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THE PRACTICAL GUIDE TO KEEPING HEALTH CARE WORKERS HEALTHY

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Asthma triggers in hospitals lead to ER visits, employee absenteeism

'Any hospitalization or ER visit for asthma is preventable.'

There's a hazard in hospitals that hits every hot button for employee health. It causes occupational illness and even fatalities, raises the costs of medical claims, and increases absenteeism. Because it's in the air we breathe, it could affect significant numbers of employees — and could even harm vulnerable patients.

Indoor air quality is an important focus for occupational health, wellness, and the "greening" of America's hospitals. Asthma triggers in hospitals include chemicals, medications, cleaners, and even baking products in the cafeteria. An estimated 10% to 23% of new onset asthma is caused by occupational exposures.[1] And hospitals have among the highest rate of occupational asthma, surveillance data show.[2]

"There are several hundred chemicals that are asthmagens known to be capable of causing asthma in people who have never had it before. Many of those same chemicals can trigger an asthma attack in someone who's already been diagnosed with it," says **Polly Hoppin**, ScD, research professor and program director of the Lowell Center for Sustainable Production at the University of Massachusetts-Lowell. Many of those chemicals, such as glu-

Special Report: Wellness, Employee Health and the Health Care Worker

A cost-saving combo

In this special issue of *Hospital Employee Health* we explore how risk assessment, hazard reduction, and wellness programs can help reduce the incidence and severity of serious chronic diseases such as asthma, heart disease, diabetes, and high blood pressure.

taraldehyde, formaldehyde, and ethylene oxide, are found in hospitals.

Hoppin and her colleagues analyzed the business case for prevention and better care for asthma in the workplace. An asthma quality improvement program that provides education and encourages self-management can save $1.52 to $9.84 for every dollar invested, they found.[3]

Uncontrolled asthma leads to unnecessary emergency room visits and hospitalizations. It also is the fourth leading cause of work absenteeism. Employees with asthma have medical costs that are 2.5 times higher than those without asthma.[4]

Addressing asthma requires a multi-pronged approach that includes employee health as well as wellness/health promotion and the involvement of human resources. "If you're going to tackle asthma across the hospital, there needs to be an integrated approach that takes into consideration three arenas — insurance coverage, a workplace-based wellness program, and ensuring that the work environment is asthma friendly," says Hoppin.

Success story: Latex alternatives

Hospitals already can point to a major accomplishment in the efforts to reduce occupational asthma: Eliminating powdered latex gloves and substituting them with powder-free, vinyl, nitrile and other alternatives. One study found a two-fold increase in asthma risk from latex gloves from 1992 to 2000 but not after 2000, when hospitals began moving away from powdered-latex gloves.[5]

That is a model for use of substitutions to reduce or eliminate exposures to other respiratory hazards, says **Margaret S. Filios**, SM, RN, a captain in the U.S. Public Health Service and epidemiologist with the Surveillance Branch of the Division of Respiratory Disease Studies at the National Institute for Occupational Safety and Health in Morgantown, WV.

"It reduced the incidence of work-related asthma in hospitals. That was a real success story," says Filios, noting that substitution is at the top of the "hierarchy of controls" as the preferred way to address a hazard.

Now, hospitals are switching to "greener" chemicals for cleaning, although Hoppin cautions that some products that claim to be "green" may still have asthmagenic properties. Look closely at ingredients for known asthmagens and look for products that have "green" certification, she advises.

The U.S. Federal Trade Commission recently issued a new "Green Guide" to clarify what kinds of environmental claims manufacturers can make about their products. Green Seal, a non-profit that certifies products and services, tightened its standard for cleaning products. Among other criteria, the products cannot contain asthmagens as identified by the Association of Occupational and Environmental Clinics. (*See resource box on p. 3.*)

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TABLE 2. Potential Exposures to Agents Known to Cause or Exacerbate Asthma by Job Type

Substance	Cleaners, Disinfectants & Sterilants															
	Cleaners	Disinfectants (can include glutaraldehyde, formaldehyde)	Floor Finish strippers	Glutar-aldehyde	Formalde-hyde*	Ethylene Oxide	Latex	Pesticides	Flour	Acrylates	VOCs	Phthalates	Fragrances	Env. Tobacco Smoke (designated smoking areas)	Biologic Allergens	Medicinal Drugs
Location – Jobs																
Radiology																
X ray tech	√			√			√								√	
Dark room tech	√			√											√	
Laboratory																
Chemists	√	√		√	√		√								√	
Techs	√	√		√	√	√	√								√	
Animal Care																
Researchers	√	√		√	√		√								√	
Lab Workers	√	√		√	√	√	√								√	
Animal Handlers	√	√					√								√	√
Cage Washers	√	√					√								√	
Nursing																
Patient Care	√	√					√					√			√	√
Special Procedures	√	√		√			√					√			√	
Surgery	√	√		√			√			√		√			√	
Orthopedics	√	√					√			√						
Cardiology	√	√		√			√								√	
Dental Clinics	√	√					√			√						
Facilities																
Maintenance	√						√			√	√	√			√	
Painters	√						√			√	√	√			√	
Housekeeping																
Floor Care	√	√	√				√				√	√	√		√	
Grounds							√	√	√						√	
Room Cleaning	√	√					√				√	√	√		√	
Mortuary																
Medical examiners	√	√			√	√	√								√	
Support	√	√			√	√	√								√	
Central Sterile																
Techs	√	√		√		√	√									
Maintenance	√	√		√		√	√									
Supervisors	√	√		√		√	√									
Dietary																
Bakers	√								√							
Endoscopy																
Nurses	√	√		√		√	√									
Techs	√	√		√		√	√									
Surgery																
Nurses	√	√		√	√		√			√						
Physicians	√	√		√	√		√			√						
Techs	√	√		√	√	√	√			√						
All employees [including administrative], patients, and/or visitors**	√	√	√	√	√		√	√			√	√	√	√	√	

*Discussed primarily when considering exposure to VOCs; **Exposures often well-diffused in the workplace

Source: Clapp R, Culver A, Donahue S, et al. Risks to asthma posed by indoor health care environments. *Health Care Without Harm*. 2006.

Green purchasing becomes easier as more consumers demand the products. Several states as well as large employers such as Kaiser Permanente require green cleaners. "There's really an increased understanding of the impact of cleaning chemicals on janitorial staff," says Hoppin.

Disinfecting and sterilizing agents, such as glutaraldehyde, continue to cause respiratory problems in hospitals. But even safer substitutes require careful handling. A Health Hazard Evaluation at a hospital in Buffalo, NY, found that poor ventilation contributed to complaints of headaches, eye irritation, and shortness of breath among employees who worked in a GI Lab Steris Room with a peracetic acid processor. (*See HEH, April 2010, p. 44.*)

Meanwhile, there are a myriad of other potential asthma triggers. Administering aerosolized medicine doubles the risk of developing asthma, one study found.[5] Dietary workers could be at risk from flour dust, and maintenance workers may be exposed to volatile organic compounds in paint, varnish, or other building materials.

Manage employees' asthma

Hospitals also have a role to play in helping employees with asthma manage their symptoms. In Massachusetts, two-thirds of adults with asthma had symptoms in the last month and 14% had at least one visit to the emergency room or an urgent care center, according to surveillance data.[6]

"Any hospitalization for asthma or any emergency department visit for asthma is preventable," says Hoppin. "There is really no reason why someone should have to end up in the emergency room or the hospital. Everyone with asthma should be living active vibrant lives. They should not be missing work. They should not be impeded by their breathing. That's the expectations people should have for their asthma."

Medical claims data provide a snapshot of the burden of asthma in the workplace. For example, greater use of "rescue" medications as opposed to asthma controllers indicates that asthma is not being well-managed, says Hoppin. Employers can encourage the appropriate use of asthma medications with lower co-pays, she says.

Wellness programs should include asthma as one of their goals to identify and manage chronic diseases among employees, she says. Asthma education can help employees control their asthma — and can provide information they need to better manage asthma symptoms of their children.

Awareness is a key to prevention, says **Christine Pontus**, MS, RN, COHN-S/CCM, associate director of Health & Safety for the Massachusetts Nurses Association in Canton. Nurses need to be aware of the symptoms and the possible connections to the hospital environment. Nurses may be exposed to "a chemical soup," she says. "You've got cleaning chemicals, people treated with hazardous drugs, perfumes. It becomes a mixture within a closed space."

Employee health should be represented on the hospital's purchasing committee and considered when selecting products, Pontus advises. Material safety data sheets should be readily available on products.

Reducing hazards, providing insurance benefits that encourage good symptom control, and offering asthma support through wellness programming will pay off, says Hoppin. Ultimately, the result is "a healthy work environment, cost-savings for the hospital, a commitment to health and also innovation," she says.

Resources: Halting asthma in health care

Check out the following resources for more information and tips on eliminating the risk of asthma in your hospital:

- **Healthcare Without Harm:** Provides a guide to reducing risks of asthma in hospitals: http://www.noharm.org/lib/downloads/cleaners/Risks_to_Asthma_Guide.pdf
- **Association of Occupational and Environmental Clinics:** Provides a list of asthmagens: http://www.aoecdata.org/
- **U.S. Environmental Protection Agency:** Provides a guide to Environmentally Preferred Purchasing: http://www.epa.gov/epp/pubs/products/cleaning.htm#a
- **Green Seal:** Provides a list of "green" certified cleaning products: www.greenseal.org
- **The Lowell Center for Sustainable Production and the Asthma Regional Council:** Reported on the business case for preventing and controlling asthma: http://asthmaregionalcouncil.org/uploads/Asthma%20Management/Business_Case_Employers_Health_Care_Purchasers%20_2010.pdf
- **Massachusetts Nurses Association:** Provides an online educational course on work-related asthma: http://www.massnurses.org/nursing-resources/continuing-education/mna-ce-online

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Wellness metrics point to HCW health risks

Employees learn to avoid chronic disease

When Washington County Health System (now known as Meritus Health) in Hagerstown, MD, first sought to measure the health status of its employees, the results were startling. Thirty-eight employees had undiagnosed diabetes or high blood pressure. More than 500 had glucose levels that placed them at high risk for developing diabetes. Other employees had high blood pressure, high cholesterol, or other risk factors.

Those metrics became the impetus for change. Employees received their own, confidential information on "modifiable risks" that showed how they could avoid the dire health consequences by making lifestyle changes. A comprehensive wellness program gave them support toward healthier habits.

Two years later, the hospital sees promising results. A survey showed that a significant number of employees have quit smoking, started taking medication for high blood pressure or other problems, lost weight, or started exercising. The estimated savings: At least $377,000 in decreased health care costs.

The hospital, which recently moved into a new facility and changed its name to Meritus Medical Center, hopes the metrics-based "Know Your Number" wellness program will help employees make further gains. "The true benefit is long-term, when you're not just treating disease, but you're preventing disease," says **Wendy Atkinson**, director of operations for THP TriState Health Partners, the health management company affiliated with Meritus Health. "By preventing these diseases and working in earlier points of intervention, we can actually save [health care] dollars."

Tying health assessments to identifiable risk of disease is the basis of BioSignia, a Durham, NC-based company that uses patented algorithms to create "Know Your Number," a calculation of an individual's risk of various diseases, including heart disease, stroke, high blood pressure, and stroke, within a five-year timeframe. With the "Know Your Number" health risk assessment, each employee receives a summary that shows how she or he compares to their peers of the same age and gender.

The bar graphs also show how much of that risk could be modified; often, the modifiable risk is as high as 70% to 80%. Understanding the risk can prod people to make lifestyle changes they wouldn't otherwise have made, says **Mark Ruby**, BioSignia's senior vice president of corporate business development.

"You have to know you've got a problem before you start going down the pathway to solve it. I may know I've got excess weight. I may know I have high blood pressure. But this is the first time I've had an assessment that actually translates that into my actual risk to getting [heart] disease [or stroke]," says Ruby. "More than that, you're giving me a roadmap to change."

The employee's information remains confidential and is not shared with the employer. But the employer does receive reports that show aggregate numbers. Know Your Number predicts future new disease burden in the screened population – how many of their employees have high health risks, how many new cases of disease will occur, and what percentage of new cases are avoidable. "That's the ultimate solution to health care costs," says Ruby. "A paradigm shift is happening."

At Meritus Health, the Know Your Number employee aggregate report predicted there would

be 70 new Type 2 diabetes cases among the employees in the next five years, 59 of them preventable. The primary contributor to the diabetes risk was excess weight.

Ruby notes that nationally, more and more employers are investing in wellness as a way to control the medical costs of employees. For hospitals, there is another imperative. It doesn't make sense if hospitals are "delivering the health care but not living it," says Atkinson. "It's important for health care workers to be role models."

Know what you need to change

Obtaining that detailed health risk assessment requires the collection of key markers. It includes the usual: weight and height to calculate body-mass index, smoking status, blood pressure. The metrics also include fasting glucose and cholesterol.

Meritus Health spurs participation with a premium differential. Employees who decline to take the health risk assessment are required to pay $30 per month in additional health care premiums.

At first, that ruffled a few feathers, but the health system succeeded in winning over employees with a comprehensive wellness program that includes fitness, nutrition, and wellness classes as well as one-on-one health coaching.

"You really can't make any changes if you don't know what you need to change," says Atkinson. "This tool helps you target [areas] where you can make some positive impact."

A wellness committee helped shape the types of programs offered by the health system. It includes some people who were recommended by managers as employees who would be likely users of the program, as well as some skeptics. "A wellness team or a wellness committee needs to be representative of your population," says Atkinson.

The committee conducted surveys to find out what types of wellness activities employees would want and what educational topics would interest them. Atkinson also joined the Wellness Council of America (www.welcoa.org) to gain access to wellness resources. (The Wellness Council offers sample employee surveys, wellness brochures, and guides to creating a program.)

The wellness committee drafted a plan with some basic goals to improve employee weight management and smoking cessation. With the support of senior leadership, the hospital has designed walking paths in its new facility and added healthy choices and nutritional information in the cafeteria.

Even the snacks at in-house meetings changed. "There is alignment that has to happen," says Atkinson. "If you have meetings and serve cookies, you're really working against yourself."

The risk assessment also includes a behavioral health component that can identify employees who suffer from high levels of stress or depression. Once they are identified, THP's behavioral health coach/case manager reaches out to offer help.

Some changes are easy to measure – pounds lost, smokers who quit. But the awareness of health and disease risks will show results over time, says Ruby. After all, rising medical costs are daunting for all employers, including hospitals. "The solution many times is in front of people's noses," he says. "If 70% to 80% of disease is avoidable, why aren't we avoiding it?" ■

HCWs take first steps to better health

Wellness program logs two billion steps

Children's Healthcare of Atlanta asked its employees to take steps to better health. A billion steps, to be exact. And they responded.

In the two and a half years of the health system's wellness program, employees have surpassed the initial goals. On walking paths or in fitness programs, they have taken 2,208,523,000 steps, which helped with weight management (30,895 pounds lost) and improved cholesterol and other health measures.

The Strong4Life program provides a wide range of incentives, but the primary message aligns with the health system's core mission. "We're doing it for the kids," says **Nancy Lloyd**, RN, MS, program director of employee health, wellness, and work life. "In order to be strong enough for the kids, we have to take care of ourselves."

This begins with a basic health assessment. Employees who participate in the annual assessment receive a discount off their health insurance premiums of $10 per pay period, or $260 per year. New employees are offered a health risk assessment at their pre-placement exam.

In 2009, 88% of employees took advantage of that incentive and completed a health risk assessment that included cholesterol and non-fasting glu-

cose screening. (The health system also has added an A1c diabetes screening test for people who had an elevated glucose.)

Strong4Life seeks to engage employees who are at different stages of wellness. Those who are already fit can get their work-out at work with a "stair gym" in the stairwell, walking paths on the campus, or in in-house exercise room. "If you're physically active, we want to keep you active, keep you engaged and support you," says Lloyd.

Those who need some help with behavior change can join Weightwatchers at Work or engage in one-on-one counseling with a nutritionist or fitness trainer. The You4Life program is an intensive, 17-week program designed for employees with the highest body-mass index. It provides customized meal replacements, a fitness program and wellness consultation and coaching. The cafeteria has increased its healthy food choices and labels its foods with calorie and nutritional information.

"It gives them the support and peer partnership that really helps to motivate people," says Lloyd.

"For those that really need the help we've got to keep designing programs that work for them," says **Linda Matzigkeit**, MBA, senior vice president for Strategic Planning and Human Resources.

No more cake and brownies

Children's Healthcare set a goal of having 40% of their employees in the "healthy" range of BMI — or a BMI of less than 25. Currently, the health system is at 39%, an improvement over the 2009 rate of 35.2% and the 2008 baseline of 33.6%. The health system also set a goal of increasing the number of employees with a normal cholesterol level to 65% from the 2009 rate of 59.8%.

Meanwhile, the paradigm has shifted at Children's. Gone are the cake and brownies at company meetings. "We used to be a culture that celebrated with food. Now we're becoming a culture that celebrates with wellness," says Matzigkeit. If there is food at a gathering, it is healthier — such as fruit or frozen fruit bars.

Employees have turned out to participate in specials walks or runs — 350 for a walk for autism, 250 for a triathlon, 700 for the Strong Legs Run, an event sponsored by the health system.

While there is comradery in the programs and events, Children's provides incentives to draw employees into the wellness activities. They can earn points through participation — and reaching goals, such as pounds lost — which can be used to "purchase" prizes. Winners of competitions in the You4Life program received a generous wellness-related shopping spree.

"Incentives do make a difference," says Lloyd, adding that "ultimately the incentive of just being well becomes enough."

The incentives keep it fun, she says. And it shows the continued commitment of Children's.

"You have to have that wellness culture all around them," she says. ■

The good shepherd: Small facility gets big results

Rural hospital saves backs — and nurses

It's not always easy to attract nurses to a small, rural hospital. But they're more likely to stay at a hospital that has a safe work environment. That has been the experience at Good Shepherd Medical Center in Hermiston, OR, which found that a comprehensive safe patient handling program boosted the hospital's recruitment and retention.

"Like all rural hospitals, we don't have any extra people," says public relations director **Mark Ettesvold**, MS. Safe patient handling "extends their careers and enhances their safety at work — and the safety of patients."

Good Shepherd is a 25-bed critical access hospital with a medical-surgical unit, an ICU, and some ancillary departments. A small staff means fewer people with the expertise to plan a patient handling program and limited resources to buy lifts.

But small hospitals often can tap into assistance from state grant programs or workers' compensation carriers. Good Shepherd was able to receive free consulting from ergonomist **Lynda Enos**, RN, MS, COHN-S, CPE, a nurse practice consultant who works with the Oregon Nurses Association (ONA) in Tualatin. Armed with a plan to create a minimal lift environment, the hospital won a $390,000 grant from Oregon's Occupational Safety and Health Division as part of a demonstration project to create a Safe Patient Handling 'Facility of Choice' for Critical Access hospitals in Oregon.

"Nearly half of our hospitals in Oregon are critical access, with 25 beds or less," Enos says. "They don't know where to start with these programs." ONA's consulting services provide that missing piece.

As with larger medical centers, small hospitals

must first have strong support from senior leadership and a "champion" of the program. At Good Shepherd, the vice president of nursing was committed to safe patient handling, and senior nurse manager **Vicki Horneck**, RN, MSN, devoted herself to making it happen.

Even before they knew they would get financial help, Good Shepherd drafted a "business plan" that included ceiling lifts, sit-to-stand and transfer devices. They developed patient assessments and considered the different needs of various units. They provided for maintenance and ongoing training with peer leaders or "superusers."

When the money became available, Good Shepherd was ready to roll. That initial planning is critical to success, says Enos. In other states, hospitals may be able to obtain consulting assistance from a workers' compensation carrier, OSHA, or a local university that has an ergonomics or safety degree program, she says.

'Superusers' save the day

Even though Good Shepherd knew what types of equipment to purchase, the hospital wanted buy-in from employees. They were able to try out and evaluate equipment at a vendor fair.

"A lot of facilities think we can just get all this equipment and [the program] will happen," says Horneck. "You have to get employees involved and you need superusers who will teach the staff [how to use it]."

Good Shepherd developed a timeline for purchasing and installing the equipment. The hospital now has 10 ceiling lifts on medical-surgical floor, three lifts in the ICU, and four in the Emergency Room. There's a lift in the diagnostic imaging area and even a lift above the pool in physical therapy, which allows paraplegics and quadraplegics to be lowered into the pool. There are sit-to-stand lifts, floor lifts and air assist lateral transfer equipment. There are even lifts to help patients out of their cars at the ER and portable lifts for home health nurses.

About 200 of the hospital's 526 employees use them regularly, including 142 nurses. They receive annual training, but they also can get ongoing help from "superusers" in each unit. "Those are the people who promote the program and encourage people to use the equipment," says Horneck.

The equipment, of course, just provides the tools. With Enos' help, Good Shepherd adapted algorithms that nurses could use to assess patients as totally dependent, partially dependent, or independent. Their status is written on white boards in the patient rooms.

The safe patient handling committee included representatives from physical therapy, med-surg, maintenance, and frontline nurses. They sought input from infection control and environmental services.

Some of the challenges were logistical. Battery failure could disable a ceiling lift motor. So now maintenance workers check the lifts every six months and replace batteries every year. Slings were being washed with the hospital laundry by a local prison, and sometimes slings got mixed with other laundry from other facilities. Now, two aides check the slings in the units every three months, sorting ones that have been misplaced. And some slings are being washed in an in-house laundry.

Not all vendors will provide ongoing service to hospitals in rural areas, so hospitals need to factor that into their selection, advises Enos. "They need to do their homework about the vendors they choose and get references and service commitment in writing," she says.

Good Shepherd is conducting surveys to gauge the acceptance of the program. So far, the patients have responded favorably. The hospital also is evaluating the impact not just on staff injuries, but on back pain and discomfort.

It takes time for nurses to get accustomed to the new way of lifting, says Enos. Sometimes they still think it's easier to ask a fellow nurse to help with a manual lift.

But she points to a common scenario that illustrates how much more efficient it is to use a lift. Recently, she observed as two caregivers helped a 400-pound dependent patient who was sitting in a chair but needed to return to bed. They hooked her sling up to the lift and within 45 seconds she was in the bed. Previously, it would have taken several employees to lift and move her.

"Lifting with this equipment is amazingly quick because it's easily accessible in the patient's room," she says. ■

Flu recs redefine HCW protection

Droplet, airborne — or a new hybrid?

In a lingering legacy of the H1N1 pandemic, stronger protections are now advised for seasonal influenza than was the case prior to the emergence of the novel H1N1 strain. That distinc-

tive status was recently highlighted in new influenza guidance in California.

When the Centers for Disease Control and Prevention issued updated guidelines for this year's seasonal influenza, which includes H1N1, it recommended surgical masks for health care workers performing routine patient care but retained the advice for health care workers to use N95 respirators when performing aerosol-generating procedures. (*See box, right.*) It also emphasized vaccination and a comprehensive strategy to prevent transmission of influenza. (*See HEH, November 2010, p. 126.*)

California public health authorities reviewed that guidance and decided to step it up a bit. The California Department of Public Health (CDPH) is suggesting that employers allow their employees to wear N95 respirators if they want more protection than provided by surgical masks.

California also will enforce the use of respiratory protection for aerosol-generating procedures under that state's Aerosol Transmissible Diseases standard, says **Barbara Materna**, PhD, CIH, chief of CDPH's occupational health branch. Employers must list the exposure-prone procedures that occur at their hospital in their ATD exposure control plan.

"The respiratory protection is required no matter the immunization status," notes **Deborah Gold**, MPH, CIH, senior safety engineer in the research and standards health unit at Cal-OSHA in Oakland. After all, employers may not know whether a particular employee has been vaccinated or is exempt due to medical contraindications, and the flu vaccine is not 100% effective, she notes.

"We wanted to acknowledge…that people doing patient care are still going to be at some risk of exposure," says Materna. "If it's not appropriate for them to have the vaccine or the vaccine isn't 100% effective at providing immunity, they're going to be at some risk."

What about meningitis?

The California interpretation raises a new question: Will the changes related to influenza lead to a new approach to other droplet-spread diseases?

"This is the first time that a disease currently [designated for] droplet precautions has a requirement for respiratory protection for aerosol-generating procedures," says Materna. "We raise a question as to whether this would be required for other [diseases considered to be spread by drop-

Use caution with aerosol procedures

The following recommendations are summarized from the "Prevention Strategies for Seasonal Influenza in Healthcare Settings" by the Centers for Disease Control and Prevention. The full document is available at: www.cdc.gov/flu/professionals/infectioncontrol/healthcaresettings.htm.

Precautions for aerosol-generating procedures include:

- Only performing these procedures on patients with suspected or confirmed influenza if they are medically necessary and cannot be postponed.
- Limiting the number of health care personnel (HCP) present during the procedure to only those essential for patient care and support. As is the case for all HCP, ensure that HCP whose duties require them to perform or be present during these procedures are offered influenza vaccination.
- Conducting the procedures in an airborne infection isolation room (AIIR) when feasible.
- Considering use of portable HEPA filtration units to further reduce the concentration of contaminants in the air.
- HCP should adhere to standard precautions, including wearing gloves, a gown, and either a face shield that fully covers the front and sides of the face or goggles.
- HCP should wear respiratory protection equivalent to a fitted N95 filtering facepiece respirator or equivalent N95 respirator (e.g., powered air purifying respirator, elastomeric) during aerosol-generating procedures. When respiratory protection is required in an occupational setting, respirators must be used in the context of a comprehensive respiratory protection program that includes fit-testing and training as required under OSHA's Respiratory Protection standard.
- Unprotected HCP should not be allowed in a room where an aerosol-generating procedure has been conducted until sufficient time has elapsed to remove potentially infectious particles.
- Conduct environmental surface cleaning following procedures. ■

lets, such as meningitis]."

That concern was highlighted in a recent case of *N. meningitidis* transmission from an undiagnosed patient to a first responder and a respiratory therapist. Cal-OSHA cited Alta Bates Summit Medical Center in Oakland, CA, for failing to conduct a prompt exposure analysis or to readily offer prophylaxis after the meningitis case was identified. (*See HEH, July 2010, p. 77.*)

The ER physician who performed suctioning and intubation on the patient and the respiratory therapist who assisted were not wearing a surgical mask or respirator. The respiratory therapist later developed meningitis and was hospitalized for 11 days. The physician was offered post-exposure prophylaxis eight days after the exposure.[1]

In fact, of 10 workers who had close contact with the patient, only four wore respirators — two firefighters and two paramedics. Only one of the five health care workers who assisted in care of the patient in the ER wore a surgical mask, and none wore a respirator. At the time, respirators were recommended for health care workers caring for patients with suspected pandemic H1N1 — and required by California's ATD standard.

The guidelines are clear for airborne infectious diseases such as tuberculosis. Health care workers must wear respirators and patients should be in airborne isolation rooms. CDC recommends droplet precautions — including use of a surgical mask by health care workers in close patient contact — for diseases "spread through close respiratory or mucous membrane contact with respiratory secretions" such as pertussis, *N. meningitidis*, and influenza.[2]

Can droplets become infectious aerosolized particles? Materna asserts that recent research "does support the fact that when people cough or sneeze they're emitting particles that can be inhaled." In its guidance, CDC acknowledges the potential for some airborne spread of influenza: "Airborne transmission via small particle aerosols in the vicinity of the infectious individual may also occur; however, the relative contribution of the different modes of influenza transmission is unclear."

Aerosol-generating procedures may increase the risk, even from droplet-borne pathogens, says Materna. While the current CDC guidelines recommend respirators only for health care workers caring for patients with tuberculosis, SARS and "avian or pandemic influenza viruses," the recent CDC and California guidance suggest that the protections may be expanded.

CNE QUESTIONS

1. According to Margaret S. Filios, SM, RN, a captain in the U.S. Public Health Service and epidemiologist with the National Institute for Occupational Safety and Health in Morgantown, WV, hospitals have made progress by eliminating what asthmagen from the workplace?
A. glutaraldehyde
B. formaldehyde
C. phthalates
D. latex

2. According to BioSignia, a Durham, NC-based company that uses patented algorithms to calculate individuals' risk of various chronic diseases such as heart disease and diabetes, how much of that risk is potentially preventable?
A. 20%-30%
B. 40%-50%
C. 70%-80%
D. 100%

3. Guidelines by the Centers for Disease Control and Prevention recommend what level of protection for health care workers performing aerosol-generating procedures on patients with seasonal influenza?
A. Face shields
B. Surgical masks
C. N95 respirators
D. No special protections

4. According to Jeanne Geiger-Brown, PhD, RN, associate professor and co-director of the Work and Health Research Center at the University of Maryland School of Nursing in Baltimore, 12-hour shifts are especially hazardous for older nurses because:
A. their eyesight is poor.
B. they have less perception of their sleep deprivation.
C. they are more prone to error than younger workers.
D. they are in poor health.

Answer Key: 1. D; 2. C; 3. C; 4. B

CNE INSTRUCTIONS

Nurses participate in this continuing nursing 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.

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Why a 12-hour shift is unhealthy for nurses

Sleep deficits lead to errors, injuries

The 12-hour shift, mainstay of the nursing schedule, may be unhealthy for nurses and their patients.

That is the conclusion of varied studies that show sleep deprivation and a greater likelihood of drowsy-driving accidents, needlesticks, musculoskeletal injuries, and medical errors. The hazards may be even greater as the nursing workforce ages and becomes more sensitive to sleep deficits, says **Jeanne Geiger-Brown**, PhD, RN, associate professor and co-director of the Work and Health Research Center at the University of Maryland School of Nursing in Baltimore.

With age, we tend to have less "consolidated" or quality sleep, says Geiger-Brown. Yet we also are less aware of the impact of that sleeplessness, she says. "If you have a young worker who gets sleep deprived they're going to feel it acutely, whereas an older worker will not have that same perception," she says.

Regardless of age, sleep deprivation has consequences. Nurses working shifts of 12.5 hours or longer had three times the risk of medical errors as nurses who worked no more than 8.5 hours, a study at the University of Pennsylvania found.[1] A review of studies also found diminished performance and fatigue in nurses who work 12-hour shifts.[2]

"In general, if a nurse is very sleep deprived, their reaction time and performance is affected," says **Alison Trinkoff**, ScD, MPH, BSN, RN, FAAN, professor in the University of Maryland School of Nursing.

More than half (51.5%) of hospital staff nurses work 12 or more hours per shift, according to a 2006 analysis that was part of Trinkoff's Nurses Worklife and Health Study.[3] About one in five (19%) work more than 12 hours, the study showed. The Institute of Medicine recommends that nurses work no more than 12 hours in a 24-hour period or 60 hours in a seven-day period to avoid fatigue that could lead to errors.[4]

"We're recommending moving away from [the 12-hour] shift," says Trinkoff. "They just don't seem to be good for nurses or patients."

Paradoxically, one reason that 12-hour shifts persist is because nurses like them. In fact, nurses who don't want to work 12-hour shifts may have already left the hospital setting for other nursing opportunities.

Hospitals can take steps to ensure that schedules allow enough time for rest and minimize fatigue, says Geiger-Brown. Here are some suggestions from the University of Maryland researchers:

Offer shifts of varied lengths: Offering shifts of shorter length can reduce fatigue and may even attract some other nurses back into hospitals, says Geiger-Brown. Older nurses or nurses with young children may even want to work a four-hour shift to help fill in during busy times and provide coverage for nurses who need to take lunch breaks, she says.

"We need shift alternatives besides 12 hours," says Trinkoff. "As nurses get older they may be unable to work long hours. It's extremely taxing work."

Back-to-back 12-hour shifts simply don't provide enough time for sleep, Geiger-Brown says. Nurses who work back-to-back 12-hour shifts generally have only 5.5 hours of sleep, she says.

To allow for more sleep, hospitals could schedule a nurse for an 8-hour shift after she has worked a 12-hour shift, she suggests. "I believe we shouldn't have 12-hour shifts. But if you're going to have them, they should be interspersed with shorter shifts so people can catch up on their sleep."

Use fatigue risk management software: This software uses mathematical algorithms in scheduling to minimize the risk of fatigue. For example, if

COMING IN FUTURE MONTHS

- Avoiding injuries in ambulance accidents
- Engaging employees in occ health and safety
- Are public hospitals less safe?
- Preventing injuries as workers age
- Tracking the impact of a safe lifting law

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.

a nurse wants to work a string of 12-hour shifts in order to have other days off, the scheduling software might show a "red zone" warning that shows the schedule could lead to error-producing fatigue.

When making changes to scheduling policies, it's important to get buy-in from nurses and to work cooperatively with labor unions, says Geiger-Brown. Emphasize the benefits of shorter shifts both to worker health and patient safety, she says.

Screen employees for sleep disorders: Hospitals should screen new hires for sleep disorders, such as sleep apnea, in pre-placement exams, says Geiger-Brown. These can often be successfully treated, she says. Employee health professionals also may want to consider fatigue and sleep disorders when evaluating injuries, she says.

Promote healthy behaviors: Awareness about sleep, shift work, and fatigue is important, says Geiger-Brown. Nurses should take their scheduled breaks during shifts and have access to quiet rooms where they could take a 20-minute nap, if necessary, to maintain alertness.

If a nurse has worked a long shift and feels fatigued, hospitals should offer taxi vouchers for the trips home and back to work, says Geiger-Brown.

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2010 SALARY SURVEY RESULTS

Hospital Employee Health®

Make the case! EH boosts bottom line in hard times

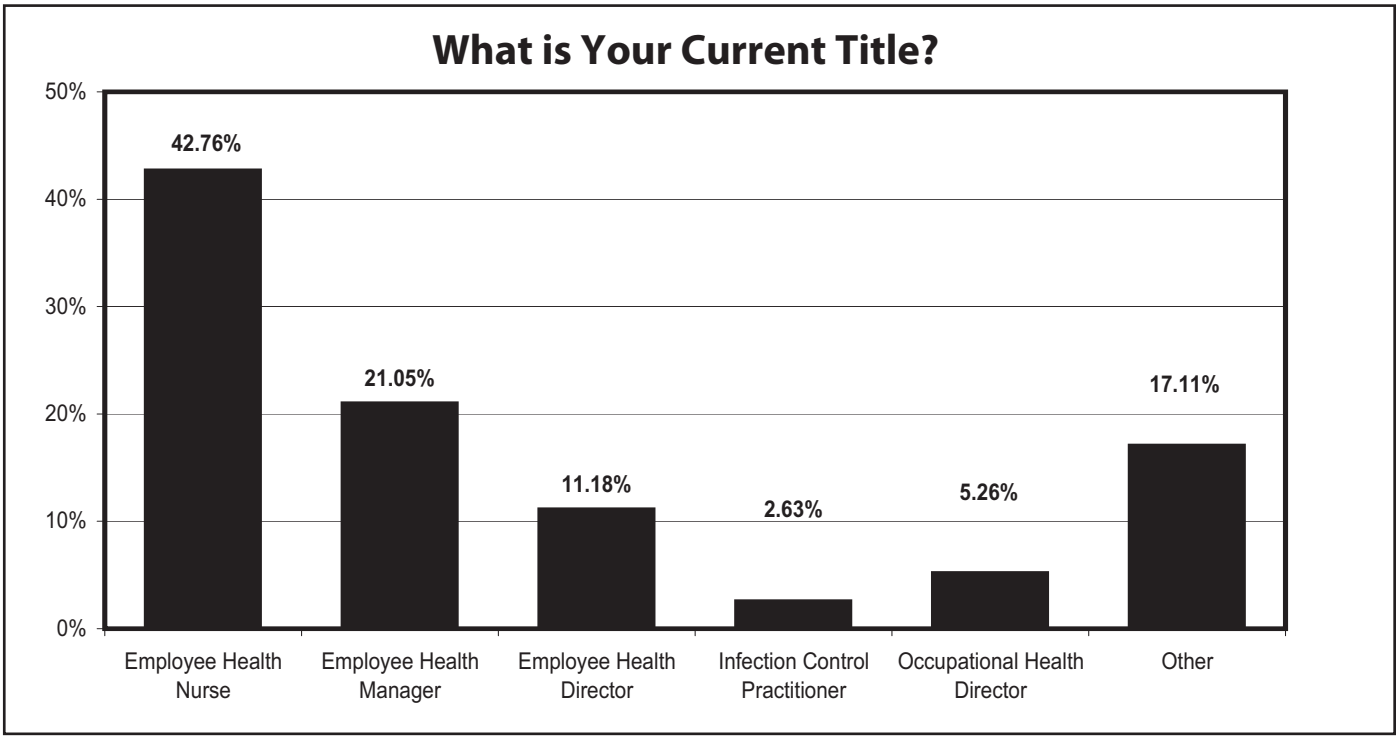
Tight budgets mean no raises for EHPs

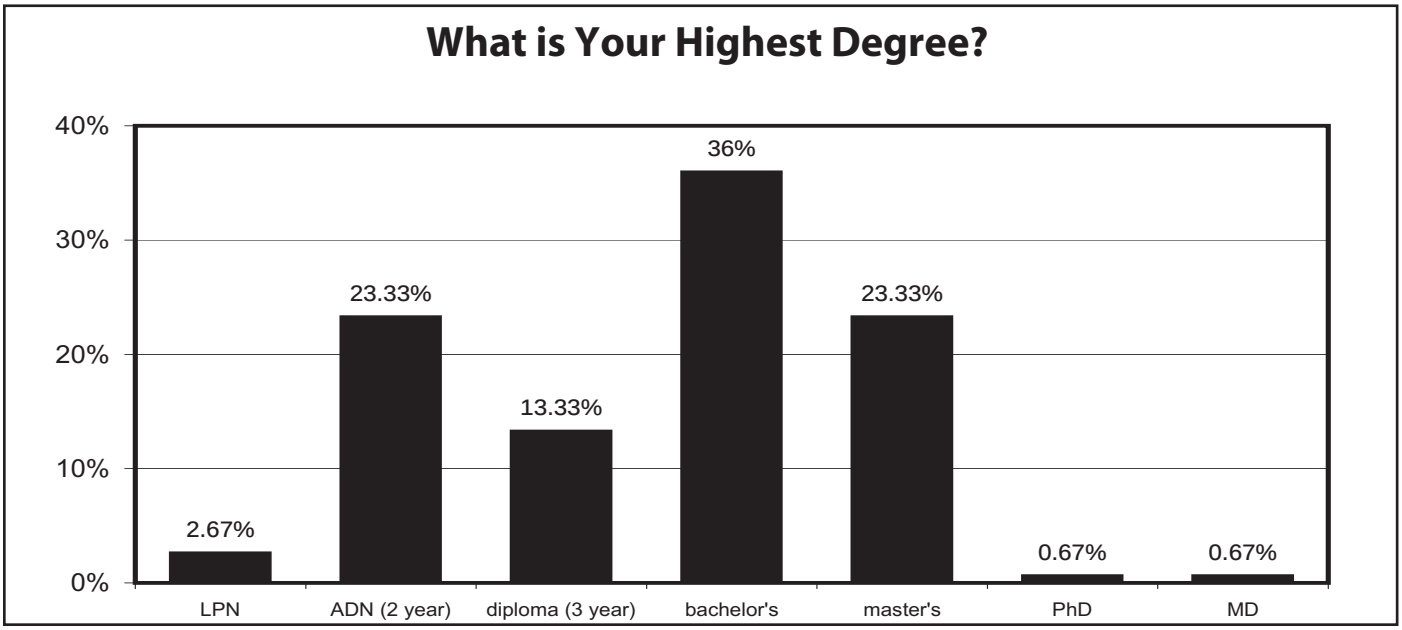
Cost-cutting at hospitals has hit deep into the personal budgets of employee health professionals, as about one-third (32%) reported receiving no raise in 2010 in the *Hospital Employee Health* salary survey. Another 4% reported taking a cut in pay.

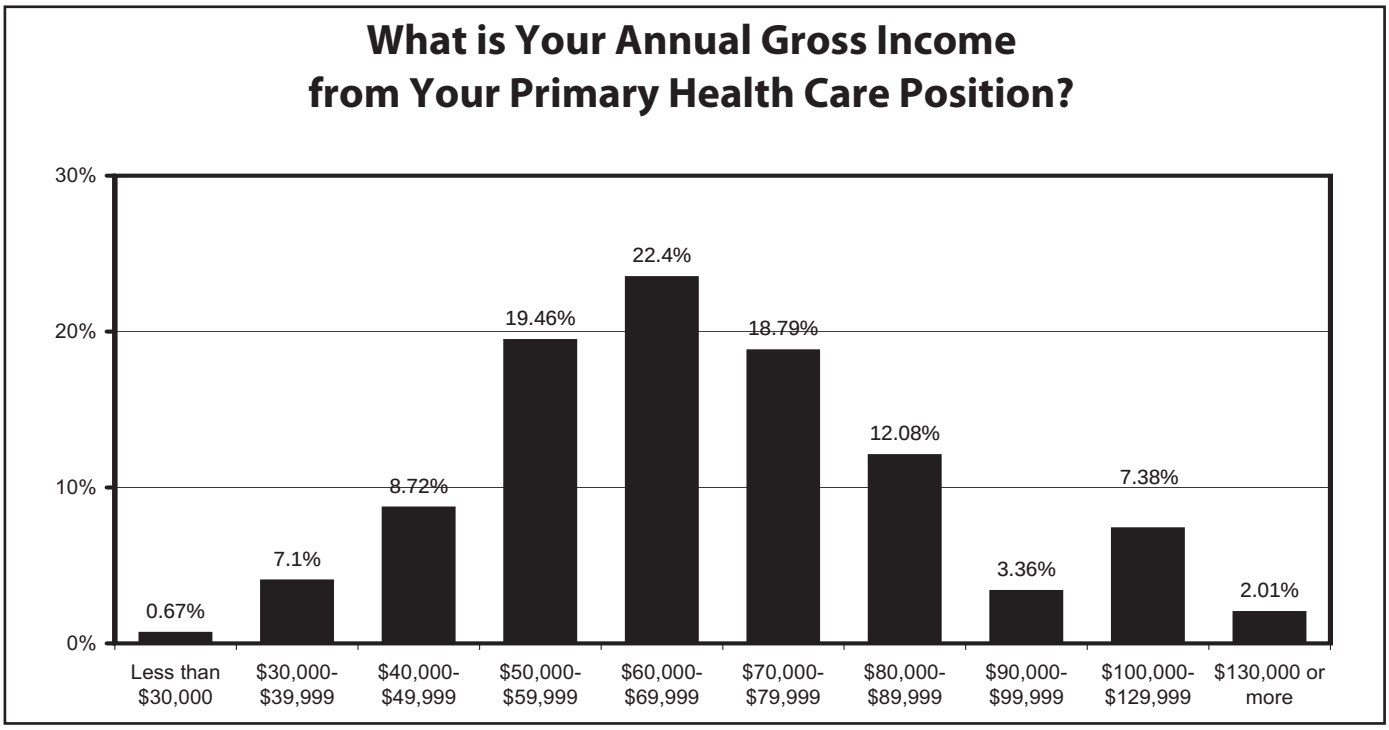
The factors driving the cost-cutting at hospitals are here to stay: Mergers and consolidations of hospitals and health care services, a continued movement of services from inpatient to outpatient, the specter of reduced reimbursements.

The key challenge for employee health professionals is to show that they are part of the solution rather than the problem.

"To the degree to which employee health...[is viewed as] an expense, then there is going to be a desire to really shrink it down to the most efficient model, using the least amount of resources," says **Charlene M. Gliniecki**, RN, MS, vice president, human resources, at El Camino Hospital in Mountainview, CA, and a former employee health nurse. "If we can communicate and demonstrate our ability to reduce expenses through the work we do — that we are saving costs — we will be sought after







as an important part of an efficient organization."

Fortunately, employee health has many opportunities to show an impact on the hospital's bottom line. Reducing injuries and helping employees return to work more quickly after an absence provides a direct benefit. For example, a transitional work program at El Camino Hospital helped bring employees back on the job more swiftly after injuries. The hospital, which was self-insured for workers' compensation, was able to reduce its reserves by $7 million.

Gliniecki let managers know that they had been important partners in accommodating returning workers. But she also touted the human resources/employee health success. "I definitely talked it up among my colleagues," she says, noting, "When something bad happens you always get attention. When something positive happens, make sure that gets noticed."

Here's another piece of evidence that employee health has a link to the bottom line: Xavier University in Cincinnati is offering a course on "the Business Value of Safety and Health" in its MBA program. The goal "is to put safety and health in the same terms for managers as they look at quality and productivity," says **Steve Wurzelbacher**, PhD, CPE, a research industrial hygienist with the National Institute for Occupational Safety and Health (NIOSH) in Cincinnati, who helped develop the program.

Employee health is an important part of risk management, Wurzelbacher says, as well as a way to reduce costs associated with absenteeism, turnover, and "presenteeism," or people who are not fully functioning because of illness or low morale.

It is up to employee health professionals to demonstrate how they contribute to the company's productivity, says **MaryAnn Gruden**, MSN, CRNP, NP-C, COHN-S/CM, employee health coordinator at Western Pennsylvania Hospital in Pittsburgh and community liaison of the Association of Occupational Health Professionals in Healthcare (AOHP).

"There are some organizations that clearly understand that, and their goals and objectives include employee safety as a top priority," says Gruden. But employee health needs to track trends and share information on injuries to raise awareness.

Employee health professionals have broad experience in health care, which helps them build partnerships within the organization. In the HEH survey, 78% of 150 respondents said they have worked in health care for 25 or more years. About one in four (23.5%) said they received a salary of $60,000 to $69,999.

Demands remain great

Although many hospitals have resorted to layoffs to "right-size" their staffing, the demands on employee health remain just as great. Here is some advice from employee health experts:

Collaborate: Employee health and infection prevention are often seen as interrelated areas. That is certainly true for tuberculosis screening or immunizations or other infection hazards. But employee health professionals also will find synergy with the organization's safety officer, suggests Gliniecki. For example, the Joint Commission's Environment of Care standard requires a safety plan that covers the control of hazardous chemicals and a bloodborne pathogen exposure control plan.

If you have purchased new lift equipment and need help demonstrating the cost savings associated with the reduction in injuries, you might want to seek the advice of someone in the finance department. They might have a template they use to demonstrate return on investment, she says.

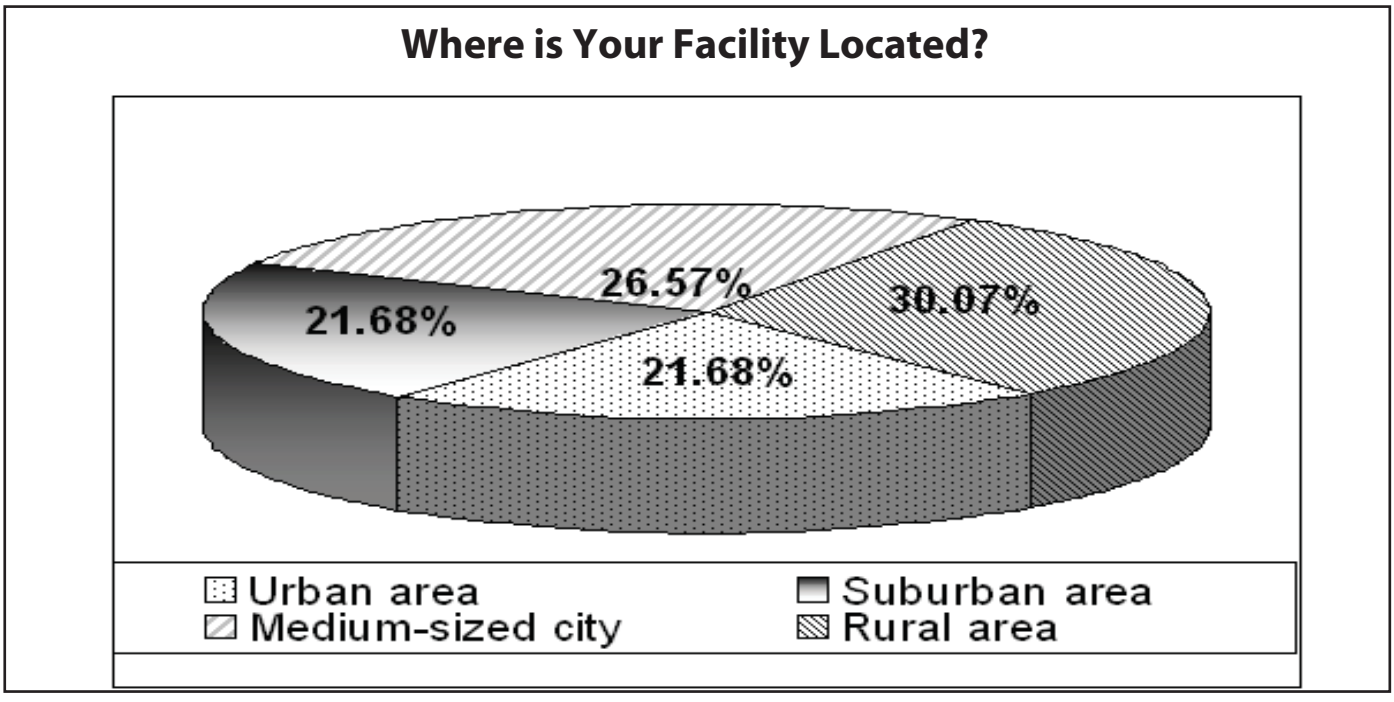
If a wellness program is coordinated by another department or by an outside vendor, you may still be able to provide support for specific programs, help educate employees, and even identify employees who could benefit, says Gruden.

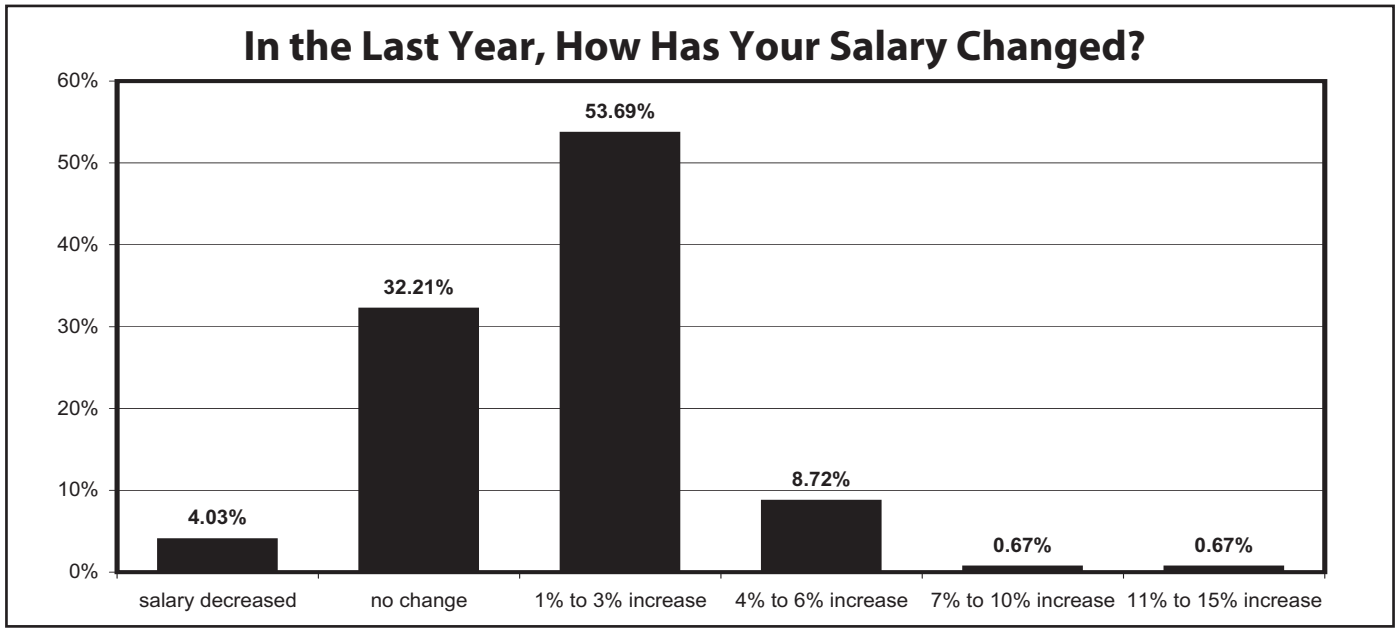
Think lean: In tough economic times, lean is in. "You're essentially trying to eliminate waste in the process and make it more efficient," says Wurzelbacher. But that doesn't mean just doing the same thing faster, he says. It means using quality improvement methods to streamline or redesign how a task is done, he says.

"Develop ways to improve the process that builds value and increases productivity," he advises.

In fact, with health care reform, hospitals will be trying to contain costs wherever possible. "They are trying to look for ways to be most cost-effective yet provide the best patient care," says Gruden. "That will be the challenge."

Broaden your scope: Your greatest value goes far beyond giving immunizations and tuberculo-



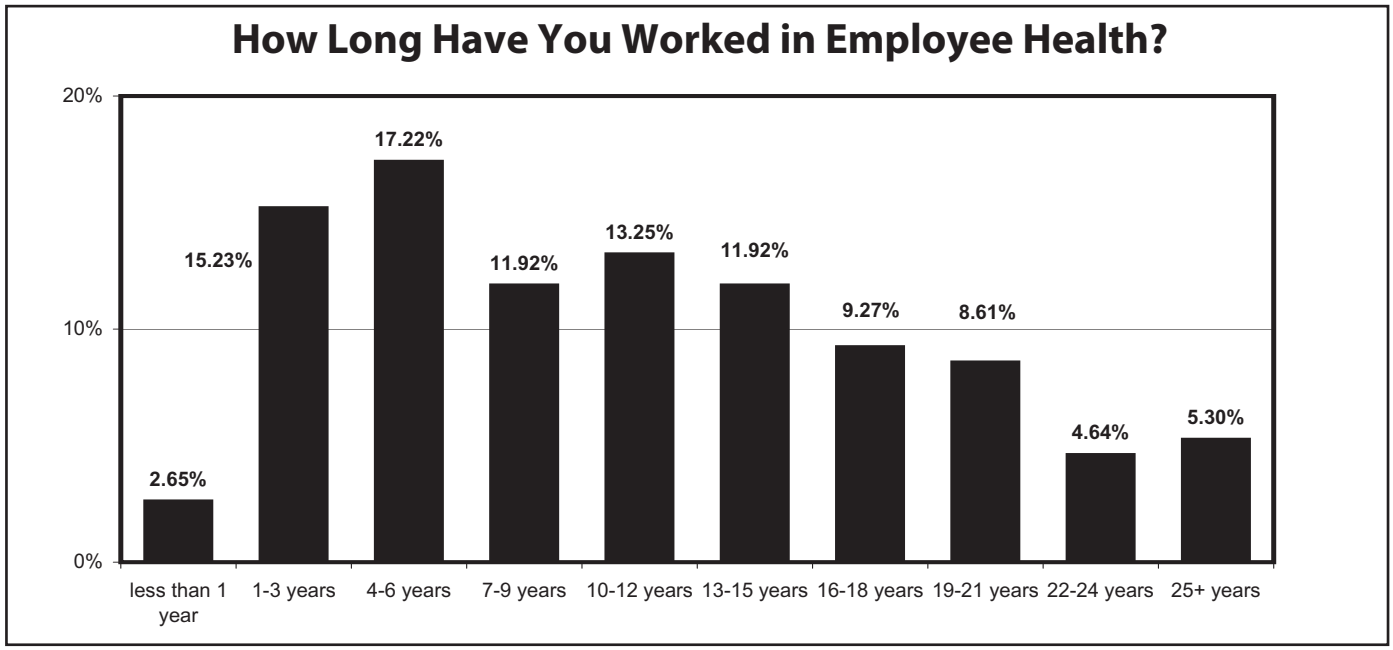


sis screening. It likes in your ability to analyze a problem area and seek cost-effective solutions. For example, some years ago El Camino Hospital began working to reduce patient handling injuries by gathering detailed information on the injuries that occurred. The assessments gave clues as to which types of equipment could have prevented the injuries — lateral transfer devices or ceiling lifts or sit-to-stand devices. The purchase of equipment was tailored to address the hospital's greatest needs.

Regulatory requirements will continue to drive employee health — especially as the U.S. Occupational Safety and Health Administration considers new rules governing recordkeeping, injury prevention programs, and infectious disease exposures. But employee health may assist in other areas, as well, such as assessing employees who return to work after Family and Medical Leave Act absences, Gliniecki says.

Present your data: Your employee health and safety reports should mirror the reporting style of your organization, says Gliniecki. Does your hospital use a "dashboard" that compares goals and results? Then you should have a dashboard, too.

Be aware of the strategic plan of your organization — and communicate how employee health is helping meet those goals, she advises. Give presentations on employee health trends, goals and accomplishments at leadership meetings. If there is a regular safety report that is submitted to the board at quarterly meetings, make sure employee health is a part of that, too, Gliniecki says. ■



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- **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.

Each issue of your newsletter contains questions relating to the information provided in that issue. After reading the issue, answer the questions at the end of the issue to the best of your ability. You can then compare your answers against the correct answers provided in an answer key in the newsletter. If any of your answers were incorrect, please refer back to the source material to clarify any misunderstanding.

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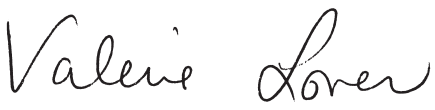

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