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Feds act on congressional demands to reduce sharps injuries among HCWs

Agencies ready plans for guidelines, alerts, and more in 1999

Federal agencies long entangled in what many perceive as finger-pointing and foot-dragging on the issue of reducing sharps injuries among the nation's health care workers are now scrambling to comply with a congressional directive that holds them responsible for protecting workers from lethal viruses transmitted by occupational blood exposures.

Late last year, Congress spelled out a directive aimed at the U.S. Centers for Disease Control and Prevention (CDC), the Occupational Safety and Health Administration (OSHA), and the Food and Drug Administration (FDA), urging them to facilitate the use of safer needle devices and more accurate reporting of needlestick injuries in health care institutions. **(See *Hospital Employee Health*, January 1999, pp. 6-7.)**

The language, added to a major federal appropriations bill, was introduced by Sen. **Barbara Boxer** (D-CA), who charged that instead of taking action on the issue, federal agencies have wasted time making excuses and blaming each other for their lack of progress.

"The FDA says they don't have the data; it's up to NIOSH [the National Institute for Occupational Safety and Health] to pull the data together. NIOSH says they can't do anything because they're under the direction of the CDC. OSHA says it involves medical devices, so it's not their problem, and the FDA says they don't do worker-safety issues. We want them all to sit down together, figure out what belongs in whose bailiwick, and then address this problem," says **Danielle Drissel**, a spokeswoman in Boxer's Washington, DC, office. "Those agencies have been promising to move on the issue but still haven't."

However, spurred by congressional action as well as changes to the California bloodborne pathogens standard requiring health care facilities to purchase and use safer needle devices — the first such law in the nation — federal agencies are gearing up to take action on several fronts this year, including issuing safety alerts and drafting protection guidelines.

NIOSH, the worker safety arm of the CDC, is planning to release two needlestick-related documents in 1999, says **Linda S. Martin**,

PhD, the agency's director of HIV activity. She describes one as a "needlestick alert," resembling the format of the latex allergy alert NIOSH issued in 1997. The other most likely will be similar in intent to the agency's recently issued sharps container guidelines, which gave hospitals criteria for selection, evaluation, and safe use of disposal boxes without specifically recommending certain products. **(See *Hospital Employee Health*, May 1998, pp. 60-65.)**

NIOSH presently is conducting focus groups at hospitals to obtain data about "what does and doesn't work at a busy hospital" for sharps injury prevention, Martin says.

CDC to set selection guidelines

While NIOSH probably will produce the needlestick alert document, the CDC will take the lead in establishing guidelines for selecting and evaluating safer device technology.

Martin notes that increased national attention to the needlestick issue has spurred NIOSH and the CDC to move forward on issuing more guidance on safer needle devices for hospitals. In addition to the congressional directive targeting federal agencies, the California law also has had a huge impact. **(See *Hospital Employee Health*, December 1998, pp. 144-146.)**

"We're happy that new emphasis has been placed on needlesticks, with the California law and the language in the budget for the CDC and NIOSH to look at additional surveillance activities," she says. "We have a lot of irons in the fire, and we're hoping in the next six months to flesh out where we are with [producing] documents. It may take us a year or so to get it all sorted out, but I think in the end we'll have one or more documents available for hospitals to help people decide how to evaluate devices and which ones they should choose."

While the specific format and scope of the documents remain undecided, Martin says NIOSH and the CDC want to give hospitals a "framework" for considerations in selecting and assessing safer devices for use in various hospital settings and conditions.

Reducing sharps injuries among HCWs is "on top of the priority list" for the CDC's hospital infections program, says **Linda A. Chiarello**, RN, MS, CIC, an epidemiologist who will coordinate the program's efforts to produce guidelines for selecting safer needle technology.

Chiarello formerly headed the infection control program for the New York State Department of Health, where she established a systematic approach for selecting and evaluating needlestick prevention devices.[1] She says the guidelines "won't tell people what to use, but will offer possible suggestions."

The NIOSH alert will focus awareness on the problem of needlestick injuries and the availability of safer technology, and will urge employers to promote its implementation. The CDC guidelines, a collaborative project with NIOSH, will target the evaluation process — what to look for in safer devices, how to evaluate them, and considerations for selection, she explains.

"We intend to be comprehensive and address what institutions need in the way of information," she says. "The CDC does not endorse products, and we would be careful to avoid that. We want to give tools for making decisions and setting priorities. Our belief is [setting priorities] should be driven by epidemiology, and that surveillance information can help identify how devices are used in an institution."

Surveillance information should include the types of injuries that occur with particular devices, to whom they occur, and identification of various mechanisms for preventing injuries. Implementation of a safety device is not always the only way to prevent needlesticks, she says, so the CDC plans to offer guidance for problem solving that includes possible work practice or policy changes that also could help prevent sharps injuries.

OSHA request generates 'interest and concern'

OSHA also made sharps injury prevention a priority last September when it published a request for information (RFI) on engineering and work practice controls for eliminating needlesticks among HCWs.[2] **(See *Hospital Employee Health*, November 1998, pp. 129-132.)**

The comment period is now closed, and the agency has received nearly 400 comments, says **Elise Handelman**, RN, MEd, COHN-S, director of OSHA's office of occupational health nursing and a preliminary reviewer of the public comments.

Handelman says the large response to the RFI indicates "a great deal of interest and concern" from health care institutions about needlestick issues.

(Continued on page 28)

FDA to warn hospitals about capillary tubes

Safety alert: Devices cause HCW injuries

The Food and Drug Administration (FDA) will issue a safety alert warning hospitals and health care workers of the risk of injury and infection from breakage of glass capillary tubes frequently used for hematocrit determination, *Hospital Employee Health* has learned.

The safety alert, due to be released nationally by this spring, is only the second sharps-related warning from the FDA, although additional safety alerts are being considered for syringes and needles, says **Tim Ulatowski**, MS, director of the agency's division of dental, infection control, and general hospital devices. The FDA, along with other federal agencies, is more aggressively seeking ways to reduce sharps injuries among U.S. HCWs in response to a congressional directive. **(See cover story.)**

The first FDA safety alert, issued in 1992, warned against the practice of using needles to access intravenous lines and generally was considered effective in reducing that type of percutaneous injury among HCWs.

Both alerts were requested by **Janine Jagger**, PhD, MPH, director of the International Health Care Worker Safety Research and Resource Center at the University of Virginia Medical Center in Charlottesville. Jagger requested a safety alert warning against glass capillary tubes in 1993.

Despite the time lag, Jagger, who operates the Exposure Prevention Information Network (EPINet) surveillance system for gathering data on HCW blood exposures, applauds the FDA initiative.

"We have very good means of tracking the transition to safer technologies and tracking injury reductions, so we look forward to documenting the benefits of the safety alert," she says.

In 1993, the FDA published a small article in one of its publications recommending that HCWs use safer alternatives to glass capillary tubes,[1] but the warning went largely unnoticed.

The alert will warn users of "frequent fractures of tubes during use or when poked into putty to seal them," Ulatowski notes. He says the FDA will provide a list of "alternative devices or procedures," but he declined to reveal them before the list is reviewed to determine if the alternatives are "legally marketed."

However, Jagger notes that three safer alternatives presently are on the market: plastic capillary tubes, Mylar-wrapped glass capillary tubes, and a hemoglobin reader using a flat plastic microcuvette to hold the blood sample.[2]

While the exact number of glass capillary tube injuries occurring annually is unknown, about 108 million are sold annually in the United States, according to **William Kendrick**, president of Safe-Tec Clinical Products in Ivyland, PA, manufacturer of a Mylar-wrapped tube with a safety seal designed to eliminate breakage and potential bloodborne pathogen transmission.

At one hospital that has eliminated glass capillary tubes reported 2.6 injuries per 100,000 tubes purchased prior to elimination. Extrapolating those figures nationally suggests that about 2,800 capillary tube injuries occur annually in health care settings.[2]

Glass capillary tubes filled with blood are prone to break when HCWs push one end into sealing clay and during centrifugation. In one case, a physician acquired HIV when a tube broke as he attempted to seal it with putty. He has since died of AIDS.[3]

EPINet data from 77 hospitals reveal that from 1993 through 1996, 38 injuries from glass capillary tubes were reported. Of those, 20 (53%) occurred in clinical labs, six (16%) in intensive or critical care units, three (8%) in outpatient clinics, and nine (24%) in emergency departments, dialysis units, blood banks, labor and delivery units, procedure rooms, or utility areas.[4]

References

1. Food and Drug Administration. Glass capillary tubes pose risk to health-care workers. *FDA Medical Bulletin* 1993; 23:6.
2. Jagger J, Deitchman S. Hazards of glass capillary tubes to health care workers (letter). *JAMA* 1998; 280:31.
3. Aoun H. When a house officer gets AIDS. *N Engl J Med* 1989; 321:693-696.
4. Exposure Prevention Information Network (Database). Charlottesville, VA; 1996. Updated March 1998. ■

"We received comments from a broad base of health care facilities, large and small, spread throughout the nation, from as far as Alaska and Puerto Rico. It was a wonderful response from the public, and we're very pleased with that," she says.

Many responses provided comprehensive answers to 16 questions or "key issues" posed in the RFI regarding an institution's percutaneous injury prevention strategies and included detailed graphs and charts, she notes.

However, the main question is what OSHA will do with the information once it's analyzed, and that remains unanswered. Critics maintain that OSHA already has the information it needs to promote the use of safer needle technology in hospitals. Some point out that California OSHA has taken the lead in requiring hospitals to use the technology while federal OSHA lags behind in similar efforts.

Handelman says OSHA could take any of several actions based upon RFI responses, including revising the bloodborne pathogens standard, its enforcement, or compliance officer training. In any case, agency officials consider the RFI the first step in their plan to address the problem systematically.

FDA to issue safety alert

The FDA also is addressing the problem with immediate plans to issue a safety alert on hazardous glass capillary tubes used in phlebotomy procedures. **(See related story, p. 27.)** The warning will mark the agency's second sharps-related safety alert. The first was issued in 1992, warning hospitals against using hypodermic needles to access intravenous lines. Additional safety alerts on unsafe syringes and needles also are being considered, says **Tim Ulatowski**, MS, director of the division of dental, infection control, and general hospital devices.

Ulatowski says the FDA has been working "in a cooperative manner" with the CDC, NIOSH, and OSHA in response to the congressional language, ironing out issues related to each agency's contribution to reducing sharps injuries among the nation's HCWs.

While the other agencies' roles might be more apparent, the FDA's part has been less defined. The agency has cleared about 300 safer sharps devices since the mid-1980s, and has maintained this is its major function despite requests from HCW unions and others for the agency to be more proactive in issuing safety alerts, banning injury-causing sharps, and establishing criteria for safer devices.

However, with plans for additional safety alerts and other actions, it now appears the FDA is pushing beyond its self-imposed limitations.

"Primarily, our role to this point has been evaluation of new products, and we continue to do that," Ulatowski says. "The other role we've taken is interacting with professionals regarding the use of safer devices, for example, through safety alerts. We've also submitted to OSHA, in response to their request for information, design features that [safer] devices should have to guide OSHA inspectors when they do on-site evaluations of engineering controls in hospitals."

Ban on conventional sharps unlikely

In 1991, the Washington, DC-based Service Employees International Union (SEIU) petitioned the FDA to ban what it considered unsafe sharps devices, but the agency was not responsive. Ulatowski says a ban still is not likely.

The California OSHA rule permits the use of conventional sharps when considered necessary for patient safety or in certain procedures when medically necessary. FDA officials say that is why a ban would not be possible.

"We do not want to inappropriately limit the practice of medicine, to deny physicians or nurses the opportunity to use devices they see as appropriate under certain conditions or in particular situations," Ulatowski says. "We don't want to get in the way of their making that decision for their patients. How can one ban devices when you need the opportunity for certain devices to be used in certain situations?"

Nevertheless, the FDA is considering another SEIU request for labeling some sharps devices with a warning about possible injuries and directions for the user to substitute safer devices.

References

1. Chiarello LA. Selection of needlestick prevention devices: A conceptual framework for approaching product evaluation. *Am J Infect Control* 1995; 23:386-395.

2. Department of Labor, Occupational Safety and Health Administration. Occupational exposure to bloodborne pathogens: Request for information. 63 *Fed Reg* 48,250-48,252 (Sept. 9, 1998). ■

'Sacrificial lamb' stance is killing healthy backs

Successful program reduces lifting injuries, costs

Preventing patient-handling injuries among health care workers requires a major attitude shift from "caring till it hurts" to "caring for the caregiver," says the creator of a model program for reducing back injuries in health care institutions.

"It's ironic in the caregiving setting that we end up hurting our own bodies to take care of patients," says **Beth Stowell**, MPH, COHN-S, division manager for health care at Maine Employers Mutual Insurance Co. (MEMIC), a mutually held state insurance fund in Portland. "The 'sacrificial lamb' attitude of the caregiver leads us to do whatever we perceive we have to do to serve patients, but if we don't put better policies and procedures in place, tomorrow we could be in the position of not being *able* to help patients."

Cutting costs by 50%

Stowell presented her successful program for reducing patient-lifting injuries among HCWs, along with related costs, in a poster session at the recent annual conference of the Association of Occupational Health Professionals in Healthcare, held in Orlando, FL.

Formerly a safety consultant for a large hospital system, Stowell says the comprehensive "caring for the caregiver" program can reduce a hospital's workers' compensation costs for back injuries by at least 50% within a year or two, depending upon the institution's size and level of commitment.

The plan was spawned by the Occupational Safety and Health Administration's (OSHA) 200 Program, a pilot project unique to Maine. A voluntary compliance program introduced in 1992 for the state's 200 worst injury-producing industries, it allowed employers to either devise prevention programs based on their own data or face wall-to-wall inspections and costly fines. Hospital systems and nursing homes were among the offenders that chose to participate.

While the 200 Program has ceased to operate, Stowell continues to assist health care facilities in reducing back injuries and workers' comp costs through a successful multifaceted approach that emphasizes several key components: data analysis to determine risky lifts, a no-manual-lift policy, ergonomic team training, the use of mechanical lift devices, and top management commitment. Return-to-work programs must be in place for injured workers, as well.

Comprehensive assessment needed

In addition to considering OSHA regulations, the program examines a facility's safety management, safety committee practices, and employee involvement.

While patient lifts and transfers are the most frequent causes of back injuries, "we almost always found that health care institutions did not have written programs on how to address injuries and how to assess transfers," Stowell tells *Hospital Employee Health*. "Our approach is very comprehensive because it's not just assessing the patient; it's also assessing the environments in which transfers take place, the caregiver, and the available equipment."

To help facilities evaluate their hazard controls and safety management practices, Stowell adapted an OSHA audit tool called the Program Evaluation Profile (PEP), customizing it for patient-handling criteria. **(See PEP form, p. 31.)** Shaded areas on the form reflect program elements related to reducing patient-handling injuries, and Stowell accompanies the form with documentation relating to each shaded area. **(See box, p. 30, for examples of how "employee participation" is described relative to patient handling. See editor's note at end of article for information on how to obtain documentation and examples for other criteria.)**

Using the PEP as a self-evaluation tool, hospitals can assess which areas of their back safety program might be inadequate and how to write effective policies and procedures for reducing patient-handling injuries.

Written policies and procedures banning manual lifts are essential for reducing injuries and associated costs, Stowell emphasizes. The type of mechanical lift devices to be purchased depends upon a facility's patient population, but she says most hospitals generally need some type of hydraulic device to lift patients from the floor, as well as for bed-to-chair and bed-to-toilet transfers. Emergency rooms should be equipped with lifts installed with overhead tracking, so lift devices need not be wheeled into crowded, hectic areas. Equipment for home health aides, who

Example of PEP Documentation: Employee Participation

(Standard type represents OSHA documentation. *Italic type represents examples of customized criteria related to patient-handling injuries as assessed by a manager at an individual hospital.*)

1. Worker participation in workplace safety and health concerns is not encouraged. Incentive programs are present that discourage reporting of incidents, injuries, potential hazards, or symptoms. Employees/employee representatives are not involved in the safety and health program.

Health care workers are not cognizant of injuries related to lifting and moving clients. Not requesting help to assist transfer even when injured. Not using mechanical lifts. Not reporting moderate soft-tissue injury due to transfers/lifting.

2. Workers and their representatives are involved in the safety and health program and inspection of work areas, and are permitted to observe monitoring and receive results. Workers' and representatives' right of access to information is understood by workers and recognized by management. A documented procedure is in place for complaining of hazards or discrimination and receiving timely employer responses.

Health care workers participate in safety committee where transfer/lift injury trending is discussed. Each unit/department is given responsibility to address hazards of transfer/lifting. Lifting limit is stated. Health care worker transfer/ lifting behavior is not part of safety audit.

3. Workers and their representatives participate fully in developing the safety and health program and conducting training and education. Workers participate in audits, management- or third-party-conducted program reviews, and in collecting samples for monitoring purposes. They have the necessary training and education to participate in such activities. Employer encourages and authorizes employees to stop activities that present potentially serious safety and health hazards.

Health care workers are empowered with education to solve ergonomic problems and authority to choose mechanical transfer/lift/assist devices. Health care workers are actively involved in accident investigations. They write transfer/lifting policies and procedures to address ergonomic hazards on their particular unit/department. Health care workers demonstrate behaviors consistent with policies and procedures. All health care workers are authorized to alter care plans. Employees are rewarded for suggestions for improving safety.

Source: MEMIC Safety Services, Portland, ME.

often are elderly and work where administrative controls and assist devices are lacking, is crucial as well.

"The point is that we must find out where the risky lifts are," she says.

Nurses resistant to change

To eliminate those risks, team training is essential for educating front-line health care workers about ergonomic risk factors so they can troubleshoot hazardous situations. Stowell recommends ergonomic teams tailored to different employee groups involved in lifting, such as groups for nurses, maintenance workers, food service personnel, and laundry workers.

"Nursing needs its own team because they have a cultural attitude that has to be changed, but they are very resistant to this type of change due to their sacrificial lamb mindset," she says. "Nurses often don't admit they have a [back injury] problem and have trouble identifying risky job tasks even though most of the injuries are occurring there."

One way to convince nurses of the need for ergonomic problem solving is to show them the successes achieved with that approach in other departments and to involve the hospital's physical therapy professionals, Stowell suggests.

Nurses also accept using mechanical lift devices when the devices are presented as a quality-of-care issue for patients instead of a means of protecting their own health.

"When we tell nurses that patients experience 90% fewer skin tears when we handle them with mechanical lifts vs. manual lifts where we practically rip people's armpits off, they are more willing to do it," she notes. "That's how deep their 'care till it hurts' culture goes."

Ergonomics teams also should evaluate lift devices before hospitals purchase them, and Stowell routinely tells vendors to leave their equipment at hospitals for a two- to three-week trial period.

"Employees who are doing the lifting have to determine what type of mechanical lift to use in a facility, not administration or anyone else. The people who are doing the work should choose what they're going to work with. The ergonomics team knows how many lifts they need to do, what kind of lifts, who they need to lift, and how often," she states.

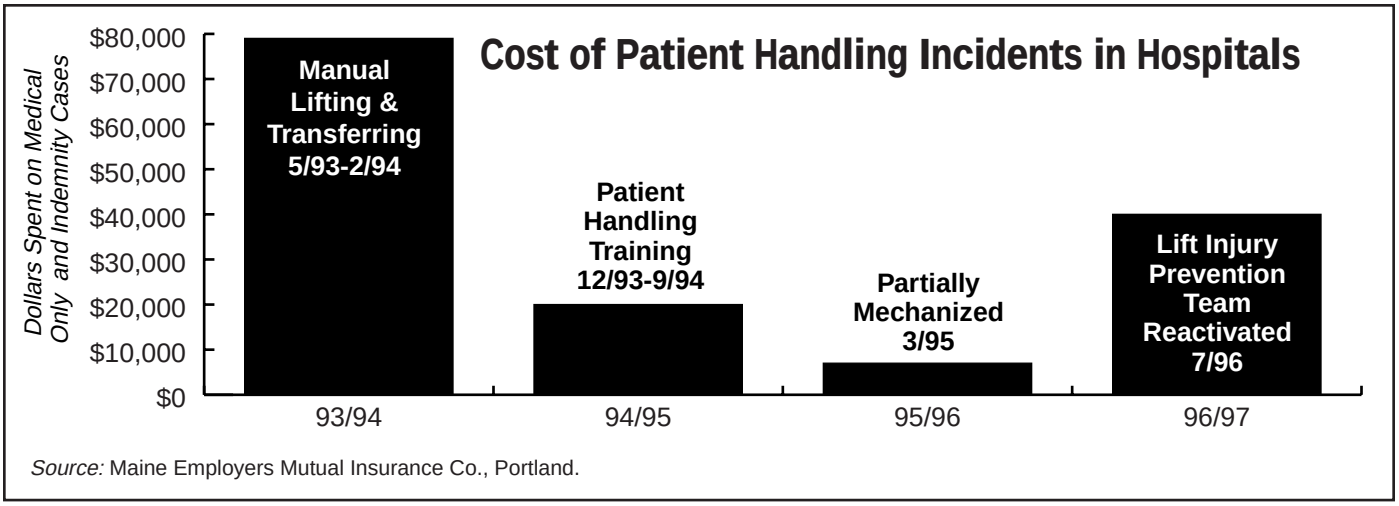
(Continued on page 32)

Program Evaluation Profile

PEP **PROGRAM EVALUATION PROFILE**	**Management Leadership & Employee Participation**				**Workplace Analysis**			**Accident & Record Analysis**		**Hazard Prevention & Control**			**Emergency Response**		**Safety & Health Training**	
Employer: Inspection No: Date: CSHO ID:	***Management Leadership***	***Employee Participation***	***Implementation***	***Contractor Safety***	***Survey and Hazard Analysis***	***Inspection***	***Reporting***	***Accident Investigation***	***Data Analysis***	***Hazard Control***	***Maintenance***	***Medical Program***	***Emergency Preparedness***	***First Aid***	***Training***	
Outstanding 5																5
Superior 4																4
Basic 3																3
Developmental 2																2
Absent or Ineffective 1																1
Score for Element																
Overall Score																

** Shaded areas represent segments with accompanying documentation.*

Source: Maine Employers Mutual Insurance Co., Portland.



Source: Maine Employers Mutual Insurance Co., Portland.

Hospitals that participate in the comprehensive program can expect a significant effect on the bottom line. At a small regional hospital in northern Maine, medical and indemnity costs from lifting injuries fell from more than $75,000 in 1993 to less than $5,600 in 1997, with corresponding decreases in patient-handling injury lost-time incidents. **(See graphs, above and below right.)**

With top management commitment to the goal of eliminating lifting injuries, workers at all levels were involved in the process. Stowell helped identify hazards through an in-depth loss analysis. Interventions included establishing a lift injury prevention (LIP) team — a reference to the fact that past efforts to eliminate lifting injuries were merely "lip service," she notes. The LIP team established procedures for assessing potential movement for newly admitted patients and for making those moves with mechanical assist devices. A no-manual-lift policy was the program's cornerstone.

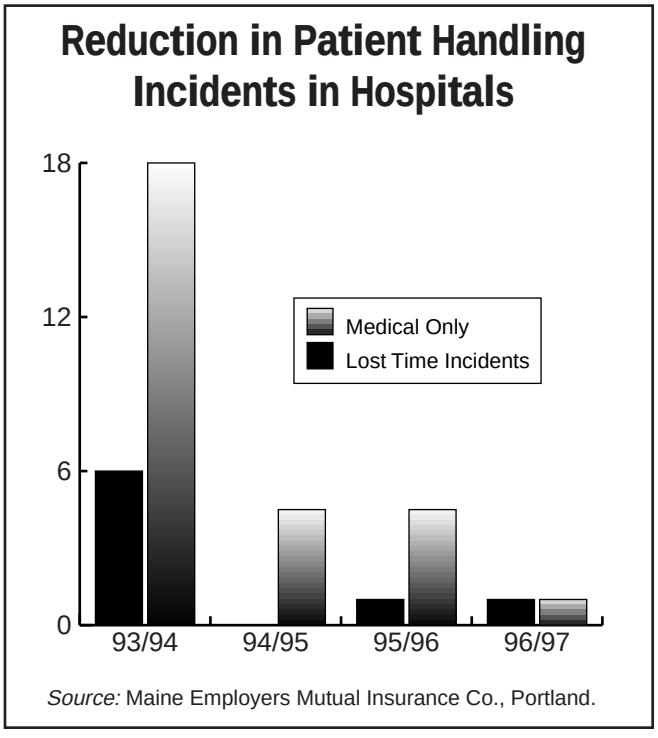
Stowell notes that changes don't occur overnight. Employee training and equipment purchases took place over three years. The process was considered part of a quality assurance program, so when two injuries occurred in 1996 due to nurses violating lifting protocols, the LIP team was reactivated.

Another regional hospital in Maine was plagued by patient-lifting injuries and significant lost time, despite a strong safety management system. A comprehensive injury management system was developed, and an ergonomic team recommended policies and procedures based on prohibiting manual lifts. Nursing staff were trained in using mechanical lifts, and full compliance was achieved within six months. Workers' compensation costs were slashed from $112,600 in 1996 to $1,495 in 1998.

Stowell warns that hospitals often experience increased injury incidents as money spent on injuries decreases.

"The reason is almost any time you implement an ergonomics program, you raise the consciousness level and let people know you want to hear about what's going on. That means you'll see an increase in incidents, but the dollars actually will go down," she explains. "I always tell top management at the beginning not to overreact if they see an increase in incidents. The goal is to have early intervention, and the dollar cost goes down due to the decreased severity of incidents."

The commitment of top management is essential, she emphasizes. "They must want to solve this problem, and they must allow the ergonomic teams to problem-solve."



Source: Maine Employers Mutual Insurance Co., Portland.

The program has been so successful that it was presented to OSHA compliance officers so they could address patient-lifting injuries in nursing homes as part of the agency's 1996 Nursing Home Initiative.

[Editor's note: For more information on implementing the patient-handling injury reduction program or on use of the PEP as a self-assessment tool, call Beth Stowell at (207) 791-3484.] ■

Mask study likely spells fit testing in final TB reg

But annual refitting requirement not expected

A recently published government study all but ensures that respirator fit-testing programs will be required in the final version of the federal tuberculosis standard, *Hospital Employee Health* has been advised.

During the protracted debate on the proposed TB standard by the Occupational Safety and Health Administration, the Association for Professionals in Infection Control and Epidemiology (APIC) questioned the need for fit testing and objected to the costs associated with such programs — particularly if retesting is required annually. The TB standard still is being finalized after months of hearings and comments. However, a recent study by the National Institute for Occupational Safety and Health (NIOSH), which documented the benefits of fit-testing, very likely means the requirement will be in the final standard, says **Julie Sellers**, RN, chair of the APIC governmental affairs committee.[1]

"The findings clearly show in their view the continued necessity to require fit testing," she says. "One of our big issues has been the need for that. I guess we can say that we will inevitably see the continued requirement for fit testing."

A branch of the CDC, NIOSH is the government agency charged with testing and approving respirators. In the mid-1990s during the height of the TB mask debate, it appeared that health care workers might be required to don high-efficiency industrial respirators to treat TB patients. As a result of the ensuing controversy, NIOSH introduced a new classification scheme for respirators and developed criteria for the less expensive and

WEB ALERT

NIOSH sites contain fact sheets, alerts, guidelines

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National Institute for Occupational Safety and Health (NIOSH) Resources:

• ***Guidelines for Protecting the Safety and Health of Health Care Workers***

http://www.cdc.gov/niosh/hcwold0.html

Although this document was published in 1988 and a few parts (particularly the sections dealing with infectious disease) are somewhat dated, it remains a wealth of useful information regarding hazard evaluation and control. This document, available in its entirety, serves as an excellent starting point, with listings broken out by department/area as well as by specific chemical and physical hazards. Of course, more recent references also should be checked when dealing with a particular problem. According to NIOSH, the document presently is under revision, although no firm date has been given for its publication.

• **NIOSH Publications**

http://www.cdc.gov/niosh/pubs.html

Users can click on numerous useful links, including alerts (such as the recent latex alert for health care workers), current intelligence bulletins, fact sheets, *Federal Register* notices, hazard controls, Health Hazard Evaluation Program, hazard IDs, respirator standards, videos, information packets, and the complete NIOSH publications list.

• **NIOSH Selected Topics — Health Care Workers**

http://www.cdc.gov/niosh/healthpg.html

This page includes links to specific information such as a latex allergy fact sheet, control of smoke from laser procedures, engineering controls and work practices for ethylene oxide sterilizers, controlling exposures to nitrous oxide, indoor air quality health hazard evaluation, guide for selecting and using particulate respirators, workplace violence, respiratory protection guide for TB, guide to sharps disposal containers, and designing safe lifting jobs.

restrictive N95 particulate respirators that many health care workers now use to prevent occupational transmission of tuberculosis. The question of whether N95 respirators needed to be fit-tested in respiratory protection programs to ensure worker protection was raised. According to the NIOSH study, fit testing is a procedure used to evaluate how well a given respirator fits a given person by assessing leakage around the face seal. Fit testing can either be qualitative (i.e., relying on a subjective response of the wearer) or quantitative (i.e., using a measurement of actual leakage).

NIOSH evaluated the performance of 21 N95 respirator models on a 25-person panel. The panel comprised 15 women and 10 men with face lengths and widths similar to the general population. For each test, the person donned the respirator and performed a user seal check (i.e., pressure-tightness test, fit check, or negative / positive pressure check) according to the manufacturer's instructions. Each person then performed a series of exercises to simulate facial movements during normal use. Quantitative tests also were performed to assess mask leakage.

"The findings in this report indicate that fit-testing N95 respirators is essential in programs employing these respirators and can eliminate poorly fitting respirators, ensuring at least the expected level of protection," NIOSH concluded.

Without surrogate fit testing, average exposure for the 25-person panel was reduced to 33% of the ambient level, which is much less protection than expected of the N95 class of respirators. However, when fit-tested first, the panel received substantially greater protection than normally expected (the average exposure was reduced to 4% of the ambient level), the agency reported. Without fit testing, people unknowingly may have poor face seals, resulting in excessive leakage and exposure, NIOSH concluded.

However, while the more elaborate quantitative testing was done to verify findings in the study, it appears that the less rigorous qualitative testing will suffice to ensure worker protection, Sellers noted. Also, the study addressed the efficacy of initial fit testing but did not emphasize any need to refit workers annually.

"So we have the feeling that we will not be doing annual fit testing," Sellers says. "We don't have to now, and we don't think we will have to change and begin to when the final rule comes out. But our hope that we wouldn't have to fit-test at all, I think, is down the drain."

Reference

1. Centers for Disease Control and Prevention. National Institute for Occupational Safety and Health. Laboratory performance evaluation of N95 filtering face piece respirators, 1996. *MMWR* 1998; 47:1,045-1,049. ■

Literature Review

Allmers H, Brehler R, Chen Z, et al. **Reduction of latex aeroallergens and latex-specific IgE antibodies in sensitized workers after removal of powdered natural rubber latex gloves in a hospital.** *J Allergy Clin Immunol* 1998; 102:841-846.

The study was undertaken to determine the success of eliminating powdered latex gloves in protecting health care workers and patients from latex sensitization and allergic reactions. Results showed that eliminating powdered gloves reduced aerogen natural rubber latex (NRL) allergen loads below detection limits and permitted sensitized / allergic HCWs to remain on the job.

From September 1996 to September 1997, German researchers studied 90 HCWs from four hospital areas (pediatric and adult intensive care and the departments of anesthesiology and surgery). Subjects responded to questionnaires to determine atopic symptoms history and NRL

COMING IN FUTURE MONTHS

- Advantages of certification as an occupational health nurse
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- Study shows education needed to support latex glove changes

allergy. Follow-up examinations included history, determination of NRL-specific IgE, and skin-prick tests.

A surgical ward floor was used as the control area, in which powdered NRL gloves were used. The pediatrics ICU was switched to non-latex gloves. The pediatrics ward, general surgery, orthopedics operating room, surgical clinic, and adult ICU were changed to powder-free NRL gloves. A changing room used by staff working with powdered NRL gloves also was studied.

Air sampling was performed for 24-hour measurement periods in seven different areas. Samplers were placed to measure areas of greatest contamination, such as near glove storage areas and garbage bins. NRL allergen content in air samples was measured by an immune inhibition assay. Results were expressed as NRL allergenic protein mass per cubic meter of air.

Of the 90 HCWs participating in baseline examinations, 10 (11%) had NRL-specific IgE antibodies during the initial September 1996 exam. Seven of those 10 had a positive skin-prick test response to latex allergens and reported symptoms ranging from urticaria to asthma. The other three subjects had a negative skin-prick test response and reported no allergic symptoms.

The researchers re-examined 49 HCWs (54%) in April 1997 and 62 (69%) in September 1997. Two HCWs reported respiratory symptoms requiring the use of antihistamines or metered-dose inhalers during work. After switching gloves, symptoms disappeared and medication use could be terminated. In September 1996, six HCWs had latex-specific IgE antibody concentrations greater than 1 kU/L. Concentrations were halved in five of those within one year.

"The decrease of NRL-specific IgE antibodies in all seven subjects during 12 months without NRL exposure is highly significant," the authors state. "No new cases of sensitization could be detected in the other participants."

Air sampling showed that within 24 hours after use of powdered gloves ceased, allergen loads fell below the detection limit. Measurements repeated in March and September 1997 showed no detectable allergen load in rooms where only powder-free latex gloves were used.

The researchers' finding that respiratory symptoms and NRL-specific IgE antibodies were present only in employees who worked in rooms with a detectable NRL allergen load confirmed their hypothesis that "direct allergen contact to the mucosa of the upper and lower respiratory tract is an important cause for the development of sensitization against NRL allergens."

They cite other studies that confirm their hypothesis, such as research showing significantly lower sensitization prevalence in operating room staff in the United Kingdom, where only powder-free gloves have been used for decades,[1] as well as a recent U.S. study finding similar results for measuring aerogen latex allergen concentrations and decline of allergen content in powdered gloves.[2]

Their hypothesis also seems to be supported by the fact that conversion from negative to positive skin-prick test responses occurred both in the group using powdered gloves and the group using powder-free gloves, but that clinical symptoms were reported only by powdered group participants.

Eliminating powdered NRL gloves and substituting powder-free or non-latex gloves is useful for

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Editorial Questions

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preventing detectable atmospheric contamination with NRL aeroallergens, the researchers conclude.

"HCWs sensitized and even allergic to NRL can remain on the job if exposure to NRL can be avoided. Banning of powdered NRL gloves in the workplace and a supply of NRL-free material for sensitized individuals seems to be a sufficient prevention strategy," they state.

References

1. Brehler R, Kolling R, Webb M, et al. Glove powder — A risk factor for the development of latex allergy? *Eur J Surg Suppl* 1997; 579:23-25.

2. Sussman GL, Liss GM, Deal K, et al. Incidence of latex sensitization among glove users. *J Allergy Clin Immunol* 1998; 101:171-178. ■

• **XVth World Congress on Occupational Safety and Health** — April 12-16, Sao Paulo, Brazil. Contact: Ministerio do Trabalho, Rua Capote Valente, n710, CEP 05409-002, Sao Paulo, Brazil, Caixa Postal 11484. Telephone: (011) 3066-6000; fax: (011) 3066-6234; e-mail: xvcongresso@fundacentro.gov.br; Web: www.fundacentro.gov.br.

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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. ■