Northwest Public Health Fall/Winter 2006

Keeping Workers Healthy and Safe

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Northwest Public Health

Fall/Winter 2006

Volume 23 Number 2

Keeping Workers Healthy and Safe

- 6 Hooked on Safety Using Public Health Methods to Prevent Accidents in Alaska Fisheries Nicolle Mode
- 7 Safe Flights in Alaska Nicolle Mode
- 8 Extreme Stress Promoting Resilience Among EMS Workers Randal Beaton
- 10 Not Just a Domestic Problem Intimate Partner Violence Anne Doherty
- 11 Annotated Resources on Occupational Health and Safety Laura Larsson
- **12** Lift that Patient, Save that Back. Barbara Silverstein and Ninica Howard





- Washington Department of Labor and Industr
- 13 Measuring Back Strain Kathy Hall
- 14 A Community Intervenes Reducing Children's Pesticide Exposure Beti Thompson and Gloria D. Coronado
- 16 No Acceptable Level of Accidents Maggie Jones
- 18 Caution: Teens at Work Mary E. Miller
- 21 Wellness in the Workplace Healthy Workplace Initiative Take the Stairs, Save Your Heart Seattle 5 a Day Washington Wellness Works ACS Workplace Solutions

Departments

- **2** From the Dean
- **3** From the Editor
- 4 Viewpoint: Protecting Workers and Promoting Public Health in the Workplace. *Susan Wilburn*
- 5 Northwest Region at a Glance: Occupational Nonfatal Injury Incidence Rates and Overview of State Occupational Health and Safety Structures



The population-based approach to health that distinguishes public health from medicine generally refers to large-scale efforts such as ensuring safe drinking water, preventing pollution, and eradicating or controlling infectious diseases. But public health's mission, promoting conditions in which people can be healthy, also refers to smaller groups—the disabled, the homeless, farm workers, children, the elderly, gays and lesbians—which often pose unique public health challenges. This issue of *Northwest Public Health* provides an excellent look at some of these groups in our region and how we in public health are working to identify and solve their problems.

At the UW School of Public Health and Community Medicine, much of our research is aimed at these special communities or populations. Although there are far too many projects to describe here, a look at the list of our centers and institutes (http://sphcm. washington.edu/research/centers.asp) offers a quick overview of a few of our areas of expertise.

One such focus is on children. In addition to our degree programs in Maternal and Child Health, we have a Center for Child Environmental Health Risks Research, which studies the mechanisms that define children's susceptibility to pesticides and identifies the implications for children's development and learning. Our Child Health Institute focuses on health care for children: access, cost-effectiveness, quality, and outcomes.

The UW Exploratory Center for Obesity Research concentrates specifically on a group found in increasing numbers, at all ages, throughout our population—the obese. This center is bringing interdisciplinary teams together—scientific, clinical, and public health researchers, schools, public health agencies, community groups—to translate research results into evidence-based strategies for obesity prevention and treatment. Another center housed in our Nutritional Sciences Program, the Center for Public Health Nutrition, coordinates research, teaching, and outreach activities in public health nutrition and provides technical assistance to government agencies and community groups.

While an overarching goal of public health is health promotion for all, our center by that name—the Health Promotion Research Center—is pioneering fitness programs specifically for older adults, built on solid science and proven results. One of the center's hallmark programs, EnhanceFitness, combines a socially stimulating class with exercises that safely enhance strength, endurance, flexibility, and balance. The goal is to enrich lives through physical independence—at any age.

Every population—regardless of its size, age, or composition—has health concerns and risks of disease and injury. Public health—whether working in communities, educating practitioners, performing research, or formulating policy—has as its goal to improve and enhance the quality of life for all of our citizens. I hope you enjoy reading about a few of those efforts in our region in this issue of *Northwest Public Health*.

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Patricia W. Wahl, Dean UW School of Public Health and Community Medicine



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The logo of the School of Public Health and Community Medicine is a symbol of physical and mental well-being (artist: Marvin Oliver)

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From the Editor



ne thing I dislike about developments in the health system over the last twenty years is the rise of

consumer as a synonym for *citizen. Consumer* means to me someone who buys, eats, digests, uses up ... consumes. That's hardly an adequate reflection of our lives, lives in which we parent, teach, learn, recreate, sleep, ponder, act politically, commune with our neighbors. The rise of this consumer orientation has, I think, narrowed our view of individual interests, behaviors, and motivations. And in so doing, it has displaced the more holistic—and complex—notion of *citizen*, a term that encompasses both individual rights and responsibilities to the community and embraces the many roles we play, only one of which is as a user of goods or services in a market place.

Like citizenship, public health is a complex notion. The 1988 Institute of Medicine's *The Future of Public Health* (and C.E.A. Winslow long before that) says that public health involves "society's interest in assuring the conditions in which people can be healthy" and that this requires "organized community effort." If we accept that view, then nearly all aspects of human life could be considered part of public health. After all, research and practice over the past hundred years have established strong links between health and sanitation, land use, education, income distribution, work, environmental degradation, housing, highway speeds, diet, and so on.

If this wide array of factors affects health, then rather than separate health, environment, and labor agencies, we should have a single, all-encompassing public health agency that grants building permits, protects wild rivers and streams, cleans up toxic dumps, inspects restaurants, organizes anti-tobacco campaigns, finances K-12 education, and gives out tickets for speeding.

Right! (Just imagine the training curriculum for that job!)

It would be unrealistic to expect a single regulatory agent to govern all of these sectors; the managerial, budgetary, legal, political, and human resource challenges would be overwhelming. So, at federal, state, and local levels, responsibilities for these various health-affecting sectors have long been divided among separate health departments, zoning and building divisions, environmental protection agencies, workers compensation programs, and employment departments. This division of labor may make sense on a practical level, but it creates some (at least potential) barriers to public health efforts. For example, half of our waking hours are spent at work, yet the bulk of our public health expertise is vested in health departments that have no direct oversight of workplaces.

The articles in this issue of *Northwest Public Health* highlight the need to overcome these jurisdictional barriers for at least two reasons. First, some work entails inherent threats to health—consider health care (see Silverstein and Howard, p. 12, and Beaton, p. 8), commercial fishing (see Mode, p. 6), aviation (see Mode, p. 7), and work performed by youth (see Miller, p. 18) or people with disabilities (see Jones, p. 16). Rates of workplace injuries for selected industries can be seen in the Northwest Region at a Glance (p. 5). Second, some threats to health transcend the divisions between work and home, including children's exposure to farm pesticides (see Thompson and Coronado, p. 14), intimate partner violence (see Doherty, p. 10), and obesity, lack of exercise, and poor diet (see the series of articles on wellness programs, p. 21).

We hope that this issue's focus on the health and safety of workers will add a little to efforts to better coordinate the strategies and practices of public health and occupational safety and health.

Aaron Katz, Editor-in-Chief Director, UW Packard-Gates Population Leadership Program

Protecting Workers and Promoting Public Health in the Workplace

Susan Wilburn

ork is where adults spend half if not the majority of their waking life. Thus, the workplace can be seen as a point of entry for the implementation of public health programs to assess and intervene not only to prevent and control occupational hazards but also to promote health. Public health professionals need to know about workplace hazards and the regulatory functions in occupational health in order to ally with occupational health professionals to take advantage of the opportunities the workplace presents for health interventions.

In 1950, a joint committee of the International Labor Organization (ILO) and the World Health Organization (WHO) adopted the following definition: "Occupational health should aim at the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations, the prevention amongst workers of departure from health caused by their working conditions, the protection of workers in their employment from risks resulting from factors adverse to health, and the placing and maintenance of workers in an occupational environment adapted to his/her physiological and psychological capabilities." In 1995, this definition was broadened to include the maintenance and promotion of workers' health and working capacity, and in 2007 the World Health Assembly will consider a resolution for a new Global Plan of Action on Workers' Health to further expand the concepts of workers' health to include activities that use the work setting as the site for interventions for health promotion, prevention of illness and injuries, and control of health problems.

Regardless of whether is it is framed as workers' health or occupational health, the primary goal is to protect workers from occupational hazards by eliminating hazards, controlling exposure to unavoidable risk, and preventing illness or injury resulting from workplace exposures. The current work environment is much different than the industrial workplace imagined in the 1950s and for which the industrial hygiene hierarchy of controls was created, which emphasized the use of engineering controls for occupational hazards. This focus assumed an "acceptable risk" of exposure and had little consideration of infection and disease as occupational hazards. Now, the first priority is applying a precautionary approach to eliminate instead of control hazards and to substitute safer materials and processes.

Tuberculosis, malaria, and HIV/AIDS, the three major killers in the world today, are not generally thought of as occupational hazards, although the workplace is considered an important setting for interventions to prevent and control these infections, and health workers are at risk of exposure and infection from work with these patients.

Other emerging infections such as Severe Acute Respiratory Syndrome (SARS) and avian influenza are more closely linked with occupation and demonstrate the need for close collaboration between occupational and public health. During the 2003 outbreak in Canada, 43 percent of all reported cases of SARS, for example, were among health care workers. In the poultry industry, workers who raise, slaughter, or prepare chickens, as well as veterinarians and others responsible for culling sick birds, are at risk for infection with avian influenza. But children represent half of the total reported human cases of avian influenza with a 50 percent mortality rate. Rural families are at risk when they raise chickens in or close to the home. Addressing the problems of children and their working parents exposed in the informal sector, where there is neither a traditional employer-employee relationship nor a specific work site, requires collaboration between public health and occupational health. The majority of workers in the world are working in the informal sector, and increasingly in the US, cottage industry occurs in home and in non-industrial settings unregulated and unreached by occupational health professionals.

The role of the workplace and occupational hazards are incorporated into a new framework or ecological model for public health described in the 2003 Institute of Medicine report, *Who Will Keep the Public Healthy? Educating Public Health Professionals for the 21st Century*, which calls on public health professionals to recognize and address multiple determinants of health. This ecological model of public health requires a heightened awareness of the role of the environment—including the work environment—biological, chemical, physical, ergonomic, social, and economic factors, as well as employment and the built environment in order to improve population health in the next century.

Workplace surveillance provides information about public health hazards that can lead to interventions for the community at large. In this way, workers are like canaries in a coal mine for emerging health problems, and workplace interventions will assist in identifying solutions for the whole community. All public health interventions should take into consideration the work environment and other determinants of health of individuals and populations and promote policies to address them.

Author

Susan Wilburn, MPH, RN, is an occupational health consultant for WHO and for John Snow International.

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Northwest Region at a Glance

Selected Occupational Nonfatal Injury Incidence Rates



Source: Bureau of Labor Statistics. Survey of Occupational Injuries and Illnesses (SOII), State Occupational Injuries, Illnesses, and Fatalities. US Department of Labor. www.bls.gov/iif/oshstate.htm. **Notes:** *Idaho data* were for 2005 and was calculated from workers' fatal and non-fatal injuries compensation claims collected by the Idaho Industrial Commission. Workers' Compensation claims include fatal and non-fatal injuries; fatal injuries accounted for only 0.1% of claims in 2005. *US data* exclude states that didn't participate in the SOII (Colorado, Idaho, Mississippi, New Hampshire, North Dakota, Ohio, Pennsylvania, and South Dakota) and include Washington DC, Guam, Puerto Rico, and the US Virgin Islands. *Montana data* for "all industries" include only private industries.

An Overview of State Occupational Health and Safety Structures

	Minimum	Workers' Compensation Insurance			nsurance	Occupational
State	Wage	Drivete	Dublis	Self-	Assigned	Health and Safety Regulators
		Private	Public	insurance	RISK POOL	
Alaska	\$7.15	X		x	X	Occupational Safety and Health, Alaska Department of Labor and Workforce Development
Idaho	\$5.15	X	X ¹	x	x	Idaho Department of Commerce and Labor; Idaho Industrial Commission
Montana	\$5.15 ²	X	X	X		Safety and Health Bureau, Montana Department of Labor and Industry
Oregon	\$7.50	X		X	x	Occupational Safety and Health Division, Oregon Depart- ment of Consumer and Business Services
Washington	\$7.63		x	x		Washington State Department of Labor and Industry
Wyoming	\$5.15		x			Workers' Safety and Compensation, Wyoming Department of Employment

Private: Employers purchase workers' compensation insurance from commercial insurance providers. Some states approve or license certain insurance carriers to provide workers' compensation. Employers send proof of insurance to the state.

Public: Employers purchase workers' compensation insurance from the state. Typically, the state sets up a separate insurance fund, supported by insurance premiums and other investments, to pay claims.

- Self-insured: Employers can apply to their state to be self-insured, which means that employers are responsible for all payment of benefits during the time the claim is open. In order to qualify to be self-insured, employers must meet certain criteria, usually based on recent workers' compensation losses and the company financials. The state oversees the provision of benefits and ensures the company is compliant with the terms of self-insurance.
- Assigned Risk Pool: A federal insurance program administered by the National Council on Compensation Insurance for employers unable to qualify for other insurance options.

¹ In Idaho the State Insurance Fund is a quasi-state agency run mostly as a private insurance company that is self-supporting from premium and investment earnings. The State Insurance Fund is not tax-supported, and Idaho State is not liable for any indebtedness incurred by the Fund.

² In Montana, minimum wage is \$4.00 for companies with gross earnings less than \$110,000.

Data researched and compiled by Maggie Jones

Hooked on Safety

Using Public Health Methods to Prevent Accidents in Alaska

Nicolle Mode

ccupational safety is more than just regulations, colorful signs about workplace dangers, and annual hazard training. Alaska is a prime testing ground for new ways to approach occupational safety.

In the past, Alaska had the highest occupational fatality rate in the nation. Confronted with the high occupational

fatality rate, and aware of the opportunities that Alaska provided for pioneering new ways to approach occupational health and safety, the National Institute for Occupational Safety and Health (NIOSH) opened a field station in Anchorage, Alaska, in 1991. NIOSH is the federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness.

One new approach the NIOSH Alaska Field Station staff have taken is to use the public health model to address occupational safety problems. This model includes using surveillance systems and summarizing data to describe the problem; collaborating with agencies, workers, and industry; using data to drive program priorities, starting with the most injurious events; and developing tailored prevention strategies and practical recommendations for each problem.

Gathering the data

Surveillance is the systematic collection, organization, and analysis of data and the timely dissemination of information necessary for action. It is the foundation for the public health approach. One of the first acts of the Alaska Field Station was to create the Alaska Occupational Injury Surveillance System (AOISS). This database contains detailed information on all the fatal traumatic occupational injuries in the state. Research staff enter information from multiple sources, including state trooper reports, medical examiner files, US Coast Guard reports, newspaper articles, National Transportation Safety Board investigations, and personal interviews.



The database includes basic information such as occupation and industry of the workers involved and type of injury as well as more specific information on commercial fishing incidents, such as the type of fishing gear used, presence of safety equipment, and weather conditions.

Fatal injuries are the most severe type of injuries that can occur at work, but a safe work environment means safety from all types of injuries. For more than a decade, NIOSH has been collaborating with the State of Alaska to develop and maintain the Alaska Trauma Registry (www.hss.state.ak.us/ dph/chems/injury_prevention/trauma.htm). This registry includes information on all hospitalized injuries in the state, including those that were transferred out-of-state for hospitalization. As part of the collaboration, information on work status at the time of the injury is collected and documented. The data set provides ongoing surveillance information for all serious nonfatal work-related injuries in the state.

Commercial fishing

Many people across the country have heard of Alaskan Copper River salmon, but the state is also a primary national source of other seafood including halibut, several species of other wild salmon, and crab. Almost 4 billion pounds of seafood were harvested in 2004 off Alaska's shores. Two of the country's most dangerous occupations, commercial fisherman and commercial pilot (see box for a discussion of pilot safety), account for approximately 3 percent of the workforce in Alaska compared to less than 0.1 percent in the US overall.

People who are employed on fishing boats work

with deck machinery including winches and cranes, 800-pound crab pots, large nets, and lines with four-inch-long hooks—all on slippery, moving decks. It isn't surprising that commercial fishing is one of the nation's most dangerous jobs. Alaskan fishermen who fish for crab in the Bering Sea have even become the focus of a popular reality show, *Deadliest Catch*, on the Discovery Channel.

Early work by Schnitzer from the 1980s identified commercial fishing in Alaska as a dangerous occupation, with an occupational fatality rate more than 40 times higher than the overall national rate. In 1988 Congress passed the Commercial Fishing Industry Vessel Safety Act, which was implemented over the next seven years. This act tries to ensure that fishermen are prepared to respond to an emergency by requiring safety equipment such as liferafts, immersion suits, and location beacons on vessels. It also requires that fishermen conduct monthly emergency drills.

AOISS and the Alaska Trauma Registry have been helpful in investigating accidents in commercial fishing. The surveillance system provides detailed data for analysis as well as longitudinal data for assessing the effects of interventions. NIOSH researchers used the surveillance data in AOISS, for example, to complete the first major assessment of commercial fishing fatalities in Alaska. The results were published in the 1997 Current Intelligence Bulletin (CIB) #58: Commercial Fishing Fatalities and Prevention Strategies in Alaska.

This analysis included details previously unavailable, such as the location of the vessel at the time of the event, the fishery in which the vessel was operating, circumstances surrounding the incident, demographics of the victims, and survival equipment used. The leading causes of death for fishermen were drownings due to vessel sinkings, falls overboard, and deck injuries. The crab fishery had the highest fatality rate of any fishery in Alaska.

During the 1990s, the fatality rate among commercial fishermen declined, in part due to the Safety Act. The act, however, focused primarily on saving lives after an emergency at sea, such as a vessel sinking, had already occurred. The regulations do not focus on the prevention of vessel sinkings, falls overboard, or injuries on deck. NIOSH recommended focusing on preventing these disasters in the first place, in addition to continuing to prepare to react to them when they occur.

Collaborating with partners

Following the public health model, the NIOSH Alaska Field Station built strong collaborative *Continued on page 24.*

Safe Flights in Alaska

Nicolle Mode

The pilot has delivered the passengers and mail, and he's already thinking of what he'll do when he gets home tonight. He's made the trip many times. He calls the airport where he'll be landing, and the weather is good, just like the airport he's at now. There's no information on the weather near the mountain pass. The trip takes a few hours, and while he's heading toward the pass, some clouds move in. His easy trip under visual flight rules has now become more difficult. Soon he can't see much at all, and by the time he's deep in the mountain pass with steep hills on either side, he can't tell where the clouds end and the mountain begins.

This story is fictional, but it used to be a common Alaskan scenario that resulted in fatal aviation accidents. Between 1990 and 1999, 52 commercial pilots flew a working plane into either the ground or a mountainside in Alaska. Controlled flight into terrain (CFIT) is the aviation terminology for the seemingly impossible act of flying an airworthy aircraft into the ground. It is the leading cause of fatal commercial aviation accidents worldwide including 25 percent of all fatal airline accidents and 38 percent of international airline fatalities (3,631 lives lost from 1987 through 2004).

In the 1990s several federal agencies came together, with financial support from Congress, to address the high rate of aviation accidents in Alaska. The National Institute for Occupational Safety and Health (NIOSH), using the public health approach, focused on addressing the most deadly problems first, including CFIT. Previous research by NIOSH staff led to the recommendation of increased availability of local weather information and specialized weather training for pilots to decrease the number of these crashes.

Today, a pilot flying between two remote airports in Alaska has more information available about the weather than ever before. NOAA's National Weather Service has placed online weather cameras across Alaska, including several mountain passes (http:// akweathercams.faa.gov). The Federal Aviation Administration's Capstone program (www.alaska.faa.gov/capstone/) is introducing avionics based on global positioning systems for small commercial aircraft. These systems allow pilots to receive updated weather information, as well as the location of other Capstone-equipped aircraft. An Alaskan nonprofit organization, the Medallion Foundation (www.medallionfoundation.org), has worked to create a culture of safety in the industry and, in the process, has made safety profitable. The foundation has a Five Star program for companies: each star represents a higher level of safety. The goal is to increase safety, and decrease insurance costs for companies operating in the state. As of this fall, the State of Alaska will contract only with companies that have at least one star completed.

The collaborative approach of federal agencies, in concert with local nonprofit organizations, has had a tangible effect. Since 2000, not only has the average number of fatal occupational crashes per year decreased but also the percentage of fatal occupational accidents due to CFIT has declined by 13 percent. In 2005, there were no occupational pilot fatalities in Alaska.

Extreme Stress

Promoting Resilience Among EMS Workers



Randal Beaton

he paramedic (let's call her Sara) had served with a rural Emergency Medical Service (EMS) department for more than a decade but nothing prepared her for what she was about to see in the next few moments. As her paramedic unit pulled up on the scene of a multicasualty traffic accident, she could see the volunteer firefighters extricating one of the victims from his pickup truck, which was still partially engulfed in fire. To her surprise the victim, who obviously had sustained severe burns, emerged from the vehicle choking and bent over but alive. Astonished, because of the severity of his burns, she turned to her partner and asked, "Is he alive?"

The victim overheard her query and responded, "Yes, I'm alive." Smoke seemed to billow out of his mouth. Sara could see the desperation and pain in the burn victim's face and knew from her years of EMS experience that he would probably not survive. She helped to treat and stabilize his burn injuries and then transported him to the nearest trauma center. Later that shift, she learned that, as both she and her paramedic partner had expected, the victim died shortly after admission.

Sara knew that she and her partner had done everything they possibly could, but the man's suffering and death still bothered her. She tried to put the victim's face and anguished cries of pain out of her mind. For a time this seemed to work-but then the nightmares began. The nightmares were almost exact replays of the traumatic incident. Then her nightmares changed and became even more disturbing-now her adolescent son's face was transposed on that of the dead man's. For the

first time in her career, Sara began to dread her EMS shift. Her sleep became progressively more disturbed and fitful. She began to isolate herself from friends and family and drifted into a state of clinical depression.

Sources of stress

Several of her co-workers noticed the changes in Sara's behavior and mood and suggested that she see a mental health professional for symptoms that seemed consistent with post-traumatic stress disorder (PTSD). PTSD is an occupational hazard for emergency medical services personnel, who are routinely and frequently exposed to their patients' trauma and suffering. This type of traumatic exposure is sometimes referred to as vicarious, or secondary, traumatization. EMS personnel also suffer primary traumatic exposures, which are exposures to potentially dangerous situations in which they risk personal injury or even death, for example at a multiple casualty motor vehicle accident on a major highway or at the scene of a recent homicide.

Remarkably, considering the frequency, nature, and intensity of their duty-related traumatic exposures, EMS personnel have relatively low rates of PTSD. Most studies have reported PTSD prevalences among them of 15 to 20 percent. A number of factors probably account for their resiliency, but the bonding and social support provided by their co-workers is perhaps most important.

It would be a mistake and an oversimplification, however, to think that all EMS job-related stress is due to traumatic incident exposures. In

fact, prehospital emergency medical service personnel, which includes emergency medical technicians (EMTs), paramedics, and other first responders, complain of a wide variety of sources of occupational stress. In many urban settings, professional EMS personnel work 24-hour shifts and suffer the stress and strain associated with shift work. In a large-scale published survey of Washington State firefighters, EMTs, and paramedics, the job stressor that was identified as the most problematic was that of disturbed sleep, including both poor quality sleep and too little sleep. It is somewhat ironic, given this complaint, that many EMS personnel actually prefer assignments at busy stations and fail to recognize the need for rest or reassignment. Another source of stress in EMS is the rigid and authoritarian organizational structure found in most EMS organizations. Poor leadership-especially a noncommunicative and nonempathic style-can aggravate stress and harm morale.

Additional sources of stress in EMS workers are their life and death responsibilities and the time urgency associated with their work. Within moments of arriving on scene, EMS workers

often need to assess sick or injured patients and provide care. The consequences of an inaccurate assessment or delayed treatment can be dire.

Mundane and often routine non-incident stressors such as work scheduling, needless paperwork, and bureaucracy can add to the stress burden. In addition, many EMS workers complain about the relatively low wages and lack of status and respect for their work. At times these routine work stressors and the various sources of stress associated with the emergency nature of their work combine to result in burn-out. Burnt-out EMS workers lose interest in their work, lack energy, and have difficulty feeling empathy for their patients. Burn-out, too, is often associated with physical stress-related symptoms such as muscle tension and fatigue.

Building resiliency

Resiliency training or stress management in EMS involves a continuum of services and options that range from self-care to the provision of professional mental health services and even, at times, anti-depressant medication. A comprehensive resiliency program needs to address both personal and organizational factors. Stress management trainings should focus on a variety of resiliency-promoting behaviors such as a good diet, regular exercise, and training in appropriate relaxation skills. Perhaps more importantly organizations need to adopt policies and procedures that support their EMS personnel and reduce unnecessary sources of organizational stress. One successful organizational approach to increasing resilience in the fire service has been the development and adoption of comprehensive wellness-fitness programs that include nutrition education, and a fitness training component with the provision of on-site aerobic and strengthtraining equipment.

Another organizational approach to workforce resilience is the promotion and training of only the best and most effective leaders. Ample research shows that line workers' relationship with their immediate superior is most strongly linked to job satisfaction and—not surprisingly—fewer symptoms of stress.

On an individual personal level EMS workers need to take some responsibility for their mental and physical health—including their off-shift health habits. To address their likely sleep deprivation they need to make an effort on their off-shift days to get adequate rest. Most

Many EMS personnel actually prefer assignments at busy stations and fail to recognize the need for rest or re-assignment.

> EMS personnel could also benefit from learning and practicing some form of relaxation Even abbreviated relaxation techniques can be helpful in countering the acute and chronic stressors associated with their occupation.

> Sara, by the way, followed the advice of her co-workers and sought some counseling. She was reluctant at first but soon learned from her therapist that she was not crazy. Her therapist also recommended an anti-depressant along with the ongoing counseling. Sara made excellent progress over a period of just a few months—her sleep improved, her spirits lifted, and she decided to rededicate herself to her work as a medic. ■

Author

Randal Beaton, PhD, EMT, is a research professor and clinical psychologist in the UW Psychosocial and Community Health Department in the School of Nursing and a research adjunct professor in the Department of Health Services in the School of Public Health and Community Medicine. He is also a volunteer emergency medical technician.

Resources

NIOSH Fact sheet—Traumatic Incident Stress. www.cdc.gov/niosh/unp-trinstrs.html.

For other resources related to this article, please see the online version at www.nwpublichealth.org.

Not JUST a Domestic Problem Intimate Partner Violence

Anne Doherty

ews of workplace violence brings to mind attacks by angry customers or fellow workers, but each year an estimated 30,000 to 40,000 reported cases of workplace violence in the US are caused by domestic partners, according to the Verizon Foundation.

The scope of the problem

Intimate partner violence (IPV, also called domestic violence or abuse) includes not only physical abuse but also sexual, mental, and emotional abuse as well as stalking and economic control. It is a serious public health concern that has been strongly correlated with physical and mental health problems, child abuse and neglect, alcoholism, and homelessness.

National Overview of Intimate Partner Violence

• One-third of women will experience domestic partner violence over the course of their lifetime.

- More than 5 million incidences of domestic partner violence occur annually, affecting 1.5 million women.
- Nearly 1,500 women die each year due to domestic partner violence.
- More than one-fifth of adult employees are domestic partner violence victims.

The workplace offers a promising arena for reducing intimate partner violence, for several reasons: nearly nine in ten abused women are or have been employed; the vast majority (89 percent) of those women have been harassed in connection with their work; and there are solid ethical, business, and legal reasons for reducing IPV.

Intimate partner violence is not limited to any particular group of people, although at least 85 percent of victims are female. Three-quarters of IPV victims are white, but proportionately, IPV rates are similar among white, black, and Hispanic women. The rates in

urban, suburban, and rural areas also are similar to each other. IPV is found in all socioeconomic and demographic segments, but it tends to occur more often among women with lower levels of income and education and among women 18 to 24 years old.

The cost to employees

The effects of IPV in the workplace range from decreased morale to death and include tardiness, absenteeism, lowered self-esteem, poor focus, and diminished work performance. Abused women face many barriers in maintaining employment. For example, nearly 44 percent of abused women reported that their partner left them without transportation for work. More than half of abused women have been tardy, one-quarter have left early, and more than half have not shown up at all.

The cost to employers

Businesses pay a high price for the direct and indirect costs of intimate partner violence, especially in the service industry (the industry in which 70 percent of all workplace assaults happen). The Centers for Disease Control and Prevention estimate that direct costs such as medical and mental health service claims total more than \$4 billion annually. Indirect costs, including lost wages, absenteeism, reduced productivity, and use of work time to arrange for personal services, total a loss of nearly \$1.8 billion.

Employers can also be vulnerable to lawsuits for not maintaining a safe work environment or not providing assistance, which can cost between \$25,000 and several million dollars per lawsuit. The average jury award is \$1.2 million, and the average settlement is \$600,000, according to the Family Violence Prevention Fund.

Employers respond

Several national studies have indicated that a majority of employers consider IPV a serious safety concern that also affects profitability. More than half of employers surveyed knew of particular instances of domestic abuse among employees. Relatively few organizations, however, have policies and programs in place to address IPV in the workplace. Of those employers who have implemented prevention or assistance programs, all did so for reasons of compassion and safety, rather than simply to improve the bottom line. Some responses include having an employee assistance program and, in some states, requesting a restraining order on behalf of an employee.

Having an employee assistance program is a positive step, but has not proven sufficient to reduce intimate partner violence in the workplace. The most common reason that many abused women do not ask for help from these employersponsored programs is fear of losing their jobs. Training for managers and expanded company policies may be necessary to reduce the incidence of intimate partner violence. Some organizations do develop explicit safety policies and provide a safe place for abused employees to seek assistance without fear of retribution. The Multnomah County Health Department in Oregon provides a model example. It has devised a comprehensive program to address partner violence in the workplace.

The department's four-page document "General County Personnel Rules: Workplace Violence Rule 3-45" addresses partner violence in a number of ways. In addition to prohibiting violence in the workplace, the rule also outlines a reporting chain of command, forbids retaliation for reporting, mandates reasonable protection accommodations, limits information given out about the employee, and allows flexible scheduling and leave time. In the case of diminished work performance, the rule mandates evaluation of all aspects of an employee's situation and options before any disciplinary actions may be taken. The county also offers two pages of ideas and suggestions for abused employees in the "Employees Experiencing Partner Violence" section of its Improving Response to Partner Violence manual.

In addition to local governments, some national corporations are working to reduce IPV. Both Verizon Wireless and Macy's West have strong internal policies concerning partner violence in the workplace. Macy's West recognizes IPV as a concern for its business, since 70 percent of their employees are women. Human resource managers developed a team-based program to identify and refer employees by collaborating with the Blue Shield of California Foundation and local domestic violence service organizations.

For employers interested in learning more about addressing IPV in the workplace, many resources are available online. One nonprofit agency, the Family Violence Prevention Fund (www.endabuse. org/workplace), offers several resources for small and large employers and unions, including examples of innovative employers, educational training tips, sample texts for developing policies, and links for state and federal laws.

Employers are becoming more concerned about the serious health and financial consequences of intimate partner violence and its effects on the workplace, and recognize both compassionate and business reasons to establish prevention and assistance programs. Increased awareness and education about the issue, coupled with the examples set by large businesses such as Verizon and Macy's West and local organizations such as Multnomah County, should lead to safer and more productive workplaces. ■

Author

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National Domestic Violence Hotline, 24 hours a day. www.ndvh.org; 800-799-7233.

For other resources related to this article, please see the online version at www.nwpublichealth.org.

Annotated Resources on Occupational Health & Safety

By Laura Larsson

Disabled Workers

CODI: Cornucopia of Disability Information. http://codi.buffalo.edu.

CODI serves as a community resource for consumers and professionals by providing disability information in a wide variety of areas. It contains a repository of electronic disability documents dating back to the early 1990s, many of which are publicly available nowhere else on the Internet.

Emergency Medical Services Personnel

Stress Management for the Emergency Care Provider. Mikolal, Alan. Prentice Hall, 2004.

Examines stress and critical incident stress in the emergency services professions and explores the latest in stress management techniques and the discussions and controversies in the literature.

Healthcare Workers' Ergonomics

Back Injury among Healthcare Workers: Causes, Solutions, and Impacts. William Charney and Anne Hudson (eds.). CRC Press, 2003. www.wingusa.org/book.htm.

This book presents the latest research and information on the topic from an

epidemiological, legal, and equipment manufacturing point of view. Uses case histories from a number of injured healthcare workers to analyze back injuries from the worker's point of view and gives a detailed discussion of the legal and rehabilitation pitfalls that workers face when dealing with an injury.

Pesticides and Agricultural Workers and their Families

CROETweb: Workplace Safety and Health Resources. 2004.

http://croetweb.com/index.cfm.

The collection of links at the Oregon Health & Science University's Center for Research on Occupational and Environmental Toxicology includes occupations and industries, chemical hazards, biological hazards, ergonomics issues, and workplace safety issues.

Workplace Wellness Initiatives

Eat 5 to 9 Servings of Fruits and Vegetables A Day for Better Health. www.5aday.gov.

One of the best sites for encouraging people to eat properly by including between five and nine servings of fruits and vegetables each day to keep healthy. Great illustrations and content containing recipes, serving portions, scientific evidence for eating fresh fruit and vegetables, and many resources.

Employer-Based Prevention of Chronic Disease in Washington State, 2005. University of Washington Health Promotion Research Center, October 2005. http://arcnw.org/docs/re_wa_emp_05.pdf

This lengthy document will be of interest to employers, employee advocates, and employees. Includes two executive summaries, a primer on Washington State employment, sections on employment-based health promotion activities in the state, employer health risk assessment activities, Washington State employers' thoughts on employment-based health promotion activities, and a list of recommendations.

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Find more annotated resources online at www.nwpublichealth.org.

Lift that Patient, Spare that



Health care workers use the SIZEWise Air Transfer, which helps safely move or transfer patients up to 1000 pounds.

Barbara Silverstein Ninica Howard

hirty years ago, when three nurses were lifting a 280-pound patient with a full leg cast from a high bed to a wheel chair, the other two let go and Barbara ended up under the patient. She was off work for three years and in pain for 17 years. This ended her career in acute care nursing. Stories like Barbara's are still common today, but thanks to the efforts of workers, hospitals, legislators, and the Governor, recent legislation in Washington State may finally

> begin to make patient handling safe for the patient and for the staff.

Washington State's population is becoming increasingly older and heavier. The incidence and cost of patient lifting-related injuries among health care workers is highnursing staff have among the highest back and shoulder injury rates of any occupational group. For example, the incidence rate for compensable back injuries in 2003 among health care employers in the state fund workers compensation system was 162.5 claims/10,000 fulltime equivalent (FTE) employees compared to 41.4 claims/10,000 FTEs for all other state fund employers. For the self-insured employers, the compensable back injury claim rate for health care employers was 98.6/10,000 FTEs compared to 64.0/10,000 FTEs for other employers.

Task force findings

Washington's effort to address the problem of lifting injuries began with a task force of labor and industry representatives to assess the magnitude of the problem, and the successes in and barriers to improving injury rates related to lifting in the health care arena. The task force, convened by the Department of Labor and Industries at the request of the Washington State House of Representatives Commerce and Labor Committee, looked at hospitals, nursing homes, home sector (home care, home health care, and hospice), and prehospital medical services (emergency medical and ambulance services). The task force reviewed the literature (epidemiologic studies, intervention and case studies, policy and legislative) and conducted interviews and site visits to the different types of health care settings. (Find a summary of the findings at http://lni.wa.gov/Safety/Research/Wmsd/ *PatientHandle/.*)

Hospitals and Nursing Homes. Nursing homes reported that one of the biggest barriers to attracting and retaining staff is the heavy physical work. All the hospital and nursing homes visited by the task force had made some attempts to reduce the manual handling of patients and residents. The sites that had made the most progress in reducing the physical load on staff reported improvements in lost-time injury rates and costs. Some hospitals had implemented ceiling lifts, and their staff seemed enthusiastic about the lifts, but none of the nursing homes had ceiling lifts. The cost of appropriate lifting equipment was seen, especially by the nursing homes, as a huge barrier.

Home Sector. Home health care, home care, and hospice care have unique challenges in that the home is often not structured for ease of client-

Ways to Reduce Lifting Injuries

- Assess transfer needs of patients every shift
- Never manually lift or transfer a totally dependent adult patient, or a patient off the floor, alone
- Have the right equipment at the right place at the right time, including sufficient auxiliary supplies (enough slings of different sizes)
- Use mechanical devices such as total body floor lifts or ceiling mounted lifts for patients who cannot bear any weight
- Use sit-to-stand mechanical lifts for those who can bear some weight but are very unsteady
- Use chair walkers for those who can ambulate but are unsteady
- Use slip sheets or ceiling lifts to reposition patients in bed
- Use air lift mats or slide boards to move from bed to stretcher
- Use adjustable easy-to-roll beds to avoid stretchers

12 Northwest Public Health • Fall/Winter 2006

assisted transfers, and the need for home health care is often temporary, making the expense of lifting equipment even more of a barrier. Employees were more likely to see the benefit of equipment use than the agency administrators. Home sector workers often work alone, which adds to their difficulty in lifting and moving patients.

Employees and employers both thought the most useful equipment would be powered lifts rather than manual lifts, stair lifts, sliding sheets, pull up straps for getting up in bed, or sit-stand devices. Ironically, some of the, so called, luxury items (for example, sit-stand assist devices and mechanical total body lifts) might be the very thing that enables family members to continue assisting homebound individuals, allowing them to remain at home.

Pre-Hospital Medical Services. In municipalities, pre-hospital medical services (paramedic, ambulance service, firefighter, and emergency medical technician) are provided by professionals, but crews in rural areas may be made up entirely of volunteers. Interviewees reported that lifting patients during medical calls was likely or very likely to cause serious injury at some point in a career. They were most concerned with back and shoulder injuries, particularly when handling heavy medical equipment and when there is no control over the facilities where they picked up patients.

The greatest physical loads in manual handling come from very obese patients, automobile extrications, lifting in tight spaces and from the floor, carrying down stairwells, and lifting a patient and gurney together, especially outdoors. Some ambulance companies have developed a bariatric-specific transport unit, with a ramp and winch system for pulling gurneys into a wider-than-typical bay or with modified suspension so the vehicle can be pneumatically lowered to make loading easier. As with the other sectors, cost is the biggest barrier these services face in reducing lifting hazards.

Findings result in changes

In response to the task force's findings, the Safe Patient Handling legislation (ESHB 1672), focusing on hospitals and supported by both labor and the hospital association, became effective June 6, 2006, with staggered program implementation dates leading to full implementation by December 2010. Some of the most important features of the legislation include:

- A safe patient handling committee (with at least 50 percent of the committee consisting of direct care staff) that conducts assessments, has input on equipment purchases, and evaluates the program annually
- Required staff training in safe patient handling
- An established minimum amount of handling equipment, with financial incentives (business and occupations tax credits) for equipment purchase
- A reduction in the workers compensation premium risk class for fully implemented programs for state fund hospitals
- An analysis of statewide workers compensation data after full implementation

Washington State's commitment to safe patient handling is good for patients and good for staff. With full implementation of the new legislation, health care staff will no longer need to fear back injuries and lost wages.

Authors

Research Director Barbara Silverstein, MSN, PhD, MPH, CPE, and Ergonomist Ninica Howard, MS, CPE, are with the Safety and Health Assessment and Research for Prevention Program of the Washington State Department of Labor and Industries.

Resources

VA Sunshine Healthcare Network. www.visn8.med.va.gov/patientsafetycenter/.

Measuring Back Strain

by Kathy Hall

Most backaches are cumulative, the result of thousands of movements that add up to overuse and strain. Old diagnostic tools made it hard—or expensive—to identify which movements pushed the back beyond its limits. In particular, the continuous assessment of physical exposures was too costly and too time consuming, but with advances in technology "a new age in exposure assessment is developing," according to Peter Johnson, whose ergonomics lab in the Department of Environmental and Occupational Health Sciences in the UW School of Public Health and Community Medicine specializes in measuring occupation-related physical exposures.

Observation alone, even by a trained ergonomist, cannot capture all events, particularly infrequent isolated events, and direct measurement methods such as muscle electromyography (EMG) and lumbar motion monitors can be somewhat invasive and cost up to \$20,000. What has been needed is a simple and relatively inexpensive device to measure a worker's posture and torso movements over the course of a whole work shift.

Johnson helped developed just such an instrument, the Virtual Corset[™]. This pager-sized unit, strapped to a worker's back, arms, or chest, can collect a continuous record of the worker's posture, which should help researchers better understand work-related musculoskeletal disorders. Johnson collaborated with Vermont-based Microstrain, Inc., to develop the system, which costs less than \$1,000 and is small enough to be used in the field. Its two megabytes of memory can collect a day's data, opening up new avenues for ambulatory exposure assessment. Ambulatory measurement can help researchers better understand the relationship between cumulative postural exposures, load patterns, and musculoskeletal disorders.

Johnson's team developed the device for the Pacific Northwest Agricultural Safety and Health center as part of a project to create tools to measure physical exposures during agricultural and forestry work. In cooperation with the Field Research and Consultation Group, in the same department, the team wants to assess and compare two tree fruit harvesting methods—traditional ladders and mobile platforms. Mobile platforms are four-wheel, self-guided, all-terrain vehicles with one or two elevated platforms that move slowly down a row of fruit trees and can carry up to six workers.

The Washington tree fruit industry is experimenting with the introduction of mobile platforms as a way to improve harvesting productivity and fruit quality, while reducing ladder-related injuries. The Virtual Corset will allow researchers to track how the mobile platform affects the physical loads on the upper arms, shoulders, and back. ■

Kathy Hall is communication director for the Department of Environmental and Occupational Health Sciences. A version of this article first appeared in the 2003–2005 Biennial Report of the Department of Environmental and Occupational Health Sciences.

Reducing Children's Pesticide Exposure



At a home health party, a promotora (lay health educator) demonstrates ways to reduce pesticide exposure.

Beti Thompson Gloria D. Coronado

gricultural workers' concerns about pesticide exposure don't stop at the orchard fence and aren't limited to their own health. Their children's health is also threatened by the pesticides used in the orchards and farms where the parents work.

Educating parents and children about reducing their pesticide exposure is crucial. To pinpoint effective interventions with agricultural families, a two-year research project conducted by the Center for Child Environmental Health in the Department of Environmental Health at the University of Washington studied a variety of community-based activities in the Yakima Valley in Eastern Washington.

Yakima Valley growers produce an abundance of Washington's well-known agricultural products, including apples, pears, peaches, cherries, grapes, and hops. These crops require a great deal of hand labor. About 50,000 workers, primarily Hispanic, harvest, prune, thin, and care for the Yakima Valley crops throughout the growing and harvesting seasons.

Many of these farmworkers are exposed to pesticides as part of their work. The organophosphate pesticides, which are currently the most widely used insecticides in the United States, are considered a high-risk group of pesticides because of their known ill health effects.

Infants and children are especially sensitive to health risks posed by pesticides because their internal organs are still developing and maturing. Pesticides may harm a developing child by blocking the absorption of important food nutrients necessary for normal healthy growth. In addition, exposure to a toxin during a critical developmental period can permanently alter the way an individual's biological system operates.

Children of farmworkers are likely to be exposed to pesticides through several pathways.

Children living near farmland are exposed to pesticides that drift into their yards and are tracked indoors. Adults exposed to pesticides at their workplace can carry those compounds into their homes on their clothes and skin. The pesticide residues lodge in the homes where they are unlikely to rapidly degrade because they are not exposed to sunlight or rain. In addition, farmworkers who pick up or play with their children before changing their clothing or showering may pass pesticide residues directly to children. And finally, children playing on floors or carpets are exposed through skin contact, and may ingest toxic residues if they place their hands or toys in their mouths.

Collaborative community response

To combat the exposure of children of farmworkers to pesticides takes a community-wide effort. Between 1999 and 2004, the project staff conducted a large, randomized, controlled trial in 24 communities (12 communities were randomized to intervention and 12 to control) in the Lower Yakima Valley to find out what kinds of interventions work best in agricultural migrant communities.

The project (funded by the National Institutes of Health) took a community-based participatory organization approach not only to testing interventions but to designing the study itself. Community-based participatory research engages the people affected by a problem in finding solutions to the problem. In order to involve all the people affected by agricultural pesticides, the authors, with the help of community members, conducted an initial community analysis (including conversations with various individuals, focus groups, and secondary data analysis), which led to the formation of a Community Advisory Board. Membership included farmworkers, growers and their associations, regulatory agencies, the health department, the Department of Agriculture, the Department of Labor and Industries, the local Environmental Protection Agency, local media including the Spanish-speaking radio station, the farmworkers union, local farmworkers clinics, and farmworker advocates.

The Advisory Board was actively involved in all aspects of the project. It was responsible for hiring project staff to work in the Valley, contributed to the research design, and recommended a number of intervention strategies. Throughout the project, the Advisory Board made recommendations on how and when the data collected from the project be conveyed to the community, the media, and peer-reviewed journals.

Multiple activities at multiple levels

The two-year, comprehensive intervention plan included activities at the community, organization, small group, and individual levels. Intervention components were based on current literature and recommendations of the Advisory Board.

Community efforts. Health fairs are a common event in the Valley, and the project created a

road-ready booth that could be erected and staffed at intervention community health fairs, community festivals, and block parties.

Staffers of the booth provided information on the risks of pesticides for children, symptoms of pesticide exposure, information on protecting oneself and one's children from pesticides, and an overview of the project.

Local media spread messages about the project and pesticide protection. Children's coloring books, balloons, and other small items also conveyed the pesticide messages. A pesticide puppet show, developed by a local university, was shown at block parties and festivals. The puppet show emphasized the importance of avoiding fields where pesticides were used and ways that children could protect themselves from pesticides.

Organization efforts. A number of groups were targeted for pesticide messages. These included elementary schools, where a calendar contest was held annually to promote pesticide protection messages; churches, where infants were given a package containing pesticide protection messages and a bib reading "Keep me pesticide free" and where after-mass coffees promoted the pesticide protection messages; English as a Second Language and citizenship classes, where messages about protecting one's family from pesticides was included in the curriculum; and preschools such as HeadStart, where a preschool curriculum was developed and taught in all intervention-community preschools.

Other organizational venues were orchards, farms, and other worksites, farmworkers clinics,

and the farmworkers union. In many organizations, group discussions were held on the dangers of pesticides, especially for children. Sample packets of detergent, clothes sorting bags, bins for storing boots outside, and shower kits were distributed in organizations.

Small group efforts. Lay health educators (*promotoras*) spread messages about pesticides. A popular small group activity was the home health party. A home health party was a small gathering of friends and relatives in the home of a host, or person who agreed to hold the party. Typically, a trained promotora guided a 30- to 45-minute discussion about a specific pesticide topic. The promotora used simple charts and props to give information about ways to reduce pesticide risks. The small group format fostered discussion and opportunities to obtain more information. In the two-year intervention period, more than 1,100 home health parties were held.

Individual efforts. Volunteer promotoras and staff talked to individuals about protecting their families from pesticide exposure. A volunteer training handbook was developed. Volunteers

Exposure to a toxin during a critical developmental period can permanently alter the way an individual's biological system operates.

> went door-to-door and spoke at grocery stores and other places frequented by farmworkers. They also distributed laundry kits, shower kits, and other samples created by the project.

Interventions can change practice

Over the two-year intervention period, the project conducted a total of 1,959 activities. Research data are still being analyzed but initial analysis highlighted some of the activities that had a significant affect on individual practices. For example, a study of the efficacy of home health parties revealed that participants of such parties were more knowledgeable about pesticide harms and engaged in more pesticide safety practices in the home than those who had not attended such parties. In addition a pesticide curriculum has been adopted by the state HeadStart organization, and materials to train farmworkers about pesticide safety are in use at many orchards.

Pesticide-related health issues are a nationally recognized public health problem for farmworkers and their children. Community participation can be an effective strategy for developing culturally appropriate materials on pesticide safety for farmworkers and their children as well as for finding and using effective venues for promoting pesticide safety for farmworkers. And effective community-based interventions to reduce the take-home pathway of pesticides will protect the health of agricultural workers' children. ■

Authors

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NO Level of Accidents

Maggie Jones



Machinist Dan Staub trains Kevin Jones on a Bridgeport milling machine as part of the Seattle Lighthouse peer training program.

years, Jim Smith has operated a large drill press in the machine shop

or more than 35

at the Seattle Lighthouse for the Blind. Jim is blind. He sets up the machine by feel and runs it with the aid of a computer with screen-reading capabilities and programs written specifically for each work order. The computer verbally reports the three dimensional location of the drill bit. Jim notes that his drilling accuracy is within 0.0005 of an inch. The pieces manufactured by Jim and the other employees in this shop are for the Boeing Company; the airplane parts built by the Lighthouse have a 99.9 percent acceptance rate.

When the Seattle Lighthouse (www. seattlelighthouse.org) was incorporated in 1918 to offer employment opportunities to people who are blind, blind people were limited to creating such things as jigsaw puzzles and brooms. Today, there's wider recognition that blind people are capable of doing almost any job (except driving a vehicle and freehand drawing). Yet, seven out of ten blind adults do not work. This shocking unemployment figure suggests that many barriers, from discrimination to the cost of assistive technology, still need to be overcome before people with visual disabilities have a wider range of employment opportunities. A key barrier, however, is the challenge of ensuring the safety of blind workers.

What is the Lighthouse?

The mission of the Lighthouse for the Blind is to create opportunities for the independence and self-sufficiency of people with visual disabilities. Their vision is for blind people to have the same opportunities as sighted people.

About 170 (61 percent) of the 280 employees at the Lighthouse are blind, deaf-blind, or blind with other disabilities; more than 75 percent of the direct labor producing items for the federal government is performed by people who are blind, deaf-blind, or blind with other disabilities. Employees with visual disabilities hold positions as machinists, production workers, computer instructors, information technology specialists, Web programmers, receptionists, customer service representatives, administrative assistants, and managers. The Lighthouse pays a competitive wage based on pay rates for similar jobs in the Puget Sound region, and employees also receive a full benefits package including medical and dental coverage, life insurance, paid sick and vacation leave, and a pension plan.

The Lighthouse, housed in two multistory buildings in southeast Seattle, produces about \$30 million in annual sales. Its two biggest contracts are with the Boeing Company and the federal government. The shop is self-supporting, with operation costs funded through sales revenue. However, the Lighthouse has costs that other manufacturers do not, such as in-house sign language interpreters, mobility instructors, and Braille computer equipment and other assistive technologies. These costs as well as the training and support services provided to its employees are funded through grants and charitable donations.

Building safety into production

On first glance, the manufacturing floor at the Lighthouse looks like any other manufacturing operation. However, on a second look, you would notice the remarkably clean and uncluttered work areas. "Housekeeping," Pat O'Hara, general manager of operations, explained, "is the main thing that distinguishes the Lighthouse from other manufacturing settings." The maintenance department is an important part of the safety efforts. A clean shop floor is a safety necessity. The Lighthouse's employees have to know where things should be. Misplaced equipment is hard to find, and something left lying in an unexpected place, for example a pallet left in aisle, becomes an accident waiting to happen.

New employees work with a mobility instructor to learn how to safely move around the Lighthouse's facilities. Traffic rules for the aisles require everyone to stay on the right as they walk in order to prevent collisions. The aisles in the manufacturing areas are clearly marked on each side with raised or textured yellow lines so that blind workers are easily able to navigate. Additional safety barriers—waisthigh retractable yellow webbing—mark off areas around machinery that is in use.

As forklifts move around on the manufacturing floor, they always have a spotter on each side to ensure that nobody walks in front of the forklift, since the standard audio beeping that signals a moving forklift isn't effective for the Lighthouse's deaf employees.

The engineering department develops adaptations to standard machinery to make the machines usable, accessible, and safe for all of their blind and deaf-blind employees. For example, some of the machines in the assembly area have two start buttons, one on either side of the machine, requiring both hands to turn the machine on. This adaptation prevents a hand accidentally being caught in a dangerous spot on the machine. Some other common adaptations include screen-reading software, voicing technology for measuring tools, Braille screen displays, Braille and large print work orders, closed circuit televisions, and specialized lighting and wall colors. The Lighthouse provides extensive machine-specific training to ensure that employees are able to comfortably and competently use the machinery. Employees often provide feedback on the usability of a machine and suggest adaptations to the engineering staff.

Another aspect of the Lighthouse's safety efforts is a required annual evacuation drill. Kirk Adams, general manager of administration, stated that the "most important risk management tool is to make sure you have a good evacuation plan." Announcements and flashing lights alert employees of an evacuation. Deaf-blind employees carry pagers and are notified of an evacuation by a specific pager vibration. Other employees also help notify their deaf-blind colleagues by drawing an X with their finger on their colleague's back, which means they need to exit. In addition sweepers are assigned to ensure that all employees have left the area. In the summer 2006 drill, they successfully evacuated both buildings in 3.5 minutes.

Building safety into administration

Safety at the Lighthouse is not just a formality. It is a critical piece of the organization's structure. The Lighthouse's 15-member safety committee meets monthly. Each department appoints one representative to sit on the committee. When needed, sign language interpreters are available to attend the safety committee meetings. All safety committee manuals are provided to employees in Braille and large print versions (as is every written correspondence at the Lighthouse). The safety committee monitors any incidents that occur and makes requests to management about improvements that need to be made.

After every safety committee meeting, a management team meets to review the minutes from the meeting and provide a management response—indicating what they will act on and when. This small management team then reports on safety initiatives at every strategic planning meeting. "An effective safety committee," Adams stated, "is vital for any workplace. If you get the right people sitting on the committee and if their feedback flows back to a responsive management—you will have a safer workplace."

A crucial part of responding to the changes requested by the safety committee is informing all employees of the change. At the Lighthouse, policy change is time consuming because of the need for face-to-face meetings. Adams explained, "I've worked at places where sending an e-mail is viewed as sufficient notice of a new policy or update. At the Lighthouse, that wouldn't work because not everybody has e-mail or the computer skills necessary to access it. Communication at the Lighthouse requires face-to-face meetings with interpreters available. Everyone's communication needs have to be met so that they can all receive the same information. Sometimes that means we have a Vietnamese language interpreter, a tactile interpreter for a deaf-blind employee, and a sign language interpreter all interpreting at the same meeting. The communication barriers can be frustrating when you just want to get something done, but in the end we have decided if we are going to communicate effectively with everyone, we need to make sure it's done right."

The Lighthouse views the safety of their employees as a priority. Their dedication results in very few accidents and injuries in the manufacturing areas. Most of their safety incidents, according to O'Hara, are collisions while entering or leaving elevators or in hallways. "But," he adds, "at the Lighthouse there is no acceptable level of accidents."

Although the Lighthouse faces additional safety challenges as a result of employing people with visual and hearing impairments, many of their safety initiatives are relevant to any workplace. By meeting the communication needs of all of their employees, they are able to ensure that all employees have equal access to information and are informed of policy changes. The Lighthouse also places a great deal of emphasis on housekeeping and on creating an effective, inclusive safety committee. Such efforts would improve safety conditions for all workers. ■

Author

Maggie Jones is an MPH candidate in the Community-Oriented Public Health Program at the UW School of Public Health and Community Medicine.

Caution Teens AT Work

Mary E. Miller

allory, a 14-year-old girl, was visiting a friend who was working in her father's ice manufacturing plant. To earn money for church camp, Mallory was helping her friend bag ice.

When one of the bags became overfilled, Mallory took the bag of ice to the hopper-end of the machine, where the auger was located, in order to dump the excess ice into the unguarded hopper. The bag became caught in the auger, pulling her by both arms into the machine. It took 55 minutes to get her released. Mallory has required multiple surgeries and much rehabilitation. She will never have full use of her arms again. Since she was paid

have full use of her arms again. Since she was paid below minimum wage as a 14-year-old, her total disability payment was only \$90,000. Young workers are exposed to many of the

same occupational risks as their adult counterparts, but for various reasons, they are more likely to be injured than are adult workers. Recently, construction-related jobs have been identified as having high injury and fatality rates for this agegroup, with up to 84 percent of youth in these jobs performing prohibited activities. Agriculture is also another high-hazard industry for youth, as it is for adults. Aggregate data across industries indicate that teens are injured at a rate at least two times higher than adults. Nearly 70 youths under the age of 18 die each year in the US as a result of an occupational injury. The leading causes of death are motor vehicles, agricultural machinery, and homicide. Nationally it is estimated that approximately 230,000 teens suffer work-related injuries each year, with 77,000, or one-third, of these seeking care in emergency rooms.

Characteristics of youth workers

Youth are new to the world of work and their age and inexperience contribute to their increased risk for injury. During this time in their lives, they are going through a great deal of change, learning many new things, and facing difficult challenges. Their ability to focus is sometimes compromised. Compared to adults, adolescents have less developed cognitive abilities, physical



coordination, and overall maturity, and they are experiencing a rapidly changing physiology. They often have a limited perception of danger and lack of a sense of vulnerability, which may lead them to engage in risk-taking behaviors. In addition, because of their youth and lack of work experience, they may feel unable to speak up to an adult or a person in authority about concerns or fears they may have when placed in a dangerous situation. At this time of their life, they seek to be given increased responsibilities and do not want to appear not to know what they are doing, which makes them even less inclined to ask questions.

Youth in Washington State

Data about injured teens in Washington State are available from workers' compensation claims, administered by the Department of Labor and Industries (L&I). Washington State is unique as the only state labor department with three major divisions affecting the workplace—industrial insurance, or workers' compensation; health and safety; and the wage, hour, and child labor regulations. This provides a great opportunity to identify injuries among teens, pursue coordinated enforcement activities as appropriate, and provide outreach and education for prevention.

In the early 1990s more than 4,000 young workers received workers' compensation benefits in Washington State annually. The numbers of workers' compensation claims are thought to be an underestimate of actual injuries, however, because many teens, parents, and health care providers are not aware that a workers' compensation claim can be filed for an injured teen just as for any other worker. The most common types of injuries include slips and falls, strains and sprains, burns, and lacerations. More severe injuries include fractures, concussions, dislocations, amputations, and multiple injuries.

From 1995 to 2005, the average number of injuries among teens decreased to 2,225 with a range of 1,200 to 2,900 per year. This drop is likely due to a combination of strategies, including changes in the regulations, effective enforcement, and outreach and education to teens, parents, employers, and teachers.

Over the past 10 to 15 years, the difference in the injury rate for boys and girls has narrowed. However, boys continue to be injured at work nearly 30 percent more often than girls. The reasons for this have not been explored. Some anecdotal evidence indicates that they may work in more dangerous jobs or take more chances. Another possibility is that developmentally boys tend to be less mature and potentially less coordinated than girls of the same age. Consistent with employment patterns, about 95 percent of injuries occur among 16- and 17-year-olds. From 1988 to the present, there have been 15 fatalities; all but one were males. Four died from agricultural or construction machinery, three from highway vehicles, three from being struck by falling objects, two from suffocation in a grain silo, one from a fall from a roof, one from drowning, and one from a fatal stabbing at a quick-service restaurant.

In Washington State, the percentage of time loss claims for teens is similar to adults', indicating that they have missed at least three days of work. Since they may not work full-time and typically are not scheduled on consecutive days, however, such lost time may indicate more severe injuries or at least injuries that could interfere with school and other age-appropriate activities. A number of injuries and *Continued on next page.*

Workplace Safety Strategies for Youth

For Parents, Caregivers, and Teens

- All employers are required to have a Minor Work Permit to hire minors and a permission slip, known as a Parent/School Authorization Form, signed by the parent. The form must also be signed by the school when it is in session. Parents should be aware that they need to sign this form giving permission for their teen to work and to be sure that the employer is aware of the laws protecting them.
- Parents and teens should be aware that there are restrictions for hazardous work for minors and restricted work hours. This information is available at TeenWorkers.LNI.wa.gov.
- Parents and teens should be aware that the minimum age for minors to work is 14. The number of hours per week and starting and quitting times and work activities are more limited for 14- and 15-year-olds. The hours of work also differ for all minors while school is in session.
- Teens should know their rights, which include the right to a safe and healthy workplace and the right to refuse to do dangerous work. Teens should know what work activities they are not permitted to perform. They should know that they can decline to do a task that they have not been trained to do. They should be encouraged to ask the following questions in any job:
 - What are the hazards and dangers of my job?
 - What are my health and safety responsibilities?
 - Will I receive job safety training and information on any safety gear I'll need to wear?
 - Who do I ask if I have a health and safety question?
 - What do I do if I get hurt?

For Employers

- Follow all child labor and relevant health and safety regulations.
- Provide increased supervision to new workers; if possible, teens should not work alone.
- Consider a young worker's physical capacity to perform the job safely, maturity to exercise good judgment, and ability to read and understand written instructions and safety signs.
- Involve co-workers; create a mentoring program among experienced workers, including experienced teen workers.
- Encourage young workers to ask questions and ask for assistance.
- Provide more detailed training for those new to the world of work including:
 - New employee orientation.
 - Specific task training.
 - Age-appropriate training—make it fun and easy to understand; keep instructions direct, short, and simple (include only information that will be needed immediately).
- Frequently review and retrain (repetition, repetition).

For Schools and Communities

- Encourage high schools and job training and placement programs to integrate curricula about workplace safety and teens' on-the-job rights.
- Develop community coalitions comprised of business associations, labor groups, schools, job placement and training programs, youth-advocacy groups, teen organizations, government agencies, health care providers, and family members.
- Encourage community coalitions to provide information to employers on the regulations for hiring minors, including the need to have a minor work endorsement or permit, the importance of providing training when a young worker is new to a job, and the need to provide periodic retraining and ongoing supervision.
- Conduct an assessment of the community to determine the extent and nature of local teen employment and workplace injury. Based on the composition of the types of industries in the community, target outreach measures based on the potential job activities and hazards teens are likely to encounter.
- Provide training and educational resources to members of the community so all are informed about the major issues concerning young workers.
- Assess teen attitudes toward work and workplace safety and health issues through the use of surveys or focus groups, and promote peer education programs to address workplace safety and health issues.

fatalities occur in jobs prohibited to youth, but the vast majority take place in jobs currently allowable under federal and state child labor regulations. The federal and state regulations have not kept pace with the changes in the workplace, such as new machinery and equipment, biologic agents, and hazardous substances.

Increasing workplace safety awareness

Research into occupational injuries among minors began to increase during the late 1980s, bringing more attention to the need for improved prevention. A 1995 report by the Department of Labor and Industries was one of the first in the United States to identify the higher rate of injuries among young workers. As a result, Washington State began to work with employers, other state agencies, and schools to develop more outreach and education about health and safety needs for young workers. At the same time, the National Institute for Occupational Safety and Health began to focus part of its research agenda on the needs of young workers, both to provide descriptive data regarding the injury patterns and to identify and evaluate preventive strategies.

A 1998 Institute of Medicine report, *Protecting Youth at Work*, brought together much of the available research data and highlighted the need to increase public health measures to protect

working teens. In recent years, OSHA and the Wage and Hour Division at the US Department of Labor have also expanded their focus to include development of educational materials for injury prevention among youth.

As part of Washington's initiative to increase available resources for health and safety awareness, L&I's Medical Aid Fund provided funding to develop the School-to-Work outreach program at the University of Washington Department of Environmental and Occupational Health Sciences. The curriculum, Health and Safety Awareness for Working Teens, contains four interactive, one-hour modules covering the areas of health and safety hazards, strategies to reduce hazards in the workplace, child labor laws, and strategies to work with employers to resolve problems. A 13-minute video

has recently been developed as part of the curriculum. In addition to the general curriculum, an agriculture-specific curriculum has been developed. An interactive Web-based training module for woodshops is also available. (*See the curriculum and other program resources at www. uwworksafe.com/worksafe.*)

Health professionals must be alert to the needs of young people and recognize that for some youth work is a significant part of their lives and their risk for injury may be substantial. Health care providers should take a thorough work history from their young patients if seen in a school or clinical setting during routine visits. This includes asking about their work activities, hours of work, types of exposures, use of personal protective equipment, and availability of safety training. Studies have found that more than half of injured teens do not receive training in how to prevent injuries while doing their jobs. Somatic health complaints such as headache, fatigue, gastrointestinal disturbances, anxiety, and depression should be assessed as possibly related to teens' attempt to do more than they can handle. Injuries must be evaluated for a possible workrelated cause and workers' compensation claims should be filed where appropriate.

Schools can also participate in providing health and safety curriculum materials to teachers and counselors to inform students about their rights on the job, the dangers they may encounter, and strategies to protect themselves. Teachers and counselors should also be aware of the child labor regulations on hours of work and jobs that teens can legally perform. (Find the regulations through the US Department of Labor's Wage and Hour Division or the appropriate state labor department.)

Special protections for youth have been recognized by the United Nations and the International Labor Organization, beginning in the 1920s, through the publication of various declarations and conventions on the rights of the child. Policy makers, health and safety professionals, employers, and the public have the responsibility to act on youths' behalf. Injury prevention requires the combined efforts of enforcement and compliance measures, plus education and outreach strategies. Young workers are our future adult workforce, and a solid foundation for their protection must continue. As Oliver Tambo, president of the African National Congress in 1985, said, "The children of any nation are its future. A country, a movement, a person that does not value its youth and children does not deserve its future."

Author

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Resources on youth work safety and hiring minors

Department of Environmental and Occupational Health Sciences. School to Work Program. *Teen Workers: Real Jobs, Real Risks* (DVD or VHS, 13 minutes); *Health and Safety Awareness for Working Teens* (curriculum). University of Washington. www.uwworksafe.com/worksafe. 2005.

Labor Occupational Health Program. University of California at Berkeley. www.youngworkers.org.

National Institute for Occupational Safety and Health (NIOSH). *Young Worker Safety and Health*. www.cdc.gov/niosh/topics/youth.

National Institute for Occupational Safety and Health. NIOSH Alert: *Preventing Deaths, Injuries, and Illnesses of Young Workers*. DHHS (NIOSH) Publication No. 2003-128. 2003.

OSHA. *Teen Workers.* US Department of Labor. www.osha.gov/teens.

Washington State Department of Labor and Industries. *Teen Workers*. www.TeenWorkers. LNI.wa.gov; teensafety@LNI.wa.gov; phone 866-219-7321.

For other resources related to this article, please see the online version at www.nwpublichealth.org.

Wellness in Workplace

According to the Centers for Disease Control and Prevention (CDC), physical inactivity cost the United States nearly \$76.6 billion in direct medical costs in 2000. Obesity, a companion problem with physical inactivity, is also on the increase in the US. CDC estimated that in 1998 medical expenses attributable to being overweight or obese accounted for 9.1 percent of total U.S. medical expenditures and may have reached as high as \$78.5 billion. Working adults spend up to half of their waking hours at work, so effective initiatives to increase physical activity and healthy eating have the potential to significantly improve workers' health and reduce related health costs. The following articles describe five new workplace wellness initiatives in the Northwest.

Healthy Workplace Initiative

In 2005, the British Columbia (Canada) Ministry of Health implemented a Healthy Workplace Initiative with the goal of enhancing the health and well-being of employees of the Ministry by providing a work environment that makes the healthy choice the easy choice. Initiative activities address physical activity, healthy eating, tobacco cessation, and stress management.

Making it work

The Healthy Workplace Initiative has three key elements necessary for a successful wellness initiative: executive buy-in for the project, internal champions, and sufficient resources for coordination, implementation, and project management.

To have an effect on health outcomes at the worksite, wellness strategies need to enable healthy lifestyles for all, including those at risk for chronic disease, such as heart disease, cancer, and diabetes, as well as those with a lower risk for chronic disease or who are already convinced that they need to make healthy choices but haven't yet taken the next step. Generally worksite health promotion efforts have focused on individual choice without consideration for the context in which individuals make their lifestyle choices. With this history in mind, the Healthy Workplace Initiative emphasized environmental and policy approaches to workplace wellness. Initiative activities included:

Information and Education: A wellness Web site for employees, HealthBytes (a 12 week electronic intervention available to all staff that provides information and tips for lifestyle behavior change), newsletter inserts, lunchroom information, lunch hour presentations, health and wellness fairs, events, and celebrations.

Behavior Change: Point-of-choice posters to encourage stair use, organizational challenges such as the Mt. Everest and CN Tower Challenge, a 10,000 Steps pedometer challenge, a fruit and vegetable challenge, a bike to work week campaign, a library pedometer loaning program, healthy food choices at events, and a tobacco cessation program called QuitNow.

Environmental Changes: Stairway beautification including paint, artwork, whiteboards, and music in the stairwells; permanent stair signage; food policies, such as making healthy items available in vending machines and cafeterias, ensuring they were cheaper than the unhealthy items, and requiring at least some healthy food options be available at meetings; a healthy workplace policy statement that was endorsed by the Ministry Executive and posted throughout the building; expansion of bike storage facilities; adequate facilities for showers, change rooms, and lockers; and a smoke-free workplace.

Organizational Capacity: Development of a Healthy Workplace logo and brand, formation of a Ministry-wide wellness committee, and ongoing evaluation of Initiative efforts.

Seeing results

Research has shown that physical changes in stairwells combined with activities that prompt employees to use the stairs are an effective component of an overall health and wellness strategy for the workplace. After implementation of the Initiative, the Ministry of Health's environment was significantly different. Stairwell use increased steadily over the year and increased significantly over the baseline during the team challenges and stairwell events.

Vending machine choices were expanded to include more fruit juices, bottled water, and lower-fat food choices, such as baked chips and tuna snacks. Labeling on the machines identified the healthier options, which were priced cheaper to encourage their purchase. Healthy food such as fresh fruit and milk were provided at Ministrysponsored events.

A positive work environment that encourages and promotes connections with others is one determinant of health, and the initiative evaluation indicated that participation in the initiative activities helped to create a feeling of connection to others in the workplace. Healthy Workplace activities raised awareness of lifestyle choices and helped to motivate some employees to initiate or maintain healthy lifestyle changes. Approximately 20 percent of staff participated in various events, such as the CN Tower Challenge, the fruit and vegetable challenge, and the bike to work campaign in the pilot year of implementation. Pedometers helped to motivate people to take up or maintain their activity levels.

The initiative staff has developed a tool kit of planning resources and tools and templates for activities, events, and challenges; policy development; and evaluation (*available from their Web site: www. actnowbc.gov.bc.ca*).

Based on feedback and the results of the first year of implementation, the Healthy Workplace Initiative positively contributed to health at the Ministry. Recommendations for the future include sustaining the organizational capacity that supports implementation, sustaining and improving the successful activities, building in employee incentives, extending the activities to additional employee health issues, continuing to include strategies that target the physical and policy environment, and finding ways to share the experiences with other worksites in British Columbia. *Contact: Debbie Leach, Healthy Workplace Committee, BC Ministry of Health, Debbie.Leach@gov.bc.ca.*

Take the Stairs, Save Your Heart

Physical activity can be difficult for people working inside all day or living in climates such as Wyoming's, with snow, wind, or ice much of the winter. According to the Behavioral Risk Factor Surveillance System, nearly 56 percent of Wyoming adults were overweight or obese and 20 percent of adults reported no leisure time physical activity in 2002. This information led the Wyoming Cardiovascular Disease Coalition to develop a simple, cost-effective program to encourage office workers to be more active.

Since walking up stairs is a physical activity available in the winter, Coalition members developed a simple, inexpensive project using point-of-decision prompts (signs) to use stairs in place of elevators. The Coalition also decided to evaluate the project in order to see how effectively it increased employees' physical activity.

The project was to be conducted during winter months (January–April), but due to Institutional Review Board (IRB) delays,



it started in the summer. (Because the Coalition wanted to evaluate the project, which would involve collecting personal data on participants, it had to obtain IRB approval from CDC and Wyoming Department of Health before beginning.) Three office buildings (two in Casper and one in Cheyenne) agreed to participate. Site representatives were chosen for each building to assist with enrolling participants, collecting pre-project and post-project data, and ensuring the signs remained posted.

Step 1: Conducting a pre-project survey. The pre-project survey, conducted July 12–16, 2004, gathered data such as the participant's gender, age, race/ethnicity, health status, daily physical activity level, and current use of elevators and stairs at the workplace.

Step 2: Posting signs. Site representatives posted signs one week after completing all pre-project surveys. At least one sign was placed on each floor at the elevators in the two Casper buildings. Signs were placed only at elevators in the basement and second and third floors in the Cheyenne building. Each 8.5 x 11 paper sign included a heart surrounding the Coalition's mascot walking up a flight of stairs. The message "Save your Heart... Take the Stairs" was included on each sign along with text giving the Coalition credit for the sign.

Step 3: Conducting a post-project survey. Site representatives conducted the post-project survey five weeks later (August 16–20, 2004) among people who completed the pre-project survey. Post-project surveys included the same pre-project questions plus two new questions that asked if people had seen a sign encouraging the use of stairs and whether this sign caused them to take the stairs.

Overall, the project was a success and proved that a simple strategy can be effective. The participants were informed that they would complete two surveys as part of the project (taking the stairs was never mentioned). Also, we waited one week to post the signs after conducting the pre-project survey. Pre-project and post-project survey comparisons indicated that the signs led to increased stair use and decreased elevator use. Almost 85 percent of the respondents saw the signs, and nearly 47 percent reported the signs influenced them to take the stairs rather than the elevator. These results suggest that a simple, low-cost sign may change behavior and increase a person's physical activity level in office buildings. It is important to remember some people have trouble taking the stairs due to bone and joint problems, medical conditions, or other injuries or illnesses. Other physical activity options, such as chair exercises, stretching, and light dumbbell exercises at one's desk, should be considered for these people so they do not feel ignored and can still gain the benefits from physical activity.

Contact: Joseph R. Grandpre, jgrand@state.wy.us, or Star L. Morrison, smorri@state.wy.us, Wyoming Department of Health. This report was supported by the Preventive Health and Health Services Block Grant from CDC. The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

Seattle 5 a Day

"Eat your vegetables" is a classic mother's command that applies to adults as well as children. Fruits and vegetables are important for good health, but working people rarely can take time for lunch, often turning to fast food and snacking to make it through the day.



Because people spend as much as 50

percent of their waking hours at work, workplace interventions to increase consumption of vegetables—as well as fruit—offer the significant potential for affecting employee health. The Seattle 5 a Day research project, sponsored by the Fred Hutchinson Cancer Research Center and funded by the National Cancer Institute, has been exploring activities in the workplace that encourage increased vegetable and fruit consumption.

From 1993 to 1997, the first Seattle 5 a Day study (Study A) worked with 28 worksites with cafeterias, with an employee base varying from 250 to 4,999 people. The recruited worksites included high-tech manufacturers, health care facilities, colleges, and financial institutions. From 1999 to 2004, the second study (Study B) focused primarily on 44 blue-collar worksites including heavy manufacturing, transportation, and service industries. Study B sites had a much smaller employee base, 50 to 150 employees, and no on-site cafeteria.

The intervention

The intervention for both Seattle 5 A Day studies incorporated worksite-level and individual-level behavioral change strategies to increase worksite-wide fruit and vegetable consumption. Activities focused initially on awareness building and were followed by skill building and maintenance.

As part of the skill building activities project scientists and staff developed a self-help manual that encouraged adding more fruit and vegetables to the diet. The manual included such tips as using vegetables as the main dish. The manual was distributed to the individual mailbox of all employees at the participating worksites. Project staff conducted food-tasting demonstrations, lunch samples to incorporate fruits and vegetables, and recipe contests at each worksite. They also sent out four newsletters, tailored for each employee, and conducted poster campaigns challenging employees to evaluate how many servings of vegetables they ate daily. Posters said, for example, "Are You Shortchanging Yourself?" and "Whenever You Eat, Think of Fruits and Vegetables."

A key piece of the project included developing an employee advisory board (EAB) at each worksite. The EAB guided intervention activities at the worksite and helped gain employee involvement and employee ownership of the project as a means for maintaining the partnership between participating companies and the research team. Each EAB member received a handbook that outlined the minimum number of activities required by the project to take place at the worksite. The EAB, with the support of worksite management, chose and promoted the intervention activities that best fit that particular worksite. EAB members assisted in the activities when possible. The EAB was also responsible for changing the posters and distributing the flyers that provided constant, inescapable messages throughout the worksite.

Each EAB was made up of individuals from all departments or areas of the worksite in order to capture the diverse needs and interests of employees. The EABs were encouraged to use personal contacts as well as company advertising channels to foster employee participation.

Basic guidelines for EAB membership

- *Good communication*. Positive communication skills are an asset to any group planning effort.
- Strong motivation. EAB members should have the ability to encourage participation in activities and motivate the adoption of healthy behaviors.
- Ability to network. EAB members should be comfortable networking with various departments in order to secure support for activities, assist with the distribution of promotional and informational materials, and access available resources.

The Seattle 5 a Day experience suggests that forming an employee advisory board is an effective means of maintaining partnership with the companies in work-sponsored wellness programs and increases employee participation in worksite-wide activities, even when it comes to eating your vegetables.

Contact: Sonia Bishop, Seattle 5 a Day project coordinator, sbishop@fhcrc.org.

Washington Wellness Works

Washington State is in the beginning stages of an initiative called Washingtor Wellness Works, which is focused on

improving the health of all Washington State employees, retirees, and their families. The initiative, in planning for the past year, launched in August 2006 and is expected eventually to reach 300,000 state employees and retirees.

The initiative is based on the Health and Productivity Management (HPM) model, which suggests that a healthier workforce will lead to reduced absenteeism, increased productivity, and reduced escalation of health care costs over time. The HPM model integrates population risk assessment and reduction, chronic illness management, care management, disability management, and productivity measures, such as employee absenteeism.

The most important concept underlying HPM is that it is less expensive to keep healthy people healthy than to reduce the health risk of high-risk individuals. An effective, integrated HPM program, however, combines a focus on maintaining low-risk with interventions to lower the risk of the high-risk population, such as disease, care, and disability management.

How do you know if a workplace health initiative is effective? Washington's initiative will use four categories of measurement: health, productivity, medical cost, and return-on-investment. Health will be measured in two ways: A validated health risk assessment will develop a risk profile of the defined population (employees, retirees, and their family members/dependents), and claims and clinical data will demonstrate over or under-utilization as well as changes in health status. Productivity will be more difficult to measure. The most common measure is absenteeism, but an emerging measure is workplace productivity, or effectiveness. For employers, medical costs and return on investment will be the measures that ultimately determine the success of workplace wellness interventions.

Washington Wellness Works tools

Health screenings: The challenge with preventive care screenings is to convince the workforce to participate. Boosting the completion rate for targeted screenings can be accomplished by helping to make access easy—for example, by providing flu vaccination or clinics at the worksite.

Telephonic personal health coaches: Coaching by telephone is a cost-effective tool. Members identified with specific conditions are coached toward behavioral changes. Evidence-based readiness to change techniques are employed, along with giving employees access to behavior change tools and skills.

Wellness programs: Worksite wellness programs can include changes in policies and in the physical workplace environment. One example is increasing access to healthy food choices in cafeterias, vending machines, and meetings.

For more information on the initiative see www.wellness.wa.gov.

ACS Workplace Solutions

A large body of high-quality research has identified health promotion practices that have positive effects on employee health and productivity. A gap exists, however, between the findings of this research and the health promotion efforts of employers. For instance, a comprehensive tobacco cessation health insurance benefit helps smoking employees quit and produces a positive return-on-investment, yet only 1 in 25 employers offer this benefit to employees.

Practice-oriented research aims to bridge this gap between knowledge and action, pointing the way to better health through the use of evidence-based interventions and real-world experience. The Health Promotion Research Center (HPRC) at the University of Washington (UW) specializes in academic-community partnerships that conduct research in practice settings. HPRC is one of 33 Prevention Research Centers funded by the Centers for Disease Control and Prevention (CDC) to focus on practice-oriented research.

In 2002, HPRC teamed up with the American Cancer Society (ACS) to develop ACS Workplace Solutions, a practical program designed to illustrate the business case for employer-sponsored cancer prevention, and to show employers how to implement best practices in prevention of cancer and other chronic diseases. Cancer is the leading cause of death for working-age Americans, and the workplace is a logical site for health promotion. Most working-age Americans receive their health insurance through their employers, and increasingly they receive other health promotion benefits, such as behavior-change programs, at work as well.

The aim of ACS Workplace Solutions is to increase employers' implementation of fifteen evidence-based practices proven to influence key behavioral risk factors such as tobacco use, physical



activity, nutrition, and use of clinical preventive services (breast, cervical, and colorectal cancer screening and flu vaccination). The practices come from systematic, expert reviews by the Task Force on Community Preventive Services, the United States Preventive Services Task Force, and the Partnership for Prevention. The intervention includes three steps: 1. an initial survey to assess which of the recommended practices the employer already has in place, 2. face-to-face delivery of recommendations for new health promotion practices, and 3. face-to-face delivery of detailed howto materials aimed at helping employers implement the recommendations.

Earlier this year, ACS and HPRC completed a twelvemonth follow-up with seven Northwest-based large employers (five Fortune 500 companies and local and state governments) who participated in the intervention's pilot. The results of the pilot are very promising. At baseline, the employers averaged 38 percent of recommended practices in place, compared to 60 percent at follow-up. Employers were most likely to implement new practices that influenced tobacco use. The participating employers doubled their coverage of effective smoking-cessation aids, including counseling, prescription and over-the-counter medications, and telephone quitlines.

ACS and HPRC are busy building on the promising results of the pilot. ACS is training staff nationwide to offer Workplace Solutions to large employers. This summer, HPRC and ACS received funding from CDC as a project of the new UW Center for Health Marketing and Communication to carry out a randomized, controlled trial of Workplace Solutions among mid-sized employers (100–5,000 employees). Mid-sized employers employ even more Washingtonians than do large employers. The trial will double the potential reach of this promising intervention. *Contact: Jeff Harris, associate director, Health Promotion Research Center, jh7@u.washington.edu.* ■

For references related to these initiatives, see www.nwpublichealth.org.



"There's been an accident down at the plant."

Continued from p. 7.—Hooked on safety

relationships with the groups involved with commercial fishing safety. The US Coast Guard is the regulatory agency for safety in this industry, and several private groups are also interested in fishing safety, including the Alaska Marine Safety Education Association and the North Pacific Fishing Vessel Owner's Association. NIOSH has worked with these groups to establish data sharing arrangements and develop new interventions. Using the CIB results, NIOSH and its partners developed several approaches to improve the safety of this workforce.

One example of this collaborative approach is the development of the Deck Safety for Crab Fishermen booklet. Because nonfatal injury surveillance data showed that many fishermen were being seriously injured on the deck of fishing vessels, particularly on crabbing vessels, NIOSH staff conducted focus groups with fishermen to gather their input on how to prevent these injuries. The research staff found that some fishermen had already developed their own interventions for particular deck safety problems, but that the information was not widely available. NIOSH partnered with a naval architecture and marine engineering firm, Jensen Maritime Consultants Inc. (JMC), to develop logical deck safety interventions and recommendations for the crab fleet to improve their safety environment by using some of the interventions developed by the fishermen. The recommendations and engineering controls were compiled in a booklet, complete with engineering designs for machinery. This booklet was printed by JMC in fall 2002 and has been distributed to more than 3,000 fishermen. At industry tradeshows, NIOSH staff demonstrate examples of the recommendations in the booklet using a deck model that JMC designed and constructed.

Public health approach results in success

NIOSH's successful work with commercial fishermen demonstrates that by merging injury epidemiology with engineering interventions and industry input, effective safety programs can be designed and implemented. The public health approach of using data and research to drive collaborative programs to address occupational safety and health issues has proven effective.

The working relationships that NIOSH staff developed with other federal and state agencies, nonprofit groups, and the industry, took time. NIOSH had to prove that it had something to offer and that it would treat the other groups as collaborators. The results have been impressive. The number of all occupational fatalities in Alaska has decreased by 67 percent from 1990 to 2005, the number of occupational fatalities in fishing events declined by 73 percent. The Alaskan annual occupational fatality rate has dropped from more than five times the national rate in the 1980s, to three times the national rate in 2004.

The public health approach to occupational injury prevention has proven successful in Alaska and serves as an example for application to other industries and areas of the country. ■

Author

Nicolle Mode, MS, is a statistician with the National Institute for Occupational Safety and Health.

Resources

NIOSH. www.cdc.gov/niosh/injury/traumafish.html.

Alaska Marine Safety Education Association. www.amsea.org.

Deck Safety for Crab Fishermen. www.jensenmaritime.com/mcms/content/ view/44/95.

North Pacific Fishing Vessel Owners' Association. www.npfvoa.org.

NIOSH. www.cdc.gov/niosh/injury/traumaaviation.html.Circle of Safety. www.alaska.faa.gov/flt_std/index.cfm?template=circle_of_safety.

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