

# Minimizing Workplace Injuries Among Sonographers

Workplace injuries, especially musculoskeletal disorders, among sonographers are becoming a costly part of doing business for hospitals and imaging centers around the world. The financial impact can be dramatic — whether supporting the medical costs for treating the injury, paying for a replacement while the injured person is not able to work, or simply losing revenue because the number of exams performed each day is reduced. In fact, it is estimated that an ultrasound system that is unused for one week because of a sonographer injury can mean a loss of \$10,000 in chargeable revenue for the site. According to the United States Department of Labor, there are 650,000 work-related musculoskeletal injuries annually, at a cost to business of approximately \$20 billion.



*A sonographer scans a patient using the just-released SONOLINE Antares system, which was designed with unique ergonomics.*

The alarming news is that most sonographers are already affected by an injury that is causing them to scan while in pain. The Society of Diagnostic Medical Sonographers benchmark study released in 2000, which included responses

from more than 10,000 participants in the United States and Canada, reports that more than 80 percent of sonographers are scanning in pain, and that one of every five sonographers has been affected by a career-ending injury. The average time a sonographer is in the profession before experiencing pain in scanning is five years.

The result for many sonographers is that

they are not able to work full time or they must select limited duty positions. Some are leaving the hospital environment to seek employment in clinics and outpatient facilities where the patient population is less demanding in number and condition. Others are leaving the profession completely.

These statistics on workplace injuries among sonographers help to explain why there is a skilled labor shortage in the field. Unfortunately, the shortage of sonographers only exacerbates the problem by increasing the patient load for those still at work. Other factors that may influence injury are lower healthcare reimbursement rates that require sonographers to increase the number of patients seen; an increasingly obese patient population that is more difficult to scan; equipment design that isn't focused on ergonomics; and an aging workforce.

Many factors contribute to musculoskeletal injuries. Sonographers are most likely to be affected by a musculoskeletal injury to the neck and/or shoulder. Some of the causes of these types of injuries, according to the United States Occupational Safety and Health Administration (OSHA), are rapid and repetitive movements, forceful or unnatural movements, extended duration of pressure or position, poor posture and improper positioning of limbs.

Musculoskeletal conditions and the associated pain are caused by inflammation, which is brought on by repetitive, forceful, or

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awkward movements that produce micro-trauma in muscles, tendons and ligaments. The debris left by inflammation creates scar tissue, which causes adherence and contracting of the soft tissues.

Symptoms of this type of injury include a dull ache, loss of sensation or numbness, tingling or burning, tenderness and swelling, and muscle spasms. These symptoms often occur away from work, although they can occur any time. Many sonographers are reluctant to report their injury and pain for fear that it will complicate or negatively impact their jobs. This reluctance may mean that a sonographer continues to scan in pain, promoting more strain and sometimes resulting in a non-reversible injury.

### *Improvements in environment can prevent injury*

Employers can play a vital role in preventing musculoskeletal injuries among sonographers by improving the workplace environment and providing training to sonographers on how to improve their scanning habits.

In an ideal scanning environment, the sonographer's body should be close to both the patient and the equipment, reducing the need to reach out in an uncomfortable way or adopt poor postural alignment. To achieve this, rooms must be designed with enough space to easily make needed equipment and patient adjustments, and the beds and chairs must be adjustable. Employers also should offer sonographers the use of support cushions and footrests if these features are not part of the equipment design.

Sonographers also need to take the time necessary to adjust the equipment and set up the workspace correctly, which means that employers need to provide adequate staffing so that sonographers aren't rushed through their routines. Adequate staffing also is necessary to provide breaks so that sonographers can rest their stressed



*The unique ErgoDynamic design of the Antares streamlines operator activities by offering a small footprint that facilitates maneuverability, adjustability and improved workflow to speed exams.*

muscles. Rooms should be furnished with appropriate lighting to prevent eye strain, and monitors should be added for patient viewing so that sonographers don't have to strain to share their field of view with a patient. In addition, patient scheduling should be arranged to provide a variety of examinations to reduce the repetitive motion caused by performing the same exam again and again.

Employers should strive to educate their staff of sonographers about scanning techniques and procedures that can put sonographers at risk for injury. For example, the shoulder should not be abducted more than 30 degrees when conducting an exam, and the transducer should be held with a relaxed grip. Stretching exercises can be beneficial if performed properly on a regular basis. And, as pointed out before, sonographers must pay close attention to their postural alignment and be taught how to adjust their workspaces appropriately to prevent injury.

### *Equipment manufacturers focus on ergonomics*

Also working to help reduce the risk of musculoskeletal injuries are equipment manufacturers such as Siemens Medical

Solutions, which recently introduced the SONOLINE Antares, an ergonomically designed, premium performance ultrasound system. Systems like the Antares are being designed to protect sonographers against injury by offering maneuverability, adjustability, and improved workflow to speed exams. By developing ultrasound systems with the smallest footprint possible, sonographers will be given optimal equipment positioning even in small scanning rooms and during bedside examinations. Systems also should be lightweight and easy to maneuver with quick-to-respond braking systems. A height-adjustable control panel, keyboard, and tilt-and-swivel monitor will minimize the sonographer's need to twist and strain, which could reduce neck injuries — one of the most common sites of injury. In addition, the system should be equipped with small, lightweight transducers that have slim and flexible cables.

Ultrasound system design can create a user-centric environment by putting all the sonographer's tools within reach. The sonographer should be able to easily access the patient, control panel, keyboard, transducer and transducer connectors, gel, and onboard accessories. Improvements in workflow design can minimize the number of times a sonographer must look down at the keyboard or repeat a keystroke.

Studies have shown that sonographers are experiencing occupational injuries at alarming numbers not only in the United States, but also in China, England, Italy, Australia and Canada. Employers and equipment manufacturers are becoming increasingly aware of the problem, and are responding by improving the workplace environment and developing "sonographer friendly" ultrasound equipment. It is essential that ergonomics continues to become a deciding factor in the site design and equipment purchasing process. ■