

# **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

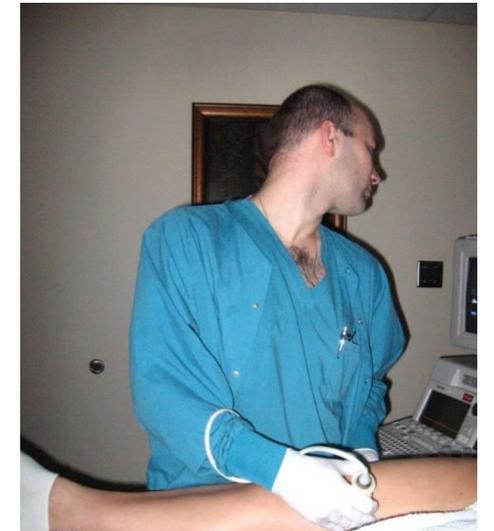
# Impact of Injuries:

- **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:



# Factors Contributing to WRMSD's in Sonographers

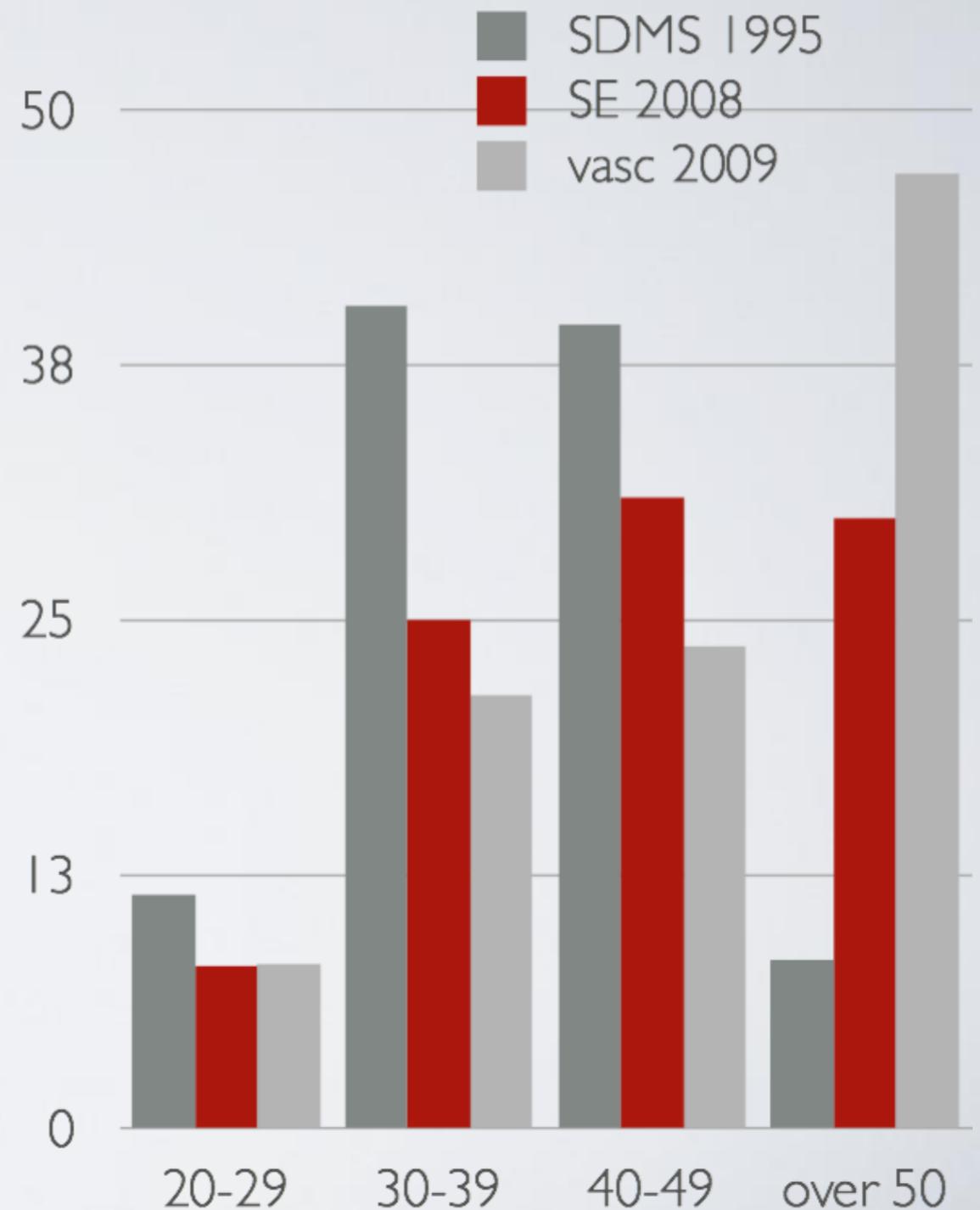
- Number & duration of scans
- Time between exams
- Transducer & equipment design
- Sonographer age
- Chair/stool design
- Exam table design
- Pushing machines
- Exam Technique
- Sonographer Height/Reach

# 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

# Age of the Respondents: 1997, 2008 & 2009 surveys

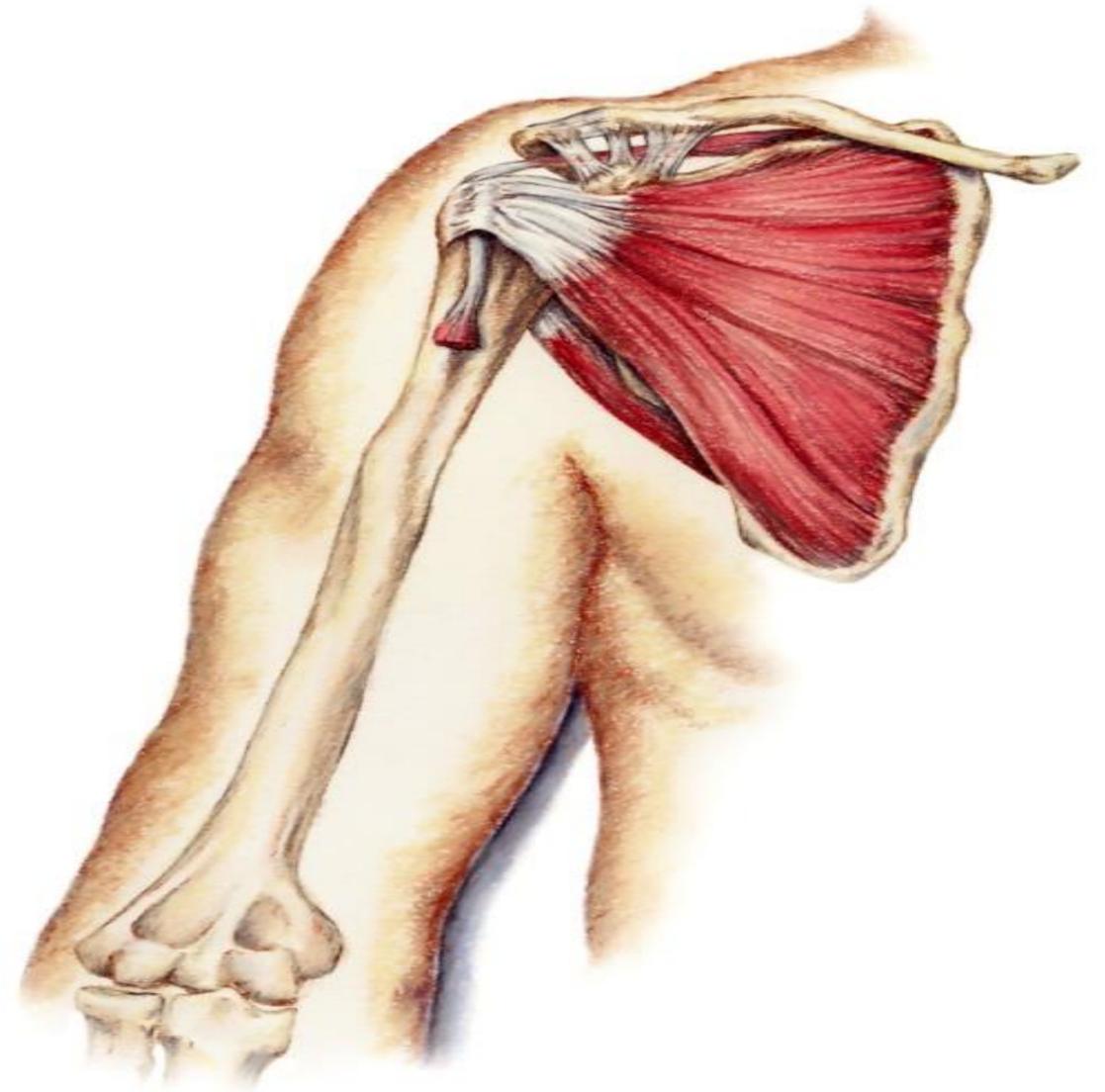
- SDMS, Sound Ergonomics and Society for Vascular Ultrasound surveys of members
- Outcome documents increasing occurrence of injury with age
- Vascular Technologists are injured at higher rate



# 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

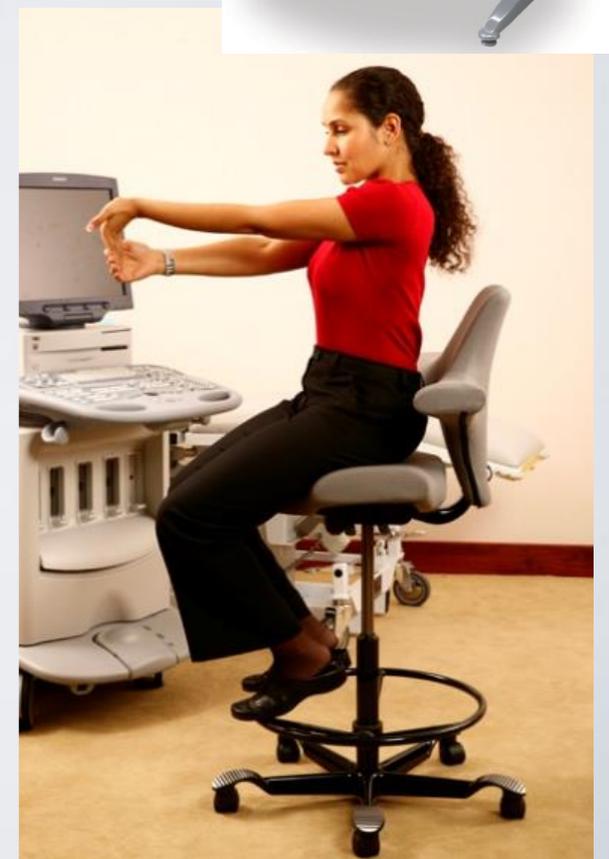
- **ICAVL: Section 3.1: 3.1.1** A policy must be in place to address technical staff safety, comfort and avoidance of work related musculoskeletal disorders (MSD)
- Appropriate ergonomic adaptations reduce the risk of WRMSD

# 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

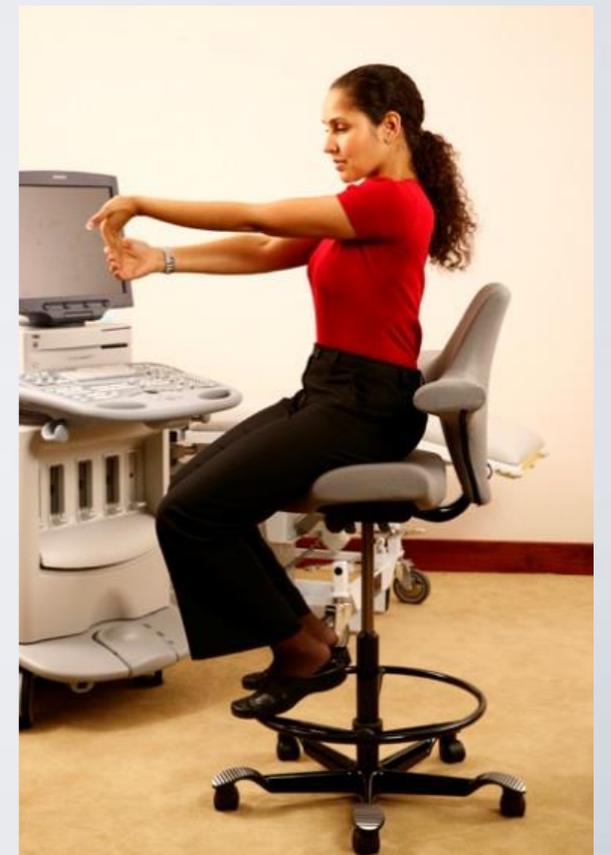
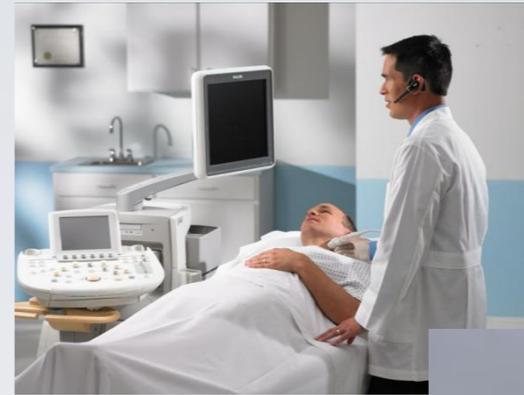
# Solutions: Your Facility

- 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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