The Value of Ergonomic Exam Tables in Sonography

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Current Challenges in Medical Imaging

Many of the challenges facing imaging departments center around stable, experienced, productive staff. This means that worker injury can have a large impact on a department's bottom line.

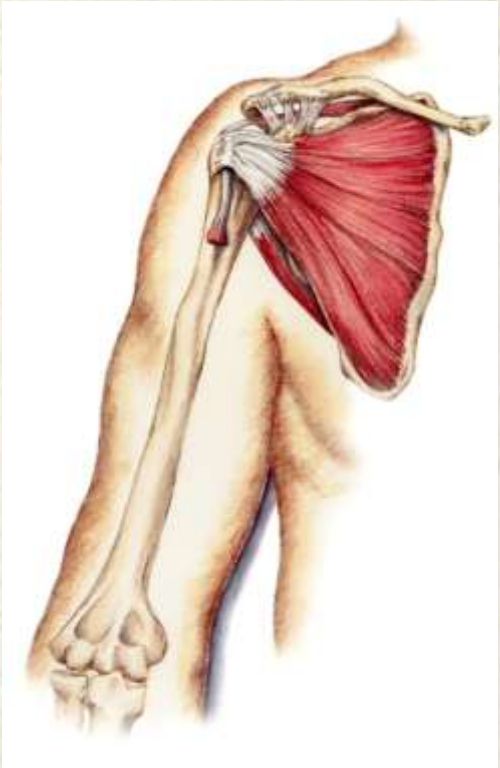
What are Work-related Musculoskeletal Disorders (WRMSD)?

- Injuries caused by or aggravated by work activities
- Result from accumulation of microtrauma
  - Not tied to a specific, acute event
  - Gradual, chronic exposure to risk factors
- Healthcare is 2nd riskiest occupation for WRMSD

How Serious Are WRMSDs in Sonography?

- 9 out of every 10 sonographers are scanning in pain (2008 survey)
  - Increase from 1997 survey that showed an 84% injury rate
- 1 out of 5 have a career-ending injury
  - May have to re-train into a different profession

Injury Sites



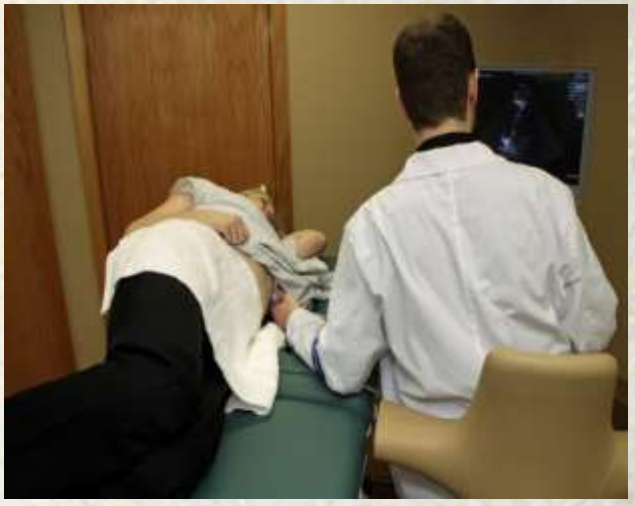
- Most affected:
  - Shoulder - #1
  - Neck
- Cause:
  - arm abduction – shoulder has to support weight of arm, leads to decreased blood flow & fatigue

Arm Abduction

- Shoulder muscles have to support the arm while it's suspended away from the body
  - leads to a lack of good blood flow to the shoulder, fatigue and injury.

Some of the Causes of WRMSD

- Repetitive motions
- Forceful or awkward movements
- Poor posture/ improper positioning
- Static body postures



2 Categories of Injury Costs

Direct:

- Worker's comp
- Medical costs
  - Increasing 2.5 times faster than any other benefit cost

Indirect costs = 3 to 5 times greater

- Replacement staff
- Work slowdown
- Retraining
- Lost time

(Bureau of Labor Statistics , 2000)
(Ergoweb, Inc., 2001) v

Prevention or Control Measures

- Administrative controls – exposure reduction
  - Patient scheduling
  - Worker rotations

- Work practices – exposure reduction
  - Changes in work postures
  - Use of support cushions, etc.

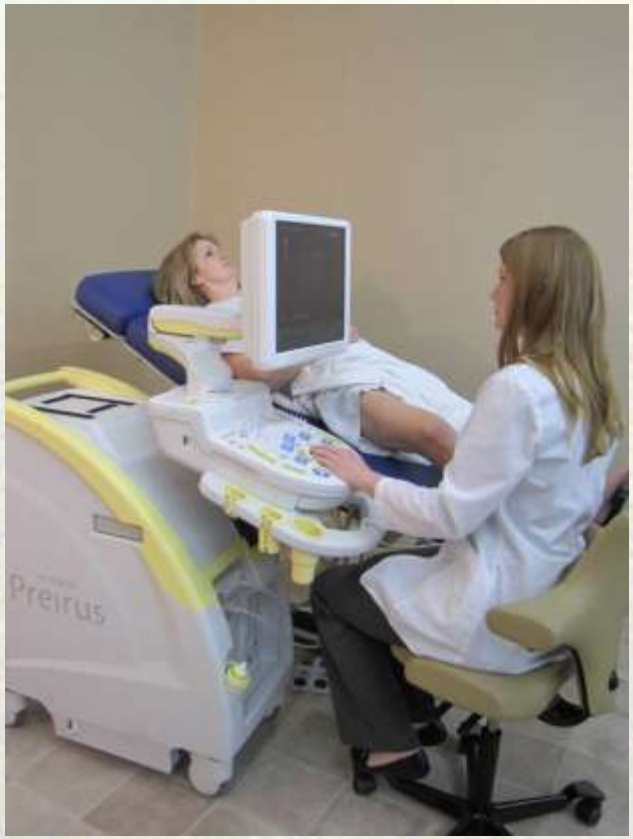
Prevention or Control Measures

- Engineering controls – exposure elimination
  - Redesign workspace
  - Redesign equipment
  - Most expensive initially, but saves in injury costs over the years

Height Adjustability

- Minimum ergonomic requirement is electric height adjustability
- Need to address needs of different height workers, different work styles

Height Adjustability



Manually Adjustable

Chair interferes with access to table controls

Controls are at end of table

Manually Adjustable

- Requires too much effort on sonograqpher's part
  - May have to get up to access controls at end or side of table

- Sonographers won't make the effort to make table changes
  - Work at whatever height the table is left in by previous worker

Exam-Specific Features

- Tables should have a variety of features specific to types of exams performed in the lab

Radiology-based Labs

- Back access support panels & leg supports (stirrups) are important for optimal patient & sonographer positioning.

Radiology-based Labs

- it may be easier for some patients to sit on the table in a chair configuration and then be laid back for the exam.

Exam-Specific Features

- Echocardiography labs need access to the apex of the heart when the patient is rolled onto his or her left side.

Echocardiography Labs

Sliding apical access panel on Oakworks tables provides a variety of opening sizes & is less alarming for patients

If sonographers perform these exams right-handed, the panel can be controlled electrically.

Dropping access panel on competitive table has one size opening and can be alarming when it drops away.

Exam-Specific Features

- Vascular labs have unique exam requirements
  - Steeper tilt angle
  - Split footboard

Vascular Labs

- Split footboard allows sonographers to position one side lower than the other or to drop one side completely away for non-weight bearing leg vein exams.

Vascular Labs

- Venous reflux exams evaluate backflow of blood in the legs

- Uses gravity, which usually means patient is standing up and sonographer is forced to kneel/sit on the floor

Vascular Labs

- The Oakworks exam table has a steep forward tilt angle, which can be close to 70 degrees

- Generally sufficient to demonstrate backflow of blood in the legs

Exam-Specific Features

Optional headrest can be added for carotid artery exams and thyroid exams

Optional armboard can be added for exams of the upper extremity

Non-ergonomic Tables

- Stretchers are not exam tables & have many features that make them good stretchers but not good exam tables.
- This stretcher is trying to serve as a cardiac exam table as well.

Non-ergonomic Tables

Side rail, although in the down position, is in the way of the apical access opening

When the railing is moved out of the way of the access panel, it sticks out too far past the end of the table, causing a safety hazard.

Non-ergonomic Tables

Table frame extends beyond the mattress. Prevents sonographers from getting in close to their patients.

Non-ergonomic Tables

- The base of the table extends beyond the frame.
- Can result in a tripping hazard & prevent sonographer from positioning a chair close to the table

Non-ergonomic Tables

Side rails don't retract under the table; prevents sonographer from getting close to patient.

Handle for moving table extends beyond frame at the head of the table; prevents sonographer from getting close to patient when working from the head of the table.

Non-ergonomic Tables

Attachment for adding IV pole or other options is a permanent part of frame. It is located on the side & prevents sonographer from sitting closer to the table.

Ergonomic Tables

- Mattress extends to edge of frame
- No features obscures the sonographer's knees when he/she is seated at the head of the table

Ergonomic Tables

- Electric height adjustability allows for optimal work position
- Back access panel supports patient's back & allows sonographer to step in closer

ROI for Improved Injury Rates

- **20%** ROI with worker behavior changes
  - Trying different work postures
  - Using arm support devices

- **100%** ROI through workplace & equipment design
  - *But*, workers have to know how to use features of the equipment & why they are important
  - Lack of this knowledge can lead to dissatisfaction with product

The Ergonomic Workstation

- Consists of:
  - Ultrasound system
  - Chair
  - Exam table
- All components should have multiple adjustments
  - *But,* the minimum requirement would be an ergonomic, adjustable exam table

Benefit

- An ergonomic workstation is the most cost effective way to create a healthy, productive workplace
- Goals of ergonomics:
  - fit the work environment to the worker
  - Improve productivity

What About the Patient?

- Patient benefits:
  - Comfortable, safe exam table
  - High-quality exam
- Features:
  - 3" mattress with soft upholstery
  - Optional side rails for safety
  - 22" & 23" (vascular table) lowest height for ease in getting onto the table
  - Electric adjustability for smooth changes in table position

Other Patient-friendly Features

- Dropping footboard & leg supports for comfort during pelvic ultrasound exams
- Chair configuration for comfortable seating & easy transition to a supine position
- Back access panels for support when lying on one's side
- Armboard for comfortable arm position during upper extremity exams
- Sliding access panel for comfortable transition of table during cardiac exam