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Hospitals must look beyond musculoskeletal disorders for ergonomics compliance

Programs may confront repetitive stress disorders

Patient lifting may be the primary risk of musculoskeletal disorders (MSDs) among health care workers, but the proposed federal ergonomics standard may compel hospital employee health professionals to confront a less obvious source of injury — repetitive stress disorders among clerical and laboratory workers.

About 6,400 hospital employees suffered from repetitive stress disorders in 1998, according to the Bureau of Labor Statistics. Since hospitals are one of the largest employers nationwide, the industry ranks fourth in the number of repeated trauma disorders. (The majority of repeated trauma cases are in the meat packing and manufacturing industries.)

The U.S. Occupational Safety and Health Administration's (OSHA) proposed ergonomics standard, which is the focus of a final round of hearings in May in Washington, DC, requires employers to establish a program to eliminate work-related MSDs. A single reported MSD would trigger either a "quick fix" or a full-blown ergonomic analysis.

What kinds of repetitive stress disorders occur in hospitals? Consider the plight of the lab worker. He or she leans over a microscope for hours each day and tightly grasps a pipette. The possible results: neck pain, back pain from poor posture, and wrist pain from repetitive stress.

Or consider the aches of clerical workers. They may pound on computer keys for hours at a time. This kind of activity can result in cumulative trauma to the wrist.

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Are ordinary items making your patients sick?

Scissors and fabric could carry dangerous bacteria from health care workers to susceptible patients, according to research presented at the 4th Decennial International Conference on Nosocomial and Healthcare-Associated Infections in Atlanta. One study found that health care workers reused scissors and rarely disinfected them between uses. Three-quarters of those scissors carried microorganisms 55

Artificial nails may harbor infectious bacteria

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New federal regulations covering electronic medical information leave gaps that make it difficult for hospital employee health professionals to protect the privacy of health care workers, experts say. While the regs add some protection, legislation is still needed, says Kae Livsey, RN, MPH, public policy and advocacy manager for the American Association of Occupational Health Nurses in Atlanta 58

Study indicates nitrile, latex gloves beat out vinyl

Researchers in California compared latex, vinyl, and nitrile gloves both right out of the box and after manipulating them to simulate clinical use conditions. When tested directly out of the box, the gloves performed similarly, with failure rates of 1%-5% (although one vinyl glove brand had a 12% failure rate). But when put through 20 minutes of manipulations, the failure rates of the latex and nitrile stayed roughly the same, while the vinyl failure rates rose as high as 61% 59

COMING IN FUTURE ISSUES

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- **Getting better:** How some hospitals are improving adherence to guidelines and universal precautions
- **Hit and miss:** What you can learn — and what you might overlook — from pre-employment drug screening
- **Money maker:** Turning your employee health service into a revenue producer
- **Needle safety:** A closer look at what causes needlestick injuries

"You get into a problem when any part of your body is out of proper alignment for long periods of time," explains **Judith S. Ostendorf**, MPH, RN, COHN-S, CCM, clinical instructor with the occupational health nursing program at the University of North Carolina School of Public Health in Chapel Hill. **(For information on a tool to evaluate or design an ergonomics program, see editor's note at the end of this article.)**

An uncomfortable chair or a work surface that is too high or too low can contribute to a problem. In a good ergonomics program, employee health professionals evaluate work stations and make corrections even before employees complain of pain, says **Guy Fragala**, PhD, PE, CSP, director of environmental health and safety at the University of Massachusetts Medical Center in Worcester and a leading ergonomics expert. **(For more information on proper computer workstation positions, see box on p. 52.)**

"If someone is doing a task for a good part of the work day, repetition becomes a big part of the evaluation," says Fragala. "If the work station isn't designed properly and people are in poor postures, that can be a risk factor as well."

'How many repetitions are too many?'

Cumulative trauma disorders (also called repetitive stress injuries) are a controversial aspect of the proposed ergonomics standard. The National Coalition on Ergonomics, a Washington, DC-based coalition of business groups opposed to the standard, asserts that not enough is known about what causes such injuries. Citing similar concerns, the American Hospital Association signed on to the coalition's comments.

"In a very general sense, there's a link between activity and injury, but we don't know the specifics," says coalition spokesman **Al Lundeen**. "That's what we need to know to regulate. We don't know how many repetitions are too many. We don't know how heavy a lift is too heavy. We don't have a clear definition of what an awkward lift is."

In an opening statement at the first hearing on the ergonomics standard, **Marthe Kent**, head of OSHA's regulatory program, acknowledged that studies continue to shed light on repetitive stress. "Although OSHA agrees that all the answers are not in and that more research is always helpful, there is more evidence on work-related MSDs than there is for any other occupational injury or illness, and the research base is growing by leaps and bounds," she contended.

Lifting devices needed to reduce injury, experts say

OSHA begins hearings with health care panel

Teaching health care workers better lifting techniques has little effect on preventing back injuries, **Guy Fragala**, PhD, PE, CSP, director of environmental health and safety at the University of Massachusetts Medical Center in Worcester, said at the first Occupational Safety and Health Administration (OSHA) hearing on the proposed ergonomics standard.

The weight and dependency of patients and the awkward posture required to lift them lead to a high risk of musculoskeletal disorders. Lifting aid devices can minimize that risk, Fragala said.

OSHA's March hearing in Washington, DC, focused in part on health care as Fragala and **Bernice Owen**, RN, professor of nursing in the Center for Health Sciences at the University of Wisconsin-Madison, spoke in favor of the proposed standard.

"[T]he most effective approach to injury prevention efforts within the health care industry is to identify high-risk jobs and activities and make

physical changes to the way this work is conducted," said Fragala. "These physical changes are achieved primarily through effective engineering controls. These engineering controls for health care include innovations in bed design, mechanical lifts, transfer chairs, sliding devices, and other aids, which are now available on a wide-scale basis for a reasonable cost."

Owen likewise pointed out the high rate of injury among health care workers, citing studies that show that common tasks such as repositioning and transferring patients from bed to chair place "excessive physical compressive force on the spine."

Owen tracked an ergonomics program at a rural hospital, which included assessment, training, and the purchase of new lifting devices. In the 18 months before the intervention, 20 back and shoulder injuries were reported on the medical-surgical floors of the hospital, leading to 64 lost workdays. After the intervention, the injuries dramatically declined; five years later, the hospital had no lost work days related to patient handling, Owen said.

After traveling to Chicago and Portland, OR, the OSHA hearings conclude in Washington, DC, in May. A final standard is expected by the end of the year. ■

Kent also noted that workers with carpal tunnel syndrome lose an average of 25 work days per year, with some losing six months or more. **(For more information on the initial OSHA hearing, see related article above.)**

Experts on ergonomics have identified factors that contribute to cumulative trauma disorders and ways to lessen the risk of injury.

While repetition of motion is clearly a major risk factor, it interacts with other factors such as duration and force, says Ostendorf. With excessive force, circulation to the muscle decreases and leads to muscle fatigue, she says.¹

The risks aren't solely related to the job tasks. Some workers will apply more force to do the same activity, she notes.

"It depends on their habits," she says. "Sometimes you notice someone who inputs data on an adding machine, and they use a very light touch. Other people pound on the keys. The pounding puts tension on your tissues."

Other risk factors relate to age and gender. Women are more likely to develop carpal tunnel

syndrome and similar musculoskeletal problems that have been linked to repetitive motion. Older workers may be more at risk simply because they have been doing the same tasks for a longer time.

Smokers also are more susceptible because their blood carries less oxygen than that of non-smokers, she says. "The way your muscles, tendons, and nerves stay healthy is from a good blood supply," says Ostendorf. "When there's not as much oxygen in the blood flow, then that freshly oxygenated blood doesn't come to the tissues to help them stay rejuvenated."

The ergonomic "fix" for clerical or lab workstations is often simple and inexpensive, says Fragala. In some cases, correction involves minor adjustments and a bit of education about proper posture.

"Make sure work station heights are appropriate and that people know how to adjust their chairs properly," he says. "For people who are going to be entering data, how can you best arrange your work station so you're in the best posture possible?"

Proper Computer Work Positions

To minimize fatigue among workers at computers:

- The feet should be placed flat on the floor or on a foot rest with the lower legs approximately vertical.
- The thighs should be horizontal with the weight taken in the buttocks. They should not be compressed, especially behind the knees, as this restricts blood flow to the lower legs.
- The trunk should be vertical and the body weight on the spine should be supported by a back-rest at the lumbar region.
- The upper arms should hang from the shoulder joint comfortably straight, with the forearms positioned at less than 90 degrees taking the load in the elbow joints, not the upper arm.
- The preferred wrist position is neutral with no deviation up, down, or to the side.
- The head should be inclined slightly downward.
- The National Institute of Occupational Safety and Health recommends a 15-minute break every two hours of continuous computer use to relieve eye and muscular fatigue and a 15-minute break every hour for particularly demanding computer use. This break could be used to do other aspects of the job, such as copying and filing.

Source: University of Massachusetts Safety Manual, 1998.

For example, clerical workers shouldn't turn their necks in unnatural way to review documents. They also may need keyboard drawers or wrist rests.

Debra Campbell, an occupational and environmental safety officer with the University of Massachusetts Medical Center, evaluates work stations upon request by employees, their supervisors, or employee health professionals.

"We've been very successful in helping folks redesign their workstations so the pain is usually eliminated in a short period of time," she says.

In one case, the "repetitive stress" Campbell identified was also linked to improper lifting. Sterile supplies at one hospital were organized by manufacturer without taking into account the weight of the containers. Sterile supply staff and OR nurses were pulling kits weighing 30 pounds or more off high shelves.

After reorganizing the supply room, the staff could pull heavier items from shelves at shoulder or waist level.

Sometimes, the problem isn't actually repetitive motion; it's lack of motion, says Fragala. Sitting in the same posture for hours can lead to muscle strain. Again, the simple solution is to encourage workers to take regular breaks, even for just a few minutes.

Employee health professionals can determine whether they have a brewing problem with repetitive motion disorders by tracking and analyzing injury rates. Because the ensuing musculoskeletal problems, such as carpal tunnel syndrome, can be costly and disabling, Fragala endorses a proactive approach of analyzing work stations and responding to more minor symptoms, such as discomfort and fatigue.

"The key is not to let the situation develop to a serious stage," he says.

[Editor's note: Judith Ostendorf created a data collection worksheet for evaluating occupational health management in an ergonomics program to enable employee health professionals to benchmark against an ideal program design or create a new program. The tool has been reviewed by OSHA's Office of Occupational Health Nurses and is available free of charge from Ostendorf at (919) 966-2597 or judy_ostendorf@unc.edu.]

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Can your hospital save money with safer needles?

One hospital did with consolidated purchasing

Switching to safer needle devices doesn't have to cost a fortune. It may even save money, while it safeguards the health of health care workers.

Certain safety devices do cost more than conventional needles, and hospitals will incur up-front training costs. But a review of hospital purchasing practices may reveal unforeseen opportunities for savings.

Factor in the high cost of needlestick injuries — about \$400 for treatment and testing per injury, not counting postexposure prophylaxis — and a safe needle program could be a financial benefit, not a burden.

That is what happened at Lucerne Medical Center in Orlando, FL, a 250-bed hospital that is now part of the Orlando Regional Healthcare System. By consolidating purchasing, the hospital was able to eliminate 12 unnecessary products for a savings of about \$3,000 a year. A new syringe used in pharmacy reduced waste of medication trapped in the hub and produced a savings of \$19,000 on one drug alone.

Lucerne made its change to safer devices in 1996, before the introduction of tougher mandates for hospitals to implement needlestick prevention. California became the first state with needlestick legislation in 1998. Many states have followed, and the U.S. Occupational Safety and Health Administration issued a directive calling for safer devices in 1999.

“We wanted to go with new devices, but we knew they were more expensive,” recalls **Mary Ann Boardman**, RN, CIC, infection control practitioner at Orlando Regional Healthcare System. “We had to do a lot of homework about what [the products were] costing us and how we could have some savings.”

Focus on high-risk devices

The needlestick prevention task force included representatives from nursing, materials management, pharmacy, employee health, and infection control. They focused on IV and phlebotomy devices because those devices presented a greater risk of exposure to bloodborne pathogens.

Focusing your needlestick prevention efforts on potentially high-risk exposures makes sense, not only as a cost-effective measure but to maximize safety, notes **Jeanne Culver**, RN, COHN-S, clinical manager, employee occupational health services at Emory Healthcare in Atlanta.¹

“What you really need to focus on are needles that are going to be in a vein or an artery,” she says. “Those are the needles that absolutely need to be a safety device if they are at all available. That needs to be a No. 1 priority.”

Injury logs will point you to your problem areas. If you show a significant decline in needlesticks by implementing safety devices, you may quickly justify the expense of the new technology, notes Culver.

“The cost to an institution of needlesticks certainly makes the case for safer needle devices,” she says. The cost, of course, goes beyond dollars. “Believe me, that employee is just as emotionally upset if it’s a low risk of transmission,” she says.

ECRI, a technology assessment firm in Plymouth Meeting, PA, has developed a cost analysis worksheet as part of its Needlestick-Prevention Device Selection Guide. **(See a sample copy of the worksheet, inserted in this issue. For more information on the ECRI report, see related article on p. 54.)**

Here are some issues to keep in mind as you analyze the cost-effectiveness of safer needle devices:

- **Safety devices aren’t always more expensive than the conventional version.**

At Emory, Culver was paying \$28.98 for a box of 50 conventional winged steel needles, while a box of 100 bluntable needles cost \$31.50. “[It was] literally half of the cost of an inherently unsafe product,” she says.

Janine Jagger, PhD, MPH, director of the International Health Care Worker Safety Center at the University of Virginia in Charlottesville, notes that the costs of both conventional and safety devices can vary widely. “There’s no generalization that can be made on the cost of implementing safety devices,” she says.

- **Consider disposal, storage, and other related costs when selecting safety devices.**

Some safety devices with shields may be bulkier than their conventional version. That means they will require more storage space and will fill up disposal containers more quickly.

“If you’re using [incineration] for disposal, you need to at least consider if your volume is going up [and] whether or not your incineration costs are going to go up,” says Keller.

When comparing safety devices, consider everything that will be necessary to use the product properly, advises Keller. “Sometimes you have to purchase accessories that you wouldn’t otherwise have to be purchasing, such as a customized disposal container,” he says. “In some cases, you would have to have a special needle holder that you wouldn’t otherwise need.”

In some cases, ECRI recommends disposing of the “reusable” tube holder of a safety device because of an exposure risk from the distal (tube-puncturing) end of the needle.

“That adds to your cost in two ways,” he says. “That tube holder is a fairly large device that will go into a disposal container, which will make your disposal costs go up.”

- **Remember that a safe environment has benefits that are hard to quantify.**

More than half of needlesticks are unreported, studies indicate. When you focus on needle safety, a greater awareness among employees

may at least temporarily lead to a rise in reporting of needlestick injuries.

While that may mean higher treatment and testing costs, the emphasis on safety will pay off in the long run, says **Gina Pugliese**, RN, MS, director of the Premier Safety Institute, a health care alliance in Chicago.

“You have to look beyond cost and look at other things that are associated with it — the culture of safety and how important it is to give a message to your workers that you believe in safety,” she says.

That emphasis on safety can pay off in better employee morale and greater attention to safety guidelines overall, Pugliese says. Ultimately, that will mean fewer injuries and lost work days, she predicts.

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ECRI rates performance of safer needle devices

Some ‘unacceptable’ devices still stop needlesticks

How well do needlestick prevention devices work? A newly released *Consumer Reports*-style review gives the pros and cons of different safety technologies. But the report by ECRI, a technology assessment firm in Plymouth Meeting, PA, also has drawn criticism for its judgment of some injury-prevention devices as “unacceptable.”

ECRI’s ratings aren’t based on how well the devices actually reduce needlesticks in clinical use. Few data are currently available to compare technologies in a clinical setting. Rather, ECRI based its evaluations on simulations in a laboratory environment, as well as input from clinical advisors who have used the products.

“The main issue here is the lack of performance data,” says **Janine Jagger**, PhD, MPH, director of the International Health Care Worker Safety Center at the University of Virginia in Charlottesville and a leading expert on needlestick prevention. “They can be declaring a device unacceptable that can show good performance in use.”

ECRI released its “Needlestick-Prevention Device Selection Guide” in February, just as many hospitals were responding to the updated needle safety directive issued by the U.S. Occupational Safety and Health Administration last fall. (See *Hospital Employee Health*, January 2000, pp. 1-4.) Several state legislatures also have passed or are considering stronger laws on the use of safety sharps devices.

ECRI wanted to fill an information gap and immediately had strong interest in compiling the special report, says **Jim Keller**, MS, director of ECRI’s health devices group.

Technologies differ in effectiveness

Designs for safety devices can vary significantly, with implications for ease of use and needlestick prevention. For example, safer phlebotomy devices use one of several technologies to reduce injuries. They may blunt the needle before it is removed from the patient, shield it with an external sheath, or use spring-loaded needle retraction.

In a study by the Centers for Disease Control and Prevention in Atlanta, researchers found that all three types of devices reduced needlestick injuries. Although the needlestick reduction ranged from 23% (winged steel needles) to 76% (bluntable vacuum-tube blood collection needles), researchers noted that the study wasn’t designed to compare the technologies.¹

Perhaps more importantly, the study highlighted the need for health care workers to be comfortable with the new technologies. In 20% of the cases in which needlesticks occurred with the safer devices, health care workers had not activated the safety feature.

In a survey portion of the study, only 44% of health care workers said they preferred the safety device to conventional ones.

That concern about ease of activation was reflected in the ECRI evaluations, says Keller.

“We have a 30-year history of doing comparative evaluation of a wide range of medical products,” says Keller. “The staff we have on board are trained in looking at ways a device can fail.”

Tom Sutton, executive vice president of marketing and administration for Bio-Plexus, a Vernon, CT-based manufacturer of safety devices, says he respects ECRI’s method of evaluation. Bio-Plexus’ blunting needle products fared well in the ratings.

“In general, we applaud their consistency and how systematic the evaluation is,” he says. “They seem to emphasize key safety features first and foremost, and that’s very important. They emphasized [the importance of] activation during the use of the needle or as close as possible.”

‘Unacceptable’ is better than conventional

Even so, ECRI ratings of some products as “not recommended” or “unacceptable” shouldn’t lead employee health professionals to believe they are better off with conventional needles, Keller says.

“We have rated some products unacceptable that would reduce the risk of needlestick injuries, but there are products in our judgment that would better reduce the risk of needlesticks,” he says. “We weren’t attempting to imply that an ‘unacceptable’ needlestick prevention product is worse than not using any needlestick prevention product.”

That is what concerns Janine Jagger. Health care workers need to decide which product they are most comfortable using, and more clinical data are needed to compare safety devices.

“The issue of evaluating and judging safety devices is a very tricky business,” she says. “It’s one that everyone involved in this field has been struggling with.

“The problem is that you can get very different answers from different institutions. You can have one institution showing very good efficacy [with a product] and another institution not showing good efficacy,” she says.

The bottom line, says Jagger, is that “from my view, no device is unacceptable if it reduces injury.”

[Editor’s note: The “Needlestick-Prevention Device Selection Guide” (\$295) is available from ECRI, 5200 Butler Pike, Plymouth Meeting, PA 19462-1298. Telephone: (610) 825-6000. Fax: (610) 834-1275. Web site: www.ecri.org. A list of manufacturers of safety devices also is available free of charge on the Web site of the International Health Care Worker Safety Center at the University of Virginia in Charlottesville: www.med.virginia.edu/~epinet.]

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Study: HCWs may transmit bacteria on everyday items

Most reused scissors carried staph, strep

Ordinary items used by health care workers could make your patients sick, according to research presented at the 4th Decennial International Conference on Nosocomial and Healthcare-Associated Infections, held in Atlanta in March.

In one study, a researcher gathered scissors that nurses and physicians kept in their pockets, as well as communal scissors left on dressing carts and tables. In just two days, **John M. Embil, MD, FRCPC, FACP**, director of the infection control unit at the Health Sciences Centre in Winnipeg, Manitoba, found 232 such scissors that were used for cutting off bandages and other tasks.¹

Three-quarters of the scissors carried microorganisms, including *Staphylococcus aureus*, Groups A and B streptococcus, and gram-negative bacilli.

“We have never shown there’s an outbreak [associated with contaminated scissors], but the potential exists,” says Embil, who noted that scissors are sometimes used to change bloody wound dressings or orthopedic casts.

The solution is quite simple, Embil says. If health care workers swab the scissors with alcohol after each use, they will virtually eliminate the risk of transmission of microorganisms. In his study, Embil found 25 of 28 contaminated scissors were effectively disinfected after swabbing the scissors with alcohol.

Yet few health care workers regularly cleaned their scissors. Only 3.5% of nurses and 14% of physicians were observed routinely cleaning scissors between use. Scissors used by orthopedic technologists, lab technologists, pharmacists, vascular technologists, orderlies, and ambulance attendants were not cleaned after each patient contact.

Embil has found that just informing physicians and staff of his findings has raised awareness that simple tools like scissors and stethoscopes can carry microorganisms. The hospital is taking other steps, as well, he says. “We’re going to try to get rid of personal scissors and have more single-use scissors available,” he says.

Meanwhile, other research shows that health care workers can spread microorganisms on their clothes and other fabrics.

Researchers at the University of Uppsala in Uppsala, Sweden, found that tightly woven scrub

suits could significantly reduce the airborne dispersal of bacteria.

The study focused on methicillin-resistant *Staphylococcus epidermidis* (MRSE), a common culprit in post-surgical wound infections. One-quarter of the women and 43% of the men staffing the thoracic and cardiovascular operating room were dispersing MRSE from their nasal passages or skin.²

Analyses conducted in a test chamber and of operating room air showed lower dispersal of bacteria among staff wearing the tightly woven fabric. However, there was no difference in the dispersal of MRSE, perhaps because the study included only three people who dispersed MRSE, says **Ann Tammelin**, MD, epidemiologist at Uppsala University Hospital.

Hospitals may want to use scrub suits with tightly woven fabric to reduce bacterial dispersal, and the associated risk of infection, in ORs that handle sensitive procedures, such as orthopedic and cardiovascular surgery, Tammelin says.

“We think it’s a very good way to prevent airborne infections during operations,” she says.

Tammelin notes that some hospitals invest considerable resources in ventilation systems to create ultra-clean air in some operating rooms. “This [study] was done in an OR without ventilation that gives you ultra-clean air,” she says, adding that the tightly woven suits resulted in a very low level of colony-forming units per metric air sample tested.

“I think you should take many measures to lower the airborne and contact contamination,” she says. “This is one way.”

The type of fabric worn by health care workers also may play a role in the potential transmission of antibiotic-resistant bacteria. Staphylococci and enterococci can survive on fabric for as long as three months, according to research at Shriners Hospital for Children in Cincinnati and the University of Cincinnati College of Medicine.³

The bacteria survival rate was lower on natural fabrics, such as cotton and terrycloth, and longest on man-made fibers, such as polyester.

“The length of survival of these organisms on the various materials may have significant infection control implications,” the researchers stated.

“For example, the polyester tested in this study is the material used at our hospital for privacy drapes, which are handled by both patients and staff when they are drawn around the patient’s bed,” they said. “Staphylococci and enterococci survived for days to months on this fabric, thereby suggesting that such drapes could act as reservoirs for these bacteria.”

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Artificial nails may carry danger of staph infection

Study finds organisms even after hand washing

Artificial nails may make an appealing fashion statement, but researchers have found a nasty element lurking beneath them. Acrylic nails can harbor *Staphylococcus aureus*, fungus, and other organisms that could be transmitted to patients.

One study of artificial nails among health care workers found that 73% had some kind of organism on the underside of their nails, compared with 32% of those with natural nails.¹ Washing with antimicrobial soap or alcohol-based gel had only a modest effect on the colonization of organisms. Of 17 health care workers with artificial nails that harbored pathogens, 94% still had a pathogen present after washing with soap and 67% had a pathogen after gel use.

“I think it’s important that someone educate health care workers that these can be dangerous for patients,” says **Shelly McNeil**, MD, an infectious diseases fellow at the University of Michigan in Ann Arbor. McNeil conducted her research at the VA Ann Arbor Health Care Systems and the University of Michigan Medical Centers.

“We cultured the surface of the nail and underneath the nail for any kind of organism,” she says. “We focused on organisms we thought could be dangerous to patients — *Staph aureus*, any gram-negative bacilli, and yeast. We found that health care workers wearing artificial nails had dramatically more of all three of those things.”

Artificial nails, which are applied by salons with a long-lasting paste, are relatively popular. In a

survey at the Ann Arbor Veterans Affairs Medical Center, 13% of female health care workers said they routinely wear artificial nails.

Outbreaks have been linked to microbial colonization of the nails. In one case, a postoperative wound infection (*Serratia marcescens*) was traced to a nurse who wore artificial nails.² In other cases, patient infections may have been transmitted to the nurse's hands.

An outbreak among newborns in a neonatal intensive care unit in Oklahoma City was linked to bacteria found under the long fingernails of two nurses. Since the hospital began requiring nurses to keep their nails short, no deaths have occurred in the neonatal ICU that were linked to the bacterial infection.³

"There are one or two outbreaks in which nurse hand flora are the same as infections in babies," says **Elaine Larson**, RN, PhD, professor of pharmaceutical and therapeutic research at the Columbia University School of Nursing in New York City and an expert on hand washing. "You don't know which came first. But once a nurse has something like that, if that's a cause of infections in high-risk patients, the nurse may not be able to work if he or she can't get it off her hands."

The Association of periOperative Registered Nurses standards state that artificial nails should not be worn in the OR.⁴ Still, Larson says she has seen OR nurses who wore long artificial nails.

The nails present a potential hazard to employees as well as patients, says Larson. They could infect themselves with the flora under their nails, and they are at a greater risk of nail infections. The long nails also could puncture gloves.

"I just think they have no place in a high-risk health care environment," says Larson.

Whether or not health care workers wear artificial nails, alcohol-based gels will give them the best chance of removing lingering organisms, according to research by McNeil and Larson. One-third of health care workers without artificial nails still had some pathogens identified under their nails in McNeil's study. In all but one individual, the gel cleansing eradicated the pathogens, while hand washing with soap failed to clear the nails of pathogens in any study participants.

In a study to be presented at AORN's annual meeting in April, Larson found that alcohol-based gels are more effective than even the traditional surgical scrub. "It only took a minute [to clean the hands]," she says. "The antimicrobial kill was better and the effect on the skin was better without any brush or scrub."

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A dose of prevention: Vaccinations for hep A

In 11 states, hepatitis A rates twice U.S. average

Taking the approach that preventing an outbreak is much better than managing one, the 11-hospital Southern California Permanente Medical Group, based in Pasadena, has been offering hepatitis A vaccines to its food handlers.

So far, about 600 employees have been screened and immunized at a cost of less than \$40,000, says **Jodi Cassutt**, MD, MPH, co-chair of southern California region employee health services for Kaiser Permanente.¹

"In California, hepatitis A is endemic," says Cassutt. "That's why we instituted this program. It's been a pretty good selling point [to say], 'You're not only protecting yourself, but all our [Kaiser Permanente] members and patients.'"

Updated guidelines from the Advisory Committee on Immunization Practices, issued last fall, stated that health care workers and food handlers are not at increased risk of contracting hepatitis A. However, in 11 states that have hepatitis A rates that are more than twice the national average, the guidelines recommend vaccination of children.² Vaccination of other groups is left to local authorities, says **Suzanne Cotter**, MB, BCH, MPH, epidemic intelligence service officer at the Centers for Disease Control and Prevention in Atlanta.

"It's certainly a reasonable approach [that Kaiser is taking]," she says. "We make room for that in our recommendation."

States with the Highest Average Reported Incidence of Hepatitis A, 1987-1997

Source: National Notifiable Diseases Surveillance System, Centers for Disease Control and Prevention, Atlanta.

Specifically, the recommendation states: "Persons who work as food handlers can contract hepatitis A and potentially transmit HAV to others. To decrease the frequency of evaluations of food handlers with hepatitis A and the need for postexposure prophylaxis of patrons, consideration may be given to vaccination of employees who work in areas where state and local health authorities or private employers determine that such vaccination is cost-effective."

Cassutt noted that the immune globulin used to treat exposed individuals is in short supply, making it more difficult to respond to outbreaks.

When Kaiser tested food handlers, two-thirds of them showed immunity. About one-third of the non-immune workers declined the vaccination, or 11% of the total.

"We educate and encourage," says **Cindy Lacy**, regional employee health services manager. "Now we have this 11% identified, so if there is an outbreak, we know who to go right to [as a possible source]."

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Medical info privacy rules don't go far enough

Stronger protections needed, EHPs say

After an injury, illness, or medical leave, employers need to know whether their employees are physically capable of doing their jobs. But if an administrator demands details, what legal backing do employee health professionals have for maintaining confidentiality?

New federal regulations covering electronic medical information add some privacy safeguards, but legislation is still needed to ensure protection of medical records, says **Kae Livsey**, RN, MPH, public policy and advocacy manager for the American Association of Occupational Health Nurses in Atlanta.

"The day occupational health nurses take a job, they're automatically torn between the employer and the employee," says Livsey. "In the course of their job, they collect a great deal of highly personal information on employees. It's not uncommon for occupational health nurses to be asked to disclose very personal medical information by personnel [administrators].

"We've had nurses who have lost their jobs because they didn't want to disclose information and there's nothing to back them up," says Livsey.

Administration may have a legitimate concern about whether or not an employee is capable of carrying out the necessary tasks of a job. An employee health professional can answer that question but cannot ethically reveal details of the diagnosis and treatment, says Livsey.

"The only thing I can tell that supervisor is whether that employee is able to come back to work and whether or not they have restrictions," agrees **Mary Ann Gruden**, MSN, CRNP, NP-C, COHN-S/CM, executive president of the Association of Occupational Health Professionals in Healthcare in Reston, VA, and an employee health nurse practitioner at Sewickley (PA) Valley Hospital.

Employee health practitioners should establish a policy based on professional standards and standards from the U.S. Occupational Safety and Health Administration and the Joint Commission on Accreditation of Healthcare Organizations, Gruden advises. The OSHA record-keeping standard, OSHA 29 CFR 1910.1020, outlines access to employee medical records.

Meanwhile, the U.S. Department of Health and Human Services issued regulations to protect the privacy of electronic health information. The regulations limit disclosure of electronic medical information to only what is needed for treatment or claims processing, unless the patient provides written consent. Individuals have a right to obtain access to their own medical information and to correct inaccurate or incomplete records.

"It doesn't provide protections for paper records," notes Livsey. "It's unclear how far it will go for providers in an employer environment. In all likelihood hospitals, because of the [electronic] claims processing they do, would be subject to these rules."

Several bills were introduced in Congress last year to protect medical information, but none passed. Efforts are continuing, Livsey says.

"We feel strongly that there is still need for national legislation," she says. ■

Literature Review

Study indicates nitrile, latex gloves beat out vinyl

Rego A, Roley L. **In-use barrier integrity of gloves: Latex and nitrile superior to vinyl.** *Am J Infect Control* 1999; 27:405-410.

As hospitals seek to address the risk of latex allergy among health care workers, the use of synthetic gloves is growing. But before switching, hospitals and their employees need to feel confident that the new gloves provide the same level of protection against bloodborne pathogens.

Researchers in California compared latex, vinyl, and nitrile gloves both out of the box and

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after manipulating them to simulate clinical use conditions. (Note: One of the researchers is with Safe-skin Corp. in San Diego, a manufacturer of nitrile and latex gloves that were included in the study.)

A total of 800 latex gloves, 800 vinyl gloves, and 400 nitrile gloves were graded on a pass-or-fail system for leaks as defined by the American Society for Testing and Materials standard D5151, *Standard Test Method for Detection of Holes in Medical Gloves*.

When tested directly out of the box, the gloves performed similarly, with failure rates of 1% to 5% (although one vinyl glove brand had a 12% failure rate). But when put through 20 minutes of manipulations, the failure rates of the latex and nitrile stayed roughly the same, while the vinyl failure rates rose as high as 61%.

Researchers attributed the difference to the chemical and physical properties of vinyl. They noted that stretch vinyl gloves performed better (with failure rates of 12% to 20% after manipulation) than standard vinyl gloves (with failure rates of 26% to 61% after manipulation), but still more poorly than latex and nitrile.

“Glove failure rate results in this study demonstrate that both nitrile and latex gloves are far less susceptible to material breakdown and leakage than vinyl during in-use conditions,” the authors concluded. “There is a correlation between tensile strength, elongation, and durability. Vinyl gloves, with a required tensile strength almost 40% lower than latex, do not maintain durability under stresses of use conditions.”

The selection of medical gloves should be based on the type of activity required and the level of protection needed, the researchers stated.

“On the basis of the results of this study, nitrile and latex gloves provide better barrier protection than vinyl gloves,” they said. “The barrier protection afforded by vinyl gloves is compromised more often during use than is either latex or nitrile. Whereas vinyl is an appropriate barrier for nonrigorous, low-risk procedures of short duration, nitrile or latex should be the glove of choice for high-risk situations, including exposure to bloodborne pathogens.

“It should be emphasized that glove material selection should include the assessment of material durability during use, the rigorousness and duration of the procedures being performed, the potential of exposure to infectious microorganisms or other hazardous substances, and, ultimately, the safety of the user,” the researchers concluded. ■

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- 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. ■