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The Importance of Ergonomics to Healthcare
By Cynthia L. Roth, RN

Healthcare is one of the most crucial and growing areas for SH&E professionals. The increasing longevity of the U.S. population has put added pressure on the nation's healthcare delivery system, and the implications of inadequate staffing among healthcare workers differ from those of other workers in many industries.

Healthcare workers suffer from the highest numbers of ergonomic-type musculoskeletal disorders (MSDs). The most recent U.S. Department of Labor (DOL) summary statistics indicate that nursing aides, orderlies and attendants, along with two other occupations (truck drivers and non-construction laborers), accounted for 1 out of 5 musculoskeletal disorders reported nationally in 2001. The American Hospital Association has stated that work-related MSDs account for the largest proportion of workers' compensation costs in hospitals and long-term nursing home facilities nationwide. In addition, the American Nurses Association reports that ergonomic injuries occur in nurses at a rate that is twice that found in the general working population.

The exact nature of RNs' daily duties usually depends on the setting in which they work:

- In hospitals, staff RNs typically "provide bedside nursing care and carry out medical regimens." They often supervise licensed practical nurses (LPNs) and aides.
- Nurses who work in physicians' offices usually prepare patients for exams and help doctors perform them, give injections, apply dressings and sometimes keep the offices' records.
- Nursing home RNs largely perform administrative and supervisory functions. They also may evaluate the health of residents and work up treatment plans as well as "perform difficult procedures."
- Home health nurses provide services in the homes of patients. They often work independently but also supervise home health aides.

- Government and private agencies, schools, senior citizen centers and other community-based organizations employ public health nurses. They provide instruction about such things as disease prevention and nutrition as well as arrange for various health screenings.
- Occupational health or industrial nurses work at firms that engage them to provide limited medical care. In addition to providing emergency assistance and writing up accident reports, these RNs offer health counseling, help with injections and assess work environments for potential health/safety problems.
- Head nurses or nurse supervisors perform such administrative and supervisory functions as creating work schedules for and assigning duties to nurses and aides, “provid[ing] or arrang[ing] for training, and visit[ing] patients to observe nurses and to ensure the proper delivery of care.”
- Nurse practitioners provide primary healthcare (i.e., prescribe medication and otherwise diagnose and treat common acute illnesses and injuries). Other advanced practice nurses include clinical nurse specialists, certified registered nurse anesthetists and certified nurse-midwives. They all must fulfill higher educational and clinical experience requirements than those established for the prior groups.

Labor shortages in various occupations and industries were reported during the late stages of the nation’s longest economic expansion, which ended in early 2001. The unemployment rate in some fields (e.g., nursing) has remained virtually unchanged despite the advent of the recession, which suggests that factors unrelated to the business cycle are involved. For example, the increasing longevity and wealth of the population combined with a growing share of elderly persons has affected the healthcare delivery system, and these trends are expected to continue.

Moreover, although women continue to account for the majority of workers in many healthcare occupations, their career opportunities have widened over time. Among women who already are licensed RNs, many are expected to retire soon while others have chosen to work in non-nursing occupations.

Healthcare providers who thought their labor supply was fairly well assured must now compete for the interest of students based on nursing’s attractiveness. Providers became more concerned about retaining their aging RN workforce and about appealing to licensed RNs who are otherwise employed. During the mid-1990s, however, earnings growth among RNs slowed compared to earlier in the decade, and their wage increases were smaller than those of all professional workers. This might explain the drop in nursing program graduates that began in the 1995-1996 academic year and the greater share of RNs not employed in nursing in 2000 as compared to 1992 and 1996. The U.S. Health Resources and Services Administration’s (HRSA) 1996 projections and those of analysts suggested the likelihood of a shortage of RNs beginning in 2007.

If current trends continue and if actions for change are not taken, HRSA projects that the aggregate shortfall could worsen at an accelerating rate—from 6% in 2000 to 12% by 2010, then rising to 20% by 2015 and climbing to 29% by 2020. Not all states

currently share in the RN shortage nor do those with shortages share equally, according to HRSA's latest projections.

It is therefore crucial to maintain the health and safety of our working nursing population, especially as they age.

Some new studies address the importance of RNs to patient recovery. Measuring nursing-sensitive patient outcomes using publicly available data provides exciting opportunities for the nursing profession to quantify the patient care impact of staffing changes at individual hospitals and to make comparisons among hospitals with differing staffing patterns. Using data from California and New York, this study tested the feasibility of measuring such outcomes in acute care hospitals and of examining relationships between these outcomes and nurse staffing.

Nursing intensity weights were used to acuity-adjust the patient data. Both higher nurse staffing and higher proportion of RNs were significantly related to shorter lengths of stay. Lower adverse outcome rates were more consistently related to a higher proportion of RNs.

Ergonomics, applied in the healthcare industry, is the science that will save the number of RNs available for work. Studies have been shared since the 1980s regarding Manual Material Handling (MMH) of patients, defined as lifting, pushing, pulling holding and carrying and the MMH contributions to healthcare staff ergonomic risk factors.

One of the best-known publications is *Prevention of Back Injuries in Healthcare Workers* by Garg, A, Owen, B., in the *International Journal of Industrial Ergonomics* [INT. J. IND. ERGONOMICS], Vol. 14, No. 4, pp. 315-331, 1994.

A Finnish review has concluded that employer attempts to push training programs that offer lifting advice and material handling devices in an effort to alleviate worker back pain do not prevent the injury potential, which is said to be the top cause of workers' compensation claims. The review, which appears in the latest issue of the *Cochrane Library*, is an examination of data from more than 18,000 employees in 11 studies.

"This study confirms that much of what is happening at the workplace is well-intentioned but probably pointless," said Christopher Maher, associate professor of physiotherapy at the University of Sydney in Australia, who was not involved in the study.

According to Maher, regulatory agencies as well as employers make the mistake of concentrating on equipment and policies that do not work such as back belts, lifting devices and workplace redesign and fail to focus on the "only known effective intervention," which is exercise.

"We also know that exercise has health benefits beyond prevention of back pain, so you are getting two health benefits (or more) for the price of one," Maher added.

With the inclusion of this study, there is even greater confusion regarding solutions to reduce the ergonomic risk factors in healthcare. Numerous studies demonstrate the hazards and costs of ergonomic injuries to healthcare providers and workers. Other studies support the efficacy of ergonomics programs in addressing these concerns. Ergonomics programs can protect workers' health, reduce lost workdays and workers' compensation costs and aid in patient care. Prevention is the key to saving staff and patients.

Common sense and the willingness to assume responsibility for your own actions are mandatory. Do not lift, push, pull or carry beyond your capacity. Get help. The patient always comes first, however, if the nursing professional is out with a back, shoulder, wrist or any other type of MSD injury, who is thinking of the patient now?

Biography

Cynthia L. Roth has been a professional in the ergonomics industry since 1987. In 1993, she co-founded Ergonomic Technologies Corp. (ETC) where she is currently Chair of the Board and Chief Executive Officer. Prior to ETC, Roth was Executive Vice President of Biomechanics Corporation of America where she provided the majority of the organization's educational development and marketing services.

Recently, Roth was the first woman to be elected to the Board of the American Society of Safety Engineers Foundation (ASSEF) and currently serves as Chair. She also been appointed a permanent member of New York State's Commission on International Trade and has traveled to Brazil, Argentina and Chile on behalf of the State of New York.

Roth is a published author and has written the chapter on ergonomics for *Maynard's Industrial Engineering Handbook*, which a majority of engineering students use worldwide. She has also been published in 50 professional magazines worldwide on subjects related to ergonomics engineering and product design.

Roth received a degree from the University of Pittsburgh as a professional registered nurse with specialties in occupational nursing and biomechanics. She also completed postgraduate work at Cornell University in labor relations/industrial management.