

## Executive Summary

The Grey Bruce County Health Services, joint health and safety committee, invited OHCOW to Owen Sound to perform an ergonomic review of the sonographers. This report has been written to address this request. It provides a description of the physical demands of the sonographer, identifies the injury risk factors associated with this job and provides recommendations focused on reducing the workers risk of injury. A detailed review of our findings can be found within the report.

Some of the primary concerns we found present in this job include exposure to the following injury risk factors:

- various awkward postures while scanning (e.g. reaching to the patient and control panel, neck rotation when viewing the monitor) which were held for extended periods of time (i.e. static contractions),
- forceful exertions which were often static in nature (particularly for obese patients),
- awkward, sustained, non optimal pinch grips while holding and working with the transducer,
- numerous repetitive awkward reaches and movements (e.g. pulling on the transducer cord, reaching to the control panel, twisting to read the monitor when performing paperwork),
- occasional exaggerated awkward twists and reaches (e.g. when retrieving items or when scanning documents)
- forceful exertions of lift, lower, push, pull and carry (e.g. when transporting patients and ultrasound machines, carrying films, loading areas)

These above exposures stemmed from problems with the equipment and work organization which included the following:

- the ultrasound machines did not provide basic adjustability features for the worker (except the Markdale unit) (i.e. most had a fixed monitor and keyboard position),
- the older monitors did not offer the same image quality and clarity as the newer monitor,
- the older machines lacked shortcut keys and had a much larger and more awkward layout,
- the transducers could not be updated or replaced because of the age of the machines,
- the exam beds lacked a central locking system and did not have additional railing to assist patients onto and off of the bed,
- the work areas in Owen Sound were shared and were fairly crowded which limited the workers ability to personalize their work area
- the low lighting levels made it difficult for performing paper work,
- there was an increased work load with the workers performing more scans (particularly with the new PACS system) and due to tight staffing levels; there was often no one available to cover sick workers,

Newer equipment designs will help to reduce awkward working postures and improve the overall job design. The primary recommendations listed in this report include:

- Supplying and or modifying the equipment to ensure optimal diagnostic accuracy while reducing the workers fatigue:
  - Chairs should be fully adjustable to allow each worker to adopt a neutral, supported posture. After each worker is familiar with how to adjust each chair they should be able to choose which chair to work from. The winged chair has the added benefit of allowing for various seated postures and for also occasionally allowing for additional arm support.
  - Exam beds should have a central locking mechanism and be equipped with some sort of railing system so that the patients with stability problems can feel more secure on the bed.

- Ultrasound machines should be fully adjustable (both the monitor and control panel) and be equipped with additional features to improve the usability (e.g. shortcut keys, touch screen options, voice activated software, a second monitor).
- Transducers should allow the user to use the most comfortable and effective grip, encouraging the worker to use a power grip over a pinch grip, particularly when static forces are required. A cable brace can help to secure the cord to the workers arm in an effort to limit the amount of cord pulling, while a wireless transducer will totally free the sonographer from having to support and work against the restrictive cord.
- Support cushions in various sizes should be available to provide arm support while scanning.
- At least one ultrasound machine should be designed with portability in mind (e.g. wheels should be maintained, easy to handle/steer, comfortable handle on the machine).
- Footrests can assist in placing the worker in a neutral posture and allow the worker to vary their position when performing a scan standing.
- Cables should be managed properly so that the carts and beds do not have to be maneuvered overtop of them.
- Individual stations for the day will allow workers to organize and stock their area to suit their needs.
- Writing stations in front of the monitor (e.g. a flip up platform to cover the keyboard) would be ideal and allow the workers to transcribe the information from the screen to their paper. A task light would also be helpful to provide localized lighting on the paper and not interfere with the screen clarity.
- Work area should be organized so that frequently used items (gel, towels) are in an easy to reach place, particularly when seated.
- Other miscellaneous recommendations include:
  - trialing all new equipment,
  - encouraging and scheduling stretching breaks and neutral working postures,
  - training/education workers around ergonomic issues,
  - expanding job duties and adjusting workload, and
  - using the literature to stay on top of changes within the industry (e.g. the Society of Diagnostic Medical Sonography has set out industry standards which include a variety of recommendations around engineering, administrative controls).