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IN THIS ISSUE

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CDC panel: HCWs need not wear N95 facepiece respirators with avian flu

Surgical masks will prevent spread, experts say

Amid worldwide alarm about the spread of H5N1 avian influenza in bird populations, an advisory panel of the Centers for Disease Control and Prevention (CDC) issued a reassuring message: You don't need to stockpile N95 filtering facepiece respirators.

In fact, in most cases, you won't need to use N95s at all, says the Healthcare Infection Control Practices Committee (HICPAC).

With no evidence that avian influenza would spread among people any differently than seasonal influenza, the panel approved guidelines that call for standard and contact precautions — the use of gloves and surgical masks.

So far, human-to-human transmission of avian influenza has been very limited. But infectious disease experts fear that the virus could mutate and become more transmissible among people.

With an estimated mortality rate of about 50%, an outbreak of avian influenza would be an immediate public health emergency. The federal government is developing an avian influenza preparedness plan, which had not been released at *HEH*'s presstime.

Even if avian influenza becomes transmissible, "there's no indication that [it] is transmitted through the airborne route," says **Jane Siegel**, MD, a professor of pediatrics and infectious disease specialist at the University of Texas Southwestern Medical Center in Dallas and an author of HICPAC's *Guideline for Isolation Precautions: Preventing Transmission of Infectious Diseases in Healthcare Settings 2005.*

Special report: Forging ahead on needle safety

In the five years since the passage of the Needlestick Safety and Prevention Act, the operating room has remained the greatest challenge to sharps safety. But with improvements in technology and support from the American College of Surgeons, change is coming to the OR. In the second part of a two-part series, HEH *examines the progress and obstacles to sharps safety.* *(See p. 149.)* ■

With no evidence of airborne spread, "it would be hard to require everyone to use airborne precautions," she says. However, for aerosol-generating procedures, the guidelines recommend the use of goggles or a face shield in addition to the surgical mask or respirator.

In some other circumstances, hospitals may choose to use a higher level of protection, as well, she notes.

Some hospitals have begun stockpiling N95s as apart of their pandemic influenza preparedness. Repirator manufacturers, such as 3M Corp. in Minneapolis, have reported an increased demand for N95s.

"We do think it's because of hurricanes Katrina and Rita and preparations for avian influenza," says 3M spokeswoman **Jacqueline Berry**. "We've increased our production and we're meeting the demand."

Some hospitals may continue to prefer to use the N95s in the event of a flu pandemic. For example, the Clinical Center at the National Institutes of Health in Bethesda, MD, treats a large population of immunocompromised patients who would be at high risk for severe sequelae of influenza.

The center likely will use N95s, at least initially, during an influenza pandemic, says **David Henderson**, MD, deputy director for clinical care.

Henderson notes, "We really have never had an opportunity to study influenza transmission characteristics during an influenza pandemic, since the last pandemic — the so-called Hong Kong flu — occurred in 1968.

"My general strategy has always been to study what's going on with any epidemic — to start conservatively and then relax," he says.

Guidelines allow for flexibility, he notes. "You modify these guidelines based on internal risk assessments," he says.

Concern about avian influenza has risen since the virus was detected in birds in Turkey, Romania and Croatia in October. ■

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Hospitals begin tracking flu declination statements

QI groups ask for vaccine tracking info

This year's fall flu vaccine campaign has a new twist at some hospitals — health care workers signing declination statements if they don't want the vaccine.

Employee health professionals remain skeptical about the value of these signed statements and concerned about the paperwork and the time required to collect them. But momentum is growing as the statements become a part of quality performance monitoring.

National quality performance organizations have called for hospitals to improve health care worker influenza vaccination and to document who receives the flu vaccine and who doesn't. Recommendations are expected from the Centers for Disease Control and Prevention (CDC); two CDC advisory panels have endorsed the collection of declination statements. In a position issued in October, the Society for Healthcare Epidemiology

of America (SHEA) became the most recent organization to endorse declination statements.

This fall some hospitals began devising methods to collect the statements.

"It is going to be extremely time-consuming. Like everyone, we're overwhelmed as it is," says **Gigi Dues**, RN, employee health coordinator at Grandview Hospital and Medical Center in Dayton, OH, which had just 1.5 full-time equivalent employee health employees to handle 1,900 employees.

Grandview is accredited by the Chicago-based American Osteopathic Association (AOA), which is requiring influenza vaccination documentation on every employee. The AOA requirement stems from a 2003 report by the National Quality Forum, *Safe Practices for Better Healthcare*, which ranked influenza vaccination of health care workers among the 30 recommended safe practices.[1]

Although she's concerned about the additional paperwork burden, Dues says she is hopeful that the new policy will influence more health care workers to receive the vaccine. The hospital system typically vaccinates about 32% to 36% of employees, which is about the same as the national average for health care worker influenza vaccination.

The Leapfrog Group, a quality improvement organization sponsored by large health care purchasers, has incorporated the National Quality Forum's safe practices as part of its hospital survey and assessment. In its frequently asked questions guide for hospitals, the Leapfrog Group advises, "A senior executive and manager should be held accountable for having a process in place that provides the opportunity for all employees to be vaccinated and documents which employees and how many received or refused to be vaccinated."[2]

The quality improvement organization notes that the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has a standard that requires hospitals to "implement a means to intervene in the potential transmission of infection between patients and staff." However, JCAHO has not specifically addressed influenza vaccination declination statements in its standards.

Declination as part of education

Why have declination statements suddenly become such a hot topic?

"It's not just an employee safety issue but a patient safety issue," says **Thomas Talbot**, MD, MPH, assistant professor of medicine at the Vanderbilt University School of Medicine in Nashville and chairman of SHEA's Healthcare Worker Influenza Task Force. "We want you to sign that you've at least been educated and you understand the ramifications not just to your health but to your patients' health."

SHEA created a sample declination statement that was adapted from the hepatitis B declination statement required by the U.S. Occupational Safety and Health Administration (OSHA). (For a copy, see box below.) OSHA does not require influenza vaccination of health care workers because it is primarily a patient safety/infection control issue.

The traditional annual influenza vaccination campaigns have not produced good results, Talbot says. Health care workers need to be better

Sample declination from the Society for Healthcare Epidemiology of America

I understand that due to my occupational exposure, I may be at risk of acquiring influenza infection. In addition, I may spread influenza to my patients, other healthcare workers, and my family, even if I have no symptoms. This can result in serious infection, particularly in persons at high risk for influenza complications.

I have received education about the effectiveness of influenza vaccination as well as the adverse events. I have also been given the opportunity to be vaccinated with influenza vaccine, at no charge to myself. However, I decline influenza vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring influenza, potentially resulting in transmission to my patients. If in the future I want to be vaccinated with influenza vaccine, I can receive the vaccine at no charge to me.

Employee Name: _____
Employee Signature: _____
Date: ____/____/____

Witness Name: _____
Witness Signature: _____

educated about the vaccine to dispel common myths, such as the belief that you can get the flu from the flu vaccine, he says.

"The education has to be more than 'Just read this,'" he says. "It really needs to be directed toward why people don't get the flu."

But Talbot and his colleagues believe that flu declination statements can be part of that education, as health care workers are required to acknowledge that they were offered the vaccine, they know it would help protect their patients, and they decided not to take it.

SHEA also addresses the concerns of employee health professionals in its position paper, stating: "Healthcare facility administrators must provide ample financial support and human resources to insure the success of their program, which may require seasonal hires of information technology, secretarial, and nursing personnel in order to accommodate the demands of the annual vaccination campaign. Active declination of the vaccine must also be coupled with the other interventions noted above designed to increase access to and ease of vaccination."

"We did not expect that the current staffing would be able to support that," explains Talbot. "They need extra support, extra attention on the program from the administration so that people buy in to it."

At Grandview Hospital, Dues plans to rely on unit directors to track which employees have received the vaccine and to make sure all employees either have the vaccine or sign a declination. She has strong support from her vice president of nursing, who hopes to improve vaccination rates dramatically.

But Dues still anticipates putting in extra hours to log the vaccinations or declinations in the employee health database and file the paper copies in employees' files. The process will continue until April 1, 2006, she says.

Some employee health professionals question whether the declination statements will have the desired effect of improving vaccination rates. After

No shortage predicted for flu vaccine: CDC

At least 71 million doses available

Hospitals will likely avoid a shortage of flu vaccine this year, even if the shipments arrive in a staged fashion, the Centers for Disease Control and Prevention (CDC) reported.

The CDC had recommended vaccinating only the top priority groups (such as elderly or chronically ill patients and health care workers with direct patient contact) until Oct. 24. Some hospitals reported they received only partial shipments of vaccine in October, but the CDC anticipated at least 71 million doses would be available this year, an increase of 10 million doses over last year's supply, says CDC spokesman **Curtis Allen**.

"We realize in an ideal situation everyone would have their vaccine as early as possible, but [the vaccine] is in the pipeline," says Allen.

Sanofi Pasteur will provide about 60 million doses, GlaxoSmithKline plc will have about 8 million doses, and another 3 million doses of the live attenuated vaccine FluMist will be available from MedImmune Inc., Allen says. Chiron Corp. also will provide some vaccine, but it was not clear how much, he says.

"We hope to approach about the historic amount of vaccine we've had in years past," says Allen, who notes that in 2003 83.1 million doses were available.

Meanwhile, if a severe shortage of influenza vaccine occurs in the future, the Society of Healthcare Epidemiology of America (SHEA) has outlined a sub-tiering system that could be used to identify the highest priority health care workers.

Tier 1A would comprise health care workers "in close (within 3 feet) and repeated contact with high-risk patients in high-risk units." That would include intensive care, the emergency department, transplant units, and obstetrics. Tier 1B would comprise "all health care workers working in close but not prolonged or repeated contact with high-risk patients in high-risk units." Tier 1C would comprise health care workers working in high patient traffic units and health care workers who perform "essential patient care functions."

HCWs with patient care duties in non-high-risk areas would be in Tier 2 and all other health care workers would be in Tier 3, SHEA advises.

In a shortage situation, sub-tiering would allow hospitals to obtain "the maximum effect of available vaccine," says **Thomas Talbot**, MD, MPH, assistant professor of medicine at the Vanderbilt University School of Medicine in Nashville and chairman of SHEA's Healthcare Worker Influenza Task Force. ■

all, there are no data specifically on influenza vaccine declination programs. Proponents point to success with the hepatitis B declination but that is a one-time shot that protects health care workers from a bloodborne pathogen.

"The hepatitis B declination letter was meant for an entirely different purpose," says **William Buchta**, MD, MPH, medical director of the employee occupational health service at the Mayo Clinic in Rochester, MN. "It was done for the employees' benefit to make sure employers were doing their part [and providing the vaccine]."

Buchta says he hopes to test influenza declination statements with about 1,000 employees who are in an "enhanced flu vaccine program" because they work with immunocompromised patients.

At Tampa (FL) General Hospital, **JoAnn Shea**, ARNP, MS, COHN-S, director of employee health and wellness, is relying instead on a Flu Challenge Campaign that offers positive incentives. The theme this year: "Your best defense is . . . a good offense!"

Shea and her colleagues identified 18 areas with high-risk patients, such as the transplant and burn units and intensive care, and created posters with Velcro footballs. The units compete to increase the percentage of staff who are vaccinated.

She also has signed up almost 70 nurses who will gain career ladder points (toward salary bonuses) for providing vaccinations and inservice education at staff meetings. Last year, with a similar campaign, the number of vaccinated staff in high-risk areas rose from 272 in 2003 to 447 in 2004.

"People respond better when their peers are there to give [the vaccine], and we don't have to use our employee health staff," Shea says of the career ladder nurses. Vaccinated employees also received candy and free massages.

"We want to spend our time and effort in encouraging more people to get [the vaccine]," she says.

References

1. National Quality Forum. Safe practices for better health care. Available at http://www.qualityforum.org/txsafeexecsumm+order6-8-03PUBLIC.pdf. 2003.

2. The Leapfrog Group. General FAQs for safe practices. Available at https://leapfrog.medstat.com/pdf/NQF-FAQ.pdf. May 23, 2005.

3. Talbot TR, Bradley SF, Cosgrove SE, et al. SHEA Position Paper: Influenza vaccination of healthcare workers and vaccine allocation for healthcare workers during vaccine shortages. Available at http://www.shea-online.org/Assets/files/HCW_Flu_Position_Paper_FINAL_9-28.pdf. Oct. 10, 2005. ■

OR becomes last frontier for move to sharps safety

ACS endorses blunt needles, spurring change

American operating rooms may finally be ready to move toward sharps safety.

The American College of Surgeons (ACS) has endorsed the use of blunt suture needles and is poised to begin an educational push to reduce one of the most persistent remaining causes of sharps injuries. While sharps injuries have declined overall by about one-third, suturing injuries have remained stable.

Meanwhile, sharps safety experts are focusing on pre-packaged kits and trays, which often contain conventional devices. (See related article, p. 150.)

"It's really astonishing how impenetrable the OR has been," says **Janine Jagger**, PhD, MPH, director of the International Health Care Worker Safety Center at the University of Virginia in Charlottesville, who has made OR safety a priority. "We have a considerable amount of data demonstrating the lack of implementation of safety technology [in the OR] and a lack of consequent improvement in percutaneous injury rates."

Jagger lauded the efforts by ACS to promote sharps safety and predicted that change will come to the OR. "This endorsement by the ACS will be extremely important," she says.

The problem is largely one of awareness, says **Lena M. Napolitano**, MD, FACS, FCCP, FCCM, chair of the ACS Committee on Perioperative Care. She also is chief of surgical critical care and associate chair of surgery for critical care at the University of Michigan Health System in Ann Arbor.

Surgeons are beginning to recognize their personal risk from sharps injuries, she says. A 1998 study by Jagger and colleagues found that residents and attending surgeons experienced 55% of all exposures in the OR, and scrub nurses accounted for another 19% of exposures. Cardiovascular surgery was the most exposure-prone, accounting for 15.8% of exposures.[1]

Double-gloving and the use of blunt suture needles for suturing muscle and fascia reduce the risk of sharps injuries, according to a review of literature published in the *Journal of the American College of Surgeons*. The authors called for further research to validate the effectiveness of the

Pre-packaed kits, trays may violate OSHA rule

Hospitals must ask for safety devices

Violations of the bloodborne pathogen standard are occurring regularly in operating rooms and procedure rooms across the country. The culprit: pre-packaged kits and trays.

A hospital may have carefully selected safety devices, garnering the feedback of frontline health care workers and providing proper training, but despite those careful steps, many pre-packaged kits and trays are purchased without safety features — even on basic items such as syringes.

Hospitals must ask for safety devices in the kits and trays, even if it requires paying more for customized versions, says **Dionne Williams**, MPH, senior industrial hygienist for the U.S. Occupational Safety and Health Administration (OSHA).

OSHA issued a letter of interpretation on this issue on Feb. 20, 2005, stating, "If, during surgical procedures. . . physician specialists or other healthcare personnel are using medical instruments supplied in pre-packaged kits, those packages must include engineering controls appropriate for the specific procedures being performed. Employees using these devices must have the opportunity to provide feedback on appropriate and effective, safer devices."

"The employers need to impress upon distributors who are packaging these kits that this is what [their] needs are," Williams says. "If they're accepting these kits just based on costs, they're eliminating the right of the employee to evaluate the device they're going to be using. We would just look at it as a violation if they're not using the device that's selected [by the hospital with frontline worker input]."

In fact, under the Multi-Employer Citation Policy, physicians could be cited along with the hospital, the interpretation letter noted.

Some hospitals may place safety syringes and other safety devices on top of the kits, but that is time-consuming and inefficient for OR teams, says **June Fisher**, MD, director of the TDICT (Training for the Development of Innovative Control Technologies) Project and associate clinical professor of medicine at the University of California at San Francisco. It may be tempting for OR teams to simply use the conventional devices rather than seek out the safety devices, she says.

Fisher suggests that employee health professionals look at the kits and trays to inventory the devices they contain. TDICT has created a short "trigger" film to spur discussion of the safety issues related to pre-packaged kits and trays. The film is funded by the National Institute for Occupational Safety and Health (NIOSH) and will be available later this year, Fisher says.

Kit packers will respond to customer demand if hospitals begin to ask for safety devices in the kits, she says.

For example, Baxter Medical, a major kit packer based in Deerfield, IL, offers both conventional and safety-engineered devices, says **Erin M. Gardiner**, senior manager of external communications. "The variety of packaged kits and trays we offer is made based on customer requests," she says.

Kits with safety-engineered devices are typically more expensive than the conventional versions. Cost has always been an obstacle to the adoption of safer sharps technology, but that can't stop the progress toward a safer workplace, says **Janine Jagger**, PhD, MPH, director of the International Health Care Worker Safety Center at the University of Virginia in Charlottesville.

"We'll never stop hearing about cost objections and we just have to forge ahead if it's an important measure," she says. ■

hands-free technique for passing sharp instruments. They found there is insufficient evidence to show that hands-free passing significantly reduces exposures.[2]

"Although we're not right now as comfortable with [blunt suture needles], they're well worth the effort because they reduce sharps injuries," says Napolitano, who has been trialing the needles in her own practice. "There's just no question that they should be used."

Behavior change has been a difficult aspect of the transfer to safer sharps devices overall. But in the operating room, surgeons need to be convinced that blunt suture needles used for fascial closure and double-gloving can be just as effective as their previous techniques, Napolitano says.

"Surgeons tend to use the routine they know is

(Continued on page 155)

JCAHO Update for Infection Control

News you can use to stay in compliance

Local heroes: JCAHO says rural areas must be ready to stand alone

Joint Commission issues emergency planning guide

As the aftermath of Hurricane Katrina so dramatically showed, the initial community response to a natural disaster or terrorist attack has to be local.

"Like politics, every disaster is local," says **Joseph L. Cappiello**, vice president for accreditation field operations at the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). "The community preparedness plan cannot say, 'If we have a disaster we will hold our breath until the cavalry comes.' That is not a plan."

While large cities have all-hazard disaster plans in place in the wake of 9/11, small communities may be relatively unprepared for a catastrophic event. To address that need, JCAHO published a step-by-step guide, *Standing Together: An Emergency Planning Guide for America's Communities*, to help small, rural, and suburban communities respond to major local and regional emergencies.[1]

The planning is applicable to a variety of events, including hurricanes, floods, terrorist attacks, major infectious outbreaks, hazardous materials spills, or other catastrophic occurrences. The document emphasizes two planning strategies of particular significance to small, rural, and suburban communities. The first is to enable people to care for themselves, and the second is to build on existing relationships.

"We're trying to prepare communities to stand alone if necessary," Cappiello says. "The magic hour, the accepted [timeframe] is 72 hours. If you can get past the 72-hour mark there is a pretty good chance that the state and federal government will be able to muster some resources to support you."

Many small communities in the United States struggle with emergency preparedness because they face common barriers. Those include lack of clarity about who is responsible for preparedness and response planning, what elements of the planning and response processes are critical, how to coordinate with state and federal emergency management programs, and how to obtain and sustain funding, JCAHO reports.

The JCAHO document is designed to remove such barriers by providing expert guidance on the emergency management planning process. The target audience is local leaders, including elected or appointed officials, health care practitioners and providers, and public health leaders.

"Our point of view comes from health care, but over the years, as we have looked at our emergency management standards and tried to think about how health care can be better prepared to deal with the issues of its community, it became apparent that the issue *is* the community," he says. "No matter what level of [accreditation] standards or requirements we put on health care, if there isn't connectivity between health care and the community it is all for naught."

Though the guidance document has been under development for some time, its publication is particularly timely in the wake of a series of domestic and global natural disasters. To develop the document, JCAHO partnered with the Illinois Department of Public Health, the Maryland Institute of Emergency Medical Services Systems, and the National Center for Emergency Preparedness at Columbia University and convened two expert roundtable meetings in May and October 2004. The meetings addressed the issue of emergency management planning in small, rural, and suburban communities; synthesized the challenges; and framed potential solutions. That resulted in the listing of 13 key preparedness components for small communities. (See related story, p.153.)

Planning that prepares the community to help

itself can serve to reduce the potential surge in demand for services experienced during an actual emergency, JCAHO emphasizes. The plan needs to include a well-defined risk communication plan that contains information on the guidance that will be provided to the public and how that guidance will occur (for example, distribution of fliers or other written material, or public service announcements on local radio and television stations).

Some types of emergencies can be managed in homes with proper information, such as how to prevent and treat influenza in low-risk individuals during an outbreak in the community. For certain kinds of chemical exposures, the instruction to stay at home and take a shower rather than go to the hospital to be decontaminated is appropriate, JCAHO's plan states. Other types of emergencies will require mass evacuation, which is best supported by ongoing public communication, education, testing, and drills. With regard to the latter, many small communities may actually have disaster plans but typically few drills are conducted.

"It is partly a resource problem," Cappiello says. "Drills are not inexpensive. It takes staff time and the smaller the community the bigger the drain. Also, if you are really going to run drills effectively you have to run drills that continue to proceed until the system begins to break down. The value of drills is knowing what is not going to work. There is this belief that, 'We ran our drill and everything worked great so it's an A-plus, gold star drill.' It's exactly the opposite. If you run a drill that proves that everything that you are doing is correct you have learned nothing. That is not really a drill."

The guidance document emphasizes the important of drilling collaboratively.

"A lot of times communities drill with the triad of fire, police, and EMS, but they don't drill with their health care infrastructure," he says. "Or often times hospitals drill without the community. There are things learned in doing it that way, but they are not in sync. For community-based drills to be effective all players have to participate. Certainly, one of the key players is the health care system within the community."

The guidance recommends that communities consider such programs as the Community Emergency Response Teams (CERTs). A key component of Citizen Corps, the CERT program trains citizens to be better prepared to respond to emergency situations in their communities. When emergencies occur, CERT members can give critical support to first responders, provide immediate assistance to victims, and organize volunteers at a disaster site. The CERT program is a 20-hour course, typically delivered over a seven-week period by a local government agency, such as the emergency management agency or fire or police department. Training sessions cover disaster preparedness, disaster fire suppression, basic disaster medical operations, light search and rescue, and team operations. The training also includes a disaster simulation in which participants practice skills that they learned in the course.

"There are a number of things that the guide talks about that are available at the federal and state level," he says. "They are well established and communities can plug themselves in. We give them some ideas of how they can be employed in the community plan."

While resources and coordinated training are challenges, there may be a bigger obstacle to preparedness in rural and suburban communities.

"They may have a certain level of complacency," he says. "They are in middle America, a suburb or smaller community. They don't think of themselves as a terrorist target and may have not had weather [related disasters] in a number of years. They are not as tuned in to this as they probably should be. But the idea of planning is not just for a terrorist attack. It can be for anything that could eventually threaten the community — a natural disaster, pandemic flu, whatever. It allows a certain responsiveness for a variety of things."

Finding dual uses for existing or emerging capabilities is also particularly critical for resource-strapped small, rural, and suburban communities. A reverse 911 call system established by a community for law enforcement emergencies could also be used to communicate information about other types of emergencies. Motels and college dormitories can be used for additional bed capacity, the document states. Investments made by local public health departments in upgrading laboratory services for smallpox, severe acute respiratory syndrome, anthrax, and other specialized testing can buttress routine laboratory services in the community. Boats or school buses can provide alternative means of emergency transportation. Businesses with call-center capabilities can support community communication needs during a disaster.

Reference

1. Joint Commission on Accreditation of Healthcare Organizations. Standing Together: An Emergency Planning Guide for America's Communities, Chicago: JCAHO: 2005. http://www.jcaho.org. ■

Lucky 13: Key steps to small-town readiness

A recently published planning document by the Joint Commission on Accreditation of Healthcare Organizations outlines 13 essential components of an effective community-based emergency management planning.[1] Components include:

1. Define the community
- Identify key stakeholders in defining the community.
- Consider geopolitical and other definitional factors.
- Consider impact of federal definitions.

2. Identify and establish the emergency management preparedness and response team
- Build on existing relationships.
- Identify appropriate planning partners.
- Consider start-up logistics.

3. Determine the risks and hazards the community faces
- Use an "all-hazards approach."
- Acknowledge the potential for a catastrophic event.
- Compile a list of potential hazards.
- Recognize the problems inherent in hazard lists.
- Assess and prioritize the listed hazards.
- Fine-tune list by conducting a "gap analysis"

4. Set goals for preparedness, response planning
- Ensure that planning covers basic societal functions.
- Make the planning process as doable as possible.
- Address the four phases of emergency management.
- Address human resources requirements.
- Plan for convergent responders.
- Involve the public in community preparedness efforts.
- Enable people to care for themselves.
- Plan for layered preparedness and response.

5. Determine current capacities and capabilities
- Use federal government asset categories and target capabilities as a guide.
- Specifically consider the public as an asset category.
- Consider other groups not yet represented at the planning table.
- Identify geographic features and vulnerabilities that may affect capabilities.
- Consider surge capacity and consult surge planning resources.
- Consider all community health resources.
- Define critical capacities for each health entity and link to state databases.
- Know the federal government's definition of required surge capacity.
- Consider the issues involved with standards of care during mass casualty events.
- Identify dual uses for existing or merging capabilities.
- Identify alternative care and shelter facilities.
- Identify federal resources in the community.
- Identify gaps in community assets.

6. Develop the integrated plan
- Maintain a collaborative effort; broaden planning partnerships where necessary.
- Choose an approach to developing the plan.
- Use available guidance and resources.
- Determine how the plan is to be drafted and the expected time frame.
- Agree on meeting frequency.
- Review existing plans, laws, and mutual aid agreements.
- Commit to the use of simple language.
- Clearly delineate roles and responsibilities.
- Determine how the plan will be organized.
- Address all types of events and cover all defined goals.
- Specifically address health and medical facility emergency planning.
- Specifically address how to meet needs for pharmaceuticals and medical suppliers.
- Identify and address hazards and resources that cross jurisdictions.
- Identify how preparedness and response success will be measured.
- Consider the lessons learned from 9/11.

7. Ensure thorough communication planning
- Understand how communication is transmitted.
- Plan for alternative and backup communications links and systems.
- Plan and provide for emergency backup power to communications systems.
- Ensure interoperability of communications systems.
- Use available communications planning

resources.
- Review and build on existing communications planning initiatives.
- Obtain/prepare information for crisis com munications.
- Define emergency communications protocols or procedures.
- Establish communications credibility with the public.
- Recognize and plan for the critical role played by media.
- Identify how every community member can be reached in an emergency.
- Plan to provide decisional support.
- Ensure culturally sensitive communication.
- Use publicly available communications materials.
- Ensure integration of the local health care organization's communications plans.

8. Ensure thorough mental health planning
- Use available mental health disaster planning resources.
- Link to pastoral care resources.
- Consider organizing self-help groups.
- Link to and know how to access federal and state disaster mental health plans/resources.
- Recognize and plan for the emotional effect of crises on rescue and health care workers

9. Ensure thorough planning related to vulnerable populations
- Identify special-needs populations to support effective communication, outreach, and planning.
- Include a cross section of partners in planning and response efforts related to vulnerable populations.
- Consider the unique needs of children.
- Involve the school nurse in emergency preparedness and response.

10. Identify, cultivate, and sustain funding sources
- Proactively pursue funding.
- Include all planning partners in the funding requests.
- Consider revenue-raising opportunities.
- Seek funding collaboratively and regionally.
- Consider the impact of funding reductions.

11. Train, exercise, and drill collaboratively
- Identify who should be trained and the training needs for each.
- Ensure competency-based training programs.
- Identify cross-training opportunities.
- Consider offering the CERT program.
- Access other training programs offered through the federal government.
- Ensure incident command training for appropriate personnel.
- Recognize drills or exercises as a critical element of the emergency preparedness process.
- Involve all players in exercises and drills.
- Be sure to include local businesses in training, exercises, and drills.
- Access available resources.
- Practice with other communities.
- Identify performance measures for drills and exercises.
- Ensure the realism of drills and exercises.
- Include alternative care sites, shelters in disaster drills.
- Activate the emergency plan.

12. Critique and improve the integrated community plan
- Conduct periodic review and reprioritization of possible emergency incidents.
- Review emergency management plan on an annual basis.
- Base review on analysis of performance.
- Discuss post-test problems and assign remedial actions.
- Consider obtaining external feedback.
- Review the planning process.

13. Sustain collaboration, communication, and coordination
- Ensure proper documentation and dissemination of plans and supporting information.
- Establish mechanisms for receiving and reviewing regional, state, and federal plans.
- Collect and disseminate information about effective models, practices, and lessons learned.
- Build multilayered relationships and prepare for transitions.
- Ensure ongoing communication with the public.

Reference

1. Joint Commission on Accreditation of Healthcare Organizations. Standing Together: An Emergency Planning Guide for America's Communities, Chicago: JCAHO: 2005 ■

(Continued from page 150)

successful in ending up in good patient outcomes," she says. "They're hesitant to change unless they're certain it's going to end up in good patient outcomes."

Blunt needles work in Japan

Japan provides an example for the effective use of blunt suture needles, which are used there in about 60% of all muscle and fascial closures, says **Brian Luscombe**, group director, marketing for Syneture, a division of U.S. Surgical in Norwalk, CT.

"In 2000, when Congress passed the Needlestick Safety and Prevention Act, it was Japan's belief that blunt needles would become standard use in the United States," he says. "They began the process to convert their market to blunt needles. It wasn't until a few years later that they found out the U.S. had not in fact made the switch. They were surprised because they had fairly effectively switched over a large percentage of their usage to blunt needles."

In fact, traditionally, suture needle manufacturers had touted the sharpness of their needles. But with changes in technology, blunt suture needles require less penetration force than before and yet have a high resistance toward penetrating surgical gloves, Luscombe says. "It's a combination of the geometry of the needle as well as the coating that's applied to the needle," he says.

Surgeons now need to request the needles to spur development of the technology, safety experts say.

Syneture has several thousand product codes for suture needles in various sizes and with various sutures. Fewer than one hundred of those are blunt suture needles. The company has created blunt versions of its most popular items, but will broaden the offerings as interest increases, says Luscombe. "As a manufacturer, we will increase the number of codes that are available as demand increases," he says.

Even with better technology, not all suture needles can be converted to a blunt version. So what potential do they have to reduce OR exposures? Some 59% of suture needle injuries occur during the suturing of fascia. By contrast, the 1998 Jagger study found that only 6% of OR injuries occurred during the hand-to-hand passing of instruments (and 1.6% occurred during hands-free passing).[1]

Blunt suture needles don't just protect surgeons, notes Jagger; they also protect patients who could be exposed to surgeons' blood and other surgical team members who may handle and dispose of the used suture needle, she says.

With ACS backing and a bigger marketing push by manufacturers, Jagger is optimistic. "There's some resistance to get past, but I think we're on the verge of making a really big difference [in the OR]," she says.

References

1. Jagger J, Bentley M, and Tereskerz PM. Patterns and prevention of blood exposures in operating room personnel: A multi-center study. *AORN Journal* 1998; 67:979-996.

2. Berguer R and Heller PJ. Preventing sharps injuries in the operating room. *Journal of the American College of Surgeons* 2004; 199:462-467. ■

How safety became the norm, not needlesticks

Why not make 'airbags' for needles?

Janine Jagger was working on integrating airbags in cars when her colleagues at the University of Virginia told her about another safety problem: Health care workers stuck with needles were at risk of contracting HIV/AIDS, as well as other bloodborne diseases.

To her, the answer was obvious. Create the equivalent of an airbag for a needle.

"I'm an injury epidemiologist. Altering the design of hazardous products is one of the most straightforward ways of solving an injury problem," says Jagger, PhD, MPH, who is now director of the International Health Care Worker Safety Center at the University of Virginia in Charlottesville.

Twenty years later, Jagger can proudly point to a culture change in health care. A federal law requires safety-engineered sharps, and safer devices have widespread acceptance. From 1993 to 2001, percutaneous injuries to nurses declined by 51%; needlesticks from IV lines were eliminated with the adoption of needleless IV systems.[1] In 2002, Jagger won a McArthur Foundation award for her work as a pioneer in sharps safety.

"You know there are health care workers out there whose lives have been saved. You don't know who they are, but you know there are many," she says.

Yet there is much work left to be done, both in

the United States and abroad. Jagger's EPINet (Exposure Prevention Information Network) surveillance shows a rate of 24 needlesticks per 100 beds in the 48 facilities reporting in 2003. More than half of the needlesticks occurred with non-safety devices — despite a federal law and a U.S. Occupational Safety and Health Administration (OSHA) standard requiring the use of safety-engineered sharps wherever feasible.

The operating room remains an area of non-compliance, with 18% of all sharps injuries caused by suture needles, according to exposure data aggregated by the Centers for Disease Control and Prevention (CDC). (For more information on suture needles, see related article on p. 149.)

Jagger continues to work on these issues, as well as promoting adoption of safer devices in other countries. She remains an optimist about the prospects for tackling the more difficult remaining obstacles to sharps safety.

Despite some resistance, Jagger feels confident about making a big difference in the OR.

Recapping as a 'safety' measure

When Jagger turned her attention to needle safety in 1985, needlesticks largely were viewed as a work practice problem. Nurses and other health care workers just needed to be more careful.

In her first article on the subject, in the *New England Journal of Medicine*, Jagger documented how and why needlesticks were occurring, placing the blame on product design.[2] For example, she noted that although the CDC recommended against recapping, nurses often chose to recap to reduce other hazards from an exposed needle before it could be disposed of. She urged health care facilities and manufacturers to work toward designs that allowed workers' hands to stay behind the needle while activating a cover.

"It is difficult to explain the relative complacency that prevailed about needlestick injuries before the AIDS epidemic, given the serious consequences of hepatitis B virus and other infectious agents transmitted in this manner," she wrote.

Change came slowly. Needleless IV systems were the first and most widespread change in technology, but acceptance of other devices was spotty; many hospitals were reluctant to purchase the new devices because of higher costs.

Jagger's approach was to gather data on needlesticks and demonstrate the benefits of safer devices. She developed EPINet to collect information on percutaneous injuries from hospitals by type of device, occupation, cause of injury, and other factors. In the journal of the International Health Care Worker Safety Center, *Advances in Exposure Prevention*, she highlighted problems in specific areas, such as blood drawing or home health, and she told the stories of health care workers whose lives were altered by a needlestick.

In April 1998, the *San Francisco Chronicle* published a three-part series that contended not enough was being done to protect health care workers from deadly diseases spread through needlesticks. The articles brought public attention to the problem and triggered political response.

In November 1998, California became the first state to require the use of safer sharps devices, the involvement of frontline health care workers in their selection, and the tracking of needlesticks. It became model legislation that influenced subsequent laws in 19 other states.

Making advances in exposure prevention

By 2000, momentum had built for a national response. Congress passed the Needlestick Safety and Prevention Act, which was signed by President Bill Clinton Nov. 6, 2000. It directed OSHA to revise its Bloodborne Pathogen Standard to require the use of safety-engineered sharps devices and to obtain frontline worker input in their selection. Recapping of needles is expressly prohibited.

"Our achievement in the United States has been a landmark achievement," says Jagger. But she adds, "I don't feel I really have time to celebrate our accomplishment because there's so much left to do in other parts of the world."

Jagger has used some of her McArthur award, which provides $500,000 over a five-year period, to promote health care worker safety and safe disposal of medical waste in Africa. Advances in the United States directly benefit other countries, which often adopt our regulations, she says. With our huge market, safety products also become less expensive and more affordable for other countries, she notes.

"There is very significant impact in other areas of the world," she says of the federal law. "This is one of the most meaningful public health measures that I think has ever been undertaken."

(Editor's note: The International Health Care Worker Safety Center would like to add hospitals to its EPINet research database. If your hospital has been using EPINet but is not part of a research network and you would be interested in joining, please contact Ginger Parker at gini@virginia.edu.)

References

1. Jagger J and Perry J. Preventing Occupational Exposures to Bloodborne Pathogens, Janine Jagger and Jane Perry, eds. International Health Care Worker Safety Center, University of Virginia, Charlottesville, 2004.
2. Jagger J, Hunt EH, Brand-Elnaggar J, and Pearson RD. Rates of needle-stick injury caused by various devices in a university hospital. *NEJM* 1988; 319:284-288.
3. Holding R and Carlsen W. Epidemic ravages caregivers; Thousands die from diseases contracted through needle sticks. *San Francisco Chronicle* April 13, 1998, p. 1. http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/1998/04/13/MN64658.DTL&type=special. ■

CDC: Physicians should seek expert advice on PEP

New drugs add to complexity

Health care workers are more likely to receive post-exposure treatment after a bloodborne pathogen exposure than they were 10 years ago, but management of their regimens still needs improvement, according to the Centers for Disease Control and Prevention (CDC) in Atlanta.

With new drug choices, post-exposure prophylaxis (PEP) can result in fewer side effects, but the selection of the best regimen has become more complex. Prescribing physicians should seek out expert opinion, especially if the source patient has received long-term treatment for HIV infection, the CDC said in updated guidelines.[1]

After 72 hours, physicians should follow up with the injured health care worker, review any new information about the exposure or the source patient, and consider altering the regimen, the guidelines say.

"The principles of occupational exposure management are essentially unchanged," explains **Lisa Panlilio**, MD, MPH, a CDC medical epidemiologist and an author of the guidelines. "You follow all the same steps in terms of assessing the risk of exposure and deciding whether or not what has happened really poses a threat of infection transmission.

"What's really changed is the array of post-exposure prophylaxis regimens," she says.

Emergency department physicians may not be familiar with PEP drug choices, the CDC found in focus groups conducted in 2002.[1] Most (95%) of the 71 participants had not read the 2001 CDC guidelines on post-exposure prophylaxis, even though they had managed blood and body fluid exposures, the CDC found.

Many hospitals have in-house expertise, such as infectious disease physicians who regularly treat HIV patients. But those that do not should seek consultation in the community or through the National Clinicians' Post-Exposure Prophylaxis Hotline (PEPLine), run by physicians with the National HIV/AIDS Clinicians' Consultation Center at the University of California at San Francisco (UCSF), the CDC says.

Don't delay PEP while you seek advice on the best drug combination, the CDC guidelines stress.

"It appears that starting antiretroviral drugs very early on is key," says **Ronald Goldschmidt**, MD, director of PEPline and vice chair of the UCSF department of family and community medicine. "By very early on we really mean within hours of the exposure, certainly within 24 hours whenever possible. If adjustments in antiretroviral drugs have to be made later based on more information about the source patients' virus, that can be done and there does not appear to be a problem in doing so."

Here are some issues to consider when managing post-exposure prophylaxis:

- **Available drugs vary in toxicity.**

Some 47% of health care workers experienced one or more symptoms from PEP, according to CDC surveillance. And studies show that 17% to 47% of health care workers failed to complete a four-week course of PEP because of side effects, the CDC reported.

Newer and more effective drugs have become available that "have far fewer side effects than the drugs we were using earlier and are more convenient to take," says Goldschmidt.

Health care workers using older regimens should be reassured that they can receive medications to resolve the common side effects of nausea, diarrhea, and vomiting, says Panlilio.

- **A two-drug regimen is sufficient for many occupational exposures.**

"It has become quite common that treating clinicians have been putting exposed health care workers on [expanded regimens of] three drugs or four drugs routinely, no matter what the exposure," says Goldschmidt.

"But as the guidelines once again point out, there is no evidence that [using] three and four drugs is more effective in preventing transmission in occupational exposures than is the basic two-drug regimen," he says. "So the guidelines once again reinforce that two-drug therapy is suf-

ficient for many of the less high-risk exposures that occur so frequently."

For example, if the source patient has a known low viral load or has an asymptomatic HIV infection, the CDC recommends a two-drug regimen. Health care workers may be more likely to complete the two-drug regimen because of fewer side effects, notes Panlilio.

• Drug resistance makes the selection of appropriate PEP more difficult.

HIV source patients who have received long-term treatment present a different scenario because the virus may be resistant to some antiviral agents. In this case, the CDC recommends a regimen of three or more drugs and urges facilities to seek expert guidance. "Because of the complexity of selection of HIV PEP regimens, consultation with persons having expertise in antiretroviral therapy and HIV transmission is strongly recommended," the guidelines state.

That is especially true when source patients have had long-term treatment for HIV infection. "Even many of the very experienced emergency rooms and occupational health units call us because of questions about viral resistance," says Goldschmidt.

The CDC noted the report of a seroconversion of a nurse performing phlebotomy on an HIV-infected patient who had failed treatment with several antiviral medications. The nurse was placed on a three-drug regimen but stopped one after eight days and the other two after 24 days due to side effects.

• All health care workers with occupational exposure to HIV receive follow-up testing and counseling for at least six months.

HIV testing of exposed health care workers should occur at the time of exposure and six weeks, 12 weeks, and six months after the event. However, the guidelines recommend a broader view of follow-up care that includes counseling and management of adverse effects of PEP.

Even if no PEP is prescribed after an exposure from a source patient of unknown HIV status, the health care worker may need additional reassurance, says Panlilio.

"This is a very stressful event," she says. "Workers will benefit from counseling whether or not they take post-exposure prophylaxis."

The CDC advises exposed health care workers to avoid blood or tissue donation, breastfeeding or pregnancy, "especially during the first six to 12 weeks post-exposure."

Goldschmidt also advises exposed health care workers not to have unprotected sex with their partners during the first three months after exposure.

CE *questions*

21. At Grandview Hospital and Medical Center in Dayton, OH, who is responsible for making sure that employees either receive the influenza vaccine or sign a declination?
    A. employee health
    B. infection control
    C. unit directors
    D. human resources
22. According to a 1998 study by **Janine Jagger**, PhD, MPH, director of the International Health Care Worker Safety Center at the University of Virginia in Charlottesville, who receives the most sharps injuries in the operating room?
    A. residents and attending physicians
    B. scrub nurses
    C. OR techs
    D. circulating nurses
23. According to **Dionne Williams**, MPH, senior industrial hygienist for the U.S. Occupational Safety and Health Administration, when pre-packaged kits and trays are used in the operating room:
    A. they are exempt from the bloodborne pathogens standard.
    B. they must contain safety-engineered devices, where available and appropriate for the procedure.
    C. they are selected solely according to the preference of the surgeon or anesthesiologist.
    D. they are not available with safety devices.
24. Updated guidelines from the Centers for Disease Control and Prevention recommend what regimen for post-exposure prophylaxis if the source patient has a known low viral load or has an asymptomatic HIV infection?
    A. Four antiviral drugs, alternated to prevent resistance
    B. Three antiviral drugs
    C. Two antiviral drugs, with an effort to select those with lower toxicity
    D. No post-exposure prophylaxis is necessary

Answer Key: 21. C; 22. A; 23. B; 24. C.

CE instructions

Nurses participate in this continuing education program by reading the issue, using the provided references for further research, and studying the questions at the end of the issue. Participants should select what they believe to be the correct answers, then refer to the list of correct answers to test their knowledge. To clarify confusion surrounding any questions answered incorrectly, please consult the source material. After completing this semester's activity with the **December** issue, you must complete the evaluation form provided in that issue and return it in the reply envelope provided to receive a certificate of completion. ■

Reference

Panlilio AL, Cardo DM, Grohskopf LA, et al. Updated U.S. Public Health Service guidelines for the management of occupational exposures to HIV and recommendations for postexposure prophylaxis. *MMWR* 2005; 54:1-17. (www.cdc.gov/mmwr/preview/mmwrhtml/rr5409a1.htm).

Contact

National HIV/AIDS Clinicians' Consultation Center at the University of California, San Francisco. Phone: (888) 448-4911. ■

Letter to the editor:

[Editor's note: In June, HEH *reported on interim guidance on respiratory protection issued by the Centers for Disease Control and Prevention (CDC) in Atlanta for a bioterrorism exercise. The CDC said surgical masks would provide adequate protection against plague during such an attack, but advised that the additional protection provided by N95 filtering facepiece respirators would be "prudent." The guidance also noted that "exigent circumstances" during a large-scale event might require suspension of fit-testing and medical clearance requirements. This letter to the editor is a response to that article.]*

The CDC's interim guidance regarding personnel protection equipment (PPE) for respiratory infections is confusing because the wrong experts are making selection decisions based on the wrong criteria. Their algorithms are based on disease-specific organisms, which typically are not ascertained until long after significant exposures have occurred. When febrile/coughing patients present, they do not do so conveniently diagnosed, with labeled organisms in hand.

Furthermore, health care workers need personal protection that is proved effective based on particle/aerosol physics-based experimentation, not a "guidance. . . based on historical and modern information on transmission patterns of naturally occurring illnesses." (See *HEH*, June 2005, p. 66). There was no historical pattern for SARS.

Infectious organisms, irrespective of their pathogenicity, are particles that obey the laws of physics. Pathogens in the air behave no differently than other particles of similar physical properties. Their infectious natures are of no consequence if they do not enter the body.

Some of the variables that determine the risk of contamination are: size, shape, concentration, relative humidity, ventilation/airflow/air exchanges/turbulence, electrostatic forces, and filtration efficiency/effectiveness. There are numerous scientific experiments that demonstrate the superior protection offered by N95 respirators[1-11].

Not only are the CDC guidelines disease-specific, but they make an unequivocal distinction between droplet and airborne diseases, whereas in reality, as a consequence of the aforementioned variables, the actual aerodynamics are rather on a continuum: A droplet can become airborne with turbulent airflow and/or low relative humidity. The right parameters will keep even hail buoyant.

In private communications with local authorities and with the CDC, and in my public submissions to the SARS Commission[12] regarding respiratory containment, isolation, and PPE, I have suggested that much more input be sought from, and credence be given to, biosafety experts, aerosol physicists, ventilation engineers, and occupational hygienists.

Consequent conclusions and recommendations would be based on sound and proven principles and experimentations; the resultant guidelines would be less confusing and controversial and be more credible. Input from respiratory safety officers and occupational health specialists would help to address the human resource demands and the logistical exigencies of an effective respiratory protection program.

Gabor Lantos, MD, PEng, MBA
President, Occupational Health Management Services
Toronto

COMING IN FUTURE MONTHS

- Should health care workers receive a pertussis vaccine?
- How and why to take an inventory of your hospital's sharps
- The pandemic influenza preparedness plan: Hospitals brace for the worst
- Using Quantiferon TB-Gold: A new generation of TB testing
- Profile of success in needle safety

References

1. Grinshpun SA, Mainelis G, et al. Sampling of biological aerosols: particle collection efficiency and survival of viable microorganisms. Proceedings of the 1st Asia Aerosol Conference, Nagoya, Japan, July 27-29, 1999.
2. Qian Y, Willike K, et al. Performance of N95 respirators: Filtration efficiency for airborne microbial and inert particles. *Am Ind Hyg Assoc J* 1998; 59:128-132.
3. Hinds, WC. Aerosol Technology: Properties, Behavior, and Measurement of Airborne Particles. 2nd Ed., 1998, New York: Wiley-Interscience.
4. Lee BU, Yermakov M, and Grinshpun SA. Filtering efficiency of N95- and R95-type facepiece respirators, dust-mist facepiece respirators, and surgical masks operating in unipolarly ionized indoor air environments. *International Journal for Aerosol and Air Quality Research* 2005; 5:27-40.
5. Qian Y, Donelly J, et al. Performance of N95 respirators: Reaerosolization of bacteria and solid particles. *Am Ind Hyg Assoc J* 1997; 58:876-880.
6. Reponen TA, Wang Z, et al. Survival of Mycobacteria on N95 respirators. *Infect Control Hosp Epidemiol* 1999 20(4):237-241.
7. Sergey A, McKay R, et al. How to increase the protection factor provided by existing facepiece respirators against airborne viruses: a novel approach. Proceedings of the European Aerosol Conference (Budapest, Hungary Sept. 5-10, 2004), *Journal of Aerosol Science*, EAC, 2:1263-1264.
8. Sergey A, Reponen TA, Grinshpun SA, Respiratory protection against airborne biological agents. Perspectives on Biodefense, University of Cincinnati, Oct. 29-30, 2004.
9. Wang Z, Gorny RL, et al. Effect of sampling time and air humidity on the bioefficiency of filter samplers for bioaerosols. *J Aerosol Science* 2001; 32:661-674.
10. Weber A, Willeke K, et al. Aerosol penetration and leakage characteristics of masks used in the healthcare industry. *Am J Infect Control* 1993; 21:167-173.
11. Willeke K, Quian Y, et al. Penetration of airborne microorganisms through a surgical mask and a dust/mist respirator. *Am Ind Hyg Assoc J* 1996; 57:348-355.
12. Lantos, G., submissions transcripts: www.sarscommission.ca, Nov. 17, 2003. ■

Hospital Employee Health web site moves

The on-line home of *Hospital Employee Health* has moved to the newly revamped Thomson American Health Consultants web site. The old address is the same. The new location offers access to an expanded number of on-line resources, including the archives, free subscriber CE and CME testing through TESTweb, and links to other sites for CE and CME testing. If you haven't already activated your on-line subscription, just click the "Activate Your Subscription" button in the left navigation area of www.hospitalemployeehealth.com. Visit your new home on the web today.

CE objectives

After reading each issue of *Hospital Employee Health*, the nurse will be able to do the following:

- identify particular clinical, administrative, or regulatory issues related to the care of hospital employees;
- describe how those issues affect health care workers, hospitals, or the health care industry in general;
- cite practical solutions to problems associated with the issue, based on overall expert guidelines from the Centers for Disease Control and Prevention, the National Institute for Occupational Safety and Health, the U.S. Occupational Safety and Health Administration, or other authorities, or based on independent recommendations from clinicians at individual institutions. ■

Go on-line for this month's *Bioterrorism Watch*

The **November/December** issue of *Bioterrorism Watch* is available on-line at www.hospitalemployeehealth.com, exclusively for subscribers of *Hospital Employee Health*.

Copies of the issue will be available in html and PDF formats for easy reading. Just log on to print out your copy. To take the CE test on-line, go to http://subscribers.cmeweb.com/. Each issue will test separately. If you have questions, please call customer service at (800) 688-2421. ■

Hospital Employee Health

HEH120105TM

CE Evaluation

Please take a moment to answer the following questions to let us know your thoughts on the CE program. Fill in the appropriate space and return this page in the envelope provided. **You must return this evaluation to receive your certificate.** Thank you.

CORRECT ● INCORRECT ⊘ ✓ ✗ ⚠

1. If you are claiming nursing contact hours, please indicate your highest credential: ○ RN ○ NP ○ Other _____

After participating in this program, I am able to:	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
2. Identify particular clinical, administrative, or regulatory issues related to the care of hospital employees.	○	○	○	○	○	○
3. Describe how those issues affect health care workers, hospitals, or the health care industry in general.	○	○	○	○	○	○
4. Cite practical solutions to problems associated with the issue, based on overall expert guidelines from the Centers for Disease Control and Prevention, the National Institute for Occupational Safety and Health, the U.S. Occupational Safety and Health Administration, or other authorities, or based on independent recommendations from clinicians at individual institutions.	○	○	○	○	○	○
5. The test questions were clear and appropriate.	○	○	○	○	○	○
6. I am satisfied with customer service for the CE program.	○	○	○	○	○	○
7. I detected no commercial bias in this activity.	○	○	○	○	○	○
8. This activity reaffirmed my clinical practice.	○	○	○	○	○	○
9. This activity has changed my clinical practice.	○	○	○	○	○	○

If so, how? _____

10. How many minutes do you estimate it took you to complete this entire semester (6 issues) activity? Please include time for reading, reviewing, answering the questions, and comparing your answers to the correct ones listed. _____ minutes.

11. Do you have any general comments about the effectiveness of this CE program?

_____

I have completed the requirements for this activity.

Name (printed) _____ **Signature** _____

Nursing license number ***(required for nurses licensed by the state of California)*** _____

Please make label address corrections here or PRINT address information to receive a certificate.

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Hospital Employee Health
2005 Index

Supplement to *Hospital Infection Control* and *Hospital Employee Health*

BIOTERRORISM WATCH

Preparing for and responding to biological, chemical and nuclear disasters

THOMSON
AMERICAN HEALTH CONSULTANTS

IN THIS ISSUE

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First cases in a bioterrorism attack may go undiagnosed by physicians

'A trip on the Metro and the cat's out of the bag'

Though we live in the shadow of 9/11 and the anthrax attacks that followed, it appears likely that the first wave of bioterrorism attack in this country may go undetected. The most likely infectious agents to be used in a bioterrorism attack are so rarely seen that physicians simply may not make the initial diagnosis.

"One has to recognize the reality that physicians operating in a developed country like this one essentially see no naturally occurring anthrax and plague," says **Joseph R. Masci**, MD, author of a new book on bioterrorism preparedness and director of medicine at Elmhurst Hospital Center in New York City.[1] "There is no natural occurring smallpox in the world, and we see a thousand other diseases all the time. It is quite a challenge to keep them focused enough that they are going to pick the needle out of the haystack."

For example, more than one-half of 631 physicians tested were unable to correctly diagnose diseases caused by smallpox, anthrax, botulism, and plague, according to a recently published study.[2]

"Most American physicians in practice today have never seen any cases of these diseases in their practice," says **Sara Cosgrove**, MD, MS, lead author of the paper and an epidemiologist in the division of infectious diseases at Johns Hopkins University Hospital and Health System in Baltimore. "Education and training health care providers in disease recognition, treatment, and prevention strategies have the potential to significantly limit the effects of a bioterrorism attack."

What are the possible consequences of delayed or missed diagnosis? Obviously, the implications are the most serious for an agent that could spread from person to person like smallpox or pneumonic plague. "If [you miss those] all it takes is a trip on the Metro from the clinic and the cat's out of the bag," says **Stephen Sisson**, MD, co-author of the study and assistant professor of medicine at Johns Hopkins. "The spread from person to person will be minimized the sooner you diagnose somebody and quarantine them."

While widening the ring of subsequent transmission is not an issue, missing an airborne anthrax diagnosis could spell death for the patient.

"With anthrax the case fatality rate is quite high so delaying treatment may kill them," Sisson says. "But it is not going to spread disease."

Of course, prompt diagnosis would have implications for criminal investigations into the attack. "If you see a botulism case - again it is not spread from person to person - but there are going to be other people out there who were probably exposed in the same event," he adds. "Making the public aware and getting them into treatment sooner will be important."

Study: Diagnosis results 'poor'

In the Johns Hopkins study, an online educational intervention was completed by 631 physicians at 30 internal medicine residency programs in 16 states and Washington, DC, between July 1, 2003, and June 10, 2004. Participants completed a pretest, assessing ability to diagnose and manage potential cases of smallpox, anthrax, botulism, and plague. An online didactic module reviewing diagnosis and management of these diseases was then completed, followed by a posttest. Pretest performance measured baseline knowledge. Posttest performance compared with pretest performance measured effectiveness of the educational intervention. Results were compared based on year of training and geographic location of the residency program.

Correct diagnoses of diseases due to bioterrorism agents were as follows: smallpox, 50.7%; anthrax, 70.5%; botulism, 49.6%; and plague, 16.3% (average, 46.8%). Correct diagnosis averaged 79.0% after completing the didactic module. Correct management of smallpox was 14.6%; anthrax, 17.0%; botulism, 60.2%; and plague, 9.7% . Correct management averaged 79.1% after completing the didactic module. Performance did not differ based on year of training or geographic location. Attending physicians performed better than residents. The researchers concluded that physician diagnosis and management of diseases caused by bioterrorism agents is "poor," but the online training module increased scores dramatically.

"The Internet offers many resources on bioterrorism training, including the Centers for Disease Control and Prevention's web site as well as the Hopkins' curriculum, and physicians who want to be prepared should take the initiative to familiarize themselves with this information," Sisson emphasizes.

Though bioterrorism is very much a real world concern, it appears largely relegated to a fringe issue of emphasis in the nation's medical schools and residency programs.

The study didn't formally address that issue, but the findings are suggested in the fact that test scores did not improve regardless of post-graduate-year (PGY) of study. "In the programs that participated in this study, the PGY 1s and PGY 3s preformed no differently," Sisson says. "That suggests that there was no improvement in knowledge based on your years of training, which means your not learning during your residency how to handle this stuff. When we looked at similar scores on hypertension and diabetes management the score goes up from year to year."

Physicians trained before 9/11 may have received less information on bioterrorism.

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Editorial Questions

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"Smallpox was mentioned to me once in medical school," Sisson says. "I finished residency 10 years ago. It wasn't on the agenda. It had been eradicated so why would we need to learn about it? Since 2001 that certainly has changed. It seems like it should be included in the educational process, both for residency training and for continued certification."

Certainly, some educational efforts still resonated in the aftermath of the anthrax attacks. Many physicians tested in the study were quick to identify the tell-tale signs of airborne anthrax when shown a widened mediastinum on chest x-ray. "However, they did poorly with management issues," he notes. "They misunderstood the difference between prophylaxing with cipro for somebody who was exposed vs. treatment of somebody who actually has anthrax, which requires two antibiotics. That's where people were not clear."

Smallpox recognition would presumably have been higher, as the study period overlapped the highly publicized vaccination campaigns for the military and health care workers. "It was surprising," he says. "The attending [physicians] did a little better than the residents, and we think that is because they are actually more familiar with chickenpox," he says. "My personal sense was there wasn't as much discussion about what the rash of smallpox looks like and how to differentiate it from chickenpox. Whereas with anthrax, everyone was talking about the mediastinum widening that you see on chest x-ray. I think the national conversation about the two was a little bit different. With smallpox the whole issue of immunization was more of the national conversation than actual identification of somebody with smallpox."

Everyday demands trump bioterrorism

Still, given the demands placed on physicians, how much motivation are they really going to have to learn more about disease that they may never have to face? "That's a very important question," he concedes. "In clinic everyday I see 20 people with hypertension, high cholesterol, diabetes, depression, and back pain. I owe it to them to be current on proper management [of those conditions] and new medicines that are coming out. So where does the time come to keep myself current and relearning about smallpox, anthrax, and botulism when it is very unlikely that I am going to see it?"

One method would be requiring some level of bioterrorism knowledge as part of board certification. "That would be the stick vs. the carrot," he says. "If you needed to know this stuff to get certified, you are going to know it.

In his book on bioterrorism preparedness, Masci includes key elements of a curriculum to keep hospital based health care workers educated about bioterrorism. **(See related story, p. 44.)**

"There are many areas where hospital staff get annual reeducation, for example infection control, recognizing child abuse," he says. "I think emergency preparedness is something that every health care worker in a hospital should have at least a working familiarity with."

That said, it is no easy task to teach bioterrorism response job-specific duties and tasks in an education program, he concedes. "But I think that should be the goal, where everybody would know exactly what their role would be — or at least know who they could turn to for advice about what their role should be — in an attack."

Asked about the results of the Hopkins study, Masci notes, "It doesn't surprise me. Prior to 9/11 there were similar studies. There was not only a very limited ability to recognize the symptoms of an attack, but a really shockingly low ability in response to questions, like 'What would you do next? Who would you contact?'"

With 9/11 and the anthrax attacks, awareness improved, but may again be fading as we move out from those landmark events. One solution is to hold tabletop exercises and drills to alert clinicians and responders about where their gaps in knowledge are, he adds.

"It's difficult," Masci says. "We need to boil it down to some obvious features of these diseases for people. That's been attempted. There was a long series of articles in *JAMA* going through the nuts and bolts of all the major agents. That's a journal that most physicians read. But we're going to have to constantly re-survey and reassess that."

The analogy of the hard-pressed physician extends to the hospitals they work in. There appears to be little extra time for anything in the modern climate of health care. "As far as the traditional agents of bioterrorism, the reality is that there will continue to be a relatively small group of public health professionals, physicians, and other health care workers who are involved in this area and are knowledgeable about it," Masci says. "But there will be a lot of on-the-spot training that will occur in the actual context of an

attack. That's inevitably the situation that we are in right now. We just can't expect everybody to keep up to speed on all possible scenarios."

Moreover, the outlook becomes all the more complicated when one considers that the agents will not remain the same. The list of usual suspects may continue to shift as new diseases emerge or possible genetic modifications of old ones must be considered.

"I don't want to sound discouraging because I think there is a lot that can be done and I am enthusiastic about this field," Masci says. "But when you talk about the indefinite future, the agents that are most likely to be of concern today may be very different from the ones that are of concern five years from now."

References

1. Masci JR, Bass E. "Bioterrorism: A Guide for Hospital Preparedness." Boca Raton, FL, CRC Press: 2005

2. Cosgrove SE, Perl TM, Song X, et al. Ability of Physicians to Diagnose and Manage Illness Due to Category A Bioterrorism Agents *Arch Intern Med*. 2005;165:2002-2006. ■

Key components of a bioterror curriculum

Host of issues must be addressed

Some examples of key areas to be included in a curriculum in bioterrorism for health care workers are summarized as follows from "Bioterrorism: A Guide for Hospital Preparedness."[1]

• **Understanding the Role of the Hospital and the Health Care Worker in a Biological Attack:** General orientation regarding the likely role that the hospital would play in the event of a biological attack should be provided to all employees. All hospital-based health care workers should be instructed on the general procedures that might be undertaken in such an event (e.g., lockdown, emergency call-in of off-duty workers, etc.).

In a larger sense, all hospital workers must understand the special role that they and their institution would play in a bioterrorist attack. Similar to the way they are held to high standards in areas such as patient confidentiality, personal hygiene, and sense of service and responsibility, much would be expected of hospital workers in the event of an attack. As was witnessed in the very limited anthrax attacks of 2001, the public would expect the hospital and its workers to remain available and accessible not only to treat victims but to provide reliable information and a safe sanctuary when necessary. It is important that all hospital workers understand that these expectations would impact their work lives in many ways. The hospital must take responsibility for preparing its workers for such an environment.

• **Clinical Recognition of Syndromes Associated with Biological Attack Scenarios:** The ability to diagnose and effectively manage infections caused by biological terrorism includes an understanding of natural history, physical findings, laboratory patterns, isolation procedures (when applicable), and the approach to diagnosis and therapy.

Embodied in this knowledge base is an understanding of the role of personal protective equipment and the proper means of obtaining and processing laboratory specimens, as well as an understanding of the methods for evaluating contacts and potential contacts of victims.

• **Medical Management of Likely Diseases To be Encountered:** This similar but slightly reoriented knowledge base would include the ability to manage complications of diseases of biological attack that might not be manifest on initial presentation.

• **Understanding the Role of Decontamination and Isolation of Victims and Contacts:** This knowledge element requires an understanding of the uses of decontamination in biological attack. Because most agents of biological terror would not require extensive decontamination, the employees needing this education should also understand why unnecessary mass decontamination procedures may represent an impediment to the response to biological attack.

Specific topics include the following: the means of deploying decontamination equipment and effectively staffing decontamination areas within the hospital; the use of personal protective equipment; and the means of identifying those patients and staff members who require decontamination.

• **Understanding Uses of Personal Protective Equipment:** This component of the curriculum would focus on the proper uses of personal protective equipment (PPE), including indications for the various levels of PPE, as well as the means of locating and deploying equipment in the event of an attack.

• **Understanding How Clinical Specimens Should Be Handled:** The proper means of collecting, packing, and transporting clinical specimens would be covered in this component of the curriculum. Included would be the specific use of PPE by the clinical, transport, and laboratory staff involved in handling and processing such specimens.

• **Understanding Hospital Plans for Establishing Surge Capacity:** The management of patient flow such that the emergency department and other clinical areas do not become overwhelmed with patients not needing acute care would be addressed in this component of the curriculum.

A knowledge of space limitations and availability within the hospital or at predesignated locations outside the hospital would be emphasized. Strategies for holding potentially exposed individuals not requiring evaluation by public health authorities or medical care would be addressed. Other appropriate topics would include the means of obtaining additional equipment and supplies, the processes for rapidly discharging or transferring hospital patients, and limiting access of individuals seeking elective care.

• **Understanding Likely Security Concerns:** Issues to be addressed include the procedures for strictly enforcing existing security procedures and, if appropriate, limiting access to public areas of the hospital. In addition, the potential interactions and means of communication between hospital security staff and law enforcement agencies should be discussed.

• **Understanding Communication Issues with News Media:** A pre-event procedure for effective communication with print and broadcast news media should be established. All hospital staff should be aware of the general procedures for responding to inquiries from the press. Such inquires are best handled through a coordinated effort directed by the hospital's senior leadership and, if available, public affairs staff.

• **Recognizing and Understanding the Psychological Impact of a Terrorist Attack on Health Care Workers:** The emotional impact of a terrorist attack on the hospital's staff should not be underestimated.

The stress and fear associated with the dual roles of hospital employee and member of the general public in a community under attack should be anticipated and provisions for addressing the emotional needs of the staff developed.

• **Familiarity with Regulations Governing Quarantine:** The need for quarantine (confinement of individuals who may have been exposed to a contagious agent) would presumably be determined by public health authorities. Hospital staff, however, would be required to assist in enforcing quarantine procedures when necessary. All clinical, administrative, and security personnel would require a basic understanding of quarantine procedures set forth by local departments of health and their individual roles in putting these procedures into practice.

Reference

1. Masci JR, Bass E. "Bioterrorism: A Guide for Hospital Preparedness." Boca Raton, FL, CRC Press: 2005 ■

Can't ID a difficult rash? Digital photos can help

Software program part of anti-terrorism efforts

The emergency department (ED) staffs at Ocean Springs (MS) Hospital and Singing River Hospital in Pascagoula, MS, used to diagnose patients the old-fashioned way when treating unusual skins rashes. They would refer to medical texts which, if they were lucky, contained photographs of the rashes in question, and then make their diagnosis.

Since the spring of 2004 all that has changed. ED physicians and clinicians treating such patients can go to their computers and access a software program called Visual Dx, a point-of-care diagnostic and management system from Logical Images in Rochester, NY.

The software program, which allows staff to compare digital photos to patients' rashes, covers more than 500 conditions that are illustrated by more than 8,700 digital images. In addition to rashes that could have been caused by terrorist activity, it can help identify common skin rashes and irritants such as chickenpox and allergic reactions to certain drugs.

Ocean Springs and Singing River are among 17 hospitals in the state that have received the specialized software as part of their bioterrorism preparedness plan. The funding was made possible by the Mississippi Hospital Association's Office of Emergency and Terrorism Preparedness and the Mississippi State Department of Health.

ED managers at both facilities are enthusiastic about the program. They note it is being used frequently by staff as an education tool to refresh their memories about various skin rashes.

The program "helps us quickly identify presenting complaints we don't normally see," says **Carolyn Gilbert**, RN, the ED nurse manager at Ocean Springs. When staff were required to use text books, they sometimes would see something similar, but not quite the same, she recalls. "Now, we have a much better chance of pinpointing the exact kind of rash it is [and determining] is this something that should cause us concern, or do we just need to prescribe an antibiotic?" Gilbert says.

Charles Howard, RN, ED nurse manager at Singing River, agrees. "The great difference is the fantastic pictures this software provides," he says. "Most of them are high-quality digital photos, so you can compare what you see in person to the usually numerous pictures of rashes you can input into the system."

The system itself is simple to use, adds Howard, who notes that all of the ED's computers allow access to the Internet-based product. "You just type in the patient's demographic information and symptomology and add other information, such as whether they have traveled outside the country, and it narrows the field down to what the rash could be," he explains.

Sometimes the software will offer a top 10 list of possible causes, or it may offer just one or two, Howard says. "Then it gives you other symptomology you haven't thought about, which you can then ask the patient to verify," he notes.

Training staff to use the software was simple, Howard says. Initially, the company provided some training for a core group of physicians and nurses, and then they trained the rest of the staff, he recalls. The training took about 90 minutes, Howard says.

"It's a very simple product to use," he says. "In fact, I took the tutorial even before we had the inservice, and learned as much by myself."

Not surprisingly, neither the Singing River nor the Ocean Springs EDs have identified bioterrorism victims through the Visual Dx software so far — but that doesn't mean the ED managers haven't found it to be of value.

"We used it one time to diagnose an obscure rash," recalls Gilbert. "It was nothing horrible, but we were glad we had the ability to be able to do that."

In addition, her staff often use the system as an education tool, she says. "My staff and I will regularly type in information - symptoms, and so forth," says Gilbert. "It's a good learning tool."

Singing River's ED staff also use the system for education, Howard says. "To this point, it's been used pretty much to increase our knowledge," he says.

Soon, both facilities will be required to make a more formal evaluation. The program is being underwritten by the state for one year, after which time the hospitals will have to pay for it themselves. "That will be an administrative decision, but I certainly would recommend we do it," Gilbert asserts.

Howard agrees. "I think we will probably keep it," he predicts. "If nothing else, it has been a very good educational tool for our ED docs and nurses, and you can't get too much of that."

[Editor's note: More information about the Visual Dx software program can be found at www.logicalimages.com.] ■

Terrorism drill shows ED response plan flaws

ED managers also see weaknesses in drill itself

Lessons continue to emerge from this year's TOPOFF3. The program mandated by Congress and sponsored by the Department of Homeland Security simulated terror attacks in several locations in the United States — including the entire state of New Jersey. ED managers who participated in the New Jersey drills said they learned important lessons, not only about the weaknesses in their own response plans, but about the structure of the drill itself, which they hope will make future drills even more instructive.

The $16-million weeklong New Jersey drill, which took place the week of April 4, 2005, simulated the spraying of deadly pneumonic plague launched from a sport utility vehicle to gauge how hospitals would react if a real attack hit U.S. soil. The "death count" statewide was 5,961. (In the state of Connecticut, by comparison, which only had designated hospitals participate, there only were 200 "deaths.")

"This was the first time such a drill has occurred on statewide basis," notes **Valerie Sellers**, senior vice president of planning for the

New Jersey Hospital Association, in Princeton, who coordinated the New Jersey effort. Planning was a two-year process, she says.

"The drill involved every acute care hospital in the state, as well as some specialty and rehab facilities," Sellers says. "It was an opportunity for hospitals to test the effectiveness of their emergency response plans."

How did the hospitals do? "I think it went very well," says **Nancy Sierra**, MD, FACEP, medical director for the ED at St. Michael's Medical Center in Newark. "We got positive feedback from a federal inspector who was here observing."

St. Michaels "played" for one day (hospitals could play for up to three days), starting at 8 a.m. "We cordoned off one section of our ED and kept our regular ED process going, but the area where our drill patients were brought was totally separate from where the real patients were," she recalls.

One of the most valuable lessons her staff learned was how to coordinate communications within the hospital when there is a disaster, Sierra explains. "We learned how to funnel what we had to do to our leader," she says. Every one wants to do their own thing in their own timing during a time of disaster, "but even I had to report up to our leader right away," Sierra adds.

If she needed something, Sierra couldn't simply call the storeroom, she says. She had to call the drill leader, and the drill leader would make the call.

As a result of the drill, St. Michaels also is amending its disaster handbook. "In our original handbook, the cordoning off process is not there," she notes. "We stepped out of our handbook, and it worked."

Communications of another kind were a problem at St. James Hospital, also in Newark. "We have a pager system that is supposed to page everyone in a disaster — and it did not work," reports **Barbara Golding**, RN, director of nursing for the ED and med/surg. "Some managers did not get the page on their pocket pagers, and we will look into why they didn't."

The staff also have portable radios, and they tried to use them frequently during the drill, "but we found they were not wonderful," she

CE/CME *questions*

1. Which of the following are possible consequences of delayed or missed diagnosis of a bioterrorism agent?
   A. unidentified pathogen could spread from person to person
   B. misdiagnosis could be fatal to patient
   C. other people exposed may not seek treatment
   D. all of the above
2. In a study conducted by researches at Johns Hopkins, few physicians knew that a widened mediastinum on chest x-ray was a tell-tale sign of airborne anthrax infection.
   A. true
   B. false
3. Researchers hypothesized that attending physicians fared better than resident physicians in identifying smallpox because there were more familiar with:
   A. chickenpox
   B. plague
   C. psoriasis
   D. all of the above
4. In the TOPOFF3 bioterrorism exercise, which of the following were cited by emergency department managers as areas for improvement?
   A. communications
   B. drill needed to be longer
   C. mortuary services were not tested realistically
   D. all of the above

Answer Key: 1. D; 2. B; 3. A; 4. D

CE/CME instructions

Physicians and nurses participate in this CE/CME program by reading the issue, using the provided references for further research, and studying the questions. To take the CE/CME test on-line, go to http://subscribers.cmeweb.com/. Each issue will test separately. If you have questions, please call customer service at (800) 688-2421. ■

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says. "You couldn't always hear; but in most of these situations, you could use a phone." Nevertheless, Golding adds, she is looking into different vendors.

How drill could be improved

Golding says she sees room for improvement in the drill itself. "It would have been better if the drill was longer, because that would really test your system," she asserts. "If a real situation were longer, you'd test your ability to get staff here."

One of the things no one was able to test — but that would have been critical if there had been a plague — was whether the EDs would have run out of supplies, Sellers says.

"They can either draw from existing vendors or go to another state, but if you were dealing with plague, supplies would be depleted," she adds. In TOPOFF, they assumed 28 other states were affected. "You could very quickly run out of supplies," Sellers says.

In addition, mortuary services were not tested realistically, she notes. "We did not have enough live people as victims," she complains. "If every place exceeded capacity, what infrastructure is there in place to relieve them? What is the hospital's plan? You can't just have bodies stacking up in the ED."

Participants were encouraged to provide feedback on the drill, Golding says, and further changes in emergency response plans are forthcoming from the Joint Commission on Accreditation of Healthcare Organizations. The agency has announced it will be revising its standards for emergency management drills. ■

HRSA awards $26.1M in bioterrorism training

HRSA Administrator Betty Duke has announced more than $26.1 million in FY 2005 grants to support bioterrorism training for the nation's public health and health care professionals and students.

Funded under the Bioterrorism Training and Curriculum Development Program (BTCDP), the 32 grants to universities and educational organizations are designed to develop a health care workforce that can recognize indications of a terrorist event and treat patients and communities in a safe and appropriate manner.

"The training supported by these grants is vital to confront the ongoing threat of bioterrorism-related public health emergencies," said Administrator Duke.

The bulk of the funds, 19 grants worth almost $24.2 million, support continuing education programs for health care providers. The remaining 13 grants, worth almost $2 million, will fund changes and upgrades to curricula at health professions schools.

In the first two project years of the BTCDP (September 2003-August 2005), 200,000 health professionals and students were trained using these funds. It is estimated that more than 150,000 will be trained in the first year of these three-year FY 2005 grants. ■

CE/CME objectives

After reading each issue of *Bioterrorism Watch*, the infection control professional will be able to do the following:

- identify the particular clinical, legal or educational issue related to bioterrorism;
- describe how the issue affects health care providers, hospitals, or the health care industry in general;
- cite solutions to the problems associated with bioterrorism, based on guidelines from the federal Centers for Disease Control and Prevention or other authorities, and/or based on independent recommendations from clinicians and bioterrorism experts. ■