

Background:

The British Medical Ultrasound Society (BMUS)

Context

The British Medical Ultrasound Society (BMUS) is a not-for-profit charity, founded in 1969, promoting the safe use of Medical Ultrasound. The Society is unique in its multiprofessional nature, consisting of leading world experts in all areas of ultrasound, including clinical, manufacturing and safety.

The Society is Internationally renowned for its development of clinical guidelines around professional practice, educational content and support of patient safety. This undertaking by BMUS supports the sonographer workforce both in the UK and abroad (the term sonographer relates to a Health Care Professional undertaking ultrasound examinations and encompasses many different professions including clinicians, radiographers, midwives, nurses, physicists to name a few of the larger groups performing ultrasound examinations).

BMUS links closely with similar and related organisations globally (Australia, the United States and Canada), the Royal College of Radiologists (RCR), Society of Radiographers (SoR), the Institute of Physics in Engineering in Medicine (IPEM), Consortium for Accreditation of Sonographic Education (CASE), European Federation of Sonography in Medicine and Biology (EFSUMB), World Federation of Ultrasound in Medicine and Biology (WFUMB), International Society of Ultrasound in Obstetrics and Gynaecology (ISUOG) etc. and is also a member of AXREM (the UK trade association representing the interests of suppliers of diagnostic medical imaging).

Diagnostic Ultrasound Workforce Challenges

There is a shortage of ultrasound users across the UK, including sonographers, radiologists and ultrasound physicists (physicists both undertake scanning but also support equipment and perform quality assurance). Sonographer vacancy rate across the UK is 12.6% (1). Workforce shortages amongst radiologists are around 30% (7). The Institute of Physics & Engineering in Medicine undertook an Ultrasound workforce survey in 2023 (10), and reported a headline vacancy rate of 24% for Ultrasound Scientists and noted the lack of very senior Ultrasound Scientist positions, which subsequently becomes a barrier when medical physicists are deciding on career options.

Many Trusts are reliant on locum workers or outsourcing. A survey by the Society of Radiographers (SOR) in 2019 found around 48% of respondents stated they relied on locum staff regularly, compared to 36% in 2014. The Royal College of Radiologists (RCR) in 2023 found that outsourcing is costing the NHS around £276 million (9).

The SOR 2019 workforce census (1) revealed 76% of respondents reported unfilled vacancies with the main reason for this being 'unable to recruit a suitably qualified applicant'. The 2023 RCR workforce census (9) found that 7/10 clinical directors believe their workforce is too understaffed to deliver safe care, and that radiology demand is increasing faster than its workforce. Aging workforce, lack of training capacity within NHS and difficulty to retain staff

within the NHS (often a direct result of competition from the private sector due to competitive salaries) have all directly led to these shortages. The NHS Long term plan (8) alongside an aging population with poorer health seeking behaviours have continued to an increased demand on imaging services. Waiting lists and workloads have become difficult to manage and have contributed to individuals being more likely to retire early, and created a greater attraction to private sector jobs. Given that 24% of the sonographer workforce is aged 51-60, the implications for the workforce in the coming years is potentially huge. The shortage of sonographers has a direct effect on training radiology registrars and other ultrasound users (including Point of Care Ultrasound (PoCUS) and neonatologists), further perpetuating skills shortages amongst other clinical teams.

Due to the nature of the work undertaken (repetitive movements, transducer pressure, poor grip, stress, workload), and the rising level of public obesity, sonographers are subject to Work Related Musculoskeletal Disorders (MSKD) (3). This limits the number of examinations per session a sonographer can perform, and potentially the length of an ultrasound practitioners' career.

Training

There is a clear need for teams and Trusts to invest in training of ultrasound practitioners and make training a priority of their long-term goals. That said, time taken to train a sonographer is labour intensive and often requires a 1:1 environment. At Postgraduate level the minimum time taken to train a sonographer to Postgraduate Certificate level (which is one area of clinical practice), is 1 year. For Postgraduate Diploma level (which is typically three areas of clinical practice), a minimum of 2 years is required. This is then followed by a period of preceptorship to embed the knowledge and confidence required for independent reporting, which can take around 6-12 months, dependent on the individual. Traditionally, ultrasound practitioners would have started their career as Radiographers, Midwives, Physicists or Vascular Scientists and undertaken additional training to perform ultrasound examinations. It has; however, been recognized in recent years that these professions also suffer their own workforce pressures - meaning training to undertake ultrasound examinations is taking time from an already challenged workforce and depleting this further.

There have been developments within Higher Education Institutions (HEIs) alongside CASE to open the doors for a career in ultrasound to individuals with a variety of backgrounds, whilst maintaining and advocating for high level academia. Developments, including direct access to Postgraduate ultrasound and the development of Undergraduate ultrasound courses (including apprenticeships), are revolutionising the pool from which sonographers can be recruited. Whilst these routes of education make recruitment availability broader, proficiency is still not quick to achieve; taking a minimum of 2-3 years (dependent upon the route taken), followed by a similar period of preceptorship before being deemed proficient to independently report.

A solution to assist with training would be equitable investment from NHSE with regard to providing the same bursary and expenses available for Undergraduate diagnostic radiographers and access to student finance for students who are studying sonography as a

second degree. This would potentially promote sonography as a profession worth investing in as a career path.

Whilst undergraduate sonography education may be a step in the right direction to help alleviate workforce challenges, it must be recognised that there needs to be ongoing investment in Postgraduate education to allow these individuals to progress professionally. Undergraduate sonographers qualify at education level 6, yet education level 7 is required for these individuals to operate in the same capacity that sonographers currently do. Without Postgraduate support, the clinical practicality of these individuals remains uncertain.

Furthermore, the 'elephant in the room' remains when recruiting individuals who do not come from a healthcare background; it is not possible for these individuals to be registered with a statutory professional body. Voluntary registers are available and provide some security, but they do not hold the same level of integrity as statutory bodies.

Regulation

Currently the title 'sonographer' is not a protected title, despite several applications to achieve this. Until 2022, sonographers could apply for voluntary registration with the SOR; however, this has now been discontinued. Currently, non-registered ultrasound practitioners can voluntarily register on the RCT public voluntary register. However, the voluntary nature of this register means there is no *responsibility* for any practitioner to do so. In essence, without regulation, there is no monitoring of who is performing this imaging modality. Some employers (largely the NHS) monitor their employees by requesting employees that have undertaken a Consortium of Accreditation to Sonography Education (CASE) accredited, or CASE equivalent, course and rely on regulation from other sources (e.g. NMC, GMC, HCPC). According to the 2019 SoR survey (1), only 76% of employees meet these criteria.

Due to the lack of regulation, this offers opportunities for ultrasound examinations to be undertaken by non-qualified staff, potentially compromising patient safety (particularly in some of the private sectors). Furthermore, lack of regulation creates a ceiling to an individual's career, as they are unable to progress to perform Advanced Practice examinations or work under patient group directives. This is potentially a long-term problem if regulation is not achieved, as a work-force of Undergraduate sonographers will be unregulated. If the majority of a workforce is made up of Undergraduate sonographers, where regulation is not achieved, current departmental processes may need to be completely re-designed.

What does BMUS want to see included and why?

1. Care From Hospital to Communities

Challenge 1- Record keeping (1 year)

Challenge

- Record keeping between different providers is inconsistent and difficult/impossible to obtain.

Enabler

- All relevant records are made available (including relevant records, images and reports from all modalities) at the time of initial examination and preferably justification of examination if appropriate. This should additionally include commissioned independent providers.
- This would enable correct and efficient justification of examination: the patient attends the appropriate imaging appointment booked to be undertaken by the most appropriate person at their first attendance hence avoiding repeat visits and wasted appointments.
- Avoidance of repeat/duplication examinations when records not available due to previous imaging being undertaken by another provider.
- Avoid repeat visits due to patient attending for imaging when the most applicable staff not available.

Challenge 2 - Increased use of skill mix with appropriate supervision. (2-5 years)

Challenge

- Patients returning to referrer to be discharged (wasted appointment).
- Some procedures undertaken by medically trained staff could be undertaken by sonographers.
- Maximisation of the diagnostic value of ultrasound examinations by ensuring high quality working relationships between radiologists and non-medically trained ultrasound practitioners.
- Increased demand for reporting of MRI/CT examinations means less time for radiologists to be involved in clinical ultrasound lists, reducing shared knowledge and skills.
- Advent of community diagnostic hubs likely to create more siloed working with less opportunity to attend MDT or easy access to MDT working.

Enabler

- Statutory regulation for sonographers to remove legal blocks to role extension.
- Increase in appropriately trained sonographers to perform some examinations which are currently performed by medical staff e.g. Interventional examinations such as

biopsy. These are currently performed by a small select number of highly trained sonographers.

- Extend the role of sonographers to undertake patient discharge in appropriate pathways thus avoiding patients without pathology entering certain pathways e.g. Cancer pathway. This would also reduce patient anxiety.
- Case study/example North West Lung screening initiative – normal examinations referred back to G.P. Abnormal findings ONLY enter Cancer Pathway.
- Increase in number of '1 stop clinics' with sonographer discharge.
- Wider implementation of 'Straight to Test' with Ultrasound Practitioners screening patient results prior to passing onto 2-week cancer pathway.
- High quality supervision of all sonographers working in Community Hospitals away from the Acute Centres.
- Patients attending Community Hospitals MUST have clinical examinations of equal quality to those in the Acute setting (e.g. same level of equipment, skill mix, supervision etc.).
- More onus on ultrasound training in radiology training programmes.
- Improvement of IT links and infrastructure to support better cross-site MDT working.

Challenge 3 – Training of sonographers, increasing training capacity (2-5 years)

Context

Ultrasound is a real-time, operator dependent examination requiring correct interpretation of normal and abnormal findings whilst maintaining a high level of professionalism and good communication skills. Findings in some cases are conveyed to patients immediately following the examination e.g. fetal demise. Sonographers work as autonomous practitioners in the UK which is unique when compared to similar roles in other countries. They work independently with a high level of autonomy (report on examinations to the same level as a medical practitioner and some undertake interventional procedures). This requires in-depth knowledge of anatomy, physiology, pathology, understanding of disease processes and interpretation of other imaging modalities. This means the training of sonographers is time consuming and a long process. Often in the acute setting the clinical urgency of requests does not preclude a safe and effective environment for training.

Challenges

- Reduced workforce has to prioritise urgent examinations over staff training, meaning opportunities to train new staff are compromised.
- Pathological conditions in the acute setting can be too complex for junior trainees to interpret and patients can be too ill to take extended time training staff as this could compromise patient safety and would be inappropriate.

- The most experienced sonographers (who would be most appropriate to train others) are often those undertaking the more complex examinations in the acute setting due to the nature of the pathology detected.
- Trainees become frustrated and training sessions are compromised.

Enablers

- Equipment (and support) commensurate with the Acute Trust would be available for training lists (funding needed).
- Clinical placements with dedicated training lists could be undertaken away from the acute setting. The appropriate facilities and staff would need to be funded along with IT links to ensure smooth workflow.
- Increased use of simulation prior to patient contact (funding needed to facilitate this).
- Closer links with teaching establishments to facilitate this with dedicated teaching staff supervising teaching lists (could be undertaken by retire and return sonographers).

Challenge 4 – address current bottle necks (1 year)

- Radiographer prescribing to enable appropriately trained sonographers to undertake treatment when pathology is detected e.g. Musculoskeletal injuries. This is currently being proposed by the Society of Radiographers to Government; however, progress is slow.

Challenge 5 – staff retention (1 year)

Challenge

- Increased workload (number of ultrasound scans requested has increased exponentially (6), and staff shortages have resulted in lack of time for correct supervision of newly qualified staff.
- Lack of clear career pathway has resulted in staff leaving to pursue careers in other areas e.g. management, medical devices industry, Universities etc.
- Staff shortages result in employment of locums
- Locum rates pay at a higher- rates making part time NHS roles an attractive option subsidizing pay by locum shifts.

Enablers

- The development of a compulsory preceptorship period for all newly qualified staff.
- Clear career pathway funded (and time allocated) to make remaining in Clinical Practice attractive. This would involve role extension.
- Manageable workload to help prevent WRMSD which is career limiting.
- Attract retire and return workers to undertake supervisory/preceptor roles.

- Better relationships with Higher Education Institutions (HEI) to facilitate effective preceptorship.

Challenge 6 – Undergraduate sonographers (2 – 5 years)

Context

Due to workforce shortages some HEIs are offering sonographer training at Undergraduate level. Traditionally training has been at Post Graduate level due to the skills and thought processes required by sonographers previously described (critical thinking). Whilst these sonographers will increase the depleted workforce, they will also introduce challenges.

Challenges

- Potential of a 2–tier workforce with some sonographers working at Enhanced Practice level, and others working at Advanced/Consultant Practice level.
- Lack of clear career progression between Enhanced and Advanced Practice.
- Further study needed to progress which currently is not available.

Enablers

- Regulation
- The Sonographer Career and Development Framework outlines the progression for sonographers from Graduate to Consultant which is aligned to educational levels; HEIs need to further address skills gap to enable sonographer career progression.
- HEIs to create/provide Postgraduate education to develop knowledge and skills required for completely independent practice.

2. Better use of technology

Challenge 1- Wasted appointments due to administration errors (1 year)

- Multiple letters for the same appointment (some with different times).
- Letters being sent to the incorrect addresses and the deceased (causing stress and anxiety).
- Appointments are at an inconvenient time for the patient etc.

Enabler

Paperless appointment scheduling using the NHS app.

- Patients can book the appointment at a time convenient to them (partial booking system).
- Appointments could be allocated so patients could only book onto an appropriate list (correct equipment and appropriate trained personnel available).

- Hospital staff monitor spaces on lists and offer patients the opportunity for last-minute appointments by telephone to ensure maximum use of appointment opportunities.

Challenge 2 inappropriate/incomplete requests (1 year)

- Ultrasound requests not containing enough information to allow justification and effective allocation to a practitioner with the appropriate skill to undertake the examination.
- Imaging requests being inappropriate (e.g. ultrasound may not be the most appropriate imaging modality for suspected pathology).
- Time wasted returning request to Clinician for more information.
- Delay in allocation for appointment.
- Causes multiple interactions between healthcare staff for a single imaging request.

Enabler

- Use of Artificial Intelligence (AI) to ensure all requests cannot be submitted without the correct information being completed. This already happens on many websites for other applications e.g. insurance etc. so should be easy to implement.
- Development of suitable and generic requesting templates for common conditions to ensure the information on request is relevant and complete.
- Investment in AI to facilitate manufacturers to develop machine functions to assist with the performance of ultrasound examinations. This could potentially decrease examination time and repetitive movements undertaken by sonographers hence reducing WRMSD, increase the accuracy of procedures and measurements, and potentially decrease medical litigation (e.g. fetal heart as a case study).

3. Preventative medicine and screening

Context

Make every contact with the patient *matter* and viewed as an opportunity to increase awareness to improve their health based on the findings of their scan. Sonographers see pathology on ultrasound scans which can potentially be resolved by lifestyle changes (e.g. fatty liver due to alcohol consumption and obesity, reduced fetal movements due to smoking).

Challenge 1 – pathology seen examination which could be initially addressed at the time of examination (2-5 years)

- Pathology due to lifestyle is routinely seen by sonographers (as above).

Enabler

- Sonographers to be trained in health education (or at a minimum have the authority to signpost) and in keeping with the Health Care Professions Council (HCPC) standards of proficiency (Standard 15.1).

Challenge 2 – increase in screening for life limiting diseases (funding needed to facilitate) (1 year)

Context

Ultrasound is a relatively safe imaging modality when used by correctly trained operators and its use can be extended effectively in focused areas (e.g. AAA screening programme). Additionally, some areas of current practice require additional training for current staff to ensure increased accuracy at first examination, potentially saving repeat examinations and freeing up appointments for new patients (e.g. endometriosis).

Challenges (Examples)

An increase in specialist ultrasound services for debilitating women's diseases such as Endometriosis (average time-frame from symptoms to diagnosis is currently 8 years (4)).

- Endometriosis is difficult to diagnose in routine ultrasound scans which are often reported as a normal examination.
- Symptoms are often confused with 'normal' physiology.
- Potentially results in infertility (with subsequent expensive treatment), sickness from work, often requires complex surgery involving multi-disciplinary teams and is life limiting when advanced.
- Current training is ad hoc and undertaken by volunteers.

Enablers

- Advanced training available to all sonographers not just specialized centres.
- AI developed to assist.
- Early detection (particularly soon after puberty) will facilitate the ability to manage effectively and to reduce symptoms and disease progression.

An example of how this has worked with other conditions is the significant increase in detection of fetal congenital heart disease when at fetal anomaly screenings by ultrasound when the 4 to 5 chamber view was introduced (increase pick up rate 25 – 50%) (5). Originally training was undertaken by the charity Tiny Tickers and subsequently became rolled out as part of training for the routine Fetal Anomaly Screening Programme.

Challenge 3 – Funding for new initiatives (1 year)

Ultrasound technology is facilitating new techniques to increase the accuracy in diagnosis for some cancers, enabling earlier diagnosis and hence survival rates. These new technologies are often introduced into the ultrasound examination and undertaken without considering the extended time needed to perform these tasks. Before long this becomes an expectation of the routine scan and is not correctly funded. Examples of this are Contrast Enhanced Ultrasound (CEUS), Hepatocellular Carcinoma (HC) tools etc. In addition to increasing examination time, they also increase the cost of ultrasound systems to purchase/lease.

Challenge

- Increased examination time.
- Increased cost of machinery.
- Clinicians understandably wanting to increase detection to increase life expectancy for diseases (largely cancer).

Enabler

- Correct funding for new services in terms of staffing, ultrasound systems, and counselling time.
- Reconsider Ovarian Cancer screening.
- Consider Carotid Artery (Bulb area) screening for patients with increased Blood pressure and Peripheral Vascular Disease (PAD) as predisposition to stroke.

References

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