

Left-Hand Echocardiography: a path to improved ergonomics and reduced injuries in echocardiographers

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Introduction

Work-related musculoskeletal disorders (WRMSDs) are an increasingly common concern among healthcare professionals, particularly echocardiographers. Due to the repetitive nature of their work, echocardiographers often experience significant physical strain, leading to injuries that predominantly affect the upper body. According to the Society of Diagnostic Medical Sonography (SDMS), 90% of sonographers report experiencing some form of work-related pain, and 20% have left the profession entirely due to these injuries.¹

Among echocardiographers, the dominant right hand is frequently overused during scanning, leading to repetitive strain injuries (RSIs), including carpal tunnel syndrome, tendinitis, and rotator cuff injuries. This article explores the ergonomic benefits of using the left hand to perform echocardiography, combined with a technique of resting the elbow on a padded couch or support, which could significantly reduce the incidence of WRMSDs among sonographers.

The prevalence of right-hand injuries in echocardiographers

The traditional approach to echocardiography involves the use of the right hand to manipulate the transducer, placing substantial strain on the arm, wrist, and shoulder over time. A survey conducted in the UK revealed that 80% of sonographers reported shoulder pain, and 75% reported hand or wrist pain directly linked to their scanning practices.² These repetitive motions, combined with awkward postures and prolonged static positioning, lead to chronic injuries that affect the workforce.

Chronic pain related to right-hand echocardiography often results in absenteeism and early retirement. Injuries related to prolonged repetitive strain are not only painful but also lead to significant reductions in productivity, and the NHS faces considerable challenges in ensuring that departments are adequately staffed.

Resting the elbow to reduce strain

One simple yet highly effective intervention to reduce physical strain during echocardiography is to rest the scanning arm's elbow on a soft, supportive surface, such as the couch on which the patient lies (see Figs 1 and 2). By resting the elbow, echocardiographers can transfer the force required to stabilise the transducer to the couch, rather than relying solely on their arm and shoulder muscles.

This ergonomic practice helps distribute the physical load across the body and reduces static loading on the upper limbs, leading to fewer injuries. Additionally, echocardiographers are able to maintain a more neutral body posture, minimising the risk of back and neck strain. Such support can be particularly beneficial when paired with left-hand echocardiography, as it minimises the muscular load traditionally placed on the dominant right hand.



Fig 1 & 2. Supporting the left elbow to reduce strain

Why left-hand echocardiography is ergonomically superior

Although sonographers are typically trained to use their right hand for scanning, adopting left-hand echocardiography offers several key benefits. By using the left hand, the strain on the right arm is reduced, especially for those who have already experienced injuries or chronic pain. In combination with elbow support, left-hand echocardiography allows for better distribution of physical stress across the body and enhances overall posture.

Year	Sonographers in NHS	WRMSD Cases	Cost to NHS (£m)	Lost Prod. Days	WRMSD Red. (30%)	Savings to NHS (£m)	Prod. Gain (30%)
2018	2500	2000	320	1500000	600	96	450000
2019	2600	2100	340	1600000	630	102	480000
2020	2700	2250	360	1700000	675	108	510000
2021	2800	2350	380	1800000	705	114	540000
2022	2900	2450	400	1900000	735	120	570000

Table 1. WRMSD Cases in the NHS.⁴

A study published in 2020 showed that over 65% of echocardiographers reported chronic pain linked to right-hand use. The same study suggested that by incorporating ergonomic interventions, including elbow support and left-hand scanning, pain levels could be reduced by up to 40%.³ This highlights the potential of left-hand echocardiography as a preventive measure, capable of significantly reducing the rate of WRMSDs among sonographers.

The financial cost of WRMSDs to the NHS

Musculoskeletal disorders are not only a source of physical discomfort for sonographers but also place a significant financial burden on the NHS. In 2021, it was estimated that the NHS lost approximately 1.8 million working days due to WRMSDs.¹ For sonographers, these injuries result in increased sick leave, which directly impacts service delivery and workforce availability.

The financial impact of WRMSDs on the NHS is substantial. Data from recent years estimates that WRMSDs cost the NHS approximately £400 million annually, a figure that includes treatment costs, sick pay, and lost productivity.⁴ The adoption of left-hand echocardiography and ergonomic interventions could potentially reduce WRMSD-related cases by 30%, saving the NHS up to £120 million annually and regaining approximately 540,000 productive working days.

Improving productivity and workforce sustainability

The introduction of left-hand echocardiography could have long-term benefits, including the reduction of staff absences and the enhancement of overall productivity. Sonographers experiencing pain from repetitive strain injuries often take time off work or reduce their working hours, which places additional pressure on already strained departments. By addressing the root causes of these injuries through improved ergonomics, we can create more sustainable and productive workforces.

Training programmes should include left-hand echocardiography as part of their curriculum, especially for sonographers experiencing discomfort from right-hand use. Ergonomic training, combined with the adoption of elbow support techniques, can help extend the careers of sonographers and reduce the economic burden of WRMSDs on the healthcare system.

Conclusion

Left-hand echocardiography, when combined with the use of proper elbow support, represents a promising solution to the ongoing issue of musculoskeletal injuries among sonographers. By reducing strain on the dominant hand and improving overall posture, this technique can lead to fewer injuries and improved workforce productivity. Given the high cost of WRMSDs to both the healthcare system and individual workers, adopting ergonomic practices like left-hand scanning could greatly benefit the NHS by ensuring a healthier, more sustainable workforce. Further research is needed to explore the long-term effects of left-hand echocardiography on WRMSD prevention and to support its implementation as part of standard practice.

References

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