

## Introduction

Traditionally, ultrasound training has consisted of two components: theoretical instruction delivered by higher education institutions and practical training conducted in clinical departments. However, the practical element is resource-intensive, and increasing clinical demands have limited the time available for teaching foundational scanning skills in clinical departments.

In 2023, the University of Cumbria introduced a simulation-based training period for full-time graduate-entry MSc Medical Imaging (Ultrasound) students. The aim was to better prepare students for clinical placement by covering core scanning techniques and underpinning knowledge in a simulated environment, thereby reducing the teaching burden on clinical staff. This study explores the impact of this simulation period on both student sonographers and clinical placement partners.

## Method

A qualitative study using total population sampling invited all 2023 students and their clinical tutors to participate. Semi-structured interviews were conducted via MS Teams, transcribed verbatim, anonymised, and analysed using reflexive thematic analysis.

## Results

Three key themes emerged:

### 'In Action' Reassurance –

Students valued immediate feedback but highlighted the continued labour-intensive nature of learning scanning skills, even in simulation.

*"So, like the days that we were almost like left alone, it was weird because I've done it before, but it was always like a bit of doubt in me to be like, I'm actually doing it the right way."*

Students favoured (very) small group teaching as this allowed instantaneous feedback. Tutors had not anticipated this, expecting that at postgraduate level a higher degree of self-directed, problem-solving learning would work best for deep learning. This emphasises the labour-intensive nature of scanning and demonstrates that it is still difficult to overcome (even in a non-patient environment).

*"Even though I know it's good to like practise things on our own, at points we were like, are we doing this right?"*

*"I'd rather have like just someone there to be like, OK, you're going the right way."*

### Preparedness –

Simulation helped build foundational knowledge and skills, though it could not fully replicate clinical experience.

*"I said it's so fast-paced once you get here (placement) and you know ... if we started in the second week of January here, I wouldn't know any anatomy. I wouldn't know anything and it's really good just to have that basic knowledge under your belt...so it's definitely beneficial."*

*"... Also in the intensive period, there's no pressure to do anything under time, or you know, you haven't got a real patient there."*

*"And I think it's definitely what was needed rather than going into to placement straight away just because like I said, you're not thrown in the deep end and you've got to slowly build up time where you can actually like focus on different areas and be able to sort of gain some skills and some knowledge before starting."*

### 'Real World' Experience –

Simulators sometimes gave a false sense of ease in identifying anatomy/pathology, highlighting the need for live model scanning to bridge the gap.

*"Live scanning each other, that was, like, great, and I feel like the tutor led ones are my favourite"*

*"For me the most beneficial part was the live scanning."*

Students appreciated using different ultrasound machines mimicked real departments.

Students found that scanning for full days in the labs mimicked the physicality of the job role of a sonographer.

*"I felt like it really eased us into it as well, an idea of what to expect."*

## Conclusion

Simulation supported safe, early skill acquisition and improved placement readiness. Both students and tutors saw value in the approach, though challenges remain in replicating real-world complexity. Future improvements should focus on enhancing realism and addressing the persistent intensity of ultrasound skill development.

