



Hospital Employee Health®



Survey: Half of nurses have a high rate of chemical exposure

Exposures may be linked to cancer, asthma, birth defects

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Nurses face myriad chemical hazards that may raise their risk of cancer, asthma and reproductive problems. About half of nurses (52%) have had regular exposure to at least six hazardous agents in their workplace five years or more, including anti-neoplastic agents, aerosolized medications, glutaraldehyde, ethylene oxide, waste anesthetic gases, and housecleaning agents.

Those are findings of a web-based survey of 1,552 nurses by the Environmental Working Group that asked about a range of exposures. Although it was a "convenience sample" — nurses self-selected to participate in the survey — it represents a unique snapshot of the exposures encountered by nurses in their workplace.

It asked nurses about 11 different hazards, including ionizing radiation. The American Nurses Association, Health Care Without Harm, and the Environmental Health Education Center of University of Maryland's School of Nursing collaborated on the survey.

There are no regulatory limits or monitoring requirements for many of the exposures, and the survey found that nurses do not feel their hospitals are doing enough to protect them from exposure.

"What shocked me was how few health protections there are. We looked at 11 different hazards. There are only three hazards that actually have enforceable safety limits," says **Rebecca Sutton**, PhD, a staff scientist with the Environmental Working Group in Oakland, CA. "The safety limits that exist are decades-old. We've got much better data these days, and these data are telling us that risks are greater than we thought and are happening at lower exposure levels."

Sutton's concerns are echoed by others. "It's disturbing to see the level of exposures and the health effects nurses are reporting," says **Stacy Malkan**, communications director with Health Care Without Harm of Arlington, VA, which promotes the use of alternatives to such chemicals as glutaraldehyde and ethylene oxide.

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The National Institute for Occupational Safety and Health (NIOSH) is preparing to conduct a national survey of health care workers and managers to gauge the workplace exposure and compare the exposures among occupations and type of facility. It will ask about chemical hazards such as aerosolized medication, surgical smoke, anti-neoplastic agents, sterilants and disinfectants, as well as lifting, violence, stress, and work hours.

“With this focus on health care, we’re trying to ask detailed questions so we can better understand the hazards,” says **Jim Boiano**, MS, CIH, research industrial hygienist with NIOSH’s

surveillance branch in Cincinnati. NIOSH conducted hazard surveillance surveys in the early 1970s and 1980s, but they were not specific to health care and therefore didn’t have health care-specific questions, he says. NIOSH is soliciting comments on its survey questionnaire and expects to conduct the survey in 2009. (*Editor’s note: More information on the survey may be available at www.cdc.gov/niosh.*)

Other studies have found higher rates of occupational asthma among health care workers, such as nurses and respiratory therapists. (*See **Hospital Employee Health**, February 2006, p. 16.*) And some say it’s common sense that nurses have hazardous exposures. “Hospitals have a distinct smell. Well, it isn’t cookies baking. It’s chemicals,” says **Nancy Hughes**, RN, MS, director of the American Nurses Association’s Center for Occupational and Environmental Health in Silver Spring, MD. Hughes calls the NIOSH study long overdue.

Occ health not taken seriously

The Environmental Working Group study revealed some troubling connections that suggest a possible link between the hazardous exposures and cancer and birth defects:

- 41% of the 1,500 nurses said they had exposure to antineoplastic agents. Those who prepared or administered the drugs at least once a week for at least 10 years (high exposure) had cancer rates that were 42% higher than nurses with low or no exposure. Children born to nurses who reported high exposures during pregnancy were 67% more likely to have birth defects.

- Children of nurses with at least weekly exposure to waste anesthetic gases during pregnancy had rates of musculoskeletal birth defects that were eight times higher than nurses with lower or no exposure.

- About half (52%) of nurses reported exposure to glutaraldehyde, and about 20% had high exposures. Those with the highest exposure had a rate of asthma that was 46% higher than those with lower or no exposure.

- Only 38% of the nurses said they felt “chemical exposure concerns are a significant part of the occupational health program at my institution.” Only 46% agreed that “occupational health is taken seriously at my place of employment.”

“The sorts of hazards we examined were not a part of their education in health and safety in the hospital,” says Sutton, adding that “there are plenty of actions that administrators can take

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Editor: **Michele Marill**, (404) 636-6021, (marill@mindspring.com).
Senior Vice President/Group Publisher: **Brenda Mooney**, (404) 262-5403, (brenda.mooney@ahcmedia.com).

Associate Publisher: **Coles McKagen**, (404) 262-5420, (coles.mckagen@ahcmedia.com).

Managing Editor: **Gary Evans**, (706) 310-1727, (gary.evans@ahcmedia.com).

Senior Production Editor: **Nancy McCreary**.

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Editorial Questions

For questions or comments call **Michele Marill** at (404) 636-6021.



right now to start protecting nurses.”

For example, substitutes are available for some products such as glutaraldehyde or volatile house-keeping disinfectants. Ventilation systems can reduce exposure to waste anesthetic gases.

The survey, which was conducted online from March 2005 to March 2006 and received responses from all 50 states, is also a mechanism to raise awareness, says Sutton.

“Our report is unique in that we look at a broad range of chemicals and a broad range of health effects,” says Sutton. “However, it is in line with previous research that has linked some of these exposures to increased miscarriage or cancer.”

While more research is needed, nurses should become more aware of the chemicals they encounter in their work and should become involved in efforts to seek substitutes, says Hughes.

(Editor’s note: The survey on Nurses’ Health and Workplace Exposures to Hazardous Substances is available at www.ewg.org/sites/nurse_survey/analysis/summary.php. CleanMed 2008, a conference on “environmentally sustainable health care,” will be held in Pittsburgh May 20-22, 2008. More information is available at www.cleanmed.org/2008/home.html.) ■

Nurse environment still seen as at-risk

Some progress made since IOM report

Five years ago, the Institute of Medicine (IOM) warned that patient safety relies on a safe nursing work environment, including adequate staffing, limiting shifts to no more than 12 hours, and a better organizational climate.

Today, although strides have been made, the risks identified by the IOM remain, according to an IOM panel member and nurse advocates.

“In general, [hospital administrators] are beginning to recognize that creating an attractive, sustainable environment is important,” says panel member **Edward O’Neil**, PhD, professor of medicine and nursing at the University of California-San Francisco, where he is director of the Center for the Health Professions. Yet if the nursing shortage begins to ease with a rise in enrollment in nursing schools, hospitals may become less committed to making necessary changes, he cautions.

The IOM panel was primarily concerned about creating a “culture of safety” for patient safety,

with good communication among health professionals, nonhierarchical decision-making, and blame-free reporting of near-misses as well as errors.

“[T]he typical work environment of nurses is characterized by many serious threats to patient safety. These threats are found in all four of the basic components of all organizations — organizational management practices, work force deployment practices, work design, and organizational culture,” the panel said in the report, *Keeping Patients Safe: Transforming the Work Environment of Nurses*.

Inadequate staffing, fatigued nurses and other organizational problems also affect worker safety, says **Linda Aiken**, PhD, FAAN, FRCN, RN, professor and director of the Center for Health Outcomes and Policy Research at the University of Pennsylvania in Philadelphia.

“We have growing scientific evidence about what the hazards are for errors that affect both staff and patients, but we haven’t seen a dramatic change in the safety of the practice environment,” she says. “There’s no evidence that the work environment of nurses has been transformed in the majority of hospitals.

“One of our recent studies shows that despite the whole series of Institute of Medicine reports on patient safety, the burnout levels among nurses are just as great as they were before 1999 when the [first] IOM reports came out,” she says.

Meanwhile, failure to protect nurses from injury worsens the problems, says **Bill Borwegan**, MPH, director of health and safety for the Service Employees International Union (SEIU) in Washington, DC. He notes that an estimated 12% of nurses leave the profession each year because of back injuries — roughly the same number needed to fill the nursing shortage.

“We could solve the nursing shortage tomorrow if we retained the skilled nurses we already have in the workplace rather than crippling them,” he says. “We have a solution to the problem and it’s being ignored.

“The lack of a safety culture in health care is really at the root of all of this. I’d like say we’re making improvements, but it’s hard to measure,” Borwegan says.

Magnet hospitals show better outcomes

Here’s one positive sign of change: Some 288 hospitals have attained “magnet” status that requires them to meet standards that call for

staffing models that ensure adequate experienced nurses, policies that encourage communication and nurse involvement in decision making and leadership.

About an equal number of hospitals are currently working toward magnet status, says **Cyndy Hagstrom**, RN, MSN, BC, outcomes analyst with the Magnet Recognition Program of the American Nurses Credentialing Center in Silver Spring, MD. The ANCC is a subsidiary of the American Nurses Association.

“That’s about a tenth of the acute care hospitals in the United States,” including those that are in the application process, says Hagstrom. She notes that many other hospitals seek to achieve the same goals but don’t apply for magnet status.

The explosion of interest in magnet status shows that hospitals are interested in engaging their nurses and involving them in improvements, says **Bobbi Kimball**, RN, MBA, a health care management consultant who previously worked as a chief nursing officer and co-authored a Robert Wood Johnson report on the nursing shortage.

“The magnet nursing model promotes a professional work environment,” she says. “Hospitals and hospital systems have figured out [that nursing] is a valuable asset and they need to protect it.”

In studies comparing the original magnet with nonmagnet hospitals, Aiken found lower patient mortality in the magnet facilities — even after adjusting for staffing.¹ In other studies, she found the magnet qualities led to less burnout among nurses, greater patient satisfaction, and even fewer needlesticks.

“There’s a lot of evidence that this blueprint that these hospitals are trying to implement actually creates a safer environment,” she says. Hospitals also face increasing regulatory pressure to provide minimum staffing. California was the first to set specific nurse-patient ratios, but 10 other states — including Illinois, Washington, and Oregon — have laws or regulations that address nurse staffing. While having adequate staff is critical, ratios will not solve the problems outline by the IOM, says O’Neil. The system of care — using a team approach — and creating a culture of safety is more important than a number, he says.

Nurses worry about health and safety

The nurses themselves do not necessarily believe that their work environment has improved. In a 2007 American Nurses Association survey of 1,039 nurses, about 90% of the respondents said health

and safety concerns would be a determinant in their decision about whether or not to stay in the profession.

“Nurses are still concerned about the conditions of their workplace,” says **Nancy Hughes**, RN, MS, director of the ANA’s Center for Occupational and Environmental Health in Silver Spring, MD.

For example, 58% of nurses said they did not feel they had an opportunity to influence the selection of sharps safety devices. The U.S. Occupational Safety and Health Administration requires hospitals to include frontline health care workers in evaluation and selection of devices.

Nurses also are worried about patient handling and violence, Hughes says. “We have a long way to go to make [the workplace] safe,” she says.

Quoting ANA president Rebecca Patton, Hughes says, “We don’t have a shortage of nurses. We have a shortage of places nurses want to work.”

(Editor’s note: The IOM report, Keeping Patients Safe: Transforming the Work Environment of Nurses, is available at www.iom.edu/?id=19376.)

Reference

1. Aiken LH, Smith HL, Lake ET. Lower Medicare mortality among a set of hospitals known for good nursing care. *Med Care* 1994; 32:771-787. ■

NIOSH action plan: Create better respirators for HCWs

Extensive plan focuses on design, effectiveness

If an influenza pandemic strikes, public health officials may not know enough about influenza transmission and respiratory protection to adequately protect health care workers.

Acknowledging that weakness, the National Institute for Occupational Safety and Health (NIOSH) has proposed an extensive “action plan” to spur research and improve design of respiratory protection.

“Due to this lack of knowledge on influenza transmission, it is not possible at the present time to definitively inform health care workers about what [personal protective equipment] is critical and what level of protection this equipment will provide in a pandemic,” NIOSH stated.

In fact, the respirators currently available to health care workers may not be practical for prolonged use during a pandemic. In a study at the

North Florida/South Georgia Veterans Health System in Gainesville, FL, health care workers wore different types of respirators for an entire eight-hour work shift.

“What we have found is that most of the respirators we use regularly in our health care system are typically not tolerable for long periods,” says **Lewis J Radonovich**, MD, director of Biosecurity Programs in the Office of Program Development at the VHA in Gainesville.

“If we were to face an influenza pandemic, how would our health care workers react if they had to wear a respirator for long periods of time, [as did] the health care workers in Toronto during the SARS crisis in 2003?” he asks.

The proposed NIOSH action plan would call for:

- surveillance of influenza transmission that would seek to connect the hospital-based spread of flu to infection control practices and the use of respirators;
- a study of the effectiveness of surgical masks and N95 filtering face-piece respirators in protecting health care workers from aerosolized particles from coughing patients;
- studies of the wearability of respirators for long periods of time, including the impact on oxygen and carbon dioxide levels of health care workers;
- the establishment of performance requirements for N95s and powered air-purifying respirators (PAPRs) that are specific to health care;
- studies on fit-testing, decontamination, and reusability of respirators.

“This is going to be the foundation of what moves us forward,” says **Maryann d’Alessandro**, PhD, associate director for science at NIOSH’s National Personal Protective Technology Laboratory in Pittsburgh, who noted that the research may lead to a better design for respirators used in health care.

Pandemic raises respirator issues

Concerns about pandemic influenza have brought respiratory protection to the forefront. The current respirators — including N95s and PAPRs — were designed for industrial use, not protecting against aerosolized agents.

The NIOSH report was drafted in response to a 2007 Institute of Medicine report, *Preparing for an Influenza Pandemic: Personal protective Equipment for Healthcare Workers*. The IOM panel called for better design for respirators and a “culture of safety” in hospitals.

Employee health professionals welcome the

greater research focus on respiratory protection. The Association of Occupational Health Professionals in Healthcare in Warrendale, PA, plans to work with NIOSH on issues such as creating the most effective and efficient fit-testing protocol.

“We want to protect our employees, but we want it to be based on science,” says **MaryAnn Gruden**, MSN, CRNP, NP-C, COHN-S/CM, association community liaison for AOHP and employee health coordinator of Western Pennsylvania Hospital (West Penn) in Pittsburgh.

Advocates for health care workers also laud the NIOSH plan as an opportunity to develop respirators that are specifically designed for health care. “We have 10 million-plus health care workers in this nation,” notes **Bill Borwegen**, MPH, health and safety director of the Service Employees International Union (SEIU). “Can we design a respirator that doesn’t need to be fit-tested? Can we design a PAPR that’s focused on [the needs of] the health care worker? Can there be a whole line of respirators that’s designed just for the health care workplace?”

“This research will move us toward more of an evidence-based model so we have greater confidence in the protections that health care workers are given,” he says.

The key question now is whether NIOSH will have the funding to follow through with the research. NIOSH should tap into funds that are designated for pandemic influenza preparedness, Borwegen says.

Meanwhile, NIOSH is expected to release new proposed criteria for N95 respirators which would require manufacturers to meet standards for “total inward leakage.” Respirators would have to have a minimal level of fit — even without fit-testing.

Later this year, NIOSH is scheduling a meeting to assess the current state of technology of respirators.

NIOSH also is continuing to study the attributes of surgical masks, including the potential for covering N95s with surgical masks to protect them from exterior contamination. A NIOSH study showed that wearing an N95 under a PAPR hood provides “significant additional protection,” which may be particularly important for health care workers performing aerosol-generating procedures, according to the NIOSH action plan.

Health care workers sometimes confuse the protective features of a surgical mask, which is designed to protect patients from the respiratory droplets of health care workers, and respirators, which are designed to protect health care workers from aerosolized infectious particles.

“One of the challenges for the health care field is to clearly understand the differences between respirators and medical masks as well as their appropriate uses,” NIOSH concluded in the action plan.

(Editor’s note: A copy of the NIOSH action plan is available at www.cdc.gov/miosh/review/public/129/pdfs/ltr022208.pdf.) ■

Monitor hand hygiene to reach 90% compliance

Other IC approach still needed to reduce infections

As concern grows over antibiotic-resistant organisms, health care workers never have been under greater scrutiny for their compliance with hand hygiene.

It is not an infectious disease cure-all. In fact, one recent study failed to show a decrease in infection rates with a rise in hand hygiene,¹ but programs that use periodic monitoring and feedback to attain very high rates of compliance — 80% or higher — are reporting that hand hygiene can have a significant impact on the spread of hospital-based infections.

“I think it’s extremely important, perhaps the most important thing we do in infection control,” says **Don Goldmann**, MD, senior vice president of the Institute for Healthcare Improvement in Cambridge and professor of pediatrics at Harvard Medical School.

Hand hygiene has long been a goal of IHI, which provides a free toolkit for monitoring compliance. (For more information, see p. 55.) The alcohol-based gels have enabled hospitals to reach high levels of compliance that were not possible with the abrasive and more time-consuming soap-and-water method.

But hospitals must do more than just install gel dispensers. They must create a hand hygiene program and includes monitoring and feedback and maintains dispensers that are conveniently located and frequently refilled, Goldmann says.

“You can’t expect [hand hygiene compliance] to happen automatically if you don’t put the systems in place to support it,” he says.

Last fall, when administrators at Massachusetts General Hospital in Boston were preparing to issue bonuses to employees, they decided to take an opportunity to emphasize the importance of hand hygiene. Half of the bonus was dependent on the

hospital reaching its goal of 90% compliance with hand hygiene both before and after patient contact.

Even the administrators would not receive the bonus if the staff failed at this mission.

It took a few months, but the hospital met its goal — and employees received their bonuses. Meanwhile, they understood that administrators considered hand hygiene to be an important component of quality patient care, says **David Hooper**, MD, chief of the infection control unit at Mass General. “It also set up the concept that we’re all in this together,” he says.

This was not a one-time campaign. The hospital has used other incentives, as well, such a pizza parties for units that achieved high rates of compliance, and it provides continual education and accountability for hand hygiene.

The infection control department devotes 1½ FTE employees to coordinate the hand hygiene program, including monitoring through observations. They conduct about 2,000 observations per quarter, rotating on different floors at different times of day. Units receive feedback quarterly.

About eight years ago, the hospital had hand hygiene compliance rates that were similar to the national average — about 40%. But a persistent focus on the issue not only raised the compliance — but created a sustainable program, says Hooper.

“It’s difficult to change behavior immediately, but over several years, our hand hygiene rates have gone up steadily and consistently and stayed up,” he says. “Our rates of hospital-acquired cases of MRSA [*methicillin-resistant Staphylococcus aureus*] have gone down 2.9-fold in a steady downward trend. Before that, we were seeing a pretty steady upward trend.”

Hand hygiene isn’t the only component of the infection control effort. The hospital also has stepped up its cleaning of patient rooms, he says. “It’s really back to basics, [like] your mother told you. Wash your hands and clean your room,” he says. “The concepts are very simple and, if done well, they can be very effective.”

Improving hand hygiene will not necessarily bring immediate results related to hospital-acquired infections. But alcohol-based gels are readily accepted by health care workers and can become a part of the health care routine.

Those were conclusions of a study at the University of Nebraska in Omaha compared two intensive care units — one that used alcohol-based gel and one without. With the gel, compliance with hand hygiene doubled from 35% to 70%. After a year, the gel was removed from one ICU and introduced into

the other. The hand hygiene compliance dropped in the first ICU. The study was conducted from 2001 to 2003, when alcohol-based gels became widely available and the Centers for Disease Control and Prevention recommended their use.

“They responded by falling back to the baseline hand hygiene rate,” says lead author **Mark Rupp**, MD, professor of infectious disease and director of the Department of Healthcare Epidemiology at the University of Nebraska Medical Center. “They sort of objected with their hands by dropping their hand hygiene compliance [when gels were removed].”

Health care workers using the hand gel had less microbial carriage on their hands. However, longer nails and wearing rings were associated with more microbes, Rupp says. “We found when the nails got anything longer than 2 mm, we saw increased carriage of microbes,” he says. “If you hold your hand palm toward your face and you can see any nail above your fingers, they’re probably too long.

Rupp and his colleagues were disappointed that they didn’t find a reduction in hospital-acquired infections such as MRSA or *Clostridium difficile*. The infection rates were low before the study began, which would make it more difficult to detect differences, he says.

There are other possible reasons that the study didn’t find that gels had an impact on infection rates, Rupp says. “The compliance was 70%, it wasn’t 90% or 100%,” he says. “There may be a threshold you have to cross over for hand hygiene to have a demonstrable effect and we didn’t cross that threshold.”

Yet Rupp says there’s still an important lesson: Hospitals must use a multipronged effort to reduce infections. “We may have to combine hand hygiene with other infection control practices in order to have an effect,” he says.

Meanwhile, the medical center is developing an ongoing monitoring program for hand hygiene compliance. Employees on each ward are trained to conduct hand hygiene observations and record the information in a web-based data entry system. Data on compliance are available in monthly reports.

“By having these observers and rapid feedback to the wards, we’ve been able to increase hand hygiene compliance up to the 80% to 90% range,” Rupp says.

Reference

1. Rupp ME, Fitzgerald T, Puumala S, et al. Prospective, controlled, cross-over trial of alcohol-based hand gel in critical care units. *Infect Control Hosp Epidemiol* 2008; 29:8-15. ■

Five ways to measure hand hygiene compliance

The Institute of Healthcare Improvement’s (IHI) *How-to Guide: Improving Hand Hygiene*, was developed in conjunction with the Centers for Disease Control and Prevention, the Society of Healthcare Epidemiology of America, and the Association for Professionals in Infection Control and Epidemiology. It includes monitoring checklists. To monitor hand hygiene compliance, IHI suggests the following measures:

1. The percentage of caregivers who answer all five questions correctly on a standardized hand hygiene knowledge assessment survey.

Consider selecting a random sample of 10 clinical providers from diverse disciplines each month (or at other intervals specified by the hospital) to answer a five-question survey along with a competency check (Measure #2). (Specific questions can be designated by the hospital and/or selected from a IHI sample survey at http://www.shea-online.org/Assets/files/IHI_Hand_Hygiene.pdf). An alternative strategy is to assess knowledge using an intranet-based system. Hospitals could require employees to take an annual online test for or could conduct more frequent sampling.

An alternative strategy is to assess knowledge by using an intranet-based system. Hospitals could require employees to take an annual online test for or could conduct more frequent sampling.

2. The percentage of caregivers who perform all three key hand hygiene procedures correctly.

Randomly select a sample of 10 clinical providers from diverse disciplines each month (or at other intervals specified by the hospital) and observe them to determine if they perform the three key hand hygiene procedures correctly: hand washing, alcohol-based hand rub, and gloves. This method has the strength of direct evaluation and feedback, but is time consuming. It also provides an opportunity to ensure that providers are not wearing artificial nails or nail extenders and have their nails trimmed to less than ¼ inch.

Alternatively, competence can be assessed by monitoring hand hygiene practices during actual work. This has the advantage of being unobtrusive and integrated with other monitoring activities, but precludes direct feedback and adds complexity to the monitoring process.

- **Hand washing:** Wash hands with soap and water, including contact with soap for at least 15

seconds, covering all surfaces (palm, back of hand, fingers, fingertips, and fingernails); rub with friction. Turn off water without recontaminating hands: If the faucet is hand-operated, use paper towel to turn off the faucet; if the faucet is automatic, credit for compliance is given for correct performance. Dry hands with fresh paper towel.

- **Alcohol-based hand hygiene product** (rub, gel, or foam): Use enough to cover all surfaces (palm, back of hand, fingers, fingertips, and fingernails); rub until dry (at least 15 seconds), which ensures sufficient volume has been applied.

- **Remove gloves using correct technique** (so as not to contaminate the hands with a contaminated glove surface).

3. The percentage of bed spaces at which there are clean gloves in appropriate sizes and dispensers (wall-mounted or free-standing bottles) for alcohol-based hand rub/gel/foam that contain product, are functional, and dispense an appropriate volume of product.

Make direct observations monthly (or at other intervals specified by the hospital) on the same nursing units where Measures 1 and 2 are monitored. Alternatively, availability can be assessed periodically as part of routine multidisciplinary rounds.

- **Dispenser of alcohol-based product must be**

present, readily accessible at the point of care, not empty, functional, and capable of delivering the appropriate volume of product. If hand/pocket bottles are used, an adequate supply must be readily available and accessible on the ward.

- **At least two sizes of gloves should be available and readily accessible at the point of care.**

4. The percentage of patient encounters in which there is compliance by health care workers with all components of appropriate hand hygiene and glove practices.

Compliance is monitored with direct observation by a trained observer using a standardized procedure and form. Independent observers are strongly recommended, preferably individuals who routinely are on the ward for other purposes and are not part of the care team. (This independent monitoring can be reinforced with monitoring by the care team during routine multidisciplinary rounds, which permits immediate assessment and feedback.) Observation periods should be 20-30 minutes (repeated if necessary) so that approximately 25-30 patient encounters are observed.

The emphasis should be on observing complete encounters so that the proper measure of *complete* compliance with all components of the hand hygiene and glove intervention package can be calculated. Divide the number of encounters in which

Type of contact	Hand hygiene before	Hand hygiene after	Use of gloves
Patient contact that involves an invasive procedure (i.e., insertion of an intravascular catheter, urinary catheter, or other invasive device)	Yes	Yes	Yes
Patient contact that involves direct contact or potential contact with blood, body fluids, secretions (except sweat), excretions, mucous membranes, and nonintact skin (i.e., wounds, ulcers)	Yes	Yes	Yes
Patient contact not involving those noted above (i.e., taking vital signs, examination, repositioning, etc.)	Yes	Yes	*
Contact with the patient environment	--	Yes	*

* *Gloves should be worn for all types of contact if the patient is on isolation precautions that require the use of gloves for contact with the patient and the environment, or if there is a unit-based procedure for universal gloving (wearing gloves for contact with all patients and their immediate environment).*

all components were performed correctly by the number of encounters observed and multiply by 100 to calculate the percentage compliance rate.

“Complete compliance” is defined by the adherence with the hand hygiene techniques and use of gloves as outlined in the table on p. 56. Gloves should be worn for all types of contact if the patient is on isolation precautions that require the use of gloves for contact with the patient and the environment, or if there is a unit-based procedure for universal gloving (wearing gloves for contact with all patients and their immediate environment).

Additional monitoring: The following additional measure also can be used, but it does not replace direct observation of health care worker compliance during patient encounters:

- Volume of alcohol-based hand hygiene product consumed per week (or per month) divided by the number of patient days in the corresponding time period.

- Self-reporting by personnel or patients is not a reliable measure of compliance.

(Editor’s note: A copy of the guide and tools is available at www.shea-online.org/Assets/files/IHI_Hand_Hygiene.pdf.) ■

OSHA: Keep updating your sharps safety devices

32 hospitals receive sharps-related citations in 2007

Don’t get too comfortable with your current safety sharps. Failing to keep up with new technology could make you vulnerable to a citation by the U.S. Occupational Safety and Health Administration.

Last year, 32 hospitals received citations for violating the Bloodborne Pathogens standard. Many of them had multiple violations, which included failing to use safety devices that are available, and failing to update the annual exposure control plan.

OSHA requires hospitals to consider new technologies every year as the exposure control plan is updated.

“We do find that some facilities tend to use the same devices they are accustomed to using for a long time,” says **James Johnston**, MS, CIH, assistant regional administrator in OSHA’s Philadelphia office, which has a Special Emphasis Program on Bloodborne Pathogens. “Sometimes they run into problems with physicians who have been trained to

use certain devices and are reluctant to try another device that might be safer,” he says.

In fact, devices have changed substantially since the “first-generation” products, says **Ron Stoker**, MS, executive director of the International Sharps Injury Prevention Society (ISIPS) based in South Jordan, UT. For example, early safety scalpels were lightweight, and some surgeons felt they uncomfortable with their feel. Newer safety scalpels are weighted and have a similar feel to the conventional version, he notes.

There are new safety products every month, Stoker says. Of course, hospitals don’t need to evaluate all of them — but they should review different categories of safety devices and look into new products. For example, hospitals could invite vendors to an annual safety fair and ask them to bring new products that can be evaluated by staff.

“Most of us don’t like change. Most of us like to have the things we’re used to,” he says. “But life changes, and we need to . . . make new decisions.”

Hospitals should seek the most “passive” devices — those that don’t need to be activated by the health care worker. Or even better, they should eliminate sharps whenever possible. For example, wound closure adhesives such as Steri-Strips (a 3M product, solutions.3m.com/wps/portal/3M/en_US/SK/SkinHealth/brands/steri-strip/) or Dermabond (an Ethicon product, www.dermabond.com) eliminate the need for suturing.

If you can’t avoid suturing, consider products that reduce needlesticks, suggests Stoker: SutureTek Inc. (www.suturetek.com) provides devices that have a mini-sewing mechanism for sterna and fascia closure. DigiCap (produced by Vienex USA of Reno, NV; www.digicap.net) offers a thimble-like device to protect the surgeon’s fingers during suturing.

ISIPS maintains a list of sharps safety products on its web site (www.isips.org) and Stoker is co-author of the *Compendium of Infection Control Technologies* (Biomedical Safety Publishing, \$489.95).

Switching to a new device may not be easy. Frontline workers must be involved in the evaluation of new technologies. Implementing a new device will require extensive training of employees.

But keeping up with change in sharps safety is just as important as other advances in health care, says Stoker. In fact, technological change is a part of life.

“I had a ’66 Barracuda. I loved that car. But you know what? Baby, we’ve come a long way since then,” he says. “Don’t just settle for your ’66

Barracuda. Keep looking to the future at the new products coming in. You might find one you like a lot more — and you'll be in compliance [with OSHA]." ■

Hospital designs for safe patient handling

230 ceiling lifts installed in rooms

When Peace Health opens its new hospital in Eugene, OR, it will have the latest and greatest technology, private rooms, and attractive décor. But there's one more attribute Peace Health is pitching, especially to nurses: The new hospital will be a low-lift facility.

With an expanded number of beds, the hospital will need to recruit more nurses. And offering a solid patient handling program is a strong recruitment and retention tool, says **Lisa Rodriguez, RN, COHN, HEM**, Peace Health Oregon Region safety coordinator.

The new hospital will have tracks for ceiling lifts in most patient rooms and will supplement those with sit-to-stand lifts and repositioning devices, she says.

"We'll have the state of the art as we move to the new facility," says Rodriguez. "We need to get on the cutting edge with our work processes as well as our environment."

Research demonstrates that ceiling lifts are the best at reducing stresses on caregivers' backs, says **Tom Waters, PhD**, research safety engineer in the NIOSH Division of Applied Research and Technology in Cincinnati.

"Ceiling lifts require much less force to push and pull patients. Floor lifts require that you wheel the person around [to maneuver to a chair or toilet]," he says.

With easily accessible lifts, Peace Health may even be able to attract nurses with back injuries who are unable to work at facilities that still rely on manual lifting, says Rodriguez. "We will see that our physical requirements to be a caregiver are probably different in the new facility," she says.

It has been a long road to arrive at this new, comprehensive safe lifting program. Lift programs aren't transformed overnight, and hospitals must meet the challenge of sustaining the improvements.

Peace Health installed its first ceiling lifts in 1999, starting with the Intensive Care Unit and expanding

CNE questions

17. In the Environmental Working Group's survey on nurses' workplace exposures, what percentage of nurses reported regular exposure to six or more hazardous agents for at least five years?
 - A. 19%
 - B. 32%
 - C. 52%
 - D. 61%
18. According to Linda Aiken, an improved organizational environment for nurses could have what benefit?
 - A. Improved patient mortality.
 - B. Greater patient satisfaction.
 - C. Fewer needlesticks.
 - D. All of the above
19. The "action plan" on personal protective equipment by the National Institute for Occupational Safety and Health is designed to primarily address what concern?
 - A. Onerous fit-testing at hospitals.
 - B. Inadequate supply of respirators and other protective devices.
 - C. Barriers to health care worker use of PPE.
 - D. Protections of health care workers from pandemic influenza.
20. According to a study by Mark Rupp, MD, which of the following was a result of the use of alcohol-based hand gels?
 - A. The rate of hand hygiene compliance doubled.
 - B. The rate of hospital-acquired infection dropped by half.
 - C. The gels caused hand irritation for HCWs.
 - D. The hand gels had no effect on hand hygiene.

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

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. ■

to neurology. For a while, patient handling injuries in those areas actually dropped to zero. But the program had some fatal flaws, says Rodriguez.

Each department was responsible for replacing the slings, training staff and maintaining the equipment — but they didn't receive a specific budget for those items. Gradually, the slings disappeared; sometimes they wouldn't come back from the laundry to the targeted unit. The staff didn't feel comfortable with the lifts and didn't have regular training.

Patient handling injuries began to rise again. "We did not have a sustainable program," says Rodriguez.

Those were valuable lessons learned. About three years ago, Rodriguez began trying to resurrect the safe patient handling program — even without a designated budget. She used some money from an Oregon program that provides funds to help injured employees return to work after a musculoskeletal injury and purchased some inexpensive lateral transfer devices, such as Slipp sheets.

Even with those modest steps, the injury rates declined for two years in a row.

As the two-hospital system began plans for a new facility, Rodriguez and her colleagues wanted patient handling to be considered in the design. They found a good reception from the chief product planner — who is a former nurse.

"The timing was right and the passion was there to see how we could make it happen," says Rodriguez.

But they also had to win support from the hospital administration. About 80% of the hospital's patients are at least partially dependent, she says. Some units need specialized slings and training, such as orthopedics. Rodriguez developed a business plan showing the cost savings from injury prevention with the lifts. She touted patient safety and comfort, including a lower likelihood of skin tears in frail elderly patients.

But the clincher was video vignettes of injured employees that she showed to the executive team and governing board. "Sometimes just being able to justify it monetarily is not all that you need," she says. "They talked about how they were injured handling patients."

Rodriguez also worked with physical therapy to gain their support and emphasize the advantages to patients. "Sit-to-stand lifts actually enhance therapeutic movement," she says. They make it easier for patients to move from the bed to the chair and encourage mobilization, she says.

As the new hospital prepared to open, all caregiving employees received an hour-long training in the new patient handling equipment. The education program is now standardized. Sling purchase also is centralized with materials management.

Because of concerns about pushing and pulling beds, stretchers and wheelchairs, carpeting was taken out of the hospital design in high-traffic areas. Instead, there will be laminate flooring.

Before purchasing any carpet, Peace Health tested it with stretchers and beds to make sure it wouldn't require undue force. And the hospital also purchased powered beds and stretchers to use with the bariatric program.

There will be about 230 ceiling lifts in the new building. Rodriguez continues to work with the operating room and emergency department to implement safe patient handling devices.

Staff will complete a mobility assessment on every patient, which will be linked with a patient fall prevention program.

"We know all the pieces we have to have to make it sustainable," says Rodriguez. ■

OSHA warns 60 hospitals on high injury rates

Sixty hospitals were among the 14,000 employers nationwide who received cautionary letters from the U.S. Occupational Safety and Health Administration for high rates of employee injury.

Each year, OSHA identified workplaces with the highest rates of injury and illness based on a survey of 80,000 worksites. Those with 5.4 or more injuries resulting in days away from work, restricted work activity, or job transfer (DART) for every 100 full-time equivalent employees (FTEs) received the letters. The national average

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■ Hospital seeks latex safety for employees, patients

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■ Assessment tool aids in safe patient handling

was 2.3 DART injuries and illnesses per 100 FTEs.

According to the U.S. Bureau of Labor Statistics, “nursing aides, orderlies, and attendants” had among the highest incidence rates for injuries resulting in days away from work — 526 per 10,000 workers. The rate was higher than for construction workers or heavy and tractor-trailer truck drivers, largely due to patient handling.

OSHA suggests employers work with its consultation service or their workers’ compensation insurer to lower injury rates. ■

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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