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## Pandemic survival guide: Be prepared and don't wait for the feds

*Hospitals must stockpile, prepare for the worst, plan says*

Neighborhoods are sealed off with barbed wire fences. The trucking industry has collapsed, and basics such as food and medicine are in short supply. Businesses and schools are closed, hospitals are overflowing, and nurses are walking off the job. This is like Hurricane Katrina hitting in every state at the same time, a government leader says.

Is this a made-for-TV movie or a scenario in the federal plan?

That dire scene was portrayed in the ABC movie on bird flu; it reflected some of the worst-case predictions contained in federal plans. The implementation plan of the *National Strategy for Pandemic Influenza*, released in May, cautions that as much as 40% of the work force could be out sick during a pandemic peak. (The report is available at [www.npr.org/documents/2006/may/birdfluplan.pdf](http://www.npr.org/documents/2006/may/birdfluplan.pdf).)

Hospitals should consider these possibilities as they draft pandemic influenza plans, experts say. They should already be working with their state and local health departments and hospital associations to coordinate planning, says **Deborah Levy**, PhD, MPH, senior adviser for health care preparedness at the division of health care promotion at the Centers for Disease Control and Prevention in Atlanta.

One fact portrayed vividly in the movie, underpinning even the federal plan: The federal government will have a stockpile and multi-agency tasks, but the ultimate response will be local. That is a message Health and Human Services Secretary Michael Leavitt brought across the country as he traveled state-to-state this past year.

"You can't wait for the feds to be the cavalry to come over the hill to rescue you," echoes **William Schaffner**, MD, chair of the department of preventive medicine at Vanderbilt University in Nashville. "This is not like a hurricane where the impact is delineated in impact and time, and once it's over, it's over. Pandemic flu is going to hit many sites in the U.S. in a scattered fashion over time. There will be second waves."

Hospitals vary greatly in the extent of their pandemic preparedness.

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But in most communities, their efforts far exceed those of other businesses and community organizations. Hospitals, along with public health departments, need to be a leader in the coordination efforts, says Schaffner. "The issue is who's got the resources, who has the clout, who has the determination to be the local community coordinator," he says.

We don't need to think back to severe acute respiratory syndrome to find a parallel for the potential spread of pandemic influenza, he says. This year, mumps outbreaks have occurred throughout the Midwest. The strain matches one that caused widespread outbreaks in the United Kingdom

and apparently was spread by international air travel.

"Mumps is a bit of a fire drill," Schaffner says. "Despite the fact that we had a well-immunized population, this disease spread and continues to spread and amazes me with how tenacious it is. You can imagine how an infectious disease that's more transmissible and less distinctive can rapidly spread."

In fact, influenza is transmissible before symptoms appear, and its incubation period is only two days. **(For information on the government's basic assumptions about pandemic influenza, see box on p. 76.)**

Planning efforts seek to answer some basic questions:

- **Will you have enough supplies?**

Transportation will be curtailed if a pandemic occurs, and some countries may completely shut their borders, severing trade, according to the federal implementation plan. It recommends "developing contingency plans to address lack of essential services, including delivery of essential commodities such as chlorine for water purification, gasoline, food, fuel, and medical supplies."

The federal implementation plan also advises hospitals to stockpile food, fuel, personal protective equipment, and other essential items that could last two or three weeks and to identify emergency sources. **(See box on p. 77.)**

That means a fundamental shift in the just-in-time policy that predominates in most hospitals.

For example, Sharp Memorial Hospital in San Diego is purchasing a stockpile of masks and N95-filtering facepiece respirators, but asking the distributor to hold the products in the warehouse, says **Shannon Oriola, RN, CIC, COHN**, lead infection control practitioner at Sharp Metropolitan Medical Campus. The hospital doesn't have enough storage space to keep the items — a problem shared by many hospitals, she says.

- **Will there be available vaccine and antivirals?**

Vaccination and antiviral medications are a critical part of the federal response to pandemic influenza. The plan assumes that if a pandemic occurs, the United States will not be able to obtain any vaccine manufactured in other countries.

States have been asked to create antiviral stockpiles that total 31 million treatment courses, while the national stockpile will have about 50 million treatment courses. The national stockpile also will include about 20 million courses of pre-pandemic vaccine.

The ultimate goal: Within five years, the federal

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government wants the domestic vaccine capability to manufacture 300 million courses of vaccine within six months of development of a reference strain — or enough to vaccinate every American.

That will require an advance in technology, and the federal government has provided grants to pharmaceutical companies to develop a new cell-based method of making flu vaccine.

Meanwhile, the first doses of available vaccine would go to critical health care workers and first responders. But creating a huge vaccine stockpile doesn't make sense in the absence of human-to-human transmission of H5N1, says influenza vaccine expert **John Treanor**, MD, professor of medicine at the University of Rochester (NY) Medical Center.

Likewise, there isn't enough evidence to support pre-pandemic vaccination of health care workers or other critical workers. "Right now, I think the likelihood of a pandemic is still not high enough that it makes sense to go forward and do that," he says.

• **If vaccine is limited, who will be the first to receive it?**

You can expect some further guidance from the Department of Health and Human Services (HHS) on the highest priority workers who will be the first to receive available vaccine or antivirals. But hospitals also should look closely at their critical personnel needs, says Levy.

"On the federal level, we are looking at that issue and providing some guidance, but it will only be guidance," she says. "Implementation rests on the shoulder of facilities."

For example, the emergency department and intensive care unit may be obvious priorities, but how many employees does it take to run those units? Who are they? "If they had to decide who was critical to the function of the hospital and taking care of patients, who would that be?" Levy says.

Keep in mind that you'll need more than clinical employees, she notes. Dietary workers, housekeepers, maintenance staff, and security also will be critical.

• **Will you have enough staff?**

In the ABC movie on the bird flu, one nurse grabs an armful of masks and begins to leave. When another nurse tells her how badly she's needed to treat the overwhelming number of patients, she says, "My mama and my little boy are sick at home, and it was probably me that got them that way. I'm not doing this anymore and you're not making me feel guilty about it."

That is a fictional, dramatized moment. But

hospitals also need to consider how they would cope with massive absenteeism as employees become sick and others are fearful to report to work.

According to the federal implementation plan, HHS is working with state and local governments to expand the Medical Reserve Corps by 20%. Volunteer health care workers, such as retired nurses and physicians, will be recruited to help treat patients during a pandemic.

Employee health professionals will need a speedy way to provide orientation on the hospital's safety devices and procedures, says Oriola. Meanwhile, your current employees need education on avian influenza and pandemic planning, she says.

At Sharp Memorial, health care workers with direct patient care responsibilities are required to participate in the on-line educational module. Other workers also will receive targeted education. The hospital will emphasize their importance to the organization, she says.

"If you work in a hospital, you're essential, whether you're a janitor or a nurse," she says. "Everyone is needed to make it run." ■

## **IOM panel: Don't reuse N95 masks in pandemic**

*If there's no choice, then double-mask*

**M**asks and respirators cannot safely be reused during an influenza pandemic — but if there is no choice, cover them with another mask or face shield, an Institute of Medicine (IOM) panel advises.

That is a paradox hospitals may face when supplies are limited and the need for protection is great. Manufacturers caution against the reuse of a disposable product, and the IOM experts found no scientific basis for allowing the reuse. But ultimately, the reuse of masks or N95-filtering face-piece respirators would be better than a makeshift cloth face covering or nothing at all, the panel concluded.

"It was almost an inherent Catch-22," says **Donald Burke**, MD, professor of international health and epidemiology at the Johns Hopkins Bloomberg School of Public Health in Baltimore and co-chair of the IOM committee. "Are there ways to reuse disposable masks? The answer is maybe; but a smarter way to do it is to design

## Federal implementation plan: Pandemic flu assumptions

The federal implementation plan, released in May, provided the following set of assumptions that underpin the planning efforts at every level:

Pandemics are unpredictable. While history offers useful benchmarks, there is no way to know the characteristics of a pandemic virus before it emerges. Nevertheless, we must make assumptions to facilitate planning efforts. Federal planning efforts assume the following:

- 1. Susceptibility to the pandemic influenza virus will be universal.**
- 2. Efficient and sustained person-to-person transmission signals an imminent pandemic.**
- 3. The clinical disease attack rate will be 30% in the overall population during the pandemic.** Illness rates will be highest among school-aged children (about 40%) and decline with age. Among working adults, an average of 20% will become ill during a community outbreak.
- 4. Some persons will become infected but not develop clinically significant symptoms.** Asymptomatic or minimally symptomatic individuals can transmit infection and develop immunity to subsequent infection.
- 5. While the number of patients seeking medical care cannot be predicted with certainty, in previous pandemics about half of those who became ill sought care.** With the availability of effective antiviral medications for treatment, this proportion may be higher in the next pandemic.
- 6. Rates of serious illness, hospitalization, and deaths will depend on the virulence of the pandemic virus and differ by an order of magnitude between more and less severe scenarios.** Risk groups for severe and fatal infection cannot be predicted with certainty but are likely to include infants, the elderly, pregnant women, and persons with chronic or immunosuppressive medical conditions.
- 7. Rates of absenteeism will depend on the severity of the pandemic.** In a severe pandemic, absenteeism attributable to illness, the need to care for ill family members, and fear of infection may reach 40% during the peak weeks of a community outbreak, with lower rates of absenteeism during the weeks before and after the peak. Certain public health measures (closing schools, quarantining household contacts of infected individuals, "snow days") are likely to increase rates of absenteeism.
- 8. The typical incubation period (interval between infection and onset of symptoms) for influenza is approximately two days.**
- 9. Persons who become ill may shed virus and can transmit infection for one-half to one day before the onset of illness.** Viral shedding and the risk of transmission will be greatest during the first two days of illness. Children will play a major role in transmission of infection, as their illness rates are likely to be higher, they shed more virus over a longer period of time, and they don't control their secretions as well.
- 10. On average, infected persons will transmit infection to approximately two other people.**
- 11. Epidemics will last six to eight weeks in affected communities.**
- 12. Multiple waves (periods during which community outbreaks occur across the country) of illness are likely to occur with each wave lasting two to three months.** Historically, the largest waves have occurred in the fall and winter, but the seasonality of a pandemic cannot be predicted with certainty. ■

them and market them as not disposable."

A possibly dire scenario forms the subtext of that question. If pandemic influenza strikes worldwide, then the supply of masks and respirators will soon be exhausted and manufacture and distribution will be unlikely to keep up with the sudden demand. Health care workers and first responders won't be the only ones using the masks. Everyone from law enforcement officers to school teachers and transportation workers will want the protection.

In fact, the U.S. economy could be crippled by worker absenteeism, disruptions in transportation, and the closing of businesses and schools, according to the *Implementation Plan of the National Strategy for Pandemic Influenza*. (See

related article on p. 78.)

"There is a sense of urgency," says Burke, noting that the committee was given only four months to research the question of reusing masks and offer guidance.

### Science is silent

Despite all the attention on influenza, there is still a dearth of scientific data, and that hampered the IOM panel's efforts.

"We really don't know for even regular seasonal flu what proportion of flu is transmitted by direct contact, [such as contaminated hands], what proportion is droplet, which would be prevented by a

mask, and what proportion is aerosol," says Burke. "I know experts who will have passionate opinions about one route vs. another route. Until those scientific questions are answered for even seasonal flu, I do think we're operating in a difficult scientific vacuum."

Moreover, no one knows how a mask might be affected by decontamination efforts, such as microwaving or bleach, he says. "Even though it looked like it was intact, it would still require reasonably rigorous testing to know that the filtration properties hadn't really changed," he says.

Health care workers routinely reuse N95 filtering facepiece respirators with different TB patient encounters, but TB is not spread by contact. During the severe acute respiratory syndrome epidemic, health care workers sometimes covered their N95s with a mask or face shield to protect the surface and extend their use, Burke says.

Although the IOM panel declined to endorse the reuse of masks or disposable respirators, they suggested double-masking as an option in a worst-case scenario. "We didn't want to shirk our responsibility to at least give some guidance based on expert opinion about what might be done," he says.

The IOM panel recommended stockpiling masks and respirators and investing in reusable models, such as elastomeric or powered air-purifying respirators (PAPRs).

"[W]e emphasize that reuse should be considered an option only in circumstances in which adequate supplies simply cannot be obtained," the report states. "[W]ithout manufacturing modifications, current disposable N95 respirators cannot be effectively cleaned or disinfected and should therefore be discarded after a single use."

According to the IOM, if a health care worker must reuse a disposable respirator, he or she should:

- Protect the respirator from external surface contamination when there is a high risk of exposure to influenza (i.e., by placing a medical mask or cleanable face shield over the respirator so as to prevent surface contamination but not compromise the device's fit).
- Use and store the respirator in such a way that the physical integrity and efficacy of the respirator will not be compromised.
- Practice appropriate hand hygiene before and after removal and, if necessary and possible, appropriately disinfect the object used to shield it.

Hospitals need more guidance as they develop their pandemic influenza plans, says **Shannon Oriola**, RN, CIC, COHN, lead infection control

## What hospitals should do

**H**ere are some general directives for hospitals and health care facilities contained in the federal implementation plan:

- All health care facilities should develop, test, and be prepared to implement infection control campaigns for pandemic influenza within six months.
- All hospitals should be prepared to treat patients with pandemic influenza (i.e., equipped and ready to care for: 1) a limited number of patients infected with a pandemic influenza virus, or other novel strain of influenza, as part of normal operations; and 2) a large number of patients in the event of escalating transmission of pandemic influenza).
- All hospitals and health care systems should develop, test, and be ready to employ business continuity plans and identify the critical links in their supply chains as well as sources of emergency.
- All health care systems, individually or collaborating with other facilities to develop local or regional stockpiles maintained under vendor-managed inventory systems, should consider stockpiling consumable critical medical materiel (including but not limited to food, fuel, water, N95 respirators, surgical and/or procedural masks, gowns, and ethyl alcohol-based gels) sufficient for the peak period of a pandemic wave (two to three weeks). ■

practitioner in the department of infection prevention and clinical epidemiology at Sharp Metropolitan Medical Campus and chair of the National Public Policy Committee for the Association for Professionals in Infection Control and Epidemiology.

"I think they're taking a conservative approach to say, 'We don't know; research is needed.'"

For example, it would be difficult and uncomfortable for health care workers to breathe through a double mask, she notes. But if masks are sufficient protection against pandemic influenza, then hospitals will have fewer supply problems, she says. The Centers for Disease Control and Prevention has recommended contact and droplet precautions (the use of masks) for both seasonal and pandemic influenza, but further guidance is expected.

Meanwhile, says Oriola, "I think each facility at their own individual planning level is trying to beef up their supply of masks." ■

# Unions demand a flu-related standard

*Emergency rule would require N95s*

The AFL-CIO and other unions representing health care workers want the U.S. Occupational Safety and Health Administration (OSHA) to create an emergency temporary standard to protect first responders from the risk of exposure to pandemic influenza.

Amid a massive federal effort to prepare for a possible pandemic, occupational health should not be left to voluntary efforts, the unions said in a petition to the agency. They proposed a standard that would have greater requirements for respiratory protection than those currently recommended by the Centers for Disease Control and Prevention in Atlanta.

“With the potential for exposure to what we fear will be a lethal agent, we could be facing the most significant occupational safety and health threat that the country and world have seen,” says **Peg Semanario**, MS, safety and health director for the AFL-CIO. “We feel it is imperative that we be prepared and have precautions and procedures and equipment put in place in the nation’s health care facilities to protect other workers who will be on the front line.”

Workers who don’t feel safe simply won’t report to work during a pandemic, Semanario asserts. And while voluntary guidance is helpful, it is not enough, she says. Preparing for a pandemic must be mandatory, she says. “Absent having a regulation, you won’t have the widespread implementation that’s needed,” she says.

The AFL-CIO also called the federal plan to use surgical masks to prevent spread of flu in health care facilities “dangerous” and “irresponsible.” The AFL-CIO proposes a standard that includes a requirement for N95-filtering facepiece respirators as a minimum requirement for protection against pandemic influenza.

Although infection control professionals say that droplet precautions are appropriate for all types of influenza, the petition asserts that influenza may be spread by droplet nuclei.

“In all other occupations where you have an airborne hazard, there is respiratory protection, [with] NIOSH [National Institute for Occupational Safety and Health]-certified respirators required,” she says. “It would be insane not to provide workers

with the basic protections and be ready to protect them.”

The unions propose a standard that would be patterned after the bloodborne pathogen standard. Hospitals would develop an exposure control plan to determine who would be at risk in the event of a pandemic and how to implement programs, such as medical surveillance and vaccination, which would mitigate that risk.

As in the bloodborne pathogens standard, employers would be required to solicit input from “nonmanagerial employees responsible for direct patient care,” the petition states.

The petition also proposes a provision for medical removal protection, so that health care workers who are furloughed with flu symptoms would still receive their pay and benefits.

An emergency temporary standard would trigger a fast-track process for creating a permanent standard, says Semanario. Even if pandemic influenza doesn’t occur, the standard would be useful for other airborne infectious diseases, she says.

“There are still exposures every day in health care settings to [seasonal] influenza, to tuberculosis, to a whole array of infectious disease hazards,” she says. “We need to have these measures put in place and ready to be implemented fully.”

OSHA had not responded to the petition as of late May. ■

## CDC: Review mumps immune status of HCWs

*Mumps prevention addresses all hospitals*

With mumps continuing to spread in at least 11 states, the Centers for Disease Control and Prevention (CDC) is recommending that all hospitals review the immune status of health care workers.

Health care workers should have documentation of two doses of the MMR vaccine or evidence of immunity, the Advisory Committee on Immunization Practices (ACIP) agreed in a special meeting held in May.<sup>1</sup> While birth before 1957 previously had been considered evidence of immunity, ACIP says hospitals should consider providing one dose of MMR vaccine to those health care workers, if they are unvaccinated.

During an outbreak, those older workers should receive two doses of the MMR vaccine,

given at least 28 days apart, says ACIP, a panel of experts that helps draft CDC guidance. Hospitals also may conduct serologic testing to determine immunity.

If health care workers report a history of mumps but do not have documentation of a physician diagnosis, they should either be vaccinated or undergo serologic testing as well, the CDC advises.

Reviewing the immunity of employees is a time-consuming task, acknowledges **Arjun Srinivasan, MD**, medical epidemiologist with the CDC's division of health care quality promotion.

"The ideal time to do this would be during other immunizations or screenings of health care workers, such as influenza vaccination," he says.

It's certainly preferable to check the immune status of employees when there's no outbreak, he says. "Doing things in a setting of an outbreak is very, very difficult," he says.

And, as the outbreak continues, it could spread to additional states. As of May 2, the CDC reported 2,597 cases of confirmed, probable, or suspect mumps, with a majority of the cases (57%) occurring in Iowa. Mumps also has been reported in other Midwestern states, including Kansas, Nebraska, Illinois, and Wisconsin.

While mumps initially spread on college campuses and has occurred most frequently among young adults (37%), it has affected all ages, the CDC reports. More than half had received two doses of the vaccine.

"It's not concerning to see a high [percentage] of cases among two-dose vaccinees. That's what we would expect," **Jane Seward, MBBS, MPH**, acting deputy director of the CDC's division of viral diseases, said in a teleconference, noting that the vaccine is about 90% effective.

However, the CDC doesn't recommend serologic testing of those who have been vaccinated. Seward notes that vaccination doesn't provide the level of antibody produced by natural infection. "Consider two doses of vaccine adequate evidence of immunity," she says.

That means that even some vaccinated health care workers can contract mumps; so employees must be aware of the possible symptoms. In the current outbreak, only about half of the mumps cases involved the classic "parotitis," or swollen salivary glands. Another 20% were asymptomatic and 30% had nonspecific respiratory or influenza-like symptoms, Seward says.

Vaccinated health care workers who have been exposed to mumps can continue working, says Seward. However, nonimmune health care workers

## Health care worker exclusion

The Centers for Disease Control and Prevention (CDC) recommends furloughing health care workers who have active mumps or who are nonimmune and have had unprotected exposures — those who have been within 3 feet of a mumps patient without wearing a surgical mask. All exposed health care workers should report signs or symptoms of illness during the incubation period (12 to 25 days after exposure), the CDC says. The agency also provided this guidance:

### Management of health care workers with illness due to mumps:

- A diagnosis of mumps should be considered in exposed health care workers who develop nonspecific respiratory infection symptoms during the incubation period after unprotected exposure to mumps, even in the absence of parotitis (swelling of the salivary glands).
- Health care workers with mumps illness should be excluded until nine days after the onset of parotitis.

### Management of health care personnel who are exposed to persons with mumps:

Health care workers with any of the following are considered immune to mumps: history of physician-diagnosed mumps, past receipt of at least one dose of mumps vaccine or positive mumps IgG.

*For health care personnel who are nonimmune:*

- Nonimmune personnel should be excluded from the 12th day after the first unprotected exposure to mumps through the 26th day after the last exposure. The mumps vaccine cannot be used to prevent the development of mumps after exposure. Hence, previously unvaccinated health care personnel who receive a first dose of vaccine after an exposure are considered nonimmune and must be excluded from the 12th day after the first exposure to mumps through the 26th day after the last exposure.

*For health care personnel who are immune:*

- Those personnel who had been previously vaccinated for mumps, but received only one dose of mumps vaccine may continue working following an unprotected exposure to mumps. Such workers should receive a second dose as soon as possible, but no sooner than 28 days after the first.
- Health care personnel who are immune do not need to be excluded from work following an unprotected exposure. However, because one dose of MMR vaccine is about 80% effective in preventing mumps and two doses are about 90% effective, some vaccinated personnel remain at risk for infection. Therefore, health care workers should be educated about symptoms of mumps, including nonspecific presentations, and should notify employee health if they develop these symptoms. ■

should be furloughed from the 12th day after exposure to the 26th day after the last exposure. (See **box, p. 79, for CDC recommendations.**)

(Editor's note: *Mumps guidance for health care facilities is available from [www.cdc.gov/nip/diseases/mumps/control-hcw.htm](http://www.cdc.gov/nip/diseases/mumps/control-hcw.htm). The teleconference can be viewed at [www.izcoalitionsta.org/confcall.cfm](http://www.izcoalitionsta.org/confcall.cfm).)*

## Reference

1. Centers for Disease Control and Prevention. Update: Multistate Outbreak of Mumps — United States, Jan. 1-May 2, 2006. *MMWR* 2006; 55:559-563. ■

# Glutaraldehyde getting attention from CA, OSHA

*OSHA urges control of hazard*

The hazards of glutaraldehyde are receiving renewed attention as California tightens its regulation and the U.S. Occupational Safety and Health Administration (OSHA) issues new guidance.

OSHA doesn't regulate an exposure limit for glutaraldehyde, a substance that can cause occupational asthma, skin irritation, and other symptoms. But about 10 states with their own occupational health programs maintain permissible exposure limits, and OSHA has issued detailed guidance for employers to monitor and reduce exposure to glutaraldehyde.

"Recognizing that we did not have an enforceable limit, we decided to at least get some information out," says **Bill Perry**, CIH, acting deputy director of OSHA's directorate of standards and guidance. "We wanted to provide more specific information that would give hospital employers [something] they could work with."

California has taken a tougher stand, as the standards board voted to lower the state's permissible exposure limit from 0.2 parts per million (ppm) to 0.05 ppm. Health care workers continued to experience symptoms from glutaraldehyde even at the level of 0.2 ppm, says **John Mehring**, health and safety specialist at the Service Employees International Union (SEIU) in San Francisco and a member of the Cal-OSHA Airborne Contaminants Advisory Committee.

In a 2004 survey, health care workers told the SEIU that they had become sensitized to glutaraldehyde, with asthma and allergy symptoms. Some

said they were no longer able to work in an environment where glutaraldehyde was in use.

"There are a lot of people who are reporting they're not getting adequate training, they don't have adequate protective equipment, and they were experiencing symptoms," says Mehring.

In fact, the SEIU and other unions had actually asked Cal-OSHA to lower the standard to 0.015 ppm. They will continue to seek the lower limit, says Mehring. "We accepted this as a compromise, something we could achieve now," he says.

The new ceiling limit will take effect in 2008. Until then, exposure may not exceed 0.05 ppm as an eight-hour, time-weighted average.

## A cause of occupational asthma

Glutaraldehyde is recognized as a cause of occupational asthma and may contribute to the relatively high rate of occupational asthma among health care workers. (Health care workers are diagnosed with occupational asthma more frequently than expected based on their work force representation, according to an analysis of 1,879 work-related asthma reports.<sup>1</sup>) It also can cause irritant symptoms at concentrations of less than 0.2 ppm and contact dermatitis from solutions containing as little as 0.1% glutaraldehyde.<sup>2</sup>

Glutaraldehyde is used as a high-level disinfectant of medical equipment, a fixative in histology and pathology labs, and a hardener in X-ray developing. While alternatives to glutaraldehyde are available, its use remains widespread in hospitals.

OSHA's efforts to regulate glutaraldehyde exposure were stymied in 1992 when the 11th Circuit Court overturned the agency's air contaminants standard, which would have revised some exposure limits and added a couple hundred new ones. Since then, OSHA has relied on voluntary compliance, although hospitals could be cited for failure to provide adequate personal protective equipment or hazard communication, notes Perry.

Meanwhile, concern about glutaraldehyde exposure has intensified. In 1997, the American Conference of Governmental Industrial Hygienists lowered its recommended exposure limit from 0.2 ppm to 0.05 ppm. In 1999, the United Kingdom set a maximum exposure limit of 0.05 ppm.

While the OSHA guidance is detailed and thorough, the agency should not rely on voluntary compliance, asserts **Bill Borwegen**, MPH, SEIU health and safety director in Washington, DC. "For OSHA not to use this as a basis for issuing a standard is an abdication of their professional

responsibility to health care workers," he says.

Perry notes that standards "reflect the regulatory priorities of current administrations."

### **Hazard communication is key**

It's important for employees to understand the hazards of glutaraldehyde and the possible symptoms related to exposure, which can include throat and lung irritation, breathing difficulty, burning eyes, rash, headache, or nausea.

"I'm always surprised by how many well-educated health care workers don't have basic knowledge about the chemicals they're working with," says Mehring. "Even though they're supposedly getting training or information about the chemicals, people aren't making the links between what they're experiencing and what the possible repercussions are of exposure to these chemicals."

The hazard communication standard requires employers to train employees about the safe use of hazardous chemical. (See box, this page.) Part of that education could include OSHA's new document, *Best Practices for the Safe Use of Glutaraldehyde in Health Care*, and a National Institute for Occupational Safety and Health brochure, *Glutaraldehyde: Occupational Hazards in Hospitals* (May 2001).

Under the personal protective equipment (PPE) standard, employers must conduct a hazard assessment and have a written program describing the PPE use. OSHA notes that butyl rubber, nitrile, and Viton are the most impervious to glutaraldehyde, while latex, vinyl, and neoprene do not provide adequate skin protection.

Splash-proof goggles or safety glasses with full face shields must be worn if there is a potential for eye contact, OSHA says.

OSHA's guidance emphasizes engineering controls to minimize exposure. For example, automated processing equipment can significantly reduce exposures by enclosing the disinfection. However, ventilation, such as a ductless enclosure hood, is still necessary, and employers need to conduct exposure monitoring to make sure it's functioning correctly, OSHA says.

OSHA doesn't say how often monitoring should take place after initial exposure monitoring. But Perry suggests, "If there's a change in the process or a change in work practices, or sometimes a change in personnel, one might think about re-monitoring to make sure that's not having an adverse effect on exposures."

(Editor's note: Best Practices for the Safe Use of

## **What to tell employees about glutaraldehyde**

**C**iting the hazard communication standard, OSHA provides this guidance on educating employees about the hazards of glutaraldehyde:

Employee training must include, at a minimum, the following elements (29 CFR 1910.1200):

- methods and observations that may be used to detect the presence or release of glutaraldehyde in the workplace;
- the physical and health hazards of glutaraldehyde;
- the measures employees can take to protect themselves, including specific procedures the employer has implemented to protect employees from exposure to glutaraldehyde, such as appropriate work practices, emergency procedures, and personal protective equipment;
- an explanation of the material safety data sheet, the employer's labeling system, and how employees can obtain and use the appropriate hazard information. ■

Glutaraldehyde in Health Care is available at [www.osha.gov/Publications/glutaraldehyde.pdf](http://www.osha.gov/Publications/glutaraldehyde.pdf). Glutaraldehyde: Occupational Hazards in Hospitals is available at [www.cdc.gov/niosh/2001-115.html](http://www.cdc.gov/niosh/2001-115.html).

### **References**

1. Pechter E, Davis LK, Tumpowsky C, et al. Work-related asthma among health care workers: Surveillance data from California, Massachusetts, Michigan, and New Jersey, 1993-1997. *Am J Ind Med* 2005; 47:265-275.
2. Occupational Safety and Health Administration. *Best Practices for the Safe Use of Glutaraldehyde in Health Care*. Washington, DC; May 2006. ■

## **Be vigilant: Sharps safety still tops OSHA citations**

*Injuries occur with safety devices*

**D**espite widespread conversion to sharps safety devices, hospitals are more likely to be cited for violations of the bloodborne pathogens standard than any other standard.

The U.S. Occupational Safety and Health Administration (OSHA) issued 136 citations to

hospitals in FY2006. Sharps injuries also contributed to the overall high rate of injury among hospitals.

In 2006, OSHA sent letters to 105 hospitals, cautioning them about their rate of six or more injuries or illnesses resulting in days away from work, restricted activity, or job transfer. The average rate for hospitals is 3.4, and the average for all industries is 2.5.

“What we’re seeing there is not only the non-use of engineering controls, but also [problems with] work practice,” says **Dionne Williams**, MPH, senior industrial hygienist.

For example, in one case, a facility was cited for a needlestick that occurred when an employee put an unprotected sharp in her pocket. She needed to carry it to a sharps container down the hall because no container was available in the patient care area. As she pulled it out of her pocket, she accidentally stuck another employee.

The hospital needed to have sharps containers available for immediate disposal, says Williams. But the hospital also is responsible for monitoring work practices to make sure safety devices are being used properly, she says.

Safety rounds, in which employee health or safety professionals observe everyday activities, can identify problems with work practice, she says. You also can evaluate the incidents on your sharps injury log, she says.

Hospitals should develop a safety culture that encourages employees to discuss potential problems in a nonpunitive environment and “to be vigilant about things they see,” says Williams.

More than half (57%) of sharps injuries occur with the use of safety devices, and about 70% of those were not activated, according to the EPINet data compiled from about 48 hospitals by the International Healthcare Worker Safety Center at the University of Virginia in Charlottesville.

With the rapid growth in the use of safety devices, it’s not surprising that they would be involved in a higher proportion of needlesticks, says **Jane Perry**, MA, associate director of the center. Hospitals should evaluate injuries to determine whether better training is needed or perhaps a switch to a device with a different safety mechanism, she says.

“There are always new devices coming on the market,” Perry says. “They need to be continually evaluated to see if there’s a new technology that would be better accepted by the staff.”

Other standards frequently cited by OSHA include personal protective equipment (PPE),

## CE questions

1. According to the implementation plan of the *National Strategy for Pandemic Influenza*, how many courses of a pre-pandemic vaccine will be available in the national stockpile?
  - A. 20 million
  - B. 40 million
  - C. 80 million
  - D. 300 million
2. What did an Institute of Medicine panel conclude about the reuse of N95-filtering facepiece respirators during a pandemic?
  - A. N95s may be safely reused if they are disinfected after each patient contact.
  - B. N95s may be safely reused for an eight-hour shift by the same health care worker.
  - C. N95s should be discarded after a single use, but if there is no alternative, they should be covered with another mask or face shield.
  - D. N95s are not necessary to protect against pandemic influenza.
3. According to the Centers for Disease Control and Prevention, hospitals that are not having a mumps outbreak should:
  - A. monitor employees for symptoms.
  - B. conduct IgG tests on employees in direct patient care.
  - C. review the immune status of employees.
  - D. no action is needed.
4. California recently lowered its permissible exposure limit for glutaraldehyde. The new limit is:
  - A. 0.015 ppm.
  - B. 0.05 ppm.
  - C. 0.2 ppm.
  - D. 0.5 ppm.

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

## 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. ■

hazard communication, and respiratory protection. For example, in the past year, hospitals have been cited for failing to have an available eye wash station.

"Everything in the health care facility isn't going to fall under the bloodborne [pathogens standard]," says Williams. "It's important for hospitals to make sure they're ensuring PPE for other types of hazards."

Although OSHA has been prohibited from enforcing the annual fit-testing requirement related to tuberculosis and N95-filtering facepiece respirators, hospitals must follow the other requirements of the respiratory protection standard, such as annual training.

Hospitals also have significant hazards in non-clinical areas, particularly related to facility and equipment maintenance. Among the top 10 most-cited standards involve lockout/tagout, wood-working, and cadmium.

One type of violation is missing from the list. The general duty clause of the Occupational Safety and Health Act has not been used to enforce ergonomics-related hazards, despite the high number of musculoskeletal disorder injuries in health care due to patient handling.

"Because there's no standard, it makes it incredibly difficult for us to be able to cite," says Williams. "We do inspect hospitals when we get complaints, but the bar is raised very high as far as documenting for citations. We do issue hazard alert letters, which is the next best thing to get some action." ■

## Virginia Mason mandatory flu policy under fire again

*NLRB agrees to hear case on masks*

The mandatory influenza vaccination policy of Virginia Mason Medical Center in Seattle has once again come under fire from unions, this time for the requirement that unvaccinated nurses wear

masks during flu season.

In response to a complaint by the Washington State Nurses Association, the National Labor Relations Board charged the hospital with "unfair labor practices" and set a hearing for June. The nurses' association asserted that the hospital refused to bargain before implementing the policy.

"We asked for certain information that we were legally entitled to about the policy. The hospital refused to provide the information," says **Anne Tan Piazza**, spokeswoman for the nurses association. "They also provided false and misleading information."

Virginia Mason is the first hospital in the nation to require influenza vaccination as a condition of employment. In the past flu season, the

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### COMING IN FUTURE MONTHS

■ Walking to wellness: Hospital benefits from a healthy competition

■ Seeking a standard: CA closes in on an airborne infectious disease rule

■ Heavy lifters save nurses' backs with OH lift team

■ Saving backs in home health care

■ Hospitals wage successful influenza immunization campaigns

hospital vaccinated about 98% of its employees, although the vaccination was not mandatory for the hospital's 600 unionized registered nurses.

The Washington State Nurses Association successfully challenged the mandatory vaccination rule, saying the hospital could not change a condition of employment without engaging in collective bargaining. An arbitrator agreed, in a decision that was upheld in January by the U.S. District Court.

Now the mask policy also is in question. "A very small percentage of staff members who were not vaccinated were asked to wear masks, which is a standard infection control practice," **Patti Crome**, senior vice president and clinic administrator said in a statement.

Crome noted that the flu policy stems from the hospital's commitment to patient safety. ■

## 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*

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Sincerely,

A handwritten signature in black ink that reads "Brenda 2. Mooney". The signature is written in a cursive style with a large, sweeping flourish at the end of the name.

Brenda Mooney  
Vice-President/Group Publisher  
Thomson American Health Consultants