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THE PRACTICAL GUIDE TO KEEPING HEALTH CARE WORKERS HEALTHY

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Warning: Prepare to retrain hospital employees on chemical hazards

Labels, safety sheets to change with pending OSHA rule

Hospitals will need to retrain all their employees on chemical hazards when the U.S. Occupational Safety and Health Administration finalizes its changes to the Hazard Communication Standard.

The standard involves new pictograms and “signal” words on labels as well as revised safety data sheets (SDSs). For example, irritants and dermal or respiratory sensitizers would be marked with a black exclamation point surrounded by a red diamond. *(See box on p. 87.)*

With the proposed revisions, OSHA would bring hazard communication in line with international requirements — a Globally Harmonized System of Classification and Labeling of Chemicals.

“With this rulemaking, OSHA is proposing to revise its requirements to increase the effectiveness of the Hazard Communication Standard and make it reflective of the 21st century workplace,” **Dorothy Dougherty**, CIH, director of the Directorate of Standards and Guidance, said at a hearing on the proposed rule.

The bottom line, according to OSHA: New labeling will make it easier for workers to understand the hazards of various chemicals and the new SDS will be easier to read than the current MSDS (material safety data sheet). Employers would be required to train their employees on the new system within two years. OSHA’s regulatory agenda says that the Hazard Communication Standard will be issued in final form in August.

“I’m going to be working very hard to come up with a completely new training program,” says **John Schaefer**, CIH, HEM, CPEA, associate director of health safety and environment at Johns Hopkins University and Medical Institutions in Baltimore.

The changes also offer an opportunity to increase awareness and emphasize the proper engineering controls, such as ventilation, as well as use of personal protective equipment, Schaefer notes. “If we can get employees to understand a little more about what they’re working with, it will be a beneficial,” says **Bruce Cunha**, RN, MS, COHN-S, manager of employee health

and safety at Marshfield (WI) Clinic.

In fact, in the preamble of its proposed rule, OSHA says that better communication about hazards could influence some employers to adopt less hazardous substitutes and can promote safer practices. (See related article on “green teams” on p. 87.)

“Knowledgeable employees can take the steps required to work safely with chemicals, and are able to determine what actions are necessary if an emergency occurs. Information on chronic effects of exposure to hazardous chemicals helps employees recognize signs and symptoms of chronic disease and seek early treatment,” OSHA said.

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AHC Media

Not all hazards covered?

With cleaners, solvents, disinfectants, and even pesticides, hospital employees can be exposed to a wide variety of hazardous chemicals. Even so, some of the most hazardous substances in hospitals — chemotherapeutic agents — are not covered by the Hazard Communication Standard. The standard specifically excludes drugs and other substances from labeling requirements if they are regulated by the Food and Drug Administration.

The Association of Occupational Health Professionals in Healthcare (AOHP) asked OSHA to consider adding those to the standard, as well. Otherwise, AOHP endorsed the changes. “We support anything that would help healthcare workers become more knowledgeable about the chemical hazards in the workplace,” says MaryAnn Gruden, manager of Employee Health Services at Allegheny General Hospital and the Western Pennsylvania Hospital in Pittsburgh and community liaison of AOHP.

She notes that the recent joint OSHA-NIOSH-Joint Commission letter to hospitals emphasizing safe handling of anti-neoplastic agents also will promote awareness about those hazards.

OSHA’s proposed rule includes “unclassified hazards,” for which there is not yet enough information. “Nano materials represent an example of the new potential hazard that may cause harm but has not yet been sufficiently studied to allow classification. For nanoscale materials, size and shape may be more important than chemical composition as a determinant of hazard,” **Paul Schulte, PhD**, director of the Education and Information Division of the National Institute for Occupational Safety and Health said at a hearing.









Overall, OSHA’s revised Hazard Communication Standard got favorable reviews and is likely to be one of the few rules that won’t face a legal challenge, says **Brad Hammock**, an attorney with Jackson Lewis in Reston, VA, who specializes in occupational health law.

“As you get integrated into the [Globally Harmonized System], it will be more understandable for employees, employers and manufacturers,” he says.

The standard changes offer an opportunity for hospitals to reassess their chemical hazards, revise their hazard communication program, and improve awareness of the hazards among employees, says Hammock.

“Hazard communication is a fundamental linchpin of your safety and health program. From an

GHS Pictograms and Hazard Classes

 <p>■ Oxidizers</p>	 <p>■ Flammables ■ Self Reactives ■ Pyrophorics ■ Self-Heating ■ Emits Flammable Gas ■ Organic Peroxide</p>	 <p>■ Explosives ■ Self Reactives ■ Organic Peroxides</p>	 <p>■ Acute Toxicity (severe)</p>
 <p>■ Corrosives</p>	 <p>■ Gases Under Pressure</p>	 <p>■ Carcinogen ■ Respiratory Sensitizer ■ Reproductive Toxicity ■ Target Organ Toxicity ■ Mutagenicity ■ Aspiration Toxicity ■ Organic Peroxide</p>	 <p>■ Irritant ■ Dermal Sensitizer ■ Acute Toxicity (harmful) ■ Narcotic Effects ■ Respiratory Tract ■ Irritation</p>

SOURCE: Occupational Health & Safety Administration

OSHA compliance standpoint, it's like a building block for everything," he says. "It's a major mechanism to inform employees of where your hazards are and what is required to protect against those hazards."

Too often, health care employers don't have a full, written hazard communication program, he says. "[This is] an opportunity to ensure you've got your hazard communications plan in order and your safety data sheets up to date, and to make sure you have your employees in the correct protection," he says. ■

'Green' movement makes hospitals safer

EH can be a part of 'green teams'

Being greener is safer. As hospitals join the sustainability movement, they are making the workplace safer for their own employees.

Employee health professionals should join their

hospitals' "green teams" as a way to reduce chemical hazards, says **Barbara Sattler**, RN, DrPH, FAAN, a professor at the University of Maryland School of Nursing in Baltimore and program director of Maryland Hospitals for a Healthy Environment.

"These green teams are creating a remarkable opening," says Sattler, who is also director of the Environmental Health Education Center at the School of Nursing. "It's a profound shift that people in occupational health should take advantage of."

Green teams pose questions that impact a broad constituency, says Sattler: "What is safe and healthy for our patients? What is safe and healthy for our employees? What is safe and healthy for our community?"

Based on a 2007 survey of nurses, chemical exposures in the health care workplace are widespread. The online survey of more than 1,500 nurses from all 50 states, conducted by the Environmental Working Group and Health Care Without Harm, found that one third (32%) were exposed at least twice weekly to combinations of

NIOSH: Be aware of dermal hazards

Skin notations offer summary of risk

The skin is a very effective barrier to hazards such as blood or body fluids. But because some chemicals can penetrate the skin, health care workers need to be aware of the risks and necessary protections, says **Scott Dotson**, PhD, CIH, an industrial hygienist with the Education and Information Division of the National Institute for Occupational Safety and Health in Cincinnati.

NIOSH is issuing a series of “skin notation profiles” to provide detailed information on serious hazards, including formaldehyde and glutaraldehyde.

“A lot of pesticides can actually get through the skin and contribute to neurotoxicity. There are compounds that can get through the skin and they’re so toxic that they can contribute to a life-threatening event,” notes Dotson.

Yet the standards and guidelines from the U.S. Occupational Safety and Health Administration focus on the inhalation hazards related to chemicals by setting airborne permissible exposure levels, he says. “Out of about 30 chemicals they’ve developed standards for, only one is specifically designated as a dermal hazard,” says Dotson.

That chemical is 4,4’ Methylenedianiline (MDA), which is used in the manufacture of epoxy resin and other industrial substances. Although OSHA still set a PEL for the chemical, the standard calls for medical surveillance related to dermal exposure.

NIOSH’s skin notation profiles use a standardized system to denote the potential effects of dermal exposure — systemic, localized or immune-mediated responses. They include a review of the medical literature.

“We hope the manufacturers will start taking these new skin notations into consideration and including them in their dossiers,” says Dotson. “To help facilitate that, we’ve tried to align some of our notations with the Globally Harmonized System.” (*See related article on cover.*)

For example, glutaraldehyde is designated as SK: DIR (COR)-SEN. That means its skin notation (SK) indicates that there can be direct effects from skin exposure, including the potential for the chemical to be corrosive. It also is a sensitizer that can lead to immune-mediated reactions.

So far, NIOSH has published 20 skin notation profiles. Another 150 chemicals are being evaluated. “We’re trying to [promote] better risk assessment and better risk communication,” Dotson says.

When workers don’t understand the hazards of chemicals they’re handling, they may not take the proper precautions. That concern was underscored when Dotson recently taught a class in Cincinnati. “The employees were putting gloves on to protect themselves from solvents, and they made the comment that the gloves were dissolving after five minutes,” he says. “They were wearing the wrong kind of gloves.”

In fact, wearing the wrong gloves could increase the hazard by allowing the chemical to penetrate and then trapping it against the skin, he says. For example, latex gloves are not recommended for exposure to glutaraldehyde, but Butyl, Viton or neoprene gloves are acceptable, he says.

“It’s important to know the hazards of your chemical and couple it with the right recommendations,” he says. ■

at least five chemicals and other hazardous agents for ten years or more. Almost half (46%) said they did not think their employers are doing enough to protect them.¹

Nurses also are suffering from the effects. The survey found that nurses with high exposures to anti-neoplastic agents (at least once a week for 10 years) had a higher incidence of cancer, and nurses with high exposures to sterilizing and disinfecting agents and housekeeping chemicals had higher rates of asthma. A recent study of Texas nurses also found that those exposed to disinfectants and

cleaning products and those involved in cleaning medical instruments had higher rates of asthma.²

Green teams can begin by seeking safer substitutes for some hazardous chemicals, says Sattler. “Often these chemicals that may trigger or cause asthma have other health effects, as well,” she says.

Growing a ‘green team’

At the University of Maryland Medical Center, **Denise Choiniere**, RN, MS, began her sustain-

ability efforts as a nurse in the cardiac intensive care unit who wanted to recycle batteries. She was planning to take them home and recycle them on her own.

Then she heard of the newly formed Green Team, and she became involved in the team's efforts to improve the hospital's waste management program. Soon, she was sharing her ideas with the vice president of facilities, the chief nursing officer — and the hospital CEO. The grassroots program became a mission of the hospital leadership, says Choiniere, who is now the hospital's sustainability manager.

Some hospital departments have taken on their own "green" initiatives, as hospital employees grow accustomed to looking for environmentally safe practices, she says. "I'll know I'm successful when [the departments] don't need me anymore, when sustainability is incorporated in every department, just the way patient safety is incorporated," she says.

Here are some ways the University of Maryland Medical Center has used "green" strategies to improve health and safety:

- **Reducing exposure to hazardous chemicals.**

The hospital uses Green Seal-certified cleaners and tries to eliminate chemicals, when possible. "When parts of the hospital are renovated, we're installing a rubber flooring that doesn't require stripping and waxing. That's another way to improve the indoor air quality," says Choiniere. An added benefit: The rubber flooring is less slippery than waxed floors and reduces the risk of slipping and falling, the second most common injury in hospitals.

The hospital also has worked to eliminate mercury and Di(2-ethylhexyl)phthalate (DEHP), a plasticizer used in some tubing and medical devices. (DEHP is primarily a patient safety issue, especially for critically ill male neonates.)

If nurses or other health care workers have adverse effects from chemicals, it's important for them to inform employee health — and for employee health professionals to pass on that information to the green team, says Choiniere. "It's hard for me to build my case without numbers," she says, noting that often nurses will simply treat a reaction to an exposure with Benadryl and go back to work.

- **Reducing pesticides and microbicides.** The University of Maryland Medical Center has gotten rid of ethylene oxide, a sterilant, and has reduced its use of glutaraldehyde. An analysis of surveillance data in four states by the National Institute

for Occupational Safety and Health revealed 401 cases of work-related injury due to anti-microbial pesticides — cleaning or disinfecting products — from 2002 to 2007.

Meanwhile, on its grounds, the hospital has adopted "integrated pest management." The first response to complaints about bugs is to seek the source of the problem, such as plugging holes or cleaning up sitting water. "Pesticides are actually the last resort," says Choiniere.

Choiniere works with the purchasing department to seek safer alternatives to some products.

"It's definitely a process," she says. "You need patience and perseverance to make changes."

- **Raising awareness of environmental health.**

Choiniere attends monthly meetings of the nursing managers, chairs an interdisciplinary Green Team with about 25 active members, and sometimes attends unit meetings. She promotes green initiatives in the hospital's newsletter

The hospital also hosts a farmer's market, providing much-needed fresh fruits and vegetables to their urban community. It also makes it easier for hospital employees to adopt healthy eating habits, she notes. "People incorporate this in their personal life," she says.

Convincing 8,000 employees to change their habits isn't easy. But Choiniere builds on the support of people who are already committed to living a more sustainable lifestyle. "There are passionate people out there," she says.

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Measles outbreaks laborious, costly

Tucson outbreak cost 2 hospitals \$800,000

When a single imported case of measles led to a small outbreak in Tucson, AZ, in 2008, two hospitals were forced to spend a total of some \$800,000 to contain it, much of that related to ensuring the immunity of

employees.¹ That incident presents a cautionary tale as the United States struggles with its largest number of measles cases since 1996.

In the first 19 weeks of 2011, 118 measles cases were reported. Most (89%) were related to importation of measles from other countries. Nine outbreaks accounted for almost half (49%) of the cases. And the consequences were serious. Forty percent of the patients with measles required hospitalization.²

“Measles is quite severe,” says **Jane Seward**, MD, MPH, deputy director of the Division of Viral Diseases at the Centers for Disease Control and Prevention in Atlanta and an author of an analysis of the Tucson outbreak. Hospitals need to consider a diagnosis of measles if a patient presents with a cough, fever and rash, she says. “Unvaccinated travelers coming into the United States continue to pose a risk,” she says.

The Tucson case revealed just how costly and difficult measles can be for hospitals. A primary concern: Ensuring that all health care workers have immunity. Measles can easily spread to people who are non-immune — and to infants too young to have had their measles-mumps-rubella (MMR) immunization.

“Measles is very highly infectious,” says Seward. “It’s one of the most infectious diseases that we have.”

Hospitals typically require new employees to receive two doses of the MMR vaccine or show proof of immunity. People born before 1957 may be presumed to be immune, according to guidelines from the Centers for Disease Control and Prevention — although in the event of an outbreak, CDC recommends that health care workers born before 1957 receive two doses of MMR.

In an outbreak situation, hospitals need to be able to verify immunity of employees quickly, says Seward. “I think hospitals in general do recommend MMR vaccine for health care workers. But I think recommending and implementing and evaluating are different things,” she says. “A lot of hospitals don’t necessarily do the extra work to follow up and see how well those policies are being implemented and if anyone is falling through the cracks.”

It can also be a nightmare for public health officials trying to contain an outbreak. “In public health circumstances, we don’t accept a report by a health care provider that they’re immune,” says **Stephen Ostroff**,

MD, director of the bureau of epidemiology in the Pennsylvania Department of Health in Harrisburg.

“Either you have to be able to produce records that show the date you received the vaccine or you have to have a laboratory test that demonstrates with absolute certainty that you’re immune. If you can’t produce either one of them, then from our perspective you’re not immune,” he says.

Measles not suspected

The Tucson case began with a 37-year-old traveler from Switzerland who was unvaccinated. She went to a hospital emergency room in Tucson on Feb. 12, 2008 and again the next day, when she was admitted with a fever and rash. Yet measles wasn’t initially suspected and she wasn’t isolated until two days later.

Meanwhile, a 50-year-old woman who was exposed to the Swiss traveler in the emergency department waiting room developed a fever and respiratory illness. At first, she was diagnosed with asthma exacerbation, then pneumonia and allergic drug reaction. Finally, on March 2, she was diagnosed with measles.

Measles spread from that second patient to several other people. A health care worker, who had just received her MMR vaccine the day she cared for Patient 2, developed fever on March 5 and fever, cough and rash by March 9. An unvaccinated 11-month-old boy who was in an emergency department room across the hall from Patient 2 developed measles, as did two unvaccinated children, ages 3 and 5, who walked past the patient’s room while visiting their mother in the hospital.

In all, there were seven cases that were confirmed as health care-associated — linked to the index case. Another five developed community-acquired cases and one person who developed measles was exposed to a patient in his home. Of 11 patients who sought medical care at a hospital or physician’s office for fever, cough and rash, only one was masked and isolated.

That delay in suspecting measles is a consequence of the success in controlling measles in this country, says Ostroff. But measles is raging elsewhere in the world. France and India were responsible for the greatest number of imported cases in the United States this year.

“Anytime you even remotely suspect this

diagnosis, it should be immediately reported to the health department,” says Ostroff. “That allows us to get the appropriate testing done and to start identifying the contacts as soon as possible to avoid an additional round of cases.”

Furloughs cost \$444,000

The outbreak investigation involved 4,793 hospital or clinic patients and 2,868 health care workers. Only 75% of the health care workers at the two hospitals that received patients with measles had evidence of immunity. None of the Tucson hospitals had electronic records that enabled them to quickly determine if their employees were vaccinated or otherwise immune.

Of 1,583 health care workers who had serologic testing, 11% were found to be seronegative. Meanwhile, health care workers without evidence of immunity were vaccinated and furloughed for five to 21 days after their last exposure.

The furloughs alone cost the two hospitals about \$444,000, according to the analysis of the outbreak.

“Hospitals can be prepared by just having the evidence [of vaccination or immunity] on file,” says Seward. For health care workers born before 1957, “they can choose to vaccinate them routinely or they can have it on file that they need to be vaccinated in the event of an outbreak,” she says.

Because measles is so transmissible, it’s important to have levels of immunity and vaccination of about 90 percent to 95 percent, says Seward.

“Suboptimal immunization is going to have ramifications in terms of the incidence of disease,” says Ostroff. “I would hate for health care providers to become more familiar with measles because there’s more disease [in the United States].”

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Complacency erodes sharps safety gains

In the July issue, HEH reported on the continuing needlesticks from devices without safety features, despite the requirements of the Bloodborne Pathogens Standard and Needlestick Safety and Prevention Act. Karen A. Daley, PhD, MPH, RN, FAAN, president, American Nurses Association, wrote this commentary for HEH to underscore the need for more progress on reducing sharps injuries.

Injuries from contaminated needles and other sharps that can cause infectious diseases are preventable, and shouldn’t be tolerated as a cost of doing business by health care organizations charged with ensuring safety and preventing harm. But unfortunately, whether through ignorance, complacency or frugality, these injuries still are occurring too often — nearly two-thirds of nurses reported being accidentally stuck by a needle in a 2008 national survey conducted by the American Nurses Association (ANA). ANA is urging managers responsible for employees’ health and safety to make sharps injury prevention a top priority.

For more than 10 years, health care workers have been protected from these risks to their careers and lives by the Needlestick Safety and Prevention Act of 2000. Progress has been made in many settings, but the law is not enough. We know that through a study published in 2010 in the *Journal of the American College of Surgeons* that shows sharps injury rates actually increasing by 6.5% in operating room settings since the law’s adoption.¹

The law provides only a framework. It is up to people to create the culture of safety necessary to minimize incidents — government enforcers, health advocates, safety engineers and hospital personnel, from executives to educators to nurses to housekeepers. That culture must be proactive and place a priority on prevention, workers’ health, education and training.

We know from Massachusetts data that more than 3,000 hospital workers in the state still suffer sharps injuries every year, resulting in exposure to

dangerous bloodborne pathogens. And that figure only includes reported injuries; many still go unreported. The 2.5% average annual decline in the rate of sharps injuries in Massachusetts from 2002 to 2008 indicates improvement, but does not remove the urgency to take further action.

Thirteen years ago, I was one of those Massachusetts health care workers, stuck by a needle protruding from the sharps container in a hospital emergency department. While infection is rare statistically, it happens. I'm living proof. I contracted hepatitis C and HIV, and didn't know if I would survive as I struggled with fatigue, weight loss and other symptoms. It changed my life forever, as I now live with a chronic disease. It also resulted in my decision to end a 26-year career in direct care nursing that I loved. No one should have to go through what I experienced — especially because we know many of these injuries can be prevented.

ANA is hearing from nurses that even 10 years after enactment of the needlestick prevention law they are not aware of the law or the provisions that affect and empower them, one of which requires employers to involve direct care workers in the identification, evaluation and selection of safety-engineered devices. We also know that compliance with the law is not universal.

Hospital employee health managers can make a huge difference in preventing sharps injuries. ANA urges that you fully comply with the law; ensure that direct care workers participate in evaluating and selecting safer devices; educate your employees about the law and train them in the proper use of safer devices; promote comprehensive reporting of incidents and near misses; and provide timely post-exposure prophylaxis and support for those who are injured.

It's clear that sharps safety warrants renewed attention. We need to explore why these accidents still occur. We need to examine the methods by which, or even whether, hospitals are continually reviewing and updating exposure control plans for injury prevention, as required by law, and determine what obstacles may be limiting the use of safe, effective, readily available sharps injury prevention technologies.

I'm pleased that, as the only state that collects comprehensive data on all reported sharps injuries annually, Massachusetts has been able to contribute important knowledge to this dialogue. The Massachusetts sharps injury data collected from 99 hospitals tells us there is still more work to do in this arena. Approximately 3,000 Massachusetts workers annually still have to go through the dis-

stress of getting tested, waiting for results, and in some cases, having to take toxic drug therapies. And 56% of those sharps incidents reported involved conventional devices that lacked any injury prevention features. There is no question in my mind that many of these injuries could have been prevented with proper training and the availability of effective safety devices. Ongoing technology assessment and updating, along with enforcement of the law, are also important components of injury prevention.

It is time to recommit to and prioritize sharps safety. To support employers and nurses, ANA relaunched its Safe Needles Save Lives educational campaign last fall. Resource materials and checklists are available at <http://www.nursingworld.org/safeneedles>.

Creating and maintaining a culture of safety that minimizes the occupational health risks to nurses and other health care workers goes a long way towards increasing job satisfaction and therefore, reducing staff turnover. Health care organizations that can create cultures of safety that we know increase employee satisfaction will enjoy an advantage in a changing health care system where value-based purchasing and quality outcomes take on greater importance.

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More sleep required for docs-in-training

Resident duty hours took effect July 1

As of July 1, first-year medical residents may be getting a better night's sleep. New rules limit duty hours for interns to a 16-hour shift, ban them from moonlighting, and require them to have at least 8 hours free between duty hours.

The rules, issued and enforced by the Accreditation Council for Graduate Medical Education (ACGME), were designed to address concerns about fatigue-related errors. They limit other residents, though to a lesser degree. The maximum shift for residents after their first year dropped from 30 hours (24 hours on duty plus six hours for patient hand-off, paperwork and education) to 28 hours (24 plus four).

Moonlighting will count toward their maximum work time of 80 hours per week, averaged over four weeks.¹ (For more information, see box on p. 95.)

The rules protect patient safety and ensure “that the next generations of physicians are well-trained to serve the public and that residents receive their training in a humanistic learning environment,” ACGME chief executive officer **Thomas Nasca, MD, MACP**, said in a statement.

Yet as hospitals began implementing the new rules, the changes remained controversial. A survey of residency program directors in pediatrics, internal medicine and surgery found that 86% opposed the 16-hour limit for first-year residents, though they agreed with other workload rules.² Consumer advocates and unions said the rules didn’t go far enough to reduce fatigue, and they petitioned the U.S. Occupational Safety and Health Administration to regulate resident work hours.

“We believe the rules should be consistent for all types of residents in training,” says **Michael A. Carome, MD**, deputy director of the Health Research Group at Public Citizen, a Washington, DC-based consumer and health advocacy group that was among the petitioners.

Fatigue in sensitive occupations has been in the public eye recently with news of air traffic controllers falling asleep during their night shifts. Carome asserts that the medical field should heed the risks of sleep deprivation. He also notes that in a recent tax-related case, the U.S. Supreme Court said medical residents are hospital employees, not students.

“That bolsters the arguments that residents should be protected [from sleep deprivation] in the same way other workers are,” he says.

Drop in adverse events may outweigh \$

Reducing resident work hours will require some significant changes for some hospitals. They may hire more physician assistants or nurse practitioners to handle some of the residents’ duties, or they may use more hospitalists or increase the number of medical residents. An Institute of Medicine panel, which supported even tougher rules limiting work hours to reduce fatigue, estimated the cost could total \$1.7 billion.³

An analysis of the new, more limited ACGME duty hour changes found that it would cost about \$381 million to implement nationwide, although the costs could vary greatly depending on how hospitals chose to make up for the lost work time. If preventable adverse events declined by 2.4%, the policy would be cost-saving for society, the study authors

Should you give PEP after an unknown stick?

In the May issue of HEH, we reported on an effort to reduce sharps injuries by using disposal containers with a better design. A reader subsequently posed a question: Would you administer post-exposure prophylaxis to an employee who receives a sharps injury from an unknown source, such as a sharp protruding from a container?

We asked **Ronald H. Goldschmidt, MD**, director of the National HIV/AIDS Clinicians’ Consultation Center (Warmline, PEline, Perinatal HIV Hotline) and professor and vice chair of Family and Community Medicine at the University of California, San Francisco, to share his advice.

Each situation needs to be assessed, Goldschmidt says. “Was the needle possibly from a patient with HIV or hepatitis? That requires the best possible clinical judgment. Obviously a needlestick in an HIV unit is very different from a needlestick in an Alzheimer’s unit for the elderly.”

Another factor is how long the needle has been in the sharps container. “HIV deteriorates very quickly with time,” says Goldschmidt, so the risk diminishes over days and even hours. Another consideration: What type of needle was it? Was it visibly bloody? PEP might be appropriate in the case of a needlestick from an unknown source with a freshly bloody needle in a busy emergency department, he says.

Even if the risk is very small, a worried health care worker might request PEP. Because you can’t say the risk is zero, “under those circumstances you’d go ahead and start PEP,” he says. Starting PEP promptly is important, but PEP can always be discontinued based on a reevaluation, he says. ■

found, and if the preventable adverse events declined by 10.9% as a result of the change, it would be cost-saving for major teaching hospitals.⁴

Hospitals began preparing for the new rules when they were adopted in September 2010. For example, the Mayo Clinic in Rochester, MN, set up pilot projects with different team structures and call schedules. They monitored patient outcomes and asked residents

about their experiences. “What we’ve learned from these pilots is that there’s no obvious formula,” says **Darcy Reed, MD, MPH**, associate program director of the internal medicine residency at Mayo. The best work schedule design will differ by unit or subspecialty, she says.

“Everyone has the goal of protecting patients from error and harm, protecting residents from injury and improving the quality of life for residents,” she says. “The question is how to best implement this to achieve the outcomes we want to achieve.”

The answer is not a simple one. Reed served on a panel that conducted a systematic review of literature related to 2003 ACGME changes in duty hours. They found that about a third of a resident’s shift is spent on tasks of “marginal educational value.”⁵ Those tasks could be delegated, but then a resident would face increased intensity throughout the work shift, which could lead to increased burnout, she says.

“You need a little bit of that downtime in your shift. It’s a difficult balance,” she says.

No harm to education or care

Studies of sleep deprivation clearly show that lack of sleep is associated with a decline in cognitive functioning. For example, one study found that medical residents working a traditional schedule in an intensive care unit made 36% more errors than those who worked shorter shifts.⁶

Yet critics of stricter duty hour rules contend that residents will not necessarily use their free time to get more sleep. Even when the ACGME established less restrictive rules in 2003, critics expressed concern that it would harm medical education and patient care.

“There was a lot of doom and gloom predicted,” says Reed, who was part of a team that reviewed the literature on duty hours changes. “Largely, things are unchanged or better.”

Some studies showed patient mortality improved, while others showed no change. The effect on medi-

COMING IN FUTURE MONTHS

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- Michigan hospitals pledge to serve healthier food
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- Reducing back injuries is a major public health triumph
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CNE QUESTIONS

1. Under the proposed Hazard Communication Standard changes, what would a black exclamation point surrounded by a red diamond signify?
 - A. Swallowing hazard
 - B. Fall hazard
 - C. Do not exceed toxic levels
 - D. Irritant and dermal or respiratory sensitizer
2. The National Institute for Occupational Safety and Health is publishing “skin notation profiles” to denote what potential dermal effects?
 - A. Toxic absorption
 - B. Systemic, localized or immune-mediated responses
 - C. Low, medium or severe contamination
 - D. Allergic or irritant
3. According to an analysis, how much did a measles outbreak cost two hospitals in Tucson in 2008?
 - A. \$400,000
 - B. \$500,000
 - C. \$800,000
 - D. More than \$1 million
4. According to a literature review, what was the impact of the 2003 restrictions on medical resident duty hours?
 - A. They improved resident well-being.
 - B. They improved resident education.
 - C. Patient care suffered.
 - D. They had no effect.

CNE INSTRUCTIONS

Nurses participate in this CNE/ CME program and earn credit for this activity by following these instructions.

1. Read and study the activity, using the provided references for further research.
2. Log on to www.cmecity.com to take a post-test; tests can be taken after each issue or collectively at the end of the semester. *First-time users will have to register on the site using the 8-digit subscriber number printed on their mailing label, invoice or renewal notice.*
3. Pass the online tests with a score of 100%; you will be allowed to answer the questions as many times as needed to achieve a score of 100%.
4. After successfully completing the last test of the semester, your browser will be automatically directed to the activity evaluation form, which you will submit online.
5. Once the completed evaluation is received, a credit letter will be e-mailed to you instantly. ■

Prime target: First-year medical residents

The new rules of the Accreditation Council of Graduate Medical Education (ACGME) focus primarily on first-year residents to reduce fatigue and fatigue-related errors. The limits include:

Residency programs must:

- educate faculty members and resident to recognize signs of fatigue and sleep deprivation and on alertness management/fatigue mitigation
- provide a process to maintain continuity of care if a resident is unable to perform his or her duties due to excessive fatigue
- provide sleep facilities and/or safe transportation for residents who may be too fatigued to safely drive home.

Resident Duty Hours

- Duty hours must be limited to 80 hours per week, averaged over a four-week period, including all in-house call activities and all moonlighting.
- First-year residents may not moonlight
- A Review Committee may grant exceptions for up to 10% or a maximum of 88 hours per week to individual programs based on a sound educational rationale.
- All residents must have a minimum of one day off every week, averaged over four weeks. At-home call cannot be assigned on these free days.
- The maximum shift length for first-year residents must not exceed 16 hours. Residents in their second year or greater may be scheduled for a maximum of 24 hours of continuous duty. They may then take care of transitional duties for another four hours.
- Strategic napping, especially after 16 hours of continuous duty and between the hours of 10 pm and 8 am, is strongly suggested.

- In unusual circumstances, residents, on their own initiative, may remain beyond their scheduled period of duty to continue to provide care to a single patient. Justifications for such extensions of duty are limited to reasons of required continuity for a severely ill or unstable patient, academic importance of the events transpiring, or humanistic attention to the needs of a patient or family. They must hand over the care of all other patients and document the reasons for remaining to care for the patient.

- Residents may be scheduled for no more than six consecutive nights of night float and second-year residents and above must have in-house call no more than every third night, averaged over four weeks.

Minimum Time Off between Scheduled Duty Periods

- First-year residents should have 10 hours, and must have eight hours, free of duty between scheduled duty periods.
- Intermediate-level residents [as defined by the Review Committee] should have 10 hours free of duty, and must have eight hours between scheduled duty periods. They must have at least 14 hours free of duty after 24 hours of in-house duty.
- Residents in the final years of education [as defined by the Review Committee] must be prepared to enter the unsupervised practice of medicine and care for patients over irregular or extended periods. There may be circumstances [as defined by the Review Committee] when these residents must stay on duty to care for their patients or return to the hospital with fewer than eight hours free of duty. ■

cal complications was mixed. Of 10 studies included in the review, none showed that longer shifts results in improved resident education. Shorter shifts were associated with fewer medical errors and greater resident well-being.⁵

“How have [the 2003 restrictions in duty hours] affected patients? If you look at the studies as a whole they’re mixed,” says Reed.

“Our review shows the one thing that is consistently improved with these limits is residents’ well-being,” she says. “The magnitude of that improvement is pretty small in more of those studies. Burnout is still a problem with doctors in training, at worrisome levels.”

Focusing the limits on first-year residents makes sense as a way to prevent fatigue-related errors or injuries, Reed says. “Interns are also the least experienced. When you combine inexperience with fatigue, there’s a greater safety risk than in someone who has a lot more experience behind them,” she says.

The American College of Surgeons had argued against further restrictions on duty hours, asserting that it could cause “irrevocable damage to a surgical residency training system that is already severely stressed.”⁷ Yet a systematic literature review of the effect of the 2003 ACGME duty hours limits on surgical residencies concluded: “Limitations had a positive effect on residents but a negative effect on

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 the clinical, administrative and regulatory issues particular to the care of hospital employees affect health care workers, hospitals, or the health care industry at large;
- cite solutions to the problems faced in the care of hospital employees based on expert guidelines from relevant regulatory bodies, or the independent recommendations of other employee health professionals.

surgical faculty. Importantly, duty hours limitations did not adversely affect surgical residents' operating-room experience."⁸

With the 2011 rule changes, there will be further research on the impact of duty hour limits, says Reed. "Since we've had the experience with the 2003 limits, people are in a better position to study this in a more rigorous way," she says. "I think we'll see higher quality research coming out with these new recommendations."

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