



Hospital Employee Health[®]

THE PRACTICAL GUIDE TO KEEPING HEALTH CARE WORKERS HEALTHY



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Joint Commission makes it perfectly clear: Get the surgical smoke out of OR

Breathing difficulties, 'viable bacteria, and viral particles'

The air is clearing in the nation's operating rooms, as The Joint Commission places a greater emphasis on evacuating smoke from electrocautery procedures.

In the accrediting process, hospitals have long been required to manage "risk related to hazardous material and waste." In the 2009 Environment of Care standard, The Joint Commission added a note for clarification: "Hazardous gases and vapors include, but are not limited to, glutaraldehyde, ethylene oxide, vapors generated while using cauterizing equipment and lasers, and gases such as nitrous oxide."

This is the first specific mention of surgical smoke in Joint Commission standards, although the National Fire Protection Association (NFPA) code addresses smoke detectors and scavenging of waste anesthetic gases. The Joint Commission requires hospitals to comply with NFPA codes.

"We have always interpreted the smoke that's generated from these procedures [as a hazard]," says **Jerry Gervais**, CHFM, CHSP, BSME, associate director-engineer of the Standards Interpretation Group of The Joint Commission, which is based in Oakbrook Terrace, IL. "Organizations didn't make that connection, so we wanted to be very, very clear about it.

"The hospital should have a written policy on how they're handling this issue," he adds. "By having a written policy, they can require compliance by all employees. They can write in the required safety precautions and hold them accountable."

The "clarification" by The Joint Commission comes on the heels of a 2008 position statement by the Association of periOperative Registered Nurses (AORN), urging hospitals and surgery centers to reduce exposure to surgical smoke and bioaerosols released in laser and electrosurgical procedures. (See related article in *Hospital Employee Health*, June 2008, p. 65.)

In March 2009, the Canada Standards Association issued a voluntary "Plume Scavenging Standard," which provides guidance on systems that evacuate surgical smoke from electrosurgery procedures.

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Hospitals frequently tout their “smoke-free” campus. Now, the “no-smoking” rule will include the pungent smoke produced when tissue is burned, say OR nurses who have advocated for greater attention to the issue.

“I think the biggest challenge we have is getting the message across to the surgical team that what they’re doing has cumulative long-term effects, just as second-hand cigarette smoke does,” says **Vangie Dennis, RN, CNOR, CMLSO**, clinical manager of procedural nursing at Gwinnett Medical Center in Duluth, GA, and a member of

the AORN Surgical Smoke Evacuation Task Force. “If you take a look at the constituents of cigarette smoke, it’s identical to surgical smoke; only we have additional components,” including viable bacteria and viral particles,” she adds.

Equipment lacking, nurses report

Surgical smoke is causing irritation, discomfort, and breathing difficulties for OR nurses. About one in four OR nurses (24%) report having allergies and one in 10 (11%) have asthma. About 12% said smoke from electrosurgical procedures caused breathing difficulties, and 25% said it led to more frequent coughing, according to a survey of AORN members by **Kay Ball, RN, PhD, CNOR, FAAN**, a nurse consultant/educator in Columbus, OH, and chair of the AORN Surgical Smoke Evacuation Task Force. Ball received 777 responses from a randomly selected group of OR nurses.

Those symptoms parallel the findings of “health hazard evaluations” conducted at three hospitals by researchers from the National Institute for Occupational Safety and Health. They detected formaldehyde, acetaldehyde, and toluene in the smoke, though not above recommended or permissible exposure limits. OR employees complained of irritant symptoms.

Yet too often, hospitals don’t have adequate smoke evacuation equipment, says Ball. Lack of equipment was the No. 1 barrier cited by nurses in the survey, she adds. “Hospitals need to get smoke evacuation devices for every surgical suite,” Ball urges. “There are still a lot of people who are not evacuating surgical smoke.”

Other barriers included the noise of the equipment, lack of support from physicians, and complacency of the staff. Freestanding ambulatory surgery centers are more likely to evacuate smoke than hospitals, as are larger or urban facilities, she found.

Start with needs assessment

To implement smoke evacuation, begin with a committee that includes OR leaders or “champions,” advises Dennis. The committee can conduct an assessment and determine the needs and concerns of OR staff and physicians, she adds.

For example, if surgeons are concerned about noise or interference with their procedures, investigate products that are insulated and can be easily incorporated into the OR, Dennis points out. “We addressed the loudness. We made sure the

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staff understood you didn't have to turn it up to 100%," she says. "On a small smoke-generating procedure, 20% [power on the smoke evacuator] is enough."

Conduct a trial of the new products and educate staff about how to use them and why evacuating surgical smoke is important, says Dennis. She conducts education annually. AORN has released a new surgical smoke toolkit, with a sample policy and procedure, competency skill checklist, tips for compliance, and a link to vendors (www.aorn.org).

After implementing a new policy, hospitals should follow up with observations to check for compliance, Dennis suggests.

Changing habits can be difficult. While hospitals typically implemented smoke evacuation along with new laser technology, they have been slow to make smoke evacuation routine in electrosurgical procedures. But hospitals are getting the message, says Ball.

"I want to make 2009 the year of smoke evacuation," she says. "I want everyone to realize you can't breathe this in. We need to protect the air of the surgical nurses." ■

HCW protection gets a piece of fed spending

NIOSH to get \$ for respiratory PPE research

Health care workers may be among those who benefit from the recent spending boost in Washington, DC. The 2009 Omnibus Appropriations Bill includes language that directs \$3 million to the National Institute for Occupational Safety and Health (NIOSH) to fund research into the modes of transmission of influenza and respirators and other personal protective equipment (PPE) that protect health care workers.

NIOSH declined to discuss the specific funding, but NIOSH officials noted that they already are moving forward with an action plan to address respiratory protection needs in health care.

Health care workers need respirators that are more effective and more comfortable, says **Bill Borwegen**, MPH, health and safety director of Service Employees International Union, which pressed for the statement in the U.S. House of Representatives report accompanying the spending bill.

The language reads:

"According to a report issued in 2008 by the Institute of Medicine [IOM] of the National Academies, there is a critical need to better understand the airborne transmissibility of pandemic flu and other pathogenic bioaerosols to protect healthcare workers and to gauge the efficacy of the currently recommended types of respirators. The bill includes \$3,000,000 within the total for Personal Protective Technology for NIOSH to research modes of transmission of influenza and to evaluate filtering facepiece respirators, other types of respirators, and other personal protective equipment. Further, NIOSH is urged to design and promote the next generation of personal protective equipment for healthcare workers and first responders to address the unique challenges posed by the healthcare environment."

This specific support for better respiratory protection is a turnaround from controversial House appropriations language that prevailed from 2004 to 2007. The Wicker Amendment, sponsored by Rep. Roger Wicker, R-MS, prohibited the U.S. Occupational Safety and Health Administration from spending federal funds to enforce its rule requiring annual fit-testing of health care workers who use respirators for protection from tuberculosis.

"Hopefully, this will mark a turn in our country whereby federal policy will do more to protect the fastest-growing segment of our work force, who are facing a wide range of hazards," says Borwegen. "It's a positive turn of events for health care workers to provide high-quality care to their patients in a safe manner.

"Without money earmarked to do the research, we didn't think the research would occur to the degree it needed to, to meet the needs identified in the [IOM] report," he says. "NIOSH had been doing some of this research, but this will direct them to do more."

The IOM report, released in September 2007, has been a catalyst for better respiratory protection for health care workers. In the report, "Preparing for an Influenza Pandemic: Personal Protective Equipment for Healthcare Workers," the IOM panel cited "an urgent need to address the lack of preparedness regarding effective PPE for use in an influenza pandemic."

The IOM outlined three broad areas for research: understanding influenza transmission; committing to worker safety and appropriate use of PPE; and innovation and improvement in PPE design, testing, and certification.

Research already has been moving forward, but additional resources would improve NIOSH's

capabilities, says **Les Boord**, director of NIOSH's National Personal Protective Technology Laboratory in Pittsburgh. The NIOSH budget is a part of the budget for the Centers for Disease Control and Prevention in Atlanta.

"The ultimate goal will be to demonstrate and have effective personal protective equipment," he says. "It's moving the state of knowledge and information on PPE and respiratory protection forward and tailoring it for the health care worker."

Research that is ongoing or planned includes:

- Mechanically simulating the exposure of a health care worker to an infectious aerosol. One machine would generate a cough; another breathing machine would provide breathing samples.
- Collecting better surveillance data on the emerging issues related to health care worker use of PPE.
- Testing methods to decontaminate N95 filtering facepiece respirators, such as microwaving or ultraviolet light. Those products are one-use items, but the research would explore whether they could safely be reused if a shortage occurred during an influenza pandemic. NIOSH also plans to research the risk associated with surface contamination of the respirators.
- Studying the efficacy of fit-tests and fit-checks and determining the best frequency for fit-tests. ■

CMS adds to pressure for safe patient handling

Lack of repositioning leads to pressure ulcers

One pressure ulcer can cost as much as your entire budget for new patient handling equipment. That alone is a reason to create a safe patient handling program that can accommodate patients of size, whether or not your hospital performs bariatric surgery, says **Susan Gallagher Camden**, PhD, RN, MA, MSN, WOCN, a Houston-based consultant on bariatric risk management, clinical advisor with the Celebration Institute in Houston, and author of *The Challenges of Caring for the Obese Patient* (Matrix Medical Communications, Edgmont, PA; 2005).

Don't expect any reimbursement to treat those pressure ulcers caused when employees don't have adequate equipment and are afraid of injuring themselves by turning or repositioning a morbidly obese patient, she notes. As of October

2008, the Centers for Medicaid & Medicare Services (CMS) no longer reimburses hospitals for Stages III and IV pressure ulcers that were not present upon admission.

"Those can be very large [claims] and very, very expensive," says Camden, an expert on bariatric safe patient handling who notes that a case requiring skin grafts can cost up to \$100,000.

That rule change provides financial justification for an upgrade in patient handling, such as the installation of ceiling lifts, she says. "It's going to be quite an amazing opportunity for us to implement good-quality care," says Camden, who was scheduled to speak at this month's Safe Patient Handling and Movement Conference, sponsored by the Patient Safety Center of the James A. Haley VA Medical Center in Tampa, FL.

Better patient handling also will improve the patient experience, as employees become more comfortable caring for the bariatric population, says **Shirley Thomas**, RN, MPA, manager of the vascular/GI surgery unit and the lift team at the University of California (UC) Davis Medical Center in Sacramento. Thomas recently spoke in an audio conference titled "Prevention of Employee Injuries and Lift Teams — A Comprehensive Approach," which was sponsored by AHC Media, the publisher of *Hospital Employee Health*. (See editor's note at the end of this article for ordering information.)

Employees need "the right equipment at the right place at the right time," as well as better information about the causes of obesity, she says. UC Davis Medical Center provided bariatric sensitivity training to about 500 employees. "I've seen a shift in the culture of how accepting we are of patients of size," Thomas adds.

'Bariatric' patients can be in any unit

More Americans are obese than ever before. About a third of adults have a body-mass index (BMI) of 30 or greater, according to the Centers for Disease Control and Prevention. About 5% are extremely obese, with a BMI of 40 or greater, according to the National Center for Health Statistics. Those patients may exceed the weight limits of standard lift equipment. (See related story, p. 53.)

It is a mistake to assume that special equipment for patients of size is only needed by hospitals that have a bariatric surgery program. Any hospital in the country is likely to treat patients who are extremely obese, says Camden. "If we just look at

Can you handle 'patients of size'?

Assessment is key, experts say

Whether your hospital has a bariatric surgery program, you should review your patients' needs and plan for heavier patients, say experts in bariatric care. Here are some steps to take to protect both patients and caregivers from injury:

- **Assess the BMI of your patient population.**

Conduct a point prevalence study by recording the height, weight, and BMI of every patient admitted that day. You also may want to conduct a point prevalence study of pressure ulcers that includes the patients' BMI. That will tell you where to focus your resources. One facility found that the lab was seeing many patients of size and needed larger furniture to accommodate them. When installing ceiling lifts, give priority to areas that care for more patients of size, says **Susan Gallagher Camden**, PhD, RN, MA, MSN, WOCN, a Houston-based consultant on bariatric risk management, clinical advisor with the Celebration Institute in Houston and author of *The Challenges of Caring for the Obese Patient* (Matrix Medical Communications, Edgemont, PA; 2005).

- **Consider patients of size when purchasing or replacing equipment or remodeling.**

The University of California (UC) Davis Medical Center created a multidisciplinary bariatric care committee, which revised policies and procedures and assessed needs. "We did an inventory of bariatric waiting room chairs, floor-mounted toilets, the weight load on the railings, [and lift equipment] to see where we needed to expand our equipment and furniture to accommodate bariatric patients," says **Shirley Thomas**, RN, MPA, manager of the vascular/GI Surgery Unit and the lift team at the UC Davis Medical Center in Sacramento.

New ceiling track systems should be capable of

accommodating patients up to 850 pounds, says Camden. Instead of slings, hospitals can purchase bands that are easy to slide under a patient and attach to the lift, she says. Rolling a heavy patient to place a sling under him or her can create a hazard, she notes.

- **Partner with risk managers and safety professionals.**

You have some natural allies as you seek to improve care for patients while protecting employees. A pressure ulcer due to inadequate repositioning or a patient fall presents liability issues for the hospital, as well as safety concerns, says Camden. She also recommends working with skin care experts to determine their concerns.

- **Purchase adequate equipment.**

Your equipment choices should be linked to your assessment of your patient population. For example, Camden notes that a hospital could put ceiling tracks in every room but maintain only two or three lift motors per unit. "One hospital explained to me that they rent the lifts so they only pay for the days the lift is in place," she says. Even with the ceiling lifts, hospitals will need some freestanding lifts for cases in which the patient is outside the range of the tracks, Camden notes.

UC Davis Medical Center purchased a "vehicle extraction lift" after an incident with a 500-pound patient who could not bear any weight. Employees tried to help her out of her car using a slide board — but dropped her. The lift team arrived and used a lift to help the patient, who was not injured. That potential problem is now averted because of the new lift that is designed to help fully dependent patients out of a car.

- **Consider the needs of your own employees.**

Some of your own employees may qualify as morbidly obese. You and other employee health staff may benefit from a better understanding of the causes of obesity and the health risks they may have. UC Davis Medical Center provides sensitivity training that covers the genetic, environmental, social/cultural, and emotional causes of obesity. ■

the hospital population, we know that at least one in 20 will require some kind of accommodation because of their weight," she says.

The proportion of morbidly obese patients may be significantly greater in some areas of the country. Obesity rates vary, with the greatest prevalence in Alabama, Mississippi, and Tennessee, according to the CDC.

At UC Davis Medical Center, every day about 12 to 22 patients out of the daily census of about 570 patients weigh 300 pounds or more. "Other hospitals I've spoken to have as many as 30%," says Thomas.

Furthermore, it may be a mistake to focus the large-capacity equipment in your bariatric surgery area, notes Camden. Patients are encouraged to walk shortly after their gastric bypass surgery.

"The weight loss surgery patient has been screened. They're pretty healthy patients other than their obesity," she says. "Some are in the hospital just 24 hours. It's really those patients in other areas that create issues for health care workers and for hospitals."

Morbidly obese patients are at greater risk for Type 2 diabetes, coronary heart disease, high blood pressure, osteoarthritis, certain cancers, sleep apnea,

and respiratory problems, according to the CDC.

Even pediatric units treat the occasional patient of size. Thomas recalls an 11-year-old, 450-pound boy who was admitted as doctors sought to determine the cause of his extreme weight. He was diagnosed with a pituitary gland deficiency.

Hospital saves \$1.6 million

Safe patient handling that incorporates the needs of bariatric patients pays off — in dollars and in other benefits.

The hospital has implemented its ceiling lift infrastructure gradually, placing ceiling lifts in one room per unit to accommodate patients of size. All new construction of patient rooms will incorporate ceiling lifts, Thomas says.

UC Davis Medical Center has lift teams that are available 24/7; they perform about 200 lifts per day. Since January 2005, when they were implemented, through June of 2008, workers'

compensation claims related to patient handling declined by \$1.6 million. Previously, the claims had been increasing.

In the past two years, no nurses have suffered career-limiting injuries related to patient handling. "We've really saved people's jobs," Thomas reports. "Anecdotally, nurses will say they had a previous back injury, and [now] they go home without their backs being sore anymore."

It's a recruitment tool as well. UC Davis has a nursing vacancy rate of about 3%. And it's a cornerstone of the hospital's emphasis on a culture of safety. "We talk to nurses about putting their safety at the same level they would patient safety," says Thomas. "You don't have to injure yourself in order to protect another person's life."

[Editor's note: A copy of the audio conference, "Prevention of Employee Injuries and Lift Teams — A Comprehensive Approach," is available from AHC Media by calling customer service at (800) 688-2421. The code for this program is 11T09314-7556.] ■

Look beyond patient care for ergo risks

Costly injuries occur in dietary and other areas

If you've implemented safe patient handling but serious musculoskeletal disorder (MSD) injuries persist at your hospital, perhaps you haven't gone far enough. Employees in many nonpatient care areas also face significant risks.

In an analysis of more than 100 reviews of workers' compensation loss data, **Woody Dwyer**, MS, CPE, CIE, senior ergonomics consultant in Human Factors and Ergonomics at Travelers Risk Control in Orange, CA, found 40% to 60% of injuries in health care related to sprains, strains, and other MSD injuries. Nonpatient-handling injuries often represented a significant portion, he says. In one hospital, for example, he found that about half of the MSD injuries were in nonpatient care areas.

"The first thing you need to do is look at your data," advises Dwyer. But hospitals also need to assess job tasks for major ergonomic risk factors: awkward postures, force, frequency or repetition of task, and duration (such as holding static postures), he says.

"It's a challenge to consider change when someone has not been injured. What's the value of the solution?" says Dwyer. "The solution should mitigate risk. Risk is the precursor of injury."

Dwyer also notes that before the risk leads to injuries, it may contribute to poor employee morale, impaired productivity, or turnover.

A Citrus Valley Health Partners in West Covina, CA, ergonomics coordinator **Dora Shaieb**, MPT, CEAS, partnered with department managers and sought to demonstrate cost-effective solutions. "We have to prove ourselves to upper management by saying, 'We're focusing on the areas that cost you money,'" she says.

Some ergonomic solutions require a change in work practices but little investment in new equipment. Hospitals should work with their workers' compensation insurers to identify solutions and develop a budget and plan for reducing risk. "We're going to pinpoint solutions that are going to give them the best value, the ones that will mitigate the most risk," says Dwyer.

Here are some areas that have common MSD risks and potential solutions:

- **Dietary/Food Service:** Citrus Valley Health Partners spent about \$200,000 on slip-and-fall injuries in 2005 at the system's three hospitals, many of them related to wet or oily food service areas. "We decided to put money into proper footwear and provide that to staff," says Shaieb. The health system set aside \$10,000 for shoe costs and arranged for a footwear mobile van to visit the hospitals. About 280 at-risk employees in dietary service or environmental services were required to wear slip-resistant shoes. If they choose not to select shoes from the mobile van, they can purchase their

How to avoid common ergo risks for office workers

(Editor's note: Travelers Risk Control in St. Paul, MN, a division of Travelers Insurance, provides these tips for improving office ergonomics and avoiding injury. Further information is available at www.travelers.com/riskcontrol.)

Stress and fatigue symptoms from working at computer terminals can be avoided with good posture, good work habits, and adjustments to the equipment on which you work. The following tips should help minimize these symptoms and maximize your personal comfort:

Posture

- All body angles — hips, knees, and elbows — should be at or around 90 degrees.
- Sit up with chair tilted back slightly.
- Your head should be upright, facing forward.
- The backs of your knees should not be in contact with the chair seat with thighs approximately parallel to the floor.
- Your shoulders should be relaxed.
- Your feet should be flat on the floor, or on a footrest.
- Your back should be firmly supported.
- Your arms should rest lightly on the armrests of the chair.
- Your wrists should be straight and flat, not bent backwards.

Equipment

- Your keyboard angle should be adjusted as flat as possible or slightly downhill, and the keyboard should be at elbow height.
- Your mouse or other input device should be at elbow height, next to your keyboard.

- Your monitor and keyboard should be square, or parallel to each other to help you avoid awkward and uncomfortable body positions.
- The top of your monitor should be slightly below eye level.
- Adjust your chair and the height of your keyboard so you can follow the above posture guidelines.
- Use a wrist rest if you find it difficult or tiring to hold your wrists level. Never plant your wrists on the wrist rest while you key. Use it to support your palms between keying activities.
- Adjust your monitor so the contrast is high, the brightness low. You may need to adjust it several times during the day, as room light changes.
- Adjust the angle of your monitor to reduce glare or reflection. Try to have your monitor at right angles to windows or long banks of light.
- Keep the screen free of dust and fingerprints.
- If the display is blurry or jittery, report it to your supervisor.

Work Habits

- Use a lighter touch on the keyboard to reduce shock to your wrists.
- Use a document holder if you often type material from other sources. Task lighting may be necessary to read the material.
- Periodically focus your eyes on something at least 20 feet away.
- Take a minute every so often to stretch and vary your routine.
- Periodically change your posture throughout the day.
- Build dynamic work into your day. You should perform 15 minutes of nonkeying activity for every two hours of keying.
- Do not cradle the telephone between your shoulder and neck while keying. ■

own and be reimbursed, as long as they meet the same standards of slip-resistance, says Shaieb.

The shoes, which must be worn only at the hospital, are replaced annually. While Shaieb originally absorbed the cost in the employee health budget, individual departments now provide the funding. In 2008, the hospital spent only \$1,600 on workers' compensation claims related to slips and falls.

Other risks in the dietary area include the handling of large containers of produce and food and pushing heavy carts. Carts should have two swivel casters and two fixed casters, Dwyer says. Employees also should have training in the proper use of knives, he says.

• **Environmental Services:** "Make sure the linen bags are not overfilled," says Dwyer. Use

carts that have a spring-loaded bottom and/or drop side, so employees don't have to reach into the bottom. Education about proper posture and body mechanics also is important — although that can be a challenge, says Shaieb. "It's a very physical job, and a lot of people aren't necessarily in top shape to begin with," she says. "You sometimes have language barriers that come into play." For example, employees need to understand that they shouldn't try to pull a cart with one arm, but instead should push it down the hall, she says.

• **Laboratory:** Often, lab workers are hunched over a desk, peering into a microscope or looking at Petri dishes. Their posture can be improved by better workstation design, says Dwyer. Shaieb assessed the lab and found "they don't have enough room for all their supplies and storage,

so they start putting their things where you're supposed to have your legs," she notes. That solution simply involved rearranging the work space. Lab workers also may need new adjustable-height stools, footrests, or a counter that provides more space for the employees' knees, says Dwyer.

- **Materials handling:** Handlers need to have powered pallet jacks for lifting and carrying pallets in storage areas, says Dwyer. Even a box of fluids can be a lifting hazard due to its weight. Check out hand trucks, carts, and dollies for their ease of use, he advises.

- **Office:** Compared to transporting patients or lifting heavy bags of linen or trash, sitting at a computer may seem like risk-free work. But office workers may develop back or neck discomfort or tendonitis in the hand, wrist, or elbow, says Dwyer. For example, while the common desk height is 29 inches, an average woman's elbow height may be 26 or 27 inches. "We either have to raise the chair and get a footrest or get a keyboard tray," he says. Shaieb was able to replace chairs and keyboards in the business office by budgeting the expenditure over a half-year period, buying four or five chairs at a time. **(For more information on reducing ergonomic risk to office workers, see box on p. 55.)** ■

Hospitals alert to reproductive hazards

Educate employees, consider job change

As the use of chemotherapeutic agents and hazardous drugs becomes more commonplace, hospitals are placing a new focus on identifying potential reproductive hazards.

The National Institute for Occupational Safety and Health (NIOSH) is updating its list of hazardous drugs, which now includes about 120 agents and encompasses drugs used in areas outside of oncology.

Reproductive hazards have been a key concern as NIOSH has issued alerts and guidance documents on medical surveillance, engineering controls, personal protective equipment, and other means to reduce exposures, says **Thomas Connor**, PhD, a research biologist at NIOSH in Cincinnati who specializes in chemotherapeutic agents and hazardous drugs.

"We have not developed recommendations on more specific considerations pertaining to

reproductive health, but we plan to seek public input on this issue in the near future," he says.

NIOSH advises hospitals to have a medical surveillance program to look for signs and symptoms of adverse effects due to drug exposure. But hospitals also are becoming more proactive to help protect employees from potential reproductive hazards.

Most importantly, hospitals need to educate health care workers about the hazards and protections. "We should make the workplace healthy for everyone, even those who don't know they're pregnant," says **William G. Buchta**, MD, MPH, medical director of the Employee Occupational Health Service at Mayo Clinic in Rochester, MN.

Mayo considers safety issues involving pregnant employees on a case-by-case basis. "We don't have a policy to automatically restrict pregnant workers from those environments as long as they're using personal protective equipment and patients are properly isolated," he says.

Assessing risk — and reassuring

The University of Connecticut Health Center in Farmington takes a proactive approach and encourages employees who are pregnant or trying to become pregnant to come in for a risk appraisal. Not surprisingly, most of the employees who seek advice already are well into their first trimester, when the fetus is undergoing rapid development.

"We don't see people early enough in this process," acknowledges **John Meyer**, MD, MPH, associate professor of Occupational and Environmental Medicine who also has worked in obstetrics and gynecology. However, the facility's approach places an emphasis on identifying and controlling reproductive hazards for everyone, he says.

University of Connecticut Health Center uses a five-page pregnancy risk questionnaire that asks employees about their exposures to chemical and biologic agents and radiation, as well as other potential hazards at work or outside work. The hospital also has a "pregnancy risk" hotline for anyone with questions about reproductive hazards.

The questionnaire provides an opportunity for education and to reinforce the importance of personal protective equipment when working with hazardous substances, says **Sandra A. Barnosky**, APRN, FNP-BC, COHN-S, a nurse practitioner with the hospital's employee health service.

"We encourage employees to notify us when they're pregnant, and then we'll take extra precautions with them," she says, noting that pregnant

radiation technicians have their monitoring badges checked more frequently.

Much of what Meyer does involves reassurance. He discusses safe lifting with the employees. He reviews their vaccination records in case they need any updates. In rare cases, an employee may have a temporary change in their work environment. For example, working with certain disinfectants, such as ethylene oxide, may be a risk that employees need to avoid altogether, and the employee may be temporarily reassigned.

Meyer is aware of the need to provide protections but maintain the ability of the employee to stay on the job. "Unemployment is probably more hazardous than being around controlled exposures [with adequate protection]," he says. Without a job, "you don't have a salary; you don't get benefits or health insurance. All of those are detrimental to pregnancy as well."

In fact, employers who restrict pregnant women from certain duties may be on sticky legal ground. In 1991, in *Automobile Workers v. Johnson Controls Inc.*, the U.S. Supreme Court found that Pregnancy Discrimination Act bars "sex-specific fetal-protection policies." A pregnant woman or

woman of childbearing age cannot be excluded from work duties "unless her reproductive potential prevents her from performing the duties of her job," the court held. (*Editor's note: See <http://laws.findlaw.com/us/499/187.html>.*)

No gender gap

Some reproductive hazards affect men as well as women, notes **Evie Bain**, RN, MEd, COHN-S, FAAOHN, associate director and coordinator of the health and safety division of the Massachusetts Nurses Association in Canton, and many women don't realize they are pregnant until several weeks into their first trimester. "The workplace should be safe at all times for all people," she says.

Yet employers may accommodate workers who are concerned that the engineering controls and personal protective equipment don't completely eliminate risk. "There are some special circumstances where a pregnant worker may be at some perceived increased risk," says Buchta. "We need to take that as seriously as real risk, because that affects their ability to function in the workplace." ■

CDC launches action plan to combat XDR-TB

Educating HCWs important to prevent spread

Although tuberculosis has reached an all-time low in the United States, the persistence of TB globally — including extensively drug-resistant (XDR)-TB — means that U.S. hospitals must remain vigilant to prevent spread of the disease, public health experts say.

An action plan to combat XDR-TB released by the Centers for Disease Control and Prevention promises more guidance on infection control, better lab resources and a focus on education of health care personnel. Health care workers are at greatest risk from the undiagnosed case,¹ says **Philip LoBue**, MD, associate director for science in the CDC's Division of Tuberculosis Elimination.

Even hospitals in communities with a low prevalence of TB must be alert to the possibility, especially among foreign-born individuals or those who have visited countries in which TB is still endemic, he says. "It's not unusual to see outbreaks of transmission in places that don't usually have a lot of TB because they're not looking for it

and they don't expect it," LoBue says.

The specter of extensively drug-resistant TB, which doesn't respond to first- or second-line antibiotic treatments, has focused new attention on the worldwide threat of TB. In 2006, there were 9.2 million cases of TB globally and 1.7 million deaths, according to the World Health Organization. India, China, Indonesia, South Africa, and Nigeria have the highest number of TB cases overall, and India, China, and Russia have the most drug-resistant strains.

"Overall, in the United States, the [TB] risk is low. Globally, it's a different story," says LoBue. "There are estimated to be about 500,000 MDR [multidrug-resistant] TB cases in the world. The estimates of how many of those are XDR are fairly rough, but probably 7% are XDR, or 35,000 cases globally."

There's no reason for U.S. health care workers to be fearful of XDR-TB, says LoBue. Administrative and engineering controls, such as the isolation of patients with suspected TB need to be isolated in a negative pressure room, and respiratory protection reduce risk of transmission, he says.

"There's no reason to think [XDR] is more transmissible [than other forms of TB]," he says. "Back in the mid-1980s through early 1990s, we had about four times the amount of MDR-TB in

the United States than we do now, and there was definitely transmission occurring in health care settings. Implementing those [guidelines] was effective in stopping transmission.”

In promising news, researchers at the National Institute of Allergy and Infectious Diseases found that two existing antibiotics — meropenem and clavulanate — may be effective against XDR-TB. The combination stopped the growth of 13 strains of XDR-TB in the laboratory.²

“Right now, there are probably four or five [new drug regimens] in the pipeline in various stages of clinical trials,” says LoBue. “A number of them are promising, but it’s going to take another decade or so before we really know how effective they are.”

An ongoing major clinical trial also is investigating a shorter regimen for treating latent TB infection, which may improve compliance, says LoBue. Results of that trial are expected in about two years.

XDR-TB results from poorly treated TB

At the New Jersey Medical School Global Tuberculosis Institute in Newark, executive director **Lee Reichman**, MD, MPH, is pleased to see heightened attention to combating TB. But he notes that the worldwide burden of TB — drug-resistant or not — is great enough to warrant an “action plan.”

“Since TB is a preventable, curable disease and it kills more people than any single infection worldwide, they should have done something before waiting for the XDR outbreak,” he says.

Every case of XDR-TB can be traced back to a case of susceptible TB that was not treated fully, Reichman notes. “If you treat regular TB properly, you don’t get MDR. If you treat MDR properly, you don’t get XDR,” he says.

CNE instructions

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

While health care workers need to be alert for TB as a possible diagnosis, developing countries need better lab capabilities and improved surveillance, Reichman says.

“Anybody can get TB,” he says. “To control TB anywhere, we need to control it everywhere. We need to control TB where the hotbeds are.”

LoBue offers the following advice to minimize the risk of TB transmission in hospitals:

- Be aware of the patients who are at higher risk for tuberculosis and have symptoms consistent with the disease: weakness, weight loss, fever, night sweats, persistent cough, chest pain, and the coughing up of blood. In the United States, about

CNE questions

17. According to a survey of operating room nurses conducted by Kay Ball, RN, PhD, CNOR, FAAN, what was the No. 1 barrier to the evacuation of surgical smoke in hospitals?
 - A. Physician opposition to the devices.
 - B. Technology isn’t available for proper evacuation.
 - C. Lack of training of OR personnel.
 - D. Lack of equipment at hospitals.
18. According to the Centers for Disease Control and Prevention in Atlanta, what proportion of Americans is extremely obese, with a BMI of 40 or greater?
 - A. 2%
 - B. 5%
 - C. 12%
 - D. 23%
19. At Citrus Valley Health Partners, what was the most significant method of preventing slips and falls in the dietary area?
 - A. Better signage
 - B. Training of dietary staff
 - C. Substitution of floor cleaners
 - D. Slip-resistant footwear
20. According to William G. Buchta, MD, MPH, what is Mayo Clinic’s policy toward pregnant health care workers who work with substances that pose reproductive hazards?
 - A. The hospital provides education and protections for all employees so most pregnant workers don’t need to be restricted.
 - B. Pregnant workers are temporarily moved to other areas that don’t have hazardous substances.
 - C. Only men can work with substances that carry reproductive hazards.
 - D. The hospital has eliminated all substances that have reproductive hazards.

Answer Key: 17. D; 18. B; 19. D; 20. A.

half of cases among foreign-born individuals were from Mexico, the Philippines, India, and Vietnam.

- Be sure that health care workers comply with the infection control measures that their institution has in place because experience tells us they are effective.

- Health care workers should feel secure when they're caring for patients that if they're following the recommended infection control practices they have no significant risk.

- Promote awareness and combat complacency. "Complacency leads to problems and breakdowns in people not adhering to control measures that we know work," he says.

References

1. Centers for Disease Control and Prevention. Plan to combat extensively drug-resistant tuberculosis: Recommendations of the Federal Tuberculosis Task Force. *MMWR* 2009; 58(RR03): 1-43.

2. Hugonnet JE, Tremblay LW, Boshoff HI, et al. Meropenem-clavulanate is effective against extensively drug-resistant *Mycobacterium tuberculosis*. *Science* 2009; 323:1,215-1,218. ■

A safer method of needle removal?

Company pitches product to hospital market

A manufacturer of needle removal and disposal devices is seeking to expand the company's marketing niche by appealing to hospitals that are seeking to cut costs.

Prohibitions on removing needles from devices limits the potential use of needle removal devices in hospitals, the U.S. Occupational Safety and Health Administration (OSHA) told QCare International, a Marietta, GA-based manufacturer. Yet **William Butler**, president of QCare, maintains that there is still a place for his product in hospitals.

"Our solution is much less expensive than safety syringe. You can use a conventional syringe and remove it at the time of use," Butler says. "It

will be safer, because the needle doesn't exist so it can't stick anybody, and it can't be reused."

Not so fast, says **Dionne Williams**, MPH, senior industrial hygienist, in OSHA's Office of Health Enforcement. OSHA requires hospitals to use safety-engineered devices unless they are not available or not medically feasible, she explains. "This is a few steps behind where technology is right now," Williams adds.

Butler sought to clarify the potential use of needle removers in hospitals with a request for interpretation from OSHA. The hand-held needle disposal devices heat the needles to 2,700 degrees, disinfecting while the needle is melted off. The remaining syringe has no protruding needle, Butler says. The device is often used by insulin-dependent diabetics who need a safe way to dispose of their needles in their homes.

OSHA states position

Richard Fairfax, director of OSHA's Directorate of Enforcement Programs, noted that the Blood-borne Pathogen Standard prohibits needle removal in health care settings:

"The standard provides an exception where an 'employer can demonstrate that no alternative is feasible or that such action is required by a specific medical or dental procedure.' The standard goes on to provide: 'such bending, recapping, or needle removal must be accomplished through the use of a mechanical device or a one-handed technique' [29 CFR 1910.1030(d)(2)(vii)(B)].

"For the limited circumstances where these criteria are met, the [QCare device] appears to be a type of mechanical removal device that could be considered," Fairfax said in the Letter of Interpretation, noting that OSHA does not endorse products.

Addresses injuries during disposal

Needle removers primarily address the needle-stick risk during disposal of a syringe, but that accounts for only about 7.8% of injuries, says **Jane Perry**, MA, associate director of the International Healthcare Worker Safety Center at the University of Virginia in Charlottesville.

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"This would be a relatively small fraction of injuries that this device would address," she says. "Most, if not all, health care institutions have implemented safety devices, and you can't use these devices with safety devices."

"There are some classes of devices where a reasonable safety alternative hasn't been devised," adds Perry. "I don't know if this device could be used with some of those kinds of needles."

The needle removal device might be appropriate to use with pre-filled, multidose syringes of medication that must be reinjected but don't have a safety device, says Williams. ■

CNE objectives

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

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

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