Ergonomics In the Vascular Lab

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What is A work related musculoskeletal injury?

• A disorder caused by cumulative damage to muscles, tendons, ligaments, nerves, or joints (as of the hand, wrist, arm, back or shoulder) from **highly repetitive** movements that are characterized chiefly by pain, weakness, and loss of feeling

• Also known as: “cumulative trauma disorder, repetitive motion injury, repetitive stress injury, repetitive stress syndrome, or RSI”

• A leading cause of human suffering, loss of productivity, and economic burden under-reported and hard to quantify
Cause of Injuries:

- **Body position** - extreme ranges of wrist, shoulder and back
- **Posture** - muscles stay contracted to maintain and decrease flow to muscle
- **Repetition** - Repetition of movements is considered the *strongest* risk factor
- **Pace of work** - little down time; when not scanning, completing reports
Additional Cause of Injury:

- **Work Setting**: improper position while scanning, design & age of ultrasound systems, fixed stretchers, patient positioning

- **Patient Population**: obesity epidemic, older, less agile patients

- **Expanded utilization** of Ultrasound: venous, visceral, emergent and bedside scans have become routine
Additional Cause of Injury:

• “Seasoned” workforce: the most experienced perform complex, lengthy exams-more prone to injury- no down time between scans

• Increased volume offsets lost reimbursement revenue
Injuries are varied and complex

- Include muscle, tendon and nerve injuries that may progress in stages from mild-severe

- The **first pain** is a signal that the muscles and tendons should rest and recover

- Ignore pain: an injury can become longstanding, and often irreversible

- Most sonographers “self-treat” until injury is severe
Impact of Injuries:

- **90%** of Sonographers experience work-related pain.
- Of those in pain, **20%** suffer career-ending injuries.
- If pain occurs, injury must be immediately addressed (not).
- Many sonographers resist reporting to Employee Health for fear of losing their job: women often sole breadwinners.
- Injured sonographer frequently dismissed/mismanaged.
- Ergonomic support resisted by administrators d/t cost, time.
Sonographers meet OSHA
Risk Factors for Injury

• Force
• Motion or Sustained Postures
• Reaching/overreaching
• Awkward Postures
  –Reaching
  –Trunk/neck twist
  –Wrist flexion/extension
  –Arm abduction

Injury producing postures:

Images: Courtesy of Sound Ergonomics Inc., Seattle, WA
Factors Contributing to WRMSD’s in Sonographers

- Number & duration of scans
- Time between exams
- Transducer & equipment design
- Sonographer age

- Chair/stool design
- Exam table design
- Pushing machines
- Exam Technique
- Sonographer Height/Reach
Results of SVU & Sound Ergonomics Survey: 2009

• Pain a likely distraction while scanning

• Pain may affect scan quality, causing shortened exams or poor quality studies

• Inadequate studies can lead to medical errors

• Concern that unless ergonomic standards are implemented, both the sonographer and the patient will suffer

- SDMS, Sound Ergonomics and Society surveys of members for Vascular Ultrasound
- Outcome documents increasing occurrence of injury with age
- Vascular Technologists are injured at higher rate
Where are we injured?

SDMS Benchmark Study

- Shoulder 17%
- Neck 15%
- Wrist 11.4%
- Hand/Fingers 10.2%
- Upper Back 10.1%
What is the Cost?

US Bureau of Labor Statistics

- Reports 650,000 WRMSD’s, @ cost to employers of over 20 billion dollars/yr.
- Costs include Worker's Compensation and medical expenses
- Cost of medical benefits increasing 2.5X faster than benefit coverage
- $1 of every $3 in Worker's Compensation costs are spent on occupational musculoskeletal disorders (MSDs)
What is the Cost?

US Bureau of Labor Statistics

- Employers pay $15-20 billion/yr. in Worker's Compensation costs for lost workdays.
- Sonographer’s injuries often UE, with mean cost per case of $8,070 vs. mean cost of $4,075 for all types of work-related injuries.
- Additional indirect costs: 3 to 5 X higher: up to ~$150 billion/yr.
What is the Solution?

Do Nothing

• Permanent, career ending injury with significant direct and indirect costs to sonographer and facility:
  • $30,000 for Worker's Compensation costs
  • $29,000 avg. cost for medical bills, x surgery
What is the Solution?

Do Nothing

- Permanent, career ending injury with significant direct and indirect costs to sonographer and facility:
  - $702,000 in lost revenue (based on 60% reimbursement/year)
  - If ultrasound exam room is down, the loss of chargeable income can be up to $4,500/day
  - $10,000 to recruit a new sonographer
Proactive Solutions: Implement & Practice Ergonomic Standards

- **ICAVL: Section 3.1: 3.1.1** A policy must be in place to address technical staff safety, comfort and avoidance of work related musculoskeletal disorders (MSD)

- Appropriate ergonomic adaptations reduce the risk of WRMSD
Proactive Solutions: Implement & Practice Ergonomic Standards

• Resistance to change will result in career ending injuries, lost revenue, workmen’s compensation claims, need for more staff, decreased access to care for patients

• The cost of providing accessory ergonomic equipment has a great return on investment: Small changes have a huge impact
Solutions: Your Facility

- Ergonomics must be considered in the decision-making process when ultrasound facilities purchase capital equipment.
- Scheduling of patients needs to include vascular technologist-vary number and type of exams.
Solutions: Your Facility

• Short breaks have impact on muscles and eye strain

• Do not suffer in silence: Find your voice and use it
Solutions: The Profession

• Collaborate with ultrasound professionals to create and apply unified ergonomic standards & further explore pain-medical error link

• Continue to report injury findings to OSHA, encourage state and national standards for Sonography

• Create standards for the profession, disseminate and publish: no longer an option to ignore

• ICAVL Standard is a very good first step
Final Thoughts:

• **You** must protect yourself & your patients

• Work smarter: Transducer time vs. volume

• **WRMSD’s** are **CAREER ENDING** injuries

• Report pain/injuries to Employee Health/supervisor

• What will you do if you can no longer scan?

• Do you think your job cares about this? **Think again!**

• Visit [soundergonomics.org](http://soundergonomics.org) & [sdms.org/OSHA/etool.asp](http://sdms.org/OSHA/etool.asp).
Thank you for your Attention

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