Preventing Musculoskeletal Problems Among Computer Users by Fred Gerr, MD

We all know that computer use in the United States, and worldwide, has skyrocketed in the past two decades (as illustrated in the chart on page 2). In 2001, according to the Bureau of Labor Statistics, 53.5% of all US workers used computers on the job. With the technology so widespread, even relatively small risks associated with its use would have important public health implications.

Considerable concern exists among workers, employers, doctors and scientists that using a computer keyboard and mouse may increase the risk of musculoskeletal disorders, including chronic neck and shoulder pain, tendonitis of the wrist and hand, and, possibly, carpal tunnel syndrome.

Fortunately, research suggests that computer users have several options for reducing the discomfort that can accompany their work. First, the layout of the computer workstation is important. The keyboard and monitor should be located directly in front of the user. The top of the monitor should be no higher than the user’s eyes—lower is probably better.

The keyboard should be placed no higher than, and even one or two inches below, the height of the computer user’s elbows. The keyboard should also be pushed several inches away from the edge of the desk (and, therefore, away from the computer user). A chair with armrests is desirable. The ability to rest the arms while typing seems to reduce the stress on the shoulder muscles.

Thinner keyboards are better than thick ones (virtually all the new keyboards are thin). The little feet at the back of the keyboard (Continued on page 2)
Preventing Musculoskeletal Problems Among Computer Users

(Continued from page 1)

Some of the research shows that taking frequent but short breaks can reduce the risk of pain or actual disorder among computer users. Studies indicate that computer users who take these breaks are no less productive than those who have limited rest break opportunities.

Finally, a number of studies have shown that using a computer for more than four to five hours per day on a regular basis is associated with increased rates of hand and arm problems.

Many gadgets are now being marketed as ergonomically beneficial, but none has been well researched. Also, no clear evidence supports the benefits of stretching or specific exercise programs of this technology on human health, workers can minimize their risk by making inexpensive changes to their work environment and limiting the time of their computer use.

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Computers in the Home

US Census Bureau, Current Population Survey, various years

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Helping Small Business Owners Afford Employee Coverage

A piece of legislation known as the Small Business Health Fairness Act of 2003, has been passed by the House of Representatives and referred to the Senate Committee on Health, Education, Labor, and Pensions.

1. Bring a Friend!
   Don’t forget to schedule your flu vaccines.
   Call your local WORKSAFE IOWA Occupational Medicine Associate for details.
Our understanding of job stress has evolved in the past few decades. Where once the source of stress was thought to be solely an employee problem, today’s models of job stress more often incorporate both personal and environmental factors.

Multi-faceted models help answer the puzzling question of why challenging work produces satisfaction in one employee and hypertension in another. For example, Dr. Robert Karasek of the University of Massachusetts proposes two related dimensions in his “job strain” model: the psychological demands of the job (too much work, not enough time, conflicting demands, etc.) and “decision latitude,” which translates into the employee’s opportunity to learn and use new skills and his or her authority to make decisions.

High demand, if matched with high decision-making ability, can result in learning, excitement, motivation. High demand and low decision latitude, on the other hand, produces the greatest risk for physical and mental problems. More than 60 studies in the past decade have linked job stress with cardiovascular disease, and other research has focused on hypertension, psychological problems and musculoskeletal disorders.

The research has also identified particularly stressful work conditions, such as repetitive and assembly-line work, or “threat-avoidant vigilant” jobs (think air traffic controllers or firefighters). Inflexible hours, involuntary overtime, and unrealistic deadlines take their toll, as does a lack of supervisory support. There is some good news: the stress scientists have also found a beneficial factor in the workplace—the social support of coworkers.

Psychiatrist Greg Couser, MD, is studying the research as an occupational medicine resident with the Heartland Center for Occupational Health and Safety. He has also been visiting small and large companies around Iowa, where he observes that “while we intuitively understand that job stress leads to decreased productivity, it can be difficult to make a business case for it.” (For more on mental health and the workplace, see “Ask the Expert” on page 6.)

Some companies are taking action to avoid stress-related problems before they impair productivity. According to NIOSH, the first step is identifying stressors. Roberta Till-Retz, PhD, a program consultant with the University of Iowa Labor Center, suggests a company’s action be guided by determining
  • whether employees show an unusual incidence of stress diseases such as coronary heart disease, hypertension, peptic ulcers, or depression
  • whether the workplace is affected by excessive absenteeism, turnover, or accident rates (especially the so-called “worker-caused” accidents)
  • whether the workplace contains stressors, both generally recognized ones such as noise, isolation, machine-paced work, etc., and site-specific ones that workers may identify.

Solutions can include changes (quite often minor) in work conditions as well as employee education on dealing more effectively with stress.

As our economy becomes increasingly dependent on productive, motivated information and service employees, organizations are looking to protect their most valuable asset. When 80% of workers surveyed by a 2000 Gallup Poll say they feel stressed on the job and half of those report they need help to cope with it, finding ways to prevent job stress would seem to be a good investment.

Sources:
  www.cdc.gov/niosh/docs/video/stress1.html
- “A Brief Introduction to Job Strain” by Peter Schnall, MD, MPH – at www.workhealth.org/strain/briefintro.html
- University of Iowa Labor Center – www.uiowa.edu/~laborctr/
In his remarks to the American Occupational Health Conference in May, John Henshaw, head of the Occupational Safety and Health Administration (OSHA), laid out his agency’s new strategic approach that emphasizes cooperative programs. He described those partnerships as one of the “tools we have to encourage employers and workers to make safety and health a core value,” the other tools being enforcement and education.

Along with plans to expand existing cooperative programs like its Voluntary Protection Programs (VPP) and OSHA Strategic Partnerships, the agency is developing new “alliances.” OSHA has joined with the American College of Occupational and Environmental Medicine (ACOEM), for example, to focus on ergonomics. Together the organizations are developing training and educational programs, and ACOEM members are serving as mentors to small employers and health care providers to help them recognize, prevent, and treat ergonomic injuries.

Last spring, OSHA entered into a formal, two-year alliance with the American Association of Occupational Health Nurses (AAOHN) to help employers address three workplace health and safety challenges: all-hazard preparedness, musculoskeletal disorders, and workplace violence. Through the summer, planning has identified project priorities and first-year objectives, many of which will be joint efforts by local AAOHN chapters and OSHA’s Compliance Assistance Specialists.

### eTools for Computer Users

“Computer Workstations” is the topic of one of the interactive web-based training tools from OSHA. It can be found at [http://www.osha.gov/SLTC/etools/computerworkstations/index.html](http://www.osha.gov/SLTC/etools/computerworkstations/index.html).

Millions of people work with computers every day. This eTool illustrates basic design goals to consider when setting up a computer workstation or performing computer-related tasks. Workers can evaluate their own workstations as they read through each section, identifying areas for improvement in posture, component placement, or work environment.

OSHA’s eTools are web-based products that provide guidance information for developing a comprehensive safety and health program. They include recommendations for good industry practice that often go beyond specific OSHA mandates. As indicated in the disclaimer, eTools do not create new OSHA requirements.

**Source:** OSHA website http://www.osha.gov accessed 09/03/03

### eTools for Teen Workers

“Teen Worker Safety in Restaurants” and “Youth in Agriculture” are also available as interactive web-based training tools from OSHA. They can be found on OSHA’s Teen Workers web site at [www.osha.gov/SLTC/youth/restaurant/index.html](http://www.osha.gov/SLTC/youth/restaurant/index.html) and [www.osha.gov/SLTC/youth/agriculture/index.html](http://www.osha.gov/SLTC/youth/agriculture/index.html).

During their high school years, 80% of US teens work. Of those, 52% will find jobs in the retail sector, which includes restaurants and fast food establishments. The “Teen Worker Safety in Restaurants” eTool offers safety and health suggestions to educate teens and employers about hazards in these workplaces. Focus areas include serving, clean-up, drive-thru, cooking, food preparation, delivery, worker rights, and child labor laws.

The “Youth in Agriculture” eTool includes case studies describing common safety hazards while offering solutions to problems with farm equipment operations and prevention information for injuries resulting from falls, electrocutions and chemical exposures. The website offers links to other sites, fact sheets on a variety of topics and comprehensive explanations of related information such as the child labor laws.

**Source:** OSHA website http://www.osha.gov accessed 08/20/03
Employer requirements concerning PPE may change in the near future. OSHA ruled in 1994 that employers must provide PPE but the rule did not specify they had to pay for it. Now the United Food and Commercial Workers International Union, the Congressional Hispanic Caucus, and several other unions have petitioned the government to require employers to cover the costs of PPE for all workers. The groups pointed out in their April petition that the 10% of employers who do not supply PPE tend to cluster in more dangerous jobs and industries and employ low-wage workers, often immigrants or Spanish-speaking workers.

Trends in PPE

The basic performance of personal protective equipment (PPE) is standardized by government regulation, but shifts and changes in technology, marketing and public policy are affecting PPE distribution and use. The technology has been there for almost a decade, but vending machines for PPE are becoming more and more popular. Snack machines retrofitted for safety equipment can give employees better access to PPE and employers more control over inventory. Machines can produce usage reports specific to a company’s regions, departments, or even employees (which also cuts down on theft). Suppliers can also receive usage reports and refer to them for shipping or billing.

Meanwhile, marketers are capitalizing on their discovery that workers can be brand-loyal where safety is concerned. Makers of shoes and glasses are profiting from the familiarity of names like Converse or Doc Martens and the demand for a bit of style to replace the old “Buddy Holly” look in eyewear. Hard hats are becoming more personalized — and more likely to be worn, say the manufacturers — with the addition of logos, for example of a favorite football team or NASCAR driver.

Disability Claim Goes to Highest Court

May 2003 ruling by the US Supreme Court may affect the 2% of disability claims that are disputed. The Court decided that employer-sponsored disability programs are not required to defer to the opinion of an employee’s physician when deciding workers’ claims. The case before the court originated with a 1997 disability claim filed by a Black & Decker employee, whose personal physician’s evaluation conflicted with that of the company physician (the company denied the worker’s claim). A series of lower-court rulings and reversals led to the final Supreme Court decision in Black & Decker Disability Plan v. Nord. (http://www.benefitsnext.com/Article.cfm/Nav/5.0.0.2.27518)

A new government-sponsored website provides comprehensive information on the health effects of ingredients in more than 4,000 household products. From ABIN Primer to Zymol Car Polish, the profiles feature products that are used in and outside the home, for personal hygiene, even for crafts and hobbies.

Basic information on the product and the manufacturer is followed by descriptions of acute and chronic health effects and first aid treatment for various types of exposure. Handling and disposal are also covered.

The National Library of Medicine, part of the National Institutes of Health (NIH), created the Household Products Database (the information source for the website) from a variety of sources, including brand labels and Material Safety Data Sheets provided by manufacturers.

Expert:

Greg Couser, MD, MPH

After completing his residency in psychiatry at the University of Iowa Hospitals and Clinics, Dr. Couser became interested in psychiatric issues in the workplace. He is now finishing a residency in occupational medicine with the Heartland Center for Occupational Health and Safety (The University of Iowa College of Public Health) while continuing to practice psychiatry at the Abbe Center for Community Mental Health in Cedar Rapids.

Question:
What mental health problems would you say are most prevalent in the workplace today?

Answer:
It depends somewhat on how you define a “problem.” If we’re talking about psychiatric disorders, then I’d say depression, anxiety disorders, substance abuse, and bipolar disorder are the most common. Together these problems cause losses of billions of dollars per year in absenteeism, reduced productivity, disability, and medical expenditures. The cost of depression alone is estimated at as much as $70 billion per year.

Another source of problems, however, can be interpersonal conflict, perhaps between two workers or between a worker and a supervisor. I think with email and other technology cutting down on what we now call “face time,” there’s more potential for conflict or at least miscommunication in the modern workplace.

Question:
What changes would you like to see in the way mental health issues are handled in the workplace?

Answer:
If I could make one change, I’d want somehow to eliminate the stigma that’s still attached to mental health problems. Depression, for example—as a psychiatrist I see it like any other biological illness that manifests in a variety of physical, mental, emotional, and behavioral symptoms, but in the workplace it’s not usually perceived that way. When someone is in the hospital because of a heart attack, we send flowers and cards. But when someone goes in for treatment of depression, we tend to shy away even if we want to help.

And stigma can involve more than how others see you. High-producing workers who drive themselves continuously may put shame on themselves. That type of person is also less likely to seek treatment, thinking “I can’t afford to leave my job—things won’t get done.” In fact, they should be thinking “I can’t afford not to get help” because the depression will very likely harm their productivity in the long run.

Question:
How can an employer begin to address mental health concerns?

Answer:
I think it makes sense to focus on supervisors and their attitudes and skills. The supervisor is the one responsible for noticing absenteeism or other behaviors and who, with good communication skills, can open up a conversation that may give clues about an employee’s mental health.

Recognizing a problem is the first step—getting people the proper help, which can be difficult, is next. An employee might receive help from an on- or off-site employee assistance program (EAP) or their family doctor. Some companies have employees who volunteer to serve as advocates and who can recognize problems and refer their co-workers for appropriate help.

Overall I’d say what matters most is a progressive attitude on the part of company management—an understanding that maintaining their human capital can improve the bottom line. If a company identifies a problem with their end product, they often spend considerable time and money to improve it. The same sort of investment can apply to workers’ health. I realize in today’s volatile business atmosphere, with more frequent job changes, employers may hesitate to invest in the health of workers they think may move on. But if I work for an employer I think cares about me, I may feel more personally invested in that company and choose to stay. So employers can end up with satisfied, healthy, productive workers who provide the backbone for a correspondingly healthy and profitable company.
## Upcoming Occupational Health Courses

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<td><strong>Case Management: Care of Work-Related Injuries</strong></td>
<td>October 3, 2003</td>
<td>Holiday Inn of Coralville/Iowa City, Coralville, Iowa</td>
<td>This one-day conference will provide current information on medical care, treatment, and case management techniques relative to work-related injuries, including back injuries, neurotoxicity, FMLA/ADA, ergonomics, and challenging case studies. Contact Lynn Cuddihy at 319/384-6107 or <a href="mailto:lynn-cuddihy@uiowa.edu">lynn-cuddihy@uiowa.edu</a> for more information or to register.</td>
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<td><strong>Occupational Health Nursing Conference</strong></td>
<td>November 21, 2003</td>
<td>Grant Wood AEA, Cedar Rapids, Iowa</td>
<td>The Northeast Iowa Association of Occupational Health Nurses annual conference will cover a range of occupational health and safety topics, including OSHA Voluntary Protection Programs; Ergonomics; Conflict Resolution; Return to Work following a Back Injury; FMLA; and Professional Opportunities for the OHN. Contact Kimberly Gordon at The University of Iowa, College of Public Health at 319/335-4423 or <a href="mailto:kimberly-gordon@uiowa.edu">kimberly-gordon@uiowa.edu</a> for details.</td>
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<td><strong>Midwest Rural &amp; Agricultural Safety and Health Forum</strong></td>
<td>November 5-6, 2003</td>
<td>Iowa Methodist Medical Center, Des Moines, Iowa</td>
<td>The Midwest Forum will be an important milestone in building collaborative efforts and shaping future policy for rural and agricultural safety and health. The Forum will have plenary sessions and Health Food and Sustainable Agriculture; Rural Health Care Services; Community, Social and Mental Health; Rural Environmental Health and Safety; and Socio-economics of Rural Health, with breakout sessions featuring research, outreach, and education on rural and agricultural safety and health. Contact Mary Mycka at 515/282-8192 or <a href="mailto:mmycka@assoc-mgmt.com">mmycka@assoc-mgmt.com</a> for more information.</td>
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<td><strong>NIOSH-Approved Spirometry Training for Workers Screening</strong></td>
<td>November 6-7, 2003</td>
<td>The University of Iowa, Iowa City, Iowa</td>
<td>This 2-day course is designed to provide a comprehensive theoretical framework combined with practical training necessary to conduct spirometry testing and screening for workers. Contact Kimberly Gordon at the University of Iowa, College of Public Health at 319/335-4423 or <a href="mailto:kimberly-gordon@uiowa.edu">kimberly-gordon@uiowa.edu</a> for details.</td>
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<td><strong>The Ergonomics of Hand/Arm and Whole Body Vibration</strong> (NIOSH Course #596)</td>
<td>November 6-7, 2003</td>
<td>Millennium Hotel, St. Louis, Missouri</td>
<td>This two-day workshop is unique and hands-on. Upon completion, participants will be able to recognize measure, evaluate, and control excessive levels of vibration exposure in work environments. By learning these techniques, participants will be able to reduce the health and safety problems related to vibration, create an ergonomically improved environment, and reduce costs associated with vibration injuries. This comprehensive workshop is designed for a diverse audience. No previous knowledge or experience with vibration biomechanics or measurement is necessary. Contact Jo Dickens at The University of Iowa, Center for Conferences and Institutes at 319/335-4141 or <a href="mailto:jo-dickens@uiowa.edu">jo-dickens@uiowa.edu</a> for details.</td>
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<td><strong>6th Annual Occupational Health Symposium</strong></td>
<td>March 10-12, 2004</td>
<td>Sheraton Iowa City Hotel, Iowa City, Iowa</td>
<td>This annual symposium provides current information on health and safety in the workplace. The symposium will also provide important resources and networking opportunities necessary for keeping current in occupational health. Details will be forthcoming. Contact Kimberly Gordon at the University of Iowa, College of Public Health at 319/335-4423 or <a href="mailto:kimberly-gordon@uiowa.edu">kimberly-gordon@uiowa.edu</a> for details.</td>
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The Workplace Health and Safety Report is published quarterly by WORKSAFE IOWA for members of its Occupational Medicine Associates Network. WORKSAFE IOWA is an occupational and environmental health outreach program of the Department of Occupational and Environmental Health, College of Public Health, The University of Iowa. For more information on the WORKSAFE IOWA Occupational Medicine Associate in your area, please refer to the list at left.

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http://www.public-health.uiowa.edu/worksafe

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