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OHNs have unique role in preparing worksite, employees for flu pandemic

Whether avian flu goes pandemic or not, preparing is time well spent

It may not be this year, and it may not be avian flu, or the H5N1 strain. But health experts agree that an influenza pandemic is inevitable, and occupational health professionals are looking closely at what they can do to prepare their employers and work forces for the impact.

Pandemics — global epidemics — most often occur when diseases that typically affect only animals mutate and are transmitted to humans, and then mutate again so that they are passed from human to human. As of early May, there have been documented cases of bird-to-human transmission of the avian influenza strain, but no human-to-human transmissions.

As of May 8, the CDC was reporting 63 cases of human illness from H5N1 worldwide in 2006, resulting in 39 deaths — better than 61% mortality. Since 2003, there have been 207 documented cases in humans, with 115 deaths. All documented cases were contracted by bird-to-human transmission, and were primarily reported in Asia and Eastern Europe.

“The thing is that nobody knows if it will mutate to human-to-human transmission, or when it might, and what the mortality would be if it does,” points out **Jim Reynolds**, MD, of Mercer Human Resource Consulting's Denver offices. “Currently, with bird-to-human transmission, there is a reported 40% mortality rate, but we don't know what it might be if it mutates to human-to-human transmission.”

Health experts around the world, however, have speculated about some of the most likely effects should H5N1 influenza create a pandemic:

- potentially high death rate;
- heavy demand on communities' entire resources to prevent spread and manage infections;
- health services possibly overwhelmed;
- absentee rates exceeding 40% from illness and fear of exposure put business continuity at risk worldwide.

That said, experts are still quick to point out that an influenza pandemic could be far less severe than the worst-case scenarios. The epidemic of 1918, which killed 40 million people worldwide, is often referred to as the benchmark for predicting bad pandemics; but the pandemics of 1957 and 1968 were far less severe — so much so that many people did not realize pandemics were underway.

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Bush: Plan to keep America running

The Bush administration's *Implementation Plan for the National Strategy for Pandemic Influenza* was released in early May by the Homeland Security Council and calls on all employers, both public and private, to take steps now to protect continuity of operations and employees in the event of a pandemic.

Unlike other catastrophic events, a flu pandemic will not directly affect organizations' communications or physical infrastructure, but could, in the worst-case scenario, flatten its manpower.

Because 85% of the food production, medicine, and financial services vital to life in the United States are private enterprises, the federal plan emphasizes business buy-in to the federal strategy

and serious attention to planning how America will keep going during the peak weeks of a pandemic.

The federal response plan recommends that organizations plan with the assumption that up to 40% of their staff may be absent for up to two weeks at the height of a pandemic wave, with fewer numbers of absentees in the weeks leading up to and following the peak. Absences will, of course, be caused by illness, but also result from employees who must care for ill family members, who might be quarantined, or who might fear coming to work and being exposed to the virus.

"Employers should be making plans for the fact that they'll have high absentee rates, and if there is truly an epidemic, in areas where people use mass transit, there might be shutdowns of mass transit or people avoiding mass transit, so planning from a workflow standpoint is important," says Reynolds, who says occupational health nurses have a unique role in planning for both protection of employee health and continuity of operations.

"Occupational health nurses will deal with potential workplace issues surrounding precautions to prevent infection, screening employees who develop fevers, and possibly being called on to [work in] other health care settings if manpower shortages in health care occur," he explains. "Health care professional will be exposed as much or more than any other group in the United States, so occupational health nurses, like other health care professionals, may find themselves called upon to serve in settings they normally aren't in."

Prevent where possible, cope with the rest

In helping craft prevention plans and coping strategies for their companies, occupational health nurses should keep in mind the effects a global pandemic will have on them locally. Because the movement of goods, services, and personnel would be crippled, to some extent, at the peak of the epidemic, planning for shortages of medical supplies as well as safety equipment is an important component of preparation. Basic medical supplies, personal protective equipment, and other crucial items should be stockpiled.

Each workplace location should have a supply of protective equipment. Reduced person-to-person contact and good hygiene practices should be stressed before outbreaks occur, so they become routine.

If a true pandemic develops, the virus will be brought into workplaces by staff, visitors, or

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Characteristics of influenza transmission

- Human influenza virus is transmitted person-to-person primarily via virus-laden large droplets (particles >5 µm in diameter) generated when infected persons cough, sneeze, or speak. Anyone within three feet of the infected person is susceptible; transmission also may occur through direct and indirect contact with infectious respiratory secretions.
- Patients with influenza typically become infectious after a latent period of about 1 to 1.5 days and prior to becoming symptomatic.
- At about 2 days, most infected persons will develop symptoms of illness, although some remain asymptomatic throughout their infection. Even seemingly healthy asymptomatic individuals in early stages of influenza could be infectious to others.

Source: U.S. Homeland Security Administration

vendors, and a policy should be developed far in advance that educates employees on what symptoms to be alert for and who to notify if they believe they or someone else is at risk. The policy should also address how to isolate sick people to minimize risk of spreading infection, provide them with the medical care they need, and safely transport them to appropriate medical and/or quarantine facilities.

The occupational health nurse would necessarily be closely involved in developing and carrying out such plans, Reynolds says. (See **Characteristics of influenza transmission, above.**)

The Department of Health and Human Services' pandemic guidelines offer these additional recommendations for employee health precautions in advance of an influenza epidemic:

- Implement guidelines to modify the frequency and type of face-to-face contact (e.g., hand-shaking, seating in meetings, office layout, shared workstations) among employees and between employees and customers (refer to CDC recommendations, available at www.cdc.gov);
- Encourage and track annual influenza vaccination for employees;
- Evaluate employee access to and availability of health care services during a pandemic, and improve services as needed;
- Evaluate employee access to and availability of mental health and social services during a pandemic, including corporate, community, and faith-based resources, and improve services as needed;
- Identify employees and key customers with

special needs, and incorporate the requirements of those people into the preparedness plan;

- Develop and disseminate programs and materials covering pandemic fundamentals (e.g., signs and symptoms of influenza, modes of transmission), personal and family protection, and response strategies (e.g., hand hygiene, coughing/sneezing etiquette, contingency plans);

- Anticipate employee fear and anxiety, rumors, and misinformation, and plan communications accordingly. Ensure that communications are culturally and linguistically appropriate;

- Disseminate information to employees about the pandemic preparedness and response plan; and

- Provide information for the at-home care of ill employees and family members.

Companies and organizations are being encouraged by the federal government and their insurers to take steps to cross-train key personnel to help continue operations in the event of a pandemic and widespread absenteeism. The occupational health nurse should examine those plans and provide guidance so that a workforce spread thin by illness does not beget more sick employees. (See **tips on minimizing risk, page 64.**)

Effectiveness of barriers uncertain

The problem with planning for a pandemic of a flu strain such as H5N1 is that because that particular strain has not yet — and might never — mutate to a version that will transmit from human to human, it is not possible to know absolutely what barriers and interventions will work best.

Face masks are frequently recommended as personal protection against influenza. However, according to an Institute of Medicine (IOM) investigation, evidence that disposable medical masks and respirators are effective against influenza is limited.

“Even the best respirator or surgical mask will do little to protect a person who uses it incorrectly, and we know relatively little about how effective these devices will be against flu even when they are used correctly,” says **Donald S. Burke, MD**, an epidemiology professor at Johns Hopkins University in Baltimore who co-chaired the IOM committee that investigated the potential for development of a reusable face mask for use during a pandemic.

Masks likely to see widespread use during a pandemic are inexpensive, disposable and intended to prevent the spread of contaminants

Minimizing risk in a pandemic

- Advise employees that there are some precautions they can take to minimize risk, even in the event of a pandemic:
- Get the standard flu vaccine; while it doesn't protect against a pandemic strain of flu, it can protect against simultaneous infection.
- Wash hands frequently, or use alcohol-based hand sanitizers to help prevent spread of infections.
- Get plenty of sleep and exercise to keep your immune system strong.
- Be cautious about travel. Confined spaces such as airplane cabins, trains, and buses can speed the spread of the virus.
- Avoid contact with birds and bird droppings in areas of outbreak.

Source: Mayo Clinic, Rochester, MN

by the wearer, not to protect the wearer from contaminants in his or her environment. N95 respirators, properly fitted, are certified to protect against 95% of an aerosolized test substance.

But neither N95 respirators nor other forms of masking have been tested for their ability to protect against influenza viruses specifically, the IOM committee reports.

Burke says any method of decontaminating a disposable N95 filtering face piece or medical mask for reuse must remove the viral threat, be harmless to the user, and not compromise the integrity of the various parts of the device. "The committee found no method of decontamination that met all three criteria," he reports.

Woven, washable cloth masks used in some countries — or improvised by the general public — are unlikely to provide the protection a medical mask would, says Burke; he added that because there is insufficient data either supporting or disproving their effectiveness, the IOM committee does not discourage or encourage their use.

"We are concerned that their use may give users a false sense of protection that could encourage risk-taking," he points out.

Homeland Defense experts urge organizations to assess their workplaces and human interactions, and to consider intervention strategies that can minimize exposures. *Transmission intervention*

involves the use of barriers such as face masks, and careful attention to hygiene. *Contact interventions* include avoiding face-to-face meetings in favor of teleconferences; telecommuting; "social distancing," in which employees are kept at least 3 feet apart; and tailoring liberal leave policies that free employees to stay home with sick family members and possibly avoid bringing the virus into the workplace.

One or both interventions may work better in some work settings than in others. In theory, experts say, a contact intervention that reduces an individual's contacts by 30% is equivalent in terms of risk reduction to transmission interventions that reduce the probability of disease transmission by 30%.

Companies not investing in plans yet

Health experts say that if a flu pandemic erupts, there are no reliable means of keeping it from spreading into the United States, even if the unlikely decision were made to close down U.S. borders.

Therefore, slowing transmission while maintaining continuity of key operations is the main thrust of the federal response plan. Slowing or limiting the spread of infection everywhere — not just in the United States — could ease the economic damage and give vaccine manufacturers more time to develop and produce strain-specific vaccine.

Reynolds says that while organizations and businesses in Asia have the current outbreaks of H5N1 and the fresh memory of the SARS epidemic to serve as reminders of what epidemics can do, the United States has no such "robust" examples to spur companies to put money behind planning yet.

"We are getting a high level of interest from companies globally," says Reynolds, who helps companies plan their responses to crises such as pandemics. "But even though we have a high level of interest from U.S. companies, their commitment to budgeting for a pandemic is lagging far behind their interest."

A survey conducted by Mercer on avian flu pandemic preparedness asked corporations and organizations around the world about plans they have made in response to the threat of a flu pandemic. To establish an organization's preparedness, the survey looked at five indicators: establishment of a budget for preparedness; development of a business continuity plan;

formation of a crisis leadership management team; workforce planning; and development of employee communications strategy.

Based on those indicators, Reynolds says, the survey results are that while 90% of respondents believe they will suffer moderate to high impact from absenteeism during a pandemic, only 47% have established a business continuity plan. Globally, only 17% of those surveyed have budgeted for preparations for a pandemic; broken down by hemisphere, 29% of surveyed companies in China, which suffered the effects of SARS (with its 10% mortality rate), have budgets in place, while only 7% of U.S. companies have set aside money to prepare for a possible pandemic.

"Influenza pandemics are a given," says Reynolds. "They have occurred in the past, and they'll occur again. Even if it's not this strain of flu, the likelihood is very high that there will be a strain in the future that results in a pandemic, and I think companies that are going ahead and planning now are not wasting effort." ■

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"Reusability of Facemasks During an Influenza Epidemic: Facing the Flu," a report by the National Institutes of Health Institute of Medicine. Available from National Academies Press at www.nap.edu or by calling (800) 624-6242.

Implementation Plan for the National Strategy for Pandemic Influenza, Homeland Security Council, Washington, DC. Available online at www.whitehouse.gov/homeland/nspi_implementation.pdf.]

E-health carry benefits, drawbacks for occ-health

Remote care key issues include privacy, accuracy

Electronic communications and media have vastly expanded the reach of health care, enabling nurses to screen sick or injured employees who are hundreds of miles away.

Cyber medicine or telehealth or e-health encompasses any health care practice that utilizes computers, telephonic communication, handheld data sources, the internet, and any other electronic tool or resource. It's tailor made, in many regards, for occupational health settings.

"It's a low-cost form of medical service in the occupational setting," says **Randi Kopf**, JD, MS, RN, a nurse and attorney who specializes in health care issues. "You don't need to have a nurse or doctor on staff if you have a cyber examination room."

A cyber examination room might be little more than a dedicated private space equipped with a telephone and a computer-mounted webcam, she says. A physician or nurse at the other end can talk with and see the employee, and depending on how elaborate the cyber exam room, obtain blood pressure, temperature, blood glucose levels, and other diagnostic data.

E-health got its start in the early 1990s during Operation Desert Storm, when military doctors needed to be able to evaluate and treat injured soldiers in the field. Doctors found they could use laptop computers linked via satellite to advise medics in the field when the doctors could not be there in person.

"It's just grown tremendously from there, to the point that we now have doctors doing robotic surgery on patients in other parts of the world via satellite," says Kopf.

Nursing, particularly home health nursing, quickly recognized the potential for electronic health care. Homebound frail or elderly patients are much better off, Kopf says, sending in glucometer readings from home via internet than making a trip to the doctor's office on a cold, snowy day.

"Also, in the employment setting, employees with medical conditions or injuries who have to be at home can be monitored easily through telemedicine home care," she adds.

It starts with good data

Not having a nurse doing the exam in person means the nurse and the employee are at the mercy of the reliability of electronically gathered and transmitted data. Also, the intangible information a nurse collects when actually seeing a patient in person is lost.

"How reliable is the data that's coming in from a remote source?" Kopf asks, bringing up a downside to e-health. "If you gather an x-ray or

EKG from an employee at another site and they are e-mailed to you, if the technology is not sufficient in terms of the quality of viewing and total compatibility [of the system components], you can have errors, and there already have been errors reported in diagnoses made from misread X-rays [gathered electronically].”

The occupational health nurse who practices cyber nursing has to be on guard that the availability of technology does not lead him or her to inadvertently or intentionally practice outside the nurse’s scope of practice, she adds.

“Just because there’s a doctor on the screen who tells you that you can do these sutures, if that’s not in your scope of practice, you’d better not do them,” she says. “This tends to be more of a problem with nurse practitioners.”

Bringing a layperson into the loop is another pitfall of practicing remotely, Kopf says, and one that should be avoided.

“If someone who is not a nurse is giving medication [at the behest of a clinician on the other end of the electronic connection] — well, practicing medicine without a license is a criminal offense in most states,” she points out.

Pay attention to privacy issues, HIPAA

The influence of technology on health care can be clearly seen in the explosion of electronic medical records (EMRs). President Bush announced in his first term that making American health care virtually paperless within 10 years would be a priority for his administration’s health information czar, and while the United States has a long way to go before health care records are truly paperless, the strides have been impressive.

“NASA has been working on artificial intelligence that can be applied to EMRs in development. When you start typing in symptoms or a diagnosis, up pops a suggested diagnosis, examinations, and a treatment plan based on the symptoms and the information that is already stored in the EMR,” Kopf explains.

EMR software is constantly being developed, refined, and released, but availability as yet has not translated into easy affordability, Kopf points out.

“Software and startup can be very, very expensive, so not all sites are going to be appropriate for it. If your company has invested in an EMR system, and it works, there are a lot of snags that go into being virtual,” she says. “Hospitals that say they are paperless really are not, because you

need to have access to records in case of a power loss or a disaster.”

An EMR can be as simple as a record of a person’s name, complaint, and treatment, or as sophisticated as an integrated menu of history, workers compensation background, diagnostics, and lifestyle health factors.

Practicing e-health on the job is catching on, but as with any big change, the cost of setting up a virtual examination room has given some employers pause. But after the initial cost of equipment and software, Kopf says, the savings are apparent. The benefits are, for many, outweighed by the drawbacks, she says.

“There is a big startup cost, but it saves money in the end because you don’t need a transcriptionist, the storage of paper files and the cost of the files, and the staff involved in keeping a medical records system,” she says.

Privacy is a big question mark when it comes to EMRs. Kopf says that while advocates say EMRs are more easily secured than paper records, others disagree.

In addition, many records still must be kept in paper form, because many government offices will only accept handwritten signatures on paper forms; for example, many workers compensation offices will not accept electronic forms, and courts usually require original medical records for use as evidence because they are time stamped with ink on paper.

Security is an issue, Kopf says, because while paper records can be shredded and burned, electronic records tend to stay forever, even when they appear to be deleted. There have been reported cases of health records turning up in computers sold to the public as excess inventory by government agencies or medical organizations.

“Then there is a very big issue when the employer, a nonmedical person, may desire access to employee medical records, which violates HIPAA [Health Insurance Portability and Accountability Act],” she points out. “Who are you working for? That’s a big issue in occupational health nursing, and an ongoing problem — is your allegiance to your patient or your employer?”

Added to the question of access is the question of security from hackers. EMRs can be accessed without ever going near the occupational health offices.

The U.S. Department of Health and Human Services issued a final rule on information security under HIPAA in 2003. Among the requirements

for organizations covered under HIPAA are that they:

- Limit physical access to electronic information systems;
- Establish protocols for how records should be accessed and modified;
- Restrict access to workstations where EMRs may be accessed;
- Monitor any removal or receipt of any hardware or software that contains EMR information;
- Back up and store all EMR data for retrieval when necessary; and
- Create policy and procedures for final disposition of EMR information and the hardware or storage media that holds it.

What records may be kept on an employee in his or her EMR can vary, so Kopf stresses that occupational health nurses should familiarize themselves with the laws in their states, and consult with an expert on electronic recordkeeping and HIPAA when setting up or changing an employee health record system.

Some states, for example, prohibit any record of HIV exposure or diagnosis from going into an employee's medical file. The information has to be kept separately, which raises the question of how and when the information can be extracted — not an uncommon dilemma, she points out, since HIV is a pervasive condition that can affect many aspects of an employee's health.

Mental health treatment, chemical dependency, and genetic disorders are all protected conditions that may require special handling of EMRs, as well.

Kopf says she has been unpleasantly surprised to hear that some nurses are told by their employers that they — and their employees' medical records — are not covered by HIPAA.

"I don't care what your company is producing, you're covered by HIPAA, and I strongly suggest to those people that they seek experienced counsel in setting up their health practice," she adds.

She also has been asked if practicing e-health is *really nursing*. "Yes, you're acting as a nurse; so there's full liability," she says. "The duty of care becomes more problematic because the patient is not in front of you, and sometimes you might not know who you're giving the advice to. Clearly, HIPAA privacy rules dictate the realm of practice. On the other hand, you have unlimited access to consultation information. That's the good part of e-health; you save money, save time, keep employees healthy and with fewer sick days. You only need one system for the whole company, no matter how many different sites there are."

Occupational health nurses who use electronic charting have to be on guard that they don't lose their critical thinking skills. Being forced by a strictly structured EMR to conform to the limited choices presented in the record can cause a nurse to neglect considering other choices or possibilities, Kopf warns.

E-health information and resources are popping up throughout the health care information system. Most professional codes and associations now have, or are developing, resources dealing with electronically enhanced health care.

"And at last count, 15 federal agencies are involved in regulating cyber medicine," Kopf says. She suggests nurses investigate their states' nurse practice acts, boards of nursing, multistate licensing compact, code of ethics, and the professional codes of any nursing societies to which they belong for guidance in practicing e-health. ■

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"Innovation, Demand, and Investment in Telehealth," U.S. Department of Commerce, Technology Administration, 2004. Available online at www.technology.gov/reports.htm.]

Injuries cost \$406 billion in lifetime expenses

Health care workers most-injured group in 2002

Health services is the largest private industry sector in the United States, but being trained in health and safety did not prevent that group from being the most-injured group of workers in 2002 — more health care workers were hurt on the job that year than construction workers and miners combined.

Slips, trips, and falls accounted for a major share of those injuries, and led to a collaboration among several hospitals, the Veteran's Health Administration, Washington University, insurance safety experts, and researchers on floor, shoe, and contaminant slipperiness to develop a best practices plan to help curb the number of health care workers injured by falls and slips at work.

"Slip, Trip and Fall Prevention in Health Care Workers" received a National Occupational

Research Agenda (NORA) Liaison Committee/NIOSH award recently for demonstrating teamwork, innovative thinking, and strong science in the collaborative partnerships that resulted in one of the participating hospitals reporting an estimated 25% reduction in workers compensation costs attributed to slips, trips and falls after implementing the program. (For a description of the model, go to www.cdc.gov/niosh/nora/symp06/pdfs/2006PartneringAward_STF.pdf.)

Injuries cost U.S. billions

The injuries occurring in a single year in the United States end up costing more than \$406 billion in medical expenses and productivity losses over the lifetime of those injured, including lost wages, benefits, and ability to perform daily tasks, according to findings from the CDC.

Lifetime medical expenses will tally up to \$80.2 billion for the almost 50 million Americans injured and treated in 2000, while another \$326 billion is the estimated loss in productivity. According to CDC calculations, the costs begin adding up when the injuries occur, and are spread over each injured person's expected lifetime.

The new data and findings are included in *The Incidence and Economic Burden of Injuries in the United States*, compiled by scientists from the CDC and scientific research contractors at RTI International and the Pacific Institute for Research and Evaluation. (Available through Oxford University Press at www.oup.com.)

Researchers noted that actual costs of injuries are likely greater than the figure reported, because police and emergency rescue services, caregiver time, costs for pain and suffering, and other non-monetary costs are not included in the analysis.

Other findings:

- Males account for approximately 70% (\$283 billion) of the total costs of injuries, largely due to higher rates of fatal injury and the projected loss in wages;
- Persons age 25 to 44 years represent 30% of the U.S. population but 40% (\$164 billion) of the total costs of injuries;
- Motor vehicle accidents account for 22% (\$89 billion) of the total costs, while injuries from falls resulted in 20% (\$81 billion) of the total costs.

"Many of the nearly 50 million injuries that occur each year in the United States are preventable," according to Ileana Arias, PhD, direc-

tor of the CDC National Center for Injury Prevention. "To accomplish that, though, we need greater recognition of the value of our prevention efforts. As this study shows, the benefits of preventing things like motor vehicle crashes, falls, residential fires, childhood abuses and other injuries are significant." ■

Lack of sleep, diet put shift workers at risk

Work with employee, employer to minimize risks

Technology and transportation have made the United States a 24-hour society, with many manufacturers, services, and utilities operating 'round the clock, either because the services are required at all times, the production process cannot be interrupted, or it makes financial sense to operate continuously.

To keep this perpetually moving society operating requires workers, and according to the U.S. Department of Labor's Bureau of Labor Statistics (BLS), more than 8 million American adults work in the evening, at night, or rotating or irregular shifts. For those people, sleeping at night and working during the day is a rare occurrence, and one that can have considerable effects on their health.

In humans, the desire to sleep is strongest between midnight and 6 a.m. Not surprisingly, the National Sleep Foundation says surveys of night shift workers reveal that 10% to 20% report they doze off on the job. Some shift workers are able to alter their internal, or circadian, clock to allow them to get a healthy amount of sleep in the daytime, so that they are alert and at full wakefulness throughout their night shift. But for many people, the pull of the body's natural wake/sleep cycle is difficult to alter, resulting in not enough sleep during the day, sleepiness during their evening or night work shifts, and a gradual deterioration in health.

Even day shift workers can have difficulty getting the eight to nine hours of sleep recommended for healthy adults; in shift workers, chronic sleep debt is a common problem that not only results in fatigue, but can contribute to health problems and safety risks.

"We have long known that long work hours, high fatigue levels, and work schedules that fail to account for human physiological needs are

linked to a 20% increased rate of workers' compensation claims among facilities with extended-hours operations," according to **Kirsty Kerin**, PhD, shift work management specialist with Circadian Technologies.

Kerin co-authored a study for Circadian, "Ergonomics Risks, Myths, and Solutions for Extended Hours Operations" (available at www.circadian.com), which presents findings that relate work schedules with ergonomic injuries and musculoskeletal injuries.

The Circadian report found that in 12,500 shift workers surveyed, 30% of men and 41% of women reported chronic or frequent back pain. A smaller percentage reported suffering wrist pain. The report's authors also speculate that sleep deprivation in shift workers who don't get a full night's sleep could make them prone to increased risk of ergonomic injury, and slows recovery time when there is an injury.

Helping shift workers stay healthy

Sleep experts and occupational health professionals agree that there is no one perfect shift work schedule that works for all employees in all settings. Many suggest that night shifts (usually 11 p.m. to 7 a.m.) should not be permanent, and that rotating shifts are healthier than extended periods of night work. Others say frequent juggling of day/night schedules carries its own health implications.

Circadian Technologies advise there are measures that workplace health and safety managers can take to help make shift workers safer and more productive:

- Educate managers and shift workers about the need for adequate sleep and the warning signs of sleep debt and fatigue;
- Install bright lights in work areas to "trick" the body into being awake and alert. Encourage shift workers to use dim lighting and light-blocking window coverings when they return home to sleep;
- Encourage employer to provide healthy food choices in vending machines;
- Caution shift workers about driving when fatigued. Encourage the use of carpools and public transportation.

Both OSHA and NIOSH warn employers to be sure safety training and refreshers are scheduled to cover all shifts. Surveys have indicated that while shift workers may be the employees who most need safety training because of the risks of

working at night or while fatigued, their training sometimes lags behind that of workers on "normal" shifts.

OSHA requirements do not address shift workers differently from other workers, but mandates that workers be given the same protections and safety measures, regardless of what time of day they are on the job.

"Involving employees in schedule selection, training workers on managing the work-life demands of working extended hours, and revisiting workplace policies such as break rules and rest periods can significantly decrease the risk of costly accidents and injuries," the authors of the Circadian study write.

Excess weight means added risk

People whose work shifts cause them to get inadequate sleep might be hurt even more if they are overweight or obese. According to **Robert D. Vorona**, MD, people with high body mass indexes (BMIs) sleep less than their peers with normal BMIs. Consequently, they are more prone to excessive daytime sleepiness and at increased risk for work-related injury and automotive accidents.

Vorona, of Eastern Virginia Medical School in Norfolk, and colleagues examined subjects' total sleep time in relation to their BMI, and found that as BMI increased, total sleep time decreased, and the difference was greater when the subjects were night-shift workers. On average, the difference in total sleep time between subjects with normal BMIs and patients with normal BMIs was about 16 minutes per day; when the subjects were night-shift workers, the difference was 42 minutes. (For a complete report on the study, which appears in *Arch Intern Med* 2005; 165:25-30, visit www.archinternmed.com.)

Because dining options are fewer during the late-night shift than during the day, shift workers might find themselves eating less healthy foods, such as calorie-laden vending machine snacks and sodas. Tell employees to think ahead about what their meals will be at work, and offer the following suggestions:

- Make fast food an occasional treat, not a daily meal;
- Bring food from home; planning and packing a healthy meal in advance makes snacking and skipping meals less likely;
- Plan a couple of quick, healthy meals rather than one large one. It's easier on digestive systems upset by the change in sleep/wake rhythms,

and provides an opportunity for a couple of quick breaks away from work;

- Avoid caffeine after the early part of the shift.

While a little caffeine early on can help promote alertness, too much caffeine or caffeine taken close to the time the worker will be sleeping can further disrupt sleep.

[For more information, contact:

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Survey: Employers think they can't afford OHNs

Many want cost/benefit analysis before hiring

Before a company will consider hiring an occupational health nurse, management must be able to see a cost/benefit analysis and successful business case studies.

This was among the findings the American Association of Occupational Health Nurses (AAOHN) gathered in a new survey of employers who do not have occupational health nurses on staff, indicating that many employers still view staff occupational health nurses as unaffordable luxuries.

From the survey, the AAOHN captures a perspective on some of the historical obstacles still facing occupational and environmental health nurses, according to AAOHN president **Susan Randolph, MSN, RN, COHN-S, FAAOHN**.

"By understanding what does and does not foster corporate leadership's understanding of the value of the [occupational health nurse's] contribution as a business partner, we can make strides toward cultivating, improving, and advancing the profession," says Randolph.

The survey was conducted in February 2006 and polled approximately 1,000 employers who do not employ occupational health nurses. More than 83% of those responding said they have never employed an occupational health nurse primarily because they did not believe they could afford the position.

Almost 70% of those surveyed said they would require a true cost/benefit analysis to justify hiring an occupational health nurse, while 60% said they would require case studies to prove the worth of having an occupational health nurse.

But it's not just money, the companies told AAOHN. Lack of understanding about what occupational health nurses can do and what role they play has prevented 46% of them from hiring nurses, they said.

Randolph says that having information about what companies know and don't know about the role and contributions of occupational health nurses will help the association focus its message to employers who do not employ nurses. ■



Top 10 contact dermatitis allergens identified

Sometimes the cure is another allergen

Among the top ten most common causes of allergic contact dermatitis are some of the topical steroids often used to treat the condition, according to a Mayo Clinic dermatologist.

A study by Mayo researchers led by **Mark Davis, MD** reveals the most common causes of the swollen, reddened, and itchy skin that is the hallmark of contact dermatitis are:

- Nickel (nickel sulfate hexahydrate), metal frequently encountered in jewelry and clasps or buttons on clothing;
- Gold;
- Balsam of Peru (myroxylon pereirae), a fragrance used in perfumes and skin lotions, derived from tree resin;
- Thimerosal, a mercury compound used in local antiseptics and in vaccines;
- Neomycin sulfate, a topical antibiotic common in first aid creams and ointments, also found occasionally in cosmetics, deodorant, soap, and pet food
- Fragrance mix — the eight most common fragrance allergens found in foods, cosmetic products, insecticides, antiseptics, soaps, perfumes, and dental products;
- Formaldehyde, a preservative with multiple uses, (e.g., paper products, paints, medications,

household cleaners, cosmetic products, and fabric finishes);

- Cobalt chloride, a metal found in medical products, hair dye, antiperspirant, objects plated in metal, and cobalt blue pigment;
- Bacitracin, a topical antibiotic;
- Quaternium-15, a preservative found in cosmetic products such as self-tanners, shampoo, nail polish, and sunscreen, or in industrial products such as polishes, paints, and waxes.

While contact dermatitis is in most cases an annoyance, in some cases, it interferes with daily life. "Patients with contact dermatitis can get a very itchy rash from head to toe, or in a confined area," says Davis. "If it's on the hands and feet it can be disabling, and patients at times can't do their jobs."

The study confirms that patch testing is a useful means of identifying common allergens.

Avoidance of the allergen is the best — and sometimes easiest — treatment for contact dermatitis, says Davis. For example, if the nickel coating on the snap at the waistband of an employee's jeans is causing an itchy spot where it touches skin, it (the snap) can be covered with adhesive tape to prevent contact. Soaps that irritate skin can be replaced with hypoallergenic versions.

Corticosteroid creams sometimes are used to treat the rashes that accompany dermatitis; however, the study revealed that some patients with contact dermatitis are also allergic to the topical steroids. ▼

EPA cautions against ionic air purifiers

Devices create smog-comparable ozone emissions

If some employees at your work site are using ionic air purifiers in their work areas in hopes of ridding the air of impurities and allergens, they might actually be adding something undesirable — levels of ozone that exceed safe levels.

California's Air Resources Board has declared war on the devices, saying they create ozone conditions that exceed those in Los Angeles on its smoggiest days.

"People operating air purifiers indoors are more prone to being exposed to ozone levels in excess of public health standards," according to **Sergey Nizkorodov**, PhD, a chemistry professor at the University of California, Irvine who led a study into the effectiveness and health effects of the air purifiers. What his team found is that used in confined spaces, the purifiers may do more harm than good.

Ionic air purifiers are said to work by charging airborne particles and then attracting them to metal electrodes. They emit ozone as a byproduct of this ionization process.

Indoor air purifiers have gained quick popularity in response to public concerns about air quality, asthma, and allergens. Some purifiers produce ozone intentionally, purportedly as a "magnet" for impurities such as dust and pollen, while in others, ozone is a byproduct of its ionization process. But ozone is recognized as an air pollutant, one that regulated by federal and state standards.

Manufacturers claim that the purifiers produce harmless levels of ozone, but according to Nizkorodov, ozone has no effect on most pollutants, kills mold only at very high levels, and can actually cause increases in some pollutants, such as formaldehyde.

Exposure to high levels of ozone can damage the lungs, cause shortness of breath and throat irritation, and exacerbate asthma. It inflames and irritates respiratory tissues, and causes coughing and chest tightness. Ozone is the primary component of smog, and has been recognized and regulated as a serious outdoor pollutant for many years.

The EPA, which has monitored the devices for some time, has issued advisories discouraging use of the ionic purifiers, pointing out in one bulletin, "Scientific evidence shows that at concentrations that do not exceed public health standards, ozone has little potential to remove indoor air contaminants."

COMING IN FUTURE MONTHS

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■ When your error hurts a patient

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Even the claim that the purifiers eliminate odors from the air is questionable, the researchers say; ozone has been shown to “fatigue” the olfactory sense and reduces the ability to smell odors, and thus masks odors, rather than removing them.

The California Air Resource Board has additional information on air purifiers at its web site: www.arb.ca.gov/research/indoor/ozone.htm. ■

CE Objectives / Instructions

The CE objectives for *Occupational Health Management* are to help nurses and other occupational health professionals to:

- Develop employee wellness and prevention programs to improve employee health and productivity.
- Identify employee health trends and issues.
- Comply with OSHA and other federal regulations regarding employee health and safety.

Nurses and other professionals 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, you must complete the evaluation form provided in the June issue and return it in the reply envelope provided in order to receive a certificate of completion. When your evaluation is received, a certificate will be mailed to you. ■

CE questions

21. The thrust of the federal pandemic influenza response plan is to:
 - A. slow transmission to ease economic damage and mortality
 - B. stop influenza from ever crossing U.S. borders
 - C. ensure that face masks are available to every member of the public
 - D. require health care workers to agree to be vaccinated against general influenza.
22. According to nurse and health law attorney Randi Kopf, a nurse who dispenses advice via telephone or e-mail is not practicing nursing and, therefore, liability does not attach.
 - A. True
 - B. False
23. According to workplace health experts, occupational health professionals can help employees who work late shifts remain healthy and alert by recommending or doing which of the following?
 - A. Installing bright lights in work areas to trick the body into feeling alert
 - B. Encouraging employer to provide healthy food choices in workplace vending machines
 - C. Advising employees to eat small, healthy meals and avoid too much caffeine
 - D. All of the above
24. Studies indicate that use of ionic air purifiers in enclosed spaces:
 - A. removes mold and pollen from the air
 - B. causes sometimes unhealthy increases in ozone levels
 - C. removes odors from the room
 - D. removes ozone from the air

Answers: 21. A; 22. B; 23. D; 24. B