NIOSH report on MSI among sonographers

To address the high rate of musculoskeletal injuries among diagnostic medical sonographers, the National Institute for Occupational Safety and Health (NIOSH) recommends the following controls to help reduce the number of injuries:

Equipment

- Provide adequate work space for personnel, sonography equipment, the patient table, and other equipment.
- Ensure that sonography equipment is fitted with a high-resolution screen that has a high refresh rate (85 Hertz or higher), a noninterlaced monitor and an easily adjustable "brightness control" to reduce eye strain. Position the equipment monitor directly in front of the sonographer.
- Position the keyboard to allow the arm to be in a relaxed position with the upper arm close to the body (minimal flexion and abduction) and the elbow at a 90° angle. A laptop computer may enable the sonographer to achieve a favorable position with respect to the patient. However, be aware that laptops can present other problems because the keyboard and monitor cannot be positioned separately, which make them difficult to handle at the bedside.
- Use a posture-enhancing adjustable chair to accommodate the sonographer through adjustable footrests, seat heights, and lock and release casters. Casters should allow for rolling between patients and the ultrasound machine when necessary, yet prevent rolling backwards when performing necessary procedures.
- Use motorized adjustable tables (including those equipped with drop-down side rails) to optimize the positions of the patient and the sonographer.
- The table should be as narrow as possible (preferably 24 to 27 inches wide) to allow for proximity to the patient and to reduce the amount of shoulder abduction needed to reach the patient's far side.

Work Practices

- Decrease the duration of static posturing:
- Vary postures throughout the day.
- Sit or stand, depending on the exam.
- Decrease hand-grip pressure:
- Alternate the scanning hand and vary the grip used.
- Take short breaks.
- Loosen grip on the transducer.
- Minimize awkward and extreme postures.
- Increase tissue tolerances through exercise and adequate rest.

Scheduling

- Schedule different types of exams for each sonographer in a workday to decrease strain on musculoskeletal tissues specific to one type of exam.
- Limit the number of portable exams to help minimize those tasks with higher number of pinch grips and increased static or awkward postures.
- Consider a maximum number of scheduled exams for sonographers. Take into account existing ergonomic conditions and equipment, the type of exams performed, experience of the sonographer, and the duration of the individual exams. Because of the complexity of each diagnostic situation, it is difficult to specify an allowable limit to the number of exams per day. Until better information is obtained, take into account the total examination time per day (more exams of shorter duration or fewer exams of longer duration).

Training

- Periodic training and reassessment regarding the above ergonomic interventions should include the following:
- Setting up the equipment, bed, and chair
- Modifying the equipment positioning during scanning
- Positioning patients
- Using adaptive equipment or devices, such as cushions and wedges and the patient's limbs for resting the elbows during scans
- Taking rest breaks during the procedures
- Maintaining good physical fitness and conditioning
- Optimal handling of specialized tests such as trans-vaginal examinations
- Having symptoms promptly evaluated by a licensed health care provider

(Source: Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. "Workplace Solutions: Preventing Work-Related Musculoskeletal Disorders in Sonography," September 2006. Available online at www.cdc.gov/niosh/docs/wp-solutions/2006-148.)