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As feds hone sharps regs, ICPs should assess risk rather than buy to comply

OSHA, NIOSH call for use of needle safety devices

Despite mounting pressure from the Occupational Safety and Health Administration to implement needle safety devices, infection control professionals should not abandon epidemiological principles and simply purchase new sharps equipment in a blind salute to compliance, OSHA-savvy ICPs advise *Hospital Infection Control*. Though Washington, DC-based OSHA has turned up the heat in recently revising its compliance guidance to inspectors, needlestick surveillance and risk assessments still should be used to determine if and where safety devices are needed, reminds **Katherine West**, MSEd, CIC, who deals frequently with OSHA compliance issues as a consultant with Infection Control/Emerging Concepts in Manassas, VA.

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"Because [new devices] may not help," she notes. "That may not be where the problem is, or there may not be such a device. You're going to have to look at the kinds of sharps that are used in each area as part of a risk assessment. [ICPs] have to be able to document that they are looking at exposures and deciding what needs to be done to reduce them. Is it an education and training problem, the way you're doing a procedure, or do you need to buy a new piece of equipment?"

For example, in a recent consultation with a

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■ **Reuse rules:** Reaction from ICPs, manufacturers, and reprocessors to FDA-proposed changes

■ **Cost and consequences:** The latest data and analysis on the attributable mortality, excess length of stay, and extra costs due to surgical site infections

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paramedic service, West found that needlesticks were occurring when blood was being drawn from patients prior to hospitalization. "We could have bought expensive new equipment that would allow us to do that more safely, or we could choose to delete that procedure," West says. "That's what we chose to do, and we notified the hospitals that we will no longer draw blood to fill blood tubes in the field. So instead of buying more equipment that cost more money, we just did away with the task. I'm not sure that people are looking at [this issue] that comprehensively."

OSHA, NIOSH take action

In recently revising its compliance directive for inspectors enforcing the 1991 bloodborne pathogen standard, OSHA mandated that needle safety device evaluation efforts must be documented at least annually in the exposure control plan.[1] **(See compliance highlights, p. 3.)** If a combination of engineering controls (i.e., shielded needle devices) and work practice controls (i.e., eliminating hand-to-hand instrument passing in the operating room) does not eliminate or minimize exposures, the employer shall be cited, OSHA determined.

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"This directive provides guidance to our compliance officers and the regulated community that seven years have gone by since we last updated the compliance directive, and there's lots of new technology available that would fit our definition of engineering controls," says **Melody Sands**, MS, director of the OSHA office of health compliance assistance in Washington, DC. "What we are saying by this is that you better be using some of these things — at least by now. Because they are readily and commercially available. It doesn't change the standard at all; it just amplifies the requirements of the standard, which have been in existence all along."

On the heels of the OSHA move, the National Institute for Occupational Safety and Health (NIOSH), a Washington, DC-based research branch of the Centers for Disease Control and Prevention, issued an alert on needlesticks that also emphasized using needle safety devices to prevent exposures to health care workers.[2] **(See alert highlights, p. 6.)** "[There] was recognition

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OSHA inspectors to check sharps, work practices

Exposure control plan must be updated annually

The Occupational Safety and Health Administration recently revised its compliance guidance to inspectors enforcing the bloodborne pathogens standard, emphasizing that hospitals can be cited and fined unless needle safety devices are being regularly evaluated.[1] The Nov. 5, 1999, directive states that employers must review and update the exposure control plan at least annually to reflect changes in technology, such as the use of effective engineering controls that can eliminate or minimize exposures.

"There is now a large body of research and data available to OSHA and the public concerning the effectiveness of these engineering controls," the directive states. ". . . The employer must review and update the [exposure control] plan as necessary to reflect changes in the technology, such as the use of effective engineering controls that eliminate or minimize exposures."

Highlights of the requirements are summarized from the compliance directive as follows:

Engineering controls and work practices [paragraph (d)(2)(i)]: This paragraph requires the employer to institute engineering and work practice controls as the primary means of eliminating or minimizing employee exposure. It conforms to OSHA's traditional adherence to a hierarchy of controls. OSHA has always required employers to use engineering and work practice controls. Thus the employer must use engineering and work practice controls that eliminate occupational exposure or reduce it to the lowest feasible extent. It is OSHA's view that preventing exposures requires a comprehensive program, including engineering controls (e.g., needleless devices, shielded needle devices, and plastic capillary tubes) and proper work practices (e.g., no-hands procedures in handling contaminated sharps, eliminating hand-to-hand instrument passing in the operating room). Where engineering controls will reduce employee exposure either by removing, eliminating or isolating the hazard, they must be used. Significant improvements in technology are most evident in the growing market of safer medical devices that minimize, control or prevent exposure incidents. OSHA does not advocate the use of one particular device over another.

Inspection guidelines. The compliance officer should determine by interviews or observation whether sufficient engineering controls and work practices are used. While it is generally accepted that an exposure incident can occur at any time or place, a review of the facility records can better direct the officer to areas that are more likely to be sites of exposure incidents. The officer should determine if there were occasions where injuries were incurred during the same procedure, using the same equipment, in the same location or among similar employees (e.g., housekeepers) and determine whether engineering or work practices have been implemented to prevent or minimize future injuries. The compliance officer should investigate whether the employer has instituted alternative engineering controls and work practices to eliminate or minimize employee exposure in areas where exposure incidents have been documented.

Citation guidelines. Paragraph (d)(2)(i) should be cited for failure to use engineering / work practice controls as discussed above. The compliance officer should carefully evaluate the exposure control measures, such as effective engineering controls, that are in use at the facility. Part of the evaluation should include whether other devices that are commercially available were reviewed or considered by the employer and whether there is evidence that other engineering controls would reduce exposures. That would include studies of efficacy, pilot tests by the employer, or data available in published studies. Inspectors should take into consideration that the availability or use of an engineering control is not enough to guarantee that an employee cannot be injured. Employee acceptance and employee training are required for the engineering control to be effective. When the compliance officer finds that an employer is using an engineering control, but believes another device would clearly be more effective than the one in use, the compliance officer should document how the device was being used and how it was selected by the employer and / or employee. The compliance officer should consult with the OSHA regional bloodborne pathogens coordinator to determine if a violation exists.

OSHA Update: Sharps Safety Alert

Reference

1. Occupational Safety and Health Administration. 29 CFR 1910.1030. Occupational Exposure to Bloodborne Pathogens. OSHA instruction CPL 2.103. Field inspection reference manual. Washington, DC: Nov. 5, 1999. ■

by NIOSH that this was an area where we had not come out strongly with a clear message," says **Thomas Hodous**, MD, lead author of the alert and associate director for science in the NIOSH division of safety research in Morgantown, WV. "Putting NIOSH backing [behind] these newer engineering controls was needed." The alert advises ICPs to give "highest priority" to implementing the use of safety needle devices designed to prevent exposures more likely to result in occupational infection (i.e., hollow-bore needles used in veins and arteries).

In that regard, a Dallas ICP has styled her interventions to the risk of the exposure, finding in one situation that a better sharps container rather than a new needle device was the answer. Needlestick injuries were occurring during disposal because the sharps containers required too much activity on the part of health care workers, says **Patti Grant**, RN, MS, CIC, director of infection control at RHD Memorial Medical Center and Trinity Medical Center, both in Dallas. "Employees had to manually open and close them, and you could easily overfill them," she says. "Needles could easily be standing straight up if they fell the wrong way."

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The needle devices commonly disposed of in the containers were needles used for intramuscular (IM) injections, as opposed to needles placed into veins to draw blood or start IV lines, Grant explains. Therefore, rather than invest substantial dollars in a protective needle for relatively low-risk procedures such as IM injections, Grant opted to replace the sharps boxes with a design that requires little activity on the part of the worker and eliminates exposures due to overfilling.

"Based on my 1998 assessment of our occupational exposure incidents at both my institutions, I found out that some 30% to 40% of my needlesticks were occurring at point of use of the sharps container," she says. "So we upgraded our sharps container and it virtually eliminated that problem. We are not having those type of needlesticks anymore. That is an example of looking at your own internal surveillance, applying the epidemiological principle of a high-risk vs. a low-risk needlestick, and implementing an engineering control that really had nothing to do with a safer sharps device."

Grant plans to document the action in her exposure control plan and expects that it will pass muster with OSHA inspectors, particularly because she also has implemented needle safety devices hospitalwide to prevent high-risk exposures such as starting peripheral IV lines. "We have removed all choice at my institutions of using a non-protective needle for starting peripheral IVs," she says. "I took a practical approach to the low-risk needlesticks and got a top-of-the-line sharps container. And for the high-risk needlesticks, we have gone the total opposite direction and spent large amounts of money on a needlestick that very rarely even occurs. But the consequences of that needlestick are so potentially devastating that we were no longer willing to give the health care worker the choice of using the unprotected device."

Too much subjective judgment?

While Grant purchased new sharps containers for the lower-risk exposures, Sands reminds that OSHA does not sanction focusing prevention efforts exclusively on high-risk exposures like phlebotomy. If there is "potential" exposure in other areas, it must be addressed in prevention efforts and the exposure control plan, she says. But Grant also expressed concern that one area of the OSHA directive document may allow too much subjective judgment by inspectors. The section in question notes that if an OSHA inspector finds that an employer is using an engineering control "but believes another device would be clearly more effective than the one in use, the compliance officer should document how the device was being used and how the employer and/or employee selected it." The inspector should consult with the OSHA regional bloodborne pathogens coordinator to determine if a violation exists, the directive states.

"That is a subjective decision that the OSHA inspector is allowed to make, and I worry about the implications of that," Grant says. "The bottom line is, there is always going to be something better, because the technology is always changing."

Asked about Grant's concern, Sands noted that the section doesn't say a citation will be issued, emphasizing that OSHA intentionally added another level of review by bringing in the regional compliance bloodborne coordinator. "The decision is not left to the individual compliance officer, but will be made in or after consultation with the regional coordinator, the regional solicitor, and, if necessary, the national office," Sands says. "The agency purposely added the

higher review [so] that compliance officers will have higher-level discussions before determining if a violation exists on this particular issue."

Nevertheless, the Washington, DC-based Service Employees International Union (SEIU), which represents some 650,000 health care workers, plans to push OSHA on that very point to ensure only the best safety devices are implemented. Independent evaluations show that some devices are poorly designed or require too much activation on the part of the worker, notes **Bill Borwegen**, director of the occupational health and safety program at the SEIU. "The language in the compliance directive is actually very impressive," he says. "It says not only do you have to buy safety needles, but also, you have to continually evaluate these things to make sure you are buying the best. We're going to start flooding OSHA with complaints. All safety needles are not created equal."

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While welcoming the NIOSH and OSHA actions, the SEIU will continue to push for a formal amendment of the bloodborne pathogen standard to require the devices, he adds. "This [compliance directive] does not codify anything. All this is is an interpretation by OSHA on how the 1991 rule should apply. They need to amend the rule." OSHA previously announced it may formally amend the bloodborne pathogen standard, and there also have been state laws passed and federal initiatives proposed to require use of the devices. Indeed, the actions make it appear to be a foregone conclusion that safety devices are becoming the standard in the nation's health care settings. State legislation is proceeding, with laws passed in California, Tennessee, and Texas, and bills under discussion in some 20 other states. **(See *Hospital Infection Control*, July 1999, pp. 85-91.)** In the interim, OSHA will weigh the effectiveness of the compliance directive changes in determining whether to pursue a formal amendment to the standard, Sands says.

"We have answered many congressional correspondences by saying that we believe that our standard right now requires these things to be done because of the way it is written," Sands says. "Certainly, the intent of these [compliance revisions] was to try to get to the bottom line without changing those requirements." Employee complaints can prompt an inspection, but there is no targeted inspection plan aimed at health care at this point, Sands says. Still, serious violations can be cited up to $7,000 each, and "willful" or repeated violations can be cited up to $70,000 each.

"ICPs who have the support of their key managers and who are doing the right thing will not be affected by this," says Grant. "The institutions that are sitting back and saying I'm not doing it until [OSHA amends the] standard have had a rude awakening. I know that I can go back and show an OSHA inspector fairly confidently that we are evaluating our occupational exposure incidents and we have implemented improvements. We will continue to do that every year."

[Editor's note: The directive can be accessed on the Internet at the OSHA home page at www.osha.gov. Copies can also be obtained from the agency's publications office by calling (202) 693-1888. The NIOSH alert is available on the web at www.cdc.gov/niosh. Free copies of the alert are available by writing NIOSH Publications Dissemination, 4676 Columbia Parkway, Cincinnati, OH 45226-1998. Telephone: (800) 35-NIOSH.]

References

1. Occupational Safety and Health Administration. 29 CFR 1910.1030. Occupational Exposure to Bloodborne Pathogens. OSHA instruction CPL 2.103. Field inspection reference manual. Washington, DC: Nov. 5, 1999.
2. National Institute for Occupational Safety and Health. "NIOSH Alert: Preventing Needlestick Injuries in Health Care Settings. DHHS NIOSH Publication No. 2000-108." Washington, DC: November 1999. ■

ICPs can call OSHA regional coordinators

For further clarification on the recent changes to the Occupational Safety and Health Administration compliance directive on bloodborne pathogens, infection control professionals can direct inquiries to the bloodborne pathogens coordinator at the following OSHA regional offices:

Boston:	(617) 565-9856
New York:	(212) 337-2378
Philadelphia:	(215) 596-0712
Atlanta:	(404) 562-2281
Chicago:	(312) 353-2220
Dallas:	(214) 767-4731
Kansas City:	(816) 426-5861
Denver:	(303) 844-1600
San Francisco (Hawaii):	(808) 541-2687
Seattle:	(206) 553-5930

NIOSH alert: High-risk needlesticks a priority

Focus on needles used in veins and arteries

The National Institute for Occupational Safety and Health, a Washington, DC-based research branch of the Centers for Disease Control and Prevention, has issued an alert that emphasizes using needle safety devices to prevent needlesticks, particularly those at highest risk of transmitting bloodborne infection to health care workers.[1]

"Identify priorities based on assessments of how needlestick injuries are occurring, patterns of device use in the institution, and local and national data on injury and disease transmission trends," the NIOSH alert states. "Give the highest priority to needle devices with safety features that will have the greatest impact on preventing occupational infection (e.g., hollow-bore needles used in veins and arteries)."

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As safer devices are introduced, worker training is essential to ensure proper use, NIOSH emphasizes. A number of job-related factors influence the adoption of safety behaviors by health care workers, who often place patient needs before their personal safety. "They are less likely to perform a safety measure they perceive to interfere with patient care or to require added steps," NIOSH reminds. "Therefore, employers must address both the hazards that contribute to needlestick injuries and the institutional barriers and attitudes that affect safe work practices." By the same token, workers must be encouraged to report needlesticks, both to ensure appropriate postexposure follow-up and to compile a record for assessing needlestick hazards in the work environment, the agency notes. Other highlights of the NIOSH alert are summarized as follows:

Desirable needle device characteristics: Desirable characteristics of needle safety devices include:

- The safety feature is integral to the device.
- The device works passively (i.e., it requires no activation by the user). If user activation is necessary, the safety feature can be engaged with a single-handed technique and allows the worker's hands to remain behind the exposed sharp.
- The user can easily tell whether the safety feature is activated.
- The safety feature cannot be deactivated and remains protective through disposal. The device performs reliably and is easy to use and practical.

Device examples: Examples of safety devices include:

- Needleless connectors for IV delivery systems (e.g., blunt cannula for use with prepierced ports and valved connectors that accept tapered ends of IV tubing).
- Protected needle IV connectors (e.g., the IV connector needle is permanently recessed in a rigid plastic housing that fits over IV ports).
- Needles that retract into a syringe or vacuum tube holder.
- Hinged or sliding shields attached to phlebotomy needles, winged-steel needles, and blood gas needles.
- Protective encasements to receive an IV stylet as it is withdrawn from the catheter.
- Sliding needle shields attached to disposable syringes and vacuum tube holders.
- Self-blunting phlebotomy and winged-steel needles (a blunt cannula seated inside the phlebotomy needle is advanced beyond the needle tip before the needle is withdrawn from the vein).
- Retractable finger / heel-stick lancets.

Evaluation strategies: When selecting a safer device, identify its intended scope of use in the health care facility and any special technique or design factors that will influence its safety and acceptability. Conduct a product evaluation, making sure that the participants represent the scope of eventual product users. The following steps will contribute to a successful product evaluation:

- Establish clear criteria and measures to evaluate the device with regard to both health care worker safety and patient care.
- Conduct on-site follow-up to obtain feedback, identify problems, and provide guidance.
- Monitor the use of a new device after implementation to determine the need for additional training. Solicit feedback on health care worker experience with the device, and identify possible adverse effects of the device on patient care.

Ongoing review of current devices and options will be necessary. As with any evolving technology, the process will be dynamic, and with experience, improved devices with safety features will emerge.

Reference

1. National Institute for Occupational Safety and Health. "NIOSH Alert: Preventing Needlestick Injuries in Health Care Settings. DHHS NIOSH Publication No. 2000-108." Washington, DC: November 1999. ■

Aspergillosis: A rare case of patient transmission

Construction dust an ongoing concern

(Editor's note: We conclude our two-part series on infection control and the environment with an update on aspergillosis. In this story, we report the first case of apparent person-to-person spread of the fungal infection; highlight methods to prevent outbreaks during renovation; and underscore the legal liabilities of even a single case of transmission to a patient.)

Epidemiologists have identified the first reported case of apparent patient-to-patient transmission of *Aspergillus fumigatus*, a fungus that can cause severe infections in the immune-compromised but usually is traced back to sources in the hospital environment. Indeed, while infection control professionals are increasingly wary of dustborne aspergillosis infections during hospital renovations, there has been less concern that the pathogen could spread from patient to patient.

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But the first report of probable person-to-person transmission of *Aspergillus* was linked to debriding and dressing a severe wound infection, which apparently resulted in aerosolization of spores and airborne transmission to at least one other patient. "This was an extensive wound that covered the entire surface of the patient's abdomen," says **David Pegues**, MD, hospital epidemiologist at the University of California at Los Angeles Medical Center. "The results of the cultures that we did — including settle plates with fungal media around the index patient and an air sampling that was performed before and after dressing changes — demonstrated the aerosolization of viable infectious spores did take place. There was no evidence of any significant environmental source in the hospital."

While likely to be a rare event, there are take-home points for infection control professionals to note in preventing any recurrence with similar wound patients, he notes. "Disruptions such as changing the dressing, debriding the wound at the bedside, [or] performing any manipulation of the wound should be minimized," Pegues tells *Hospital Infection Control*. "If that situation is not practical because of the extent of the wound or the localized infection, we would place such a patient in an air-controlled negative-pressure room to minimize the risk of aerosolization of spores."

Aspergillus species, ubiquitous fungi that occur in soil, water, and decaying vegetation, are primarily a threat to severely immune-compromised patients such as those undergoing bone marrow or organ transplantation. Indeed, the index patient developed deep surgical site and organ space infection with *A. fumigatus* eight days after a second liver transplant in September 1998, Pegues reported recently in Philadelphia at the annual meeting of the Infectious Disease Society of America.[1]

The patient was transferred to an open cubicle in an 11-bed transplant intensive care unit, where the abdominal wound was debrided and wet-to-dry dressing changes were performed. Two other patients in the ICU were subsequently diagnosed with invasive pulmonary *A. fumigatus* infection. *A. fumigatus* tissue isolates from the index patient and a sputum isolate from one of the two other patients had an identical subtype. The index patient was moved to a private room and portable HEPA-filtration units were placed inside and outside the room. In settle plate testing, colonies of *A. fumigatus* went from zero prior to a dressing change to as high 34 after. Similarly, air samples outside the room showed *A. fumigatus* colonies increasing after a dressing change. The index patient was transferred from the ICU to a negative-pressure isolation room, where he died.

Patient was at increased risk

"The point that I would emphasize is that this was a patient who was at profoundly increased risk for developing aspergillosis," Pegues says. "We know it came from somewhere in the environment, as the result of the fact that he had at least four surgeries with a failed liver transplant during that hospital admission and a large open abdominal wound. So a single colony of *Aspergillus* from the environment could have been the source. As safe as we wish to make the hospital environment, I am not aware of anyone who can remove the risk of aspergillosis entirely. But there did not did appear to be an environmental source to explain the outbreak."

Indeed, most aspergillosis infections and outbreaks are traced to environmental sources,

Fungi pose greatest threat to bone marrow patients

Tips for routine, construction prevention

Infection control professionals should maintain a high index of suspicion for the diagnosis of nosocomial pulmonary aspergillosis in patients who are at high risk for the disease, particularly those with prolonged, severe granulocytopenia, such as bone-marrow-transplant recipients. Patients who have received solid-organ transplants and patients who have hematologic malignancies and are receiving chemotherapy also are at high risk for acquiring the infection, the Centers for Disease Control and Prevention advises.

In draft environmental guidelines expected to be finalized this year, the CDC Healthcare Practices Advisory Committee advises some general measures, summarized as follows, to prevent nosocomial aspergillosis:

Aspergillus species are ubiquitous fungi that commonly occur in soil, water, and decaying vegetation. The fungi have been cultured from unfiltered air, ventilation systems, and dust dislodged during hospital renovation and construction. *Aspergillus fumigatus* and *Aspergillus flavus* are the most frequently isolated species in patients who have aspergillosis. The most important nosocomial infection caused by *Aspergillus* species is pneumonia.

Maintain surveillance for cases of nosocomial pulmonary aspergillosis by periodically reviewing the hospital's microbiologic, histopathologic, and postmortem data. If a case of nosocomial aspergillosis occurs, begin a prospective search for additional cases in hospitalized patients and an intensified retrospective review of the aforementioned records. If evidence of continuing transmission is not present, continue routine maintenance procedures to prevent nosocomial aspergillosis.

When constructing new specialized-care units for patients at high risk for infection, ensure that patient rooms have adequate capacity to minimize fungal spore counts via maintenance of HEPA filtration; directed room airflow; positive air pressure in patients' rooms relative to the air pressure in the corridor; properly sealed rooms; and high rates of room-air changes.

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During construction or renovation activities:

A. Construct barriers between patient-care and construction areas to prevent dust from entering patient-care areas; these barriers (e.g., plastic or drywall) should be impermeable to *Aspergillus* species.

B. In construction / renovation areas inside the hospital, create and maintain negative air pressure relative to that in adjacent patient-care areas unless such a pressure differential is contraindicated (e.g., if patients in the adjacent patient-care areas have infectious tuberculosis).

C. Direct pedestrian traffic from construction areas away from patient-care areas to limit the opening and closing of doors or other barriers that might cause dust dispersion, entry of contaminated air, or tracking of dust into patient-care areas.

D. Clean newly constructed areas before allowing patients to enter the areas. ■

particularly dustborne fungi dispersed during construction and renovation.[2] Such outbreaks threaten to increase with rising patient acuity and many hospitals trying to extend the life of aging facilities through renovations and expansions. The Centers for Disease Control and Prevention is updating infection control guidelines for aspergillosis, including recommendations for dust control and other prevention measures that are a major concern for ICPs during renovations. **(See related story, above.)**

For example, an ICP whose hospital was undergoing a major construction project knew aspergillosis would be a threat, so she developed a comprehensive program that featured interactive training for both construction workers and health care staff. Renovation and remodeling involved two different buildings, which were connected on several different floors. "We have a bone marrow transplant unit and we do heart and kidney transplants," says **Joan Wideman**, MT(ASCP), MS, CIC, infection control specialist at Henry Ford Hospital in Detroit. "We were very much concerned about making sure that the

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Source: Henry Ford Hospital, Detroit.

environment for our patients and our employees was going to remain as safe as we could make it."

Wideman pulled together a collaborative team that included contractors, who constructed dust-tight temporary partitions and plastic barriers to ensure airborne fungi released during renovation would not find their way to vulnerable patients.

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An environment and air contamination checklist was developed so a "roving patrol" could routinely check that barriers were intact, traffic and air flow were appropriate, and construction debris was being safely removed. **(See checklist, p. 9.)** In addition, air sampling was done to check for increase in fungal spore counts, particularly near critical areas like surgical suites. "They knew if it went above a certain [threshold] to stop the project and check all of the seals," she says. A key to the success of the entire program was the education of construction workers and health care staff, she says.

"The bottom line with education was getting the workers involved," she says. "We took pictures of the workers in action at various levels, including some we [staged] to show things being done the wrong way." The technique reinforced the use of correct infection control measures, as workers identified unsealed barriers and other simulated breaches, she notes. "We had a two-pronged approach with the education," she says. "[First], we showed them what we expected of them, augmenting the policy with the photos. Then we had them view slide after slide and tell us what was right or wrong with the situation [depicted.] Having them analyze the situation is where we really made the change in their behavior. They had to dissect it and sometimes they would miss a few things. We would take that opportunity if no one had any further suggestions to point out [other breaches]."

Overall, nearly 300 construction workers and health care staff attended the training, and one result was that medical staff would be more likely to identify any hazards related to the construction. "That extended our ability to patrol by having the [health care workers] who were working at and near the sites as our eyes and ears," she says. Wideman estimates that the barriers, education, and other prevention efforts added about 10% to the cost of the project.

While such additional spending may seem expensive in an era of cost containment and cutbacks, it is well to remember that a single case of nosocomial aspergillosis can cost hundreds of thousands of dollars if a patient prevails in court, notes **Andrew Streifel**, MPH, REHS, hospital environment specialist at the University of Minnesota in Minneapolis. "We put on a construction management course every year, and one of the things we really try to stress is that this is becoming a standard of care," he says. "It will be judged. It's much more definable, and I think there are some precedents now being set in the legal issues. There are regulators in the United States other than government, and that's lawyers and insurance companies."

Streifel cites a case of a recently reported out-of-court settlement totaling $717,000 that began when a 55-year-old patient underwent surgery in a western Massachusetts hospital to repair herniated discs. During the surgical procedure, airborne *A. fumigatus* contaminated the surgical site, resulting in a disc space infection, according to a report on the settlement by the *Massachusetts Lawyers Weekly*.[3] The patient had nine hospitalizations with two additional surgeries in the following year, spending a total of 115 days in the hospital. The patient eventually brought claims against a general contractor, an environmental testing company, and medical staff that included the chair of the infection control committee and the hospital ICP.

Records point finger at air ducts

"Hospital records suggested that water in the air handling ducts was a likely source of the fungus," the report stated. ". . . The plaintiff contended that the medical defendants were responsible for his infection because they failed to: find and eliminate the source of the fungus; appreciate the risk of cross-contamination; and do comprehensive testing in the individual operating rooms." After more than four years of litigation, the contractors settled for $117,000; the environmental testing company for $150,000; and the medical staff for a total of $450,000.

"The real bad news for them was that the person infected was a retired microbiologist," says Streifel, a frequent hospital consultant on environmental issues. "He knew this was odd." Similar cases likely go undetected, particularly those that result in death, because aspergillosis may not be suspected or detected postmortem,

he adds. "We are not detecting these diseases as well as we should, simply because we are not autopsying the dead like we used to," he says. "That's too expensive, if you will, and so the doctors' doctors, the pathologists, are not seeing as much aspergillosis. Perhaps that's due to the fact that they're simply just not autopsying. We're burying those mistakes."

References

1. Pegues DA, McNeil MM, Lasker BA, et al. Aspergillosis in a transplant ICU: Possible person-to-person airborne transmission. Abstract 19. Presented at the Infectious Disease Society of America Conference. Philadelphia; Nov. 18-21, 1999.

2. Carter CD, Barr BA. Infection control issues in construction and renovation. *Infection Control Hosp Epidemiol* 1997; 18:587-596.

3. Verdicts and settlements: Medical malpractice: Infection at Surgery Site — Fungus. *Massachusetts Lawyers Weekly* 1999; 27:2,674. ■

Liability issues fuel HCV screening debate

Workers' comp, public health benefits cited

Citing both hospital liability and health benefits, infection control professionals have joined in a growing debate about whether health care workers should be routinely tested for hepatitis C virus. While some weighing the pros and cons have concluded that limited health care resources would be best spent elsewhere, others argue that it is time to consider voluntary HCV testing policies. Regardless, there is growing consensus that HCV is eclipsing HIV as the prime occupational infection issue of the future.

"We're seeing fewer and fewer long-term HIV patients in the hospital because of the protease inhibitors and all [the other drug therapies]," says **Sue Felt**, RN, infection control professional at San Francisco General Hospital. "And we can all get vaccinated against hep B, but hep C is still rather prevalent in our patient population and certainly a risk. It is much easier to transmit than HIV."

In addition, HCV increasingly raises troubling liability issues because workers infected through other risk factors may claim a job exposure caused the disease, she notes. "In cases in the past — not specifically about hepatitis C — health care workers have often prevailed in the courts, even if there was no initial report of injury," she says. "It's presumed, for instance, if you get TB and you are a health care worker, that you probably got it at work."

A highly mutable virus for which there is no vaccine, HCV is the leading cause of chronic liver disease in the United States. Overall, some 4 million Americans have HCV antibodies, and 2.7 million of those people are chronically infected with the virus.[1] The risk factors most strongly associated with HCV traditionally have been a history of transfusions and injecting drug use. Many of those infected are undiagnosed, as HCV is often asymptomatic in those carrying the virus. Routine testing of health care workers is one way to flush out some of those "silent infections," which may be helped by treatment intervention, Felt says. "At least the [health care worker] can get a diagnostic work-up," she says. "In a city like San Francisco, where there are quite a number of clinical trials going on with hepatitis C treatment, I think that it is a good public health move to test people and recommend that those [who are HCV-] positive avail themselves of treatment."

Voluntary HCV test offered

Felt has not recommended such a routine testing policy yet at her hospital, but a colleague in Oakland is moving ahead with a voluntary worker-testing program based on a similar rationale. Citing both medical and hospital liability issues, an infection control consultant for the Catholic Healthcare West chain of 48 hospitals is recommending that HCV screening programs be considered by the facilities. "I am recommending that they focus on the health care workers that actually take care of the high [HCV]-prevalence patients — for example, the trauma, dialysis, or liver transplant patients," says **Cynthia Fine**, RN, MSN, CIC. "[The policy] wouldn't include health care workers who don't have blood exposures. So it would be the nurses and the phlebotomists — the people that really do have blood exposure — and certainly it would not be a mandatory test."

As currently planned for those hospitals that decide to enact the policy, HCV testing will be

(Continued on page 13)

Source: Catholic Healthcare West, Oakland, CA.

offered on initial hire and to existing employees who want to know their serostatus, she says. As part of the program, the workers will be educated about risk factors in order to make an informed decision about whether they want to be voluntarily tested, she says. **(See form, p. 12.)** The HCV testing policy will be optional for Catholic West hospitals, but those that treat a lot of trauma patients or do liver transplants may consider it more seriously due to heightened risk of exposures or greater prevalence of the virus in the patient population, Fine says.

Was infection acquired in community?

Echoing Felt's sentiments, Fine says another motivating factor is that workers who have acquired HCV in the community may claim the infection is occupational. "Even if they don't have a needlestick in the past — or some [exposure] that's documented — it usually is going to come out that the health care worker gets the benefit of the doubt and is covered for the infection," Fine says. HCV testing at time of employment could redirect liability claims back to the previous health care employer, she notes, adding that the long-term medical expenses associated with chronic infection can be exorbitant. "You can end up with hepatocellular carcinoma or liver transplants," she says. "While we certainly want to be responsible for the infections that are a result of our employment, we don't want to have to pay for the ones that aren't."

In addition, there is a public health concern, because people can be unaware of their HCV infection for years, unknowingly aggravating the course of the disease by consuming alcohol instead of making lifestyle adjustments, she adds. In addition, Fine says her policy includes assurances that the test result will not have any effect on employment. "[Those who are HCV-positive] could still work as usual using the normal, standard precautions when caring for patients, so it wouldn't limit their employment," she says. "Again, [testing] would have to be something that was their option whether to do or not." Centers for Disease Control and Prevention guidelines state that the agency does not recommend routine testing of health care workers for HCV "unless they have risk factors for infection."[2] Fine says her policy for routine HCV testing of workers whose jobs may involve blood exposures is in keeping with that guidance, particularly because all existing protocols for testing source patients and following workers after exposures will remain in place.

Still, health care employment was not associated with heightened risk for hepatitis C virus infection in recent CDC data, as only 1.4% of 769 people reporting a history of medical-related occupation had HCV antibodies, reports the CDC.[1] However, infection control professionals should note that workers exposed to blood in health care settings are still at risk of HCV infection and should be followed accordingly.

"Because the [HCV] prevalence among health care workers is very low, we do not recommend routine screening of health care workers to identify individuals with infection," says **Miriam Alter**, PhD, chief of epidemiology in the CDC hepatitis branch. "Health care workers who are exposed to blood in the workplace are at occupational risk of acquiring HCV, primarily as a result of needlestick exposures to blood contaminated with HCV. That is different from the fact that health care workers in general have a low prevalence of HCV infections. We recommend that health care workers with an exposure be followed for infection, rather than recommending that health care workers as a group be screened."

In addition, even workers who initially screen negative still could acquire HCV in the community, complicating such testing approaches and raising questions about resource allocation, says **Robert Ball**, MD, MPH, infectious disease consultant epidemiologist at the South Carolina Department of Health in Columbia. "The most efficient way to manage those situations is not to test employees regularly and waste precious limited resources, but to require them to report any and all exposures immediately," he says. "Once an exposure incident is reported, immediately test the source patient. In a small percent [of cases], they may not know who the source patient is, but most source patients will be negative. So even if that worker has a negative baseline and positive hep C testing three to six months later, they still didn't get it from that source patient."

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OSHA expects to issue final TB reg in 2000

Study approved, but agency proceeding

The Occupational Safety and Health Administration (OSHA) expects to finalize its proposed tuberculosis regulation in the spring of 2000, despite recent congressional approval of an independent review of the merits of the controversial standard.

In what is being viewed as a political compromise, the U.S. House Appropriations Subcommittee on Labor, Education, and Human Services allocated $450,000 for an independent study of the TB standard by the National Academy of Sciences in Washington, DC. However, the language of bill HR 3194 states the study is approved "without any intent to delay pending regulations," giving OSHA the green light to continue finalizing a regulation it originally proposed in 1997.

"We will continue to go forward," says OSHA spokesman **Bill Wright**. "There is nothing in the appropriations and the final bill that says the agency has to stop the TB proposal. Congress may come back and say we want to have hearings or something, but right now, with what we have, the agency will continue and we plan to publish a final rule sometime in spring 2000."

The study has been previously characterized as a one-year review, most likely by the academy's Institute of Medicine. However, calls to the national academy did not yield any further details about the nature and duration of the study. Regardless, while OSHA is moving ahead with the standard, the agency will not ignore any findings that eventually come out of the study, Wright says. "The agency would not turn a deaf ear to any bona fide study," he says. "It certainly would be reviewed. There would be options to amend a final rule based on the study, certainly. I would definitely say that if the study comes out prior to publication of the final rule, OSHA would certainly look at the study and review it. But the study can go forward and OSHA can pursue the final rule as well."

The Association for Professionals in Infection Control and Epidemiology has led the effort to get the study funded, but hopes that the review would delay or kill finalization of the standard appear to be dashed by the committee's action. **(See *Hospital Infection Control*, August 1999, p. 97, 100-102.)** Still, just getting the study approved is a step, and it is possible that OSHA will change some of the requirements based on the independent review, says **Eddie Hedrick**, MT(ASCP), CIC, manager of infection control at the University of Missouri Hospital and Clinics in Columbia, and one of the ICPs who testified in the OSHA TB hearings.

"The fact that a study is being done is obviously important," he says. "Most people out in the real world would suggest this [TB standard] is a waste of money at this stage. We have suggested that all along, but it is now even more of a waste of money because there are extremely low levels of TB in the country, and it is obviously being controlled without a new standard."

Indeed, TB control programs that emphasize prompt identification of cases, rapid initiation of therapy, and sustained efforts to ensure therapy is completed have been credited for a 31% decrease in annual TB cases from 1992 to 1998. Yet while TB among American-born citizens is at an all-time low, TB continues to increase in the foreign-born, who account for almost half of the TB cases in the United States. Ultimately, OSHA should approve a standard that is in sync with TB guidelines by the Centers for Disease Control and Prevention, which revises its guidelines periodically based on current trends, Hedrick notes. "I'm not objecting to the fact that OSHA has something in place for [facilities] that don't comply with common sense," he says. "But when you [require] fit-testing respirators, you're costing people a fortune — with no yield, no value."

On the contrary, the IOM study itself is a waste of money because the standard is clearly warranted, counters **Bill Borwegen**, director of the occupational health and safety program at the Washington, DC-based Service Employees International Union (SEIU) and one of the principal proponents of the regulation. Representing some 650,000 health care workers, the SEIU has lobbied for the TB regulation to prevent occupational TB infections. "They're wasting taxpayer dollars to proceed with this study," Borwegen says. "It is going to be a meaningless study because OSHA is going to proceed with the rule anyway."

Reference

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Antiseptic-coated catheters reduce infection

Veenstra DL, Saint S, Sullivan D. **Cost-effectiveness of antiseptic-impregnated central venous catheters for the prevention of catheter-related bloodstream infection.** *JAMA* 1999; 282:554-560.

The use of chlorhexidine-silver sulfadiazine-impregnated central venous catheters in patients at high risk for catheter-related infections reduces the incidence of catheter-related blood stream infection (CR-BSI) and death and provides significant saving in costs, the authors found.

"Use of these catheters should be considered as part of a comprehensive nosocomial infection control program," they recommended. CR-BSI occurs with 3% to 7% of catheters and affects more than 200,000 patients per year in the United States. The attributable mortality of CR-BSI ranges from approximately 10% to 25%, and CR-BSI has been associated with significant increases in the length of hospitalization and medical care costs.

BSI decrease of 2.2%

To estimate the incremental clinical and economic outcomes associated with the use of antiseptic-impregnated vs. standard catheters, the authors constructed a model based on data from randomized controlled trials, meta-analyses, and case-control studies. They used a hypothetical cohort of hospitalized patients at high risk for catheter-related infections (e.g., patients in intensive care units, immunosuppressed patients, and patients receiving total parenteral nutrition) requiring use of a central venous catheter.

In the analysis, use of antiseptic-impregnated catheters resulted in a decrease in the incidence of CR-BSI of 2.2% (5.2% for standard vs. 3.0% for antiseptic-impregnated catheters); a decrease in the incidence of death of 0.33% (0.78% for standard vs. 0.45% for antiseptic-impregnated); and a decrease in costs of $196 per catheter used ($532 for standard vs. $336 for antiseptic-impregnated). The decrease in CR-BSI ranged from 1.2% to 3.4%, the decrease in death ranged from 0.09% to 0.78%,

CE objectives

After reading each issue of *Hospital Infection Control*, the infection control professional will be able to do the following:

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and the costs saved ranged from $68 to $391 in a multivariate sensitivity analysis.

"Our analysis was conducted from the perspective of a health care payer," the authors conclude. "An analysis from the societal perspective, which might include indirect costs such as patient's time lost from work, would result in even greater costs saved than reported here." ■