

Hospital Employee Health[®]

THE PRACTICAL GUIDE TO KEEPING HEALTH CARE WORKERS HEALTHY



IN THIS ISSUE

- **Show me the money:** Prove in-house EH services are cheaper than outsourcing. cover
- **What is it worth?** Are some cost-benefit decisions worth the cost? 40
- **Measles check:** CDC considers tighter recs on HCW measles immunity, despite cost 42
- **'Graveyard' shift:** NC hospital focuses wellness on night workers 43
- **Airborne flu:** Study finds airborne particles suggest potential transmission 44
- **Breathless:** RNs are more likely to report work-related asthma, study finds 45
- **Staff for health:** Review of studies shows link between staffing, health care-associated infections 47
- **Inserted in this issue:**
— 2009 Reader Survey

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Employee health programs: A resource is more cost-effective than an outsource

Outsourcing would cost 300% to 1,200% more than in-house

If your hospital administrators think that outsourcing employee health would be cheaper than paying your salary (plus that of a few others), show them the numbers. An in-house program is a much better value than paying the marked-up cost of consultants.

Depending on the size of the program, service offerings, and operational structure, outsourcing may actually run from 300% to more than 1,200% higher than performing the same tasks in-house, says **Jeffrey L. Bowman**, MD, MS, medical director of associate health for St. Vincent Hospitals in Indianapolis. In addition, some tasks cannot be outsourced, such as program administration in organizational compliance.

In reality, there is much more beyond employee health services to be considered, such as medical center occupational health (MCOH), workers' compensation (WC), disability management (DM), industrial hygiene (IH), manager education, manager accountability, and integration with other programs in safety, infection control, and benefits, he notes.

Cutting the employee health function isn't an option for hospitals. Some employee health tasks are required by federal or state regulation. Others are linked to patient safety and accreditation. Injury prevention and effective workers' compensation case management save the hospital money. "Many of the things that are done in employee health, occupational health, and the related programs have to be done," he says.

But finding a way to trim employee health costs may be tempting — especially since administrators may view employee health as a nonrevenue-producing department. To demonstrate the value of employee health, Bowman developed a method that can be used to compare it to fair-market (outsourced) costs. To make that comparison, you need to know how much your services cost the hospital per employee per day. And you need to calculate the costs of common tasks.

For example, pre-placement evaluations may be required by state law or regulation. Even if they're not, you need to follow various rules and

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guidelines — to offer hepatitis B vaccination, for example, and to check for immunity to measles, rubella, and varicella. You also need to check new employees for fitness for duty and, depending on their exposure risks, they may need to be fit-tested to wear respirators.

You might streamline your pre-placement exam in employee health and only send special cases to an occupational health physician for a full medical evaluation, but you can't get around the basic services. So how much does that cost?

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"You have to have a good representation of the services you're providing and what is required," says Bowman. "What does it take for us to run these operations?"

Employee health nurses need to take a business approach and demonstrate the return on investment, or ROI, for the programs implemented by their department, concurs **Annette Haag**, MA, RN, COHN-S/CM, FAAOHN, occupational health nurse with 3M Drug Delivery Systems in Northridge, CA, and a past president of the American Association of Occupational Health Nurses (AAOHN).

It is difficult for occupational health nurses to develop and analyze metrics amid their many other roles and responsibilities, she says. "However, it is critical that OHNs take the time to articulate their value to management. In today's economic climate, it is essential that cost-benefit and cost-effective analyses be done and presented to management in business terms on a regular basis.

"On-site OHN programs will not survive unless the OHN analyzes the data to prove that the services provided by the OHN program are cost-effective and produce value to the bottom line," she says.

Calculate cost per employee per day

To get a handle on the value of your services, Bowman suggests measuring how many minutes it takes each member of your staff to conduct a pre-placement exam, from the scheduling and other front office time to nursing and practitioner time during the visit, after the visit, and in follow-up visits. Assign a labor rate for each staff category and include the cost of vaccines and supplies.

Compare that cost to the fee charged by an occupational health service in your area. Chances are its fee will be much higher than your actual cost, says Bowman.

For example, the fee for a single lab immunity assessment of a new employee may be as much as \$75 when outsourced. The internal costs for the same service could be a fraction of that total, and in some cases, may be only 13% of the outsourced cost. Bowman conducted a cost comparison in the Indiana region and found that contracting out pre-placement exams would cost the hospital system from 300% to 1,200% more than what they were currently paying.

You also may want to understand how your costs compare to those of your competitors. As a

simple approach, determine the cost per-employee-per-day by dividing your total annual operating budget by the number of employees in the systems you serve and then dividing by 365, he says. Detail the types of services you may be providing (i.e., EHS, MCOH, WC, DM, Family and Medical Leave Act, industrial hygiene, manager education, etc). Then you need to find colleagues in your region with a similar employee health program. (For example, do they coordinate workers' compensation and disability management? Does the program include wellness and health promotion?)

Bowman found that his hospital and a closely matched competitor with an equally good reputation for expertise in EHS and MCOH had a very similar per-employee-per-day (pEpD) cost, while another less-refined program that relied on outsourcing spent nearly 800% more. "Upon further investigation into the detail, this more expensive program that was smaller in size was not providing the same level of service offerings and not getting the best value for their organization," he says.

Meanwhile, Haag encourages occupational health nurses to do a time study, logging how much time they spend on various tasks throughout the day, as a way to assess their priorities. If you're spending time on a task that doesn't require nursing skills, such as data entry or even fit-testing, delegate those and focus on priorities that can promote health and wellness and reduce injuries or illness, she says.

How do you save your hospital money?

Why provide employee health at all? The answer may seem obvious to you, but perhaps the importance of employee health isn't fully understood by hospital leadership. In a time of rising costs and pinched reimbursements, you need to make the case for employee health both as a necessity and a cost-saver.

"Employee health is linked to risk management, infection control, regulatory compliance, worker safety, patient safety, and accreditation. It's the right thing to do for comprehensive quality and safety initiatives," says Bowman.

What would the cost be of not having employee health? You need to break down the different types of functions you provide, including services beyond conventional EHS such as MCOH, WC, integrated disability management (IDM), infection control support, compliance tracking, wellness, safety, programs for managers, support for medical

education, services to indirect employees (such as some contract workers or students) and medical staff.

Benchmarks and evidence-based treatment guidelines can help increase the cost-effectiveness of medical care, Haag says. For example, *Medical Disability Advisor* (Reed Group, www.medicaldisabilityadvisor.com) or *Official Disability Guidelines* (Work Loss Data Institute, www.disabilitydurations.com/) can tell you how many days an employee typically loses from work due to a condition such as back strain.

If you are able to accommodate employees and you are able to return them to work earlier than the disability duration guidelines indicate, you can calculate the savings. You don't need to pay for a replacement for the absent worker or indemnity payments (lost wages) for workers' compensation cases. Disability benefits can be discontinued.

The direct costs are much less than the significant indirect costs, which include lost productivity and the cost of administering the claim. "Some companies use a 5-to-1 ratio of indirect costs to direct costs," says Haag.

"Each month, the occupational health nurse should document the costs that are avoided (cost avoidance) by treating injuries and illnesses in a timely manner and then following these cases through case management activities to assist employees in achieving optimal outcomes," she says.

"Many managers are unaware of how much the OHNs are saving them," says Haag, who teaches courses to prepare occupational health nursing to obtain their certification in occupational health nursing. She also has been actively involved in teaching business courses for occupational health nurses to assist them in demonstrating their value to management.

If you increase the percentage of employees who receive the flu vaccine, for example, you are reducing absenteeism. It will cost 1.4 times her salary to replace an absent nurse, including lost productivity on that nurse's unit. **(For more information on worker health and productivity, see *Hospital Employee Health*, March 2008, p. 27.)**

Preventing a single back injury through safe patient handling could save as much as \$100,000, if the employee requires surgery and has a serious, long-term condition. The use of safe patient handling equipment also could lead to a reduction in workers' compensation premiums.

Then there's the worst-case scenario: Unsafe

needle practices or an undetected case of tuberculosis in a health care worker can compel the hospital to test hundreds of patients for possible exposure to an infectious disease — and cause negative publicity in the community.

Taking a business approach to employee health also can help build a stronger program. An analysis will reveal where you are spending your greatest resources. How does that match with your priorities?

The cost analysis may help you reassess your program. For example, you may be able to reduce the employee health cost of the flu campaign by using nurses on units as peer vaccinators. Bowman's motto: "You've got to be able to measure in order to be able to manage." ■

Breaking down the cost-benefit equation

Should you spend the money for . . . ?

• Pertussis vaccines for health care workers?

What the guidelines say: The Centers for Disease Control and Prevention in Atlanta recommends vaccinating health care workers with direct patient contact with a pertussis booster to reduce the risk of nosocomial spread. CDC estimated that hospitals would save \$2.38 for every dollar spent on vaccination because of the reduction in pertussis exposures. However, because of a lack of studies on the effectiveness of the pertussis booster (Tdap), the CDC still recommends prophylaxis for exposed health care workers. (Daily monitoring of exposed health care workers for symptoms could be a "reasonable strategy" as an alternative, CDC said.)¹

Cost implications: The pertussis vaccine is combined with a tetanus and diphtheria vaccine. The two licensed versions, Boostrix and Adacel, cost about \$37 per dose.²

How one health system saves money: At the Marshfield (WI) Clinic, health care workers who care for pediatric patients are encouraged to receive the vaccine — free of charge. This includes pediatrics, urgent care, family practice, radiology, and OB/GYN. Other health care workers are informed about the new vaccine and encouraged to ask their private providers to give them Tdap when they are due for a tetanus booster. Tdap is covered by the clinic's medical plan.

• QuantiFERON-TB Gold instead of skin tests for tuberculosis screening?

What the guidelines say: CDC recommends using the blood assay test, QuantiFERON-TB Gold (QFT-G), in place of but not in addition to the tuberculin skin test (TST). In the case of an exposure, a negative QFT-G should be followed up with a repeat test in eight to 10 weeks. QFT-G is more specific than the TST and is not affected by previous BCG vaccination. Although it avoids the reader bias of the TST, errors in collecting or transporting the specimens or lab errors can affect the accuracy of QFT-G. It would be "prudent" to follow an indeterminate QFT-G with another QFT-G or a TST.³

Cost implications: One study estimated the cost, including laboratory and phlebotomy costs, to be \$37.39 per test.⁴ However, this may vary based on lab costs and volume. Tampa (FL) General Hospital estimated their per-test cost to be \$14. Because QuantiFERON is more specific, it is expected to produce fewer false positive results than skin testing. False positive results could lead to unnecessary treatment for latent tuberculosis infection.

How hospitals save money: Tampa General began using the QFT-G only in pre-placement exams, instead of the two-step TST. Of 130 health care workers who reported having had a previous positive skin test, 86 (66%) were negative with the QFT-G. Last year, the hospital began QFT-G screening of employees who had previous positive TSTs; 74% of them had a negative QFT-G. The hospital now uses the QFT-G for all pre-placement tests and for annual screening of employees with previous positive TSTs. (Employees with a history of negative skin tests continue to receive annual skin tests due to the lower cost.) The QFT-G program costs the hospital about \$20,000, but it saves the expense of chest X-rays and other medical evaluation of employees with a positive TST, says **JoAnn Shea, MSN, ARNP**, director of employee health and wellness. The hospital may convert all tuberculosis screening to the QFT-G because of its greater specificity and sensitivity, she says. The advantages extend beyond the cost comparison, she says. "Seventy-four percent of these employees [with a previous positive skin test] now feel relieved that they don't have latent tuberculosis," she says.

Many hospitals in communities that have very few cases of TB have been able to reduce or even eliminate annual screening of employees due to the "low-risk" status. In some cases, the money

and time saved from the hospitalwide skin testing program can be used on QFT-G for a limited number of higher-risk employees.

Still, the cost and lab requirements for QFT-G remain a barrier, especially for smaller, rural hospitals. **April Tainter**, RN, employee health nurse at Shawano (WI) Medical Center, sent two employees for QFT-G testing after questionable TST results in their pre-employment screens. The lab in Green Bay charges \$76 for the test and \$17 for the blood draw, and it is 40 miles away. "We will do it very infrequently," says Tainter. "Until they come up with a different testing method that we'll be able to do in our own lab, we won't [use it for screening]."

• **Powered air-purifying respirators instead of N95s?**

What the guidelines say: The U.S. Occupational Safety and Health Administration requires respiratory protection of an N95 filtering facepiece respirator or greater for employees who are exposed to airborne infectious diseases such as tuberculosis. If employees cannot wear an N95 due to a beard or other reasons, they must wear a full-face elastomeric or powered air-purifying respirator (PAPR). When performing aerosol-generating procedures (such as bronchoscopy) with a patient who has tuberculosis or pandemic influenza, CDC recommends use of "at least an N95" or greater protection. The CDC states that "use of N95 respirators for other direct care activities involving patients with confirmed or suspected pandemic influenza also is prudent."⁵

Cost implications: Cost may vary based on the model and quantity ordered, but PAPRs cost about \$500, including the hood, battery pack unit, and air flow tubing.

How a hospital saved money: Time is money, and Prince William Health System in Manassas, VA, was spending too much time on a program to fit-test hundreds of employees for N95s. The hospital system hired an outside consultant who brought two Portacount machines for the fit-testing. When the tests took longer than expected, nurses and other health care workers were kept waiting as long as two hours for their test, says **Kathy Moss**, RN, CPHQ, CPUR, Lead Clinical Nurse for Employee Health/Occupational Health Services.

That debacle influenced the health system to purchase PAPRs, which do not require fit-testing. They started with 50 battery packs and 200 hood sets of the 3M Air Mate PAPR. Employees who need to enter the room of a suspected

tuberculosis patient receive their own hood, which they disinfect and keep for future use. The health system also purchased chargers that can charge up to five battery-pack units. For example, a department such as radiology would receive five battery-pack units and 20 hoods. More could then be purchased out of the department's budget, if necessary. The initial investment came to about \$15,000.

Moss found nurse "champions" in the departments who agreed to train their co-workers. New employees receive their medical clearance for respiratory protection during their pre-placement screening, and additional training takes place during annual "skills" days.

While the initial investment is costly, the hospital saves money by eliminating the fit-testing and the need to purchase the disposable N95s, notes Moss. About 800 of the hospital's 1,300 employees, including housekeepers, are trained to use the PAPRs, if necessary. (Prince William is considered "low risk" for TB, but because the hospital is near the higher-risk metro area of Washington, DC, the hospital has numerous patients that must be assessed for tuberculosis.)

Employees have embraced the change. "N95s are very constricting, but these have air blowing constantly, so they're nice and cool to work in," Moss says.

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Cost a factor in checking HCWs measles immunity

CDC draft tightens proof of immunity

Cost considerations may stymie an effort to make sure that all hospital employees are immune to measles, mumps, and rubella (MMR).

The Centers for Disease Control and Prevention is drafting a new recommendation that would tighten the criteria for measles immunity in health care workers. Under the proposal, only documentation of MMR vaccination or laboratory evidence of immunity would be considered evidence of immunity. That would eliminate documentation of physician-diagnosed disease and a birth date before 1957 as evidence of immunity.

“High standards of immunity to measles, mumps, and rubella are appropriate for health care personnel,” said **Amy Parker**, MSN, MPH, an epidemiologist in CDC’s Division of Viral Diseases, in a presentation to the Healthcare Infection Control Practices Advisory Committee (HICPAC), an advisory board to CDC. “Health care personnel have a duty to protect themselves and their patients from diseases preventable by vaccine. The current permissive recommendations are confusing.”

A rash of outbreaks

CDC also is responding to a spike in measles outbreaks. In 2008, there were 140 cases of measles, representing transmission from imported cases. (While there is no endemic measles in the United States, outbreaks are triggered by travelers from other countries.)

From 2001 to 2008, there were 27 reported cases of measles that were transmitted in health care settings, CDC says. The largest and most troublesome case occurred in Tucson, AZ, in 2008, when a Swiss traveler spread measles to another patient in the emergency department, a woman with a weakened immune system. That woman spread it to four other people in the hospital, including a health care worker. The health care worker spread it to several people, including a patient. (See related story in *Hospital Employee Health*, September 2008, p. 102.)

In all, 14 cases were linked to nosocomial spread. The hospital had to review the documentation of immunity for about 2,000 health care

workers and provide emergency serology and vaccination of 400 employees. The hospital also conducted about 4,000 other contact investigations. The total cost exceeded \$400,000, according to CDC.

However, members of HICPAC expressed reluctance to draft new policy based on an anecdote, however compelling.

“There were 27 cases over an eight- or 10-year period, which is a small number of cases,” said HICPAC member **William Schecter**, MD, a professor of clinical surgery at the University of California, San Francisco and a surgeon at San Francisco General Hospital. “It sounds like the amount of benefit that’s going to accrue isn’t that great. I’m not sure whether this will be a cost-effective policy or not.”

A matter of money

An informal online survey of 35 occupational health professionals found that 10 hospitals (29%) conducted either serologic testing or vaccination of all employees, regardless of age. Another eight (23%) facilities conducted screening or vaccination on all new employees.

However, in California, a survey of 56 hospitals found that almost all (93%) report screening employees for measles regardless of age — although that is primarily conducted among new employees.

“I think it would be useful to have a better handle on how expensive an undertaking this is. Hospitals don’t have a lot of extra money right now,” said **Mark Russi**, MD, director of occupational health at Yale-New Haven (CT) Hospital and associate professor of medicine and public health at the Yale University School of Medicine. Russi is the liaison for the American College of Occupational and Environmental Medicine (ACOEM) to HICPAC.

Jane Seward, MD, MPH, deputy director of CDC’s Division of Viral Diseases, noted that hospitals must verify health care worker immunity in the event of an outbreak — and that process can be very disruptive.

“We don’t know what will happen to measles in the next five to 10 years,” she said. “We’re worried about the undervaccinated and exemptors [and the potential for greater measles transmission].”

HICPAC and the Advisory Committee on Immunization Practices, another CDC advisory panel, are scheduled to vote on the proposal in June. ■

Boosting wellness on the 'graveyard shift'

Hospital maps out walking program

There's a reason the night shift is dubbed "the graveyard shift." Working overnight has been linked to a greater risk of cancer, heart disease, depression, and automobile accidents. That is why Albemarle Hospital in Elizabeth City, NC, has focused wellness efforts on this often-forgotten group of employees.

"When I learned about the risks [specific to night shift workers], I thought at the very least we need to educate them," says **Barbara McCarthy**, RN, BSN, COHN, occupational health manager, who is scheduled to bring her message to the annual conference of the American Association of Occupational Health Nurses. (See editor's note for conference information.)

Night shift health tips

A wellness program geared toward night workers doesn't have to be expensive, she says. "There are little things that can be done that really contribute to their health," she says.

Albemarle currently offers regular health screenings (blood pressure, blood sugar, and body fat) from 8:30 a.m. to 9:30 a.m., which means night workers have to overstay their shift to participate. McCarthy is planning to add screening from 10 p.m. to 11 p.m., which will be conducted by night-shift nurses who are champions of wellness.

The hospital's fitness center, located in a nearby YMCA, isn't open at night, but McCarthy has measured and mapped out walking routes. During their breaks, night-shift employees can walk a loop on the first floor (one-eighth of a mile) or the perimeter of the hospital (one-quarter mile).

Night-shift teams also participate in the hospital's wellness competitions. "The Biggest Loser," modeled after the television reality show, rewards the team that loses the greatest percentage of its weight. "Maintain, Don't Gain" encourages employees to try nutritious recipes during the holidays from November to January. Winning recipes are collected into a cookbook.

The recipes also inspired further initiatives. Since the cafeteria has limited offerings during

the middle of the night, McCarthy encourages night staff to bring nutritious potluck meals to share on their shift.

Night work raises health risks

Before you can expect night shift workers to take advantage of wellness programs, you need to educate them about the risks of their overnight duty, says McCarthy.

For example, the International Agency for Research on Cancer (IARC), a World Health Organization agency based in Lyon, France, has designated working the night shift as a "probable" carcinogen. An analysis of studies showed that women working the night shift may have a 30% to 80% increase in relative risk of breast cancer, which makes night shift work a potentially greater risk of cancer than secondhand smoke, according to a monograph published by the agency.¹ (For more information, see *Hospital Employee Health*, February 2008, p. 20, and September 2008, p. 105.)

Disruption of the circadian rhythm causes problems, notes McCarthy, but there are lifestyle issues as well. "They get less sleep. People who work traditional day shifts will get between five and eight hours. People who work the night shift get three to five hours a day because they try to live a daytime life," she says. "You can't catch up. Ultimately, you're going to have sleep deprivation."

Meanwhile, night workers aren't as likely to engage in fitness, she says. "Many people work shift work because they have other commitments during the day. They're working the shift because it's the only option open to them in their lives. It really makes it very challenging," she says.

McCarthy is developing wellness presentations for the night shift workers and provides recordings of the daytime wellness programs that the night workers can view in the lounge during their breaks.

The night shift also has been encouraged to participate in "Get Fit Now," which targets employees with at least two comorbidities: Obesity, smoking, high blood pressure, diabetes, and arthritis.

McCarthy and her wellness coordinator function as coaches to help employees reach goals such as smoking cessation. She also uses other in-house resources, such as the diabetes educator and nutritionists. The hospital purchased health risk assessment software as a part of the program.

"It doesn't have to be expensive [to conduct

wellness programs],” she says. “You just have to be creative.”

(Editor’s note: The 2009 AAOHN Symposium & Expo will be held in Orlando April 17-23. More information is available at www.aaohn.org.)

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Study points to flu inhalation risk

Virus particles remain airborne

Influenza virus particles remain suspended in the air, which suggests that the virus may be transmitted by an airborne route.¹ That finding, from a study by the National Institute for Occupational Safety and Health (NIOSH) and West Virginia University, bolsters the recommendation to use N95 respirators rather than face masks during an influenza pandemic.

The transmission of influenza has been hotly debated. The Centers for Disease Control and Prevention considers influenza to be spread primarily through “large virus-laden droplets” that can enter the respiratory tract of people in close contact (within 6 feet) of an infected person or that can be transmitted by contact with infectious respiratory secretions.

“Airborne transmission (via small-particle residue of 5 microns or less of evaporated droplets that might remain suspended in the air for long periods of time) also is thought to be possible, although data supporting airborne transmission are limited,” the CDC stated.²

Airborne spread ups the ante

If influenza is airborne, then preventing the spread of pandemic influenza would require N95s or even greater protection, according to respiratory protection experts and health care worker advocates.

“Now we know that every time someone coughs or sneezes, there is a significant fraction [of virus] that is airborne,” says **Bill Borwegen**, MPH, occupational safety and health director of

the Service Employees International Union. “It can stay airborne for some time and potentially cause a risk to people who are further than 3 feet or 6 feet away [the commonly recommended distance to reduce exposure risk].”

In the study, researchers collected air samples in the emergency department of West Virginia University Hospital in Morgantown in February 2008. More than half the viral particles detected by PCR testing were in the inhalable range of less than 4 microns, the authors said.

“A number of factors, including temperature, humidity, and severity of the influenza season, could influence the concentration of viral particles in an aerosol sample. Future studies will be needed to address the viability and infectivity of these viral aerosols and, ultimately, will shed light on the relative importance of airborne transmission of influenza,” the authors concluded.

Small particle inhalation

The study also built upon recent findings that influenza patients exhale tiny viral particles. In three clinics in Hong Kong, researchers tested the exhaled breath of 12 patients and found influenza RNA in one-third of them. More than 87% of the exhaled particles were smaller than 1 micron.³

“These findings regarding influenza virus RNA suggest that influenza virus may be contained in fine particles generated during tidal breathing, and add to the body of literature suggesting that fine particle aerosols may play a role in influenza transmission,” the authors concluded.

Those findings are not surprising to **Mark Nicas**, PhD, MPH, CIH, MS, adjunct professor of environmental health sciences at the University of California — Berkeley School of Public Health, who has studied the mathematical pattern of particle dispersion.

“I don’t doubt that influenza can be transmitted by inhalation,” he says. “I would call it an expected finding that you would find influenza virus in air [near infected persons].”

Nicas notes that doesn’t reveal how infectious those particles are. Because you don’t know what percentage of this virus is active, you can’t make calculations of infection risk.

However, faced with a pandemic strain of influenza that has a high case fatality rate, hospitals would need to consider the risk of inhalation and use a respirator with greater protection than an N95, he says.

In its pandemic guidance, the U.S. Occupational

Safety and Health Administration acknowledges the possibility that influenza could be spread through the airborne route: “No study has definitively established airborne transmission as a major route of influenza transmission, but multiple studies suggest that some airborne influenza transmission may occur.”⁴

OSHA’s guidance: “Given the potential severity of health consequences (illness and death) associated with pandemic influenza, a comprehensive pandemic influenza preparedness plan should also address airborne transmission to ensure that health care workers are protected against all potential routes of exposure.

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RNs at risk for asthma from cleaners, disinfectants

Rates higher than for other HC professionals

Exposure to cleaning products, solvents, and disinfectants continues to place nurses at risk for occupational asthma.

The switch from powered latex gloves to powder-free, low-protein and synthetic varieties has helped prevent additional cases of asthma. But a recent report from the National Institute for Occupational Safety and Health (NIOSH) and research into occupational asthma in the hospital setting indicate that nurses and other health care workers develop work-related asthma more

frequently than those in other occupations.

The Work-Related Lung Disease (WoRLD) Surveillance Report 2007, compiled by NIOSH, found that:

- About 10% of hospital workers suffer from asthma, as determined by the National Health Interview Survey.
- Respiratory therapists have the highest “proportionate mortality ratio” due to asthma — the number of asthma deaths per 100 deaths from all causes — for the years 1990 to 1999, according to the data from the National Center for Health Statistics.
- Health services accounted for more than 15% of all work-related asthma cases from 1993 to 2002, according to surveillance in California, Michigan, New Jersey and Massachusetts.¹
- Registered nurses alone accounted for 5% of the work-related asthma cases in the surveillance states.

“People are still exposed to things in the health care workplace that we know can exacerbate or potentially cause asthma. Some of the biggest offenders are the cleaners and disinfectants,” says **David Weissman**, MD, director of the NIOSH’s Division of Respiratory Disease Studies in Morgantown, WV.

For example, glutaraldehyde is known to cause asthma, as are quaternary ammonia compounds, which are found in many cleaning products, he says. Hospitals also must be aware of other agents that could trigger asthma, such as aerosolized medication, he says.

Hospitals need to be concerned exposures that may affect employees who have pre-existing asthma, Weissman says. “Work-exacerbated asthma is really just as important as new onset asthma because it really affects the quality of life for many people,” he says.

The hierarchy of controls — engineering controls, administrative controls, and personal protective equipment — can limit exposures. But education also is critical, says **Margaret Filios**, SM, RN, occupational and environmental safety and health specialist and project officer for state-based surveillance in NIOSH’s Division of Respiratory Disease Studies.

For example, reports of respiratory symptoms linked to floor strippers or cleaning products could lead a hospital to seek “greener” solutions. “I think we have a hard time convincing people that cleaners are creating problems for their employees,” she says. “[You need to] make sure employees report to employee health if they’re

having a problem. We're still raising the level of awareness."

Latex drops as cause of asthma

Evidence is growing that cleaning products cause a substantial problem for nurses. A study of 3,650 physicians, respiratory therapists, occupational therapists, and nurses in Texas found that nurses involved in instrument cleaning or who had exposure to general cleaners and disinfectants had a higher prevalence of reported asthma.

About 10% of registered nurses had physician-diagnosed new-onset asthma after entry into the health care profession and 31% had symptoms of bronchial hyperresponsiveness.²

"The most important message is for health care professionals to be aware of this," says co-author **George Delclos**, MD, MPH, PhD, professor in the Division of Environmental and Occupational Health Sciences at the University of Texas School of Public Health in Houston. "[We need to] start thinking about how to balance the very necessary use of these [cleaning] products for the welfare of our patients to making sure it doesn't cause adverse health effects in our workers."

Delclos also demonstrated through his research that voluntary interventions in the workplace can significantly reduce the risk of asthma. He compared reported asthma and symptoms of bronchial hyperresponsiveness during three time periods that marked different use of latex gloves: Before the U.S. Occupational Safety and Health Administration's bloodborne pathogen standard became effective (pre-1992), the period from 1992 to 2000 when powdered latex gloves were commonplace, and after 2000 when the use of powdered latex gloves greatly declined.

He found a significantly increased risk from 1992 to 2000, followed by a reduction.³ "It's a beautiful example of how these types of [voluntary] interventions can work," he says.

The research also underscores the importance of employee health as a part of new product evaluation in the hospital, to assess "the sensitizing and irritant potential of the new product," he says.

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CNE questions

13. According to Jeffrey L. Bowman, MD, MS, how should hospitals compare their costs with that of competitors who have similar programs?
 - A. Calculate cost per employee per day.
 - B. Calculate annual budget per employee.
 - C. Compare annual budget per 100 patient beds.
 - D. There is no comparable benchmark.
14. According to the Centers for Disease Control and Prevention, how many reported cases of measles were transmitted in a hospital setting from 2001 to 2008?
 - A. 18
 - B. 27
 - C. 43
 - D. 140
15. Although the fitness center is closed at night and wellness programs occur during the day, how did Albemarle Hospital encourage fitness on the night shift?
 - A. Employees have a special workout room.
 - B. Shifts were altered to enable employees to attend exercise sessions.
 - C. Night-shift workers have their own fitness competition.
 - D. On breaks, employees walk a mapped-out route around the hospital.
16. According to a study of Texas health care professionals, nurses with exposure to what substances have a higher prevalence of reported asthma?
 - A. Latex products
 - B. Cleaners and disinfectants
 - C. Chemotherapeutic agents
 - D. Infectious diseases such as influenza

Answer Key: 13. A; 14. B; 15. D; 16. B.

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. ■

Med 2009 (online publication ahead of print) doi:10.1136/oem.2008.042382.

3. Delclos GL, Gimeno D, Arif AA. Occupational risk factors and asthma among health care professionals. *Am J Respir Crit Care Med* 2007; 175:667-675. ■

Nurse staffing levels affect HC infections

Studies link temp nurses, MRSA, and BSI

Hospitals struggling to decrease their rates of health care-associated infections such as *Methicillin-resistant staphylococcus aureus* (MRSA) may want to consider a new strategy: Hiring more staff.

A review of 38 studies found a significant relationship between nurse staffing and health care-associated infections. Four of them explored the impact of temporary nurse staffing and found a link between the use of temporary (agency) nurses and infection rates.¹

Two studies linked the use of temporary nurses with increased risk of bloodstream infections and two indicated an association between temporary nurse staffing and MRSA.

"It's clear that the frontline caregivers, the people seeing the patient every day, make a difference in these important infections," says **Patricia Stone**, PhD, MPH, MS, FAAN, lead author of the literature review and associate professor of nursing at the Columbia University School of Nursing in New York City.

Staffing may be interrelated with a culture of safety, she suggests. Temporary workers, no matter how diligent, are not vested in the ongoing issues of the facility, she adds.

"They don't know the system as well," Stone says. "Also, they're not committed to making the change so these things don't happen again. When you have a lot of temporary workers, you're not building a better system. They don't have that organizational commitment."

The analysis of studies did not show a clear pattern between infection control staffing and infection

rates. "We certainly need more studies to understand the impact of infection control and employee health, to see how they interact with the frontline people and how they can help," Stone says.

Reference

1. Stone PW, Pogorzelska M, Kunches L, et al. Hospital staffing and health care-associated infections: A systematic review of the literature. *Clin Infect Dis* 2008; 47:937-944. ■

Israeli HIV+ surgeon cleared to work

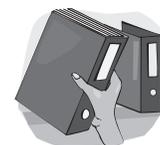
A cardiothoracic surgeon in Israel specializing in open-heart procedures was found to be HIV-positive in January 2007 during evaluation for fever of recent onset, the Centers for Disease Control and Prevention reports.¹ Of 1,669 patients identified in a look-back study that went back 10 years, 545 (33%) underwent serologic testing for HIV antibody. All results were negative.

A review panel recommended allowing the resumption of work, with no restrictions on the types of procedures the surgeon could perform, provided the surgeon followed infection control practices, had routine medical follow-up and adhered to an antiretroviral regimen.

The CDC suggests that policy revisions should be reconsidered for HIV-infected providers who

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■ Help with HCW vaccinations?

perform invasive procedures, particularly the issue of informing patients of their infection. Formed in the wake of the 1991 Florida HIV dental case, those policies were written before the current regimen of HIV drugs — which can suppress the virus and possibly lower the risk of transmission — were available.

Reference

1. Centers for Disease Control and Prevention. Investigation of patients treated by an HIV-infected cardiothoracic surgeon — Israel, 2007. *MMWR* 2009; 57(53):1,413-1,415. ■

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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