Independent reporting sonographers: could other countries follow the UK's lead?

Introduction

The rapid growth in the use of ultrasound as a diagnostic imaging technology over the past forty years, has led to a demand for a workforce with the appropriate skills to perform and interpret the scans. For many years, the majority of ultrasound examinations in the United Kingdom (UK), both obstetric and non-obstetric, have been performed by radiographers who have undergone postgraduate training. These 'sonographers' scan, interpret and report their own examinations. Today, sonographer-led ultrasound services are essential and well established. The second largest professional group performing ultrasound in the UK is radiologists. Other groups including midwives, obstetricians, emergency physicians and abdominal aortic aneurysm screening technicians also contribute to services.

This model is successful yet it appears to be unique.[1] No other country relies so heavily on sonographers. Throughout mainland Europe, physicians and general practitioners perform a significant proportion of ultrasound examinations having undergone very variable levels of training in ultrasound. Alternatively, sonographers may perform the scans but reporting remains the domain of the overseeing medical staff. For example, in countries such as Australia, Canada and the United States, ultrasound might be performed by sonographers but there is little evidence of independent reporting. However, the escalating need for ultrasound services is now causing some teams, particularly from Australia and some mainland European countries, to start focusing their attention on the UK model as a possible solution to meet demand.

Background

At the beginning of the twenty first century, diagnostic ultrasound had become the most widely used imaging technique throughout the world.[2] In the UK, ultrasound investigations now comprise over 21% of all diagnostic imaging examinations.[3] Technological advances in sonographic equipment have led to a rapid expansion in the diagnostic applications of ultrasound. This together with the growing number of older patients and the increasing population overall, has led to a demand for a workforce with the appropriate skills to perform and interpret the scans. Prior to the 1970s, on the rare occasions when ultrasound examinations were performed in the UK, these were generally carried out by medical doctors.[2,4] Gradually other healthcare professionals from varying backgrounds began to perform the scans, and it became known as 'sonography'.[5] This multidisciplinary development of sonography practice has been driven by clinical need and has resulted in a range of professionals now providing the service.[6]

By the early 1980s the largest group of professionals working with ultrasound was radiographers.[7] The Society and College of Radiographers (SCoR) introduced an ultrasound training programme in 1977 which led to a Diploma in Medical Ultrasound for radiographers, or a Certificate in Medical Ultrasound for practitioners from other backgrounds. This continued to be offered until it was replaced in the early 1990s by a postgraduate, higher education institution (HEI) based, qualification open to all healthcare professionals.[8] These HEIs were able to develop their own ultrasound programmes, and set standards and assessments, independent of the professional body.

In 1993 an organisation was formed to oversee the standards and provision of sonography education, known as the Consortium for the Accreditation of Sonographic Education (CASE). The current remit of CASE is to ensure high standards of training for ultrasound practitioners

in order to meet the needs of the healthcare service. One of its stipulations is that interpretation and reporting of examinations should be an integral part of the curriculum, and that graduates should demonstrate competency in this area of practice.[9] This stipulation is aligned with recommendations from the British Medical Ultrasound Society (BMUS) and the SCoR stating that, due to the dynamic nature of ultrasound, the person performing the scan should issue the report.[10]

In the 1970s and '80s radiographers were limited in the extent to which they could practise sonography, as professional constraints prevented them from communicating scan results.[7] In 1987 these constraints were removed from the Professional Statement of Conduct[8] by the regulating body at the time, the Council for Professions Supplementary to Medicine (CPSM), and this enabled a new approach for radiographers.

The advent of independent reporting in the UK

Although the SCoR and the Royal College of Radiologists (RCR) were still having discussions as late as 1998 regarding reporting by sonographers[11], widespread adoption of this practice was taking place despite this. The active support of BMUS for non-medical practitioners, which went against the RCR at the time, undoubtedly helped to drive this change.[12] An additional outcome of this pioneering stance was that it demonstrated that, rather than being blindly adhered to, professional guidelines could be changed as a result of popular pressure and published peer-reviewed audit.[13-15]

Now, most ultrasound examinations in the UK are performed and reported by sonographers and radiographers with postgraduate training, but this does not happen in other countries. In a limited study by the European Society of Radiology less than 14% of departments had sonographers working in them, with even fewer (<4%) providing reports on their examinations.[16] Elsewhere, sonographers tend to perform examinations and often draft a provisional opinion but an overseeing physician writes the report. With demand for ultrasound services continuing to escalate, the possibility of educating technicians to become reporting sonographers has been raised in several countries following the model inspired by the position of sonographers in the UK.

How are sonography services delivered outside the UK?

Whilst some countries in Europe such as Germany, France, Italy and Spain seem to have very little sonographer activity, sonographers are well established in others including Ireland, Denmark, Sweden and the Netherlands.[16] Outside Europe, countries such as Australia, Canada and North America also have dedicated sonographers[17,18], although many are not from a radiographic background unlike the majority of UK practitioners. In North America it is common to train only in ultrasound. Also, twenty years ago sonographers in The Netherlands were trained 'on the job' with often no healthcare background at all. Increasingly the situation in the Netherlands now mirrors that in the UK with sonographers usually obtaining qualifications in radiography first before embarking on postgraduate training in ultrasound.[19]

Most countries with sonographers have organisations and boards that define scope and standards of practice. Undoubtedly, some of these sonographers perform complex work but it is difficult to find any evidence of independent reporting, only that to the contrary. For example, the recent 'Standards and scope of practice' document for medical sonographers produced jointly by 16 North American and Canadian organisations states clearly

"The diagnostic medical sonographer functions as a delegated agent of the physician and does not practice independently".[20]

The situation is replicated in Australia since all sonographers must include the supervising physician's name on their reports even if no changes are made to their preliminary comments.[21] However, it seems this is not just related to practice, since some of the respondents in a large Australian survey explained that they required the physician's name to receive remuneration.[21] Another smaller but more recent survey looking at paediatric ultrasound services across Europe found no evidence of independent reporting outside the UK.[22]

It is likely that this restriction on sonographers' practice is multifactorial involving physician dominance, funding pathways, entrenched thinking and possibly a reluctance of some sonographers to accept greater autonomy. The reluctance may be due to feelings of vulnerability with the perceived greater risk associated with independent reporting, especially if appropriate financial incentives are not in place. Remuneration for additional responsibility was one of the factors highlighted by sonographers in the aforementioned Australian survey.[21] With regard to vulnerability, certainly in a UK court of law testing a case of medical negligence involving ultrasound, a sonographer or radiologist would both be expected to perform at the same reasonable standard within the specific scope of the case. Exactly the same rules would be applied to measure their competence. This is why UK sonographers must ensure that they have appropriate indemnity cover in place before practising.[10]

There is evidence to support the belief that medical practitioner dominance plays a part in stunting sonographer practice and reporting in mainland Europe. Tensions were apparent between the Norwegian Society of Radiology (NSR) and sonographers in a recent paper investigating Norwegian sonographers' accuracy in abdominal ultrasound.[23] Although it is obvious within the article that the NSR was very much against sonographers, the reason remains unclear.

Resistance to change was also evident during a recent debate at the 2017 European Congress of Radiology where French and Italian radiologists were opposed to reporting sonographers. There are concerns by some radiologists and physicians who feel that any evolution toward independent reporting should be moderated, or in some cases prevented, which is somewhat ironic in view of the heterogeneous nature of ultrasound training programmes for European radiologists and medical practitioners.[16,17] In particular they see challenges in the level and control of competences and practice of such new activities for technicians. They emphasise that caution is required before moving in this direction, and that careful control of ultrasound practice should be retained by radiologists and other medical practitioners.

Similar attitudes and resistance were experienced by sonographers in the UK around the turn of the last century but published studies, often co-authored by sonographers and radiologists, have largely assuaged fears and changed opinion.[13-15,24-26] We have now reached a position where the RCR recognises, in its documents, the invaluable and essential contribution made by UK sonographers and supports appropriate delegation of duties.[27,28] Other similar organisations may also need to review policy and issues around delegation if reporting sonographers are to develop in their countries.

Firm evidence relating to sonographer roles and scope of practice in Europe is very difficult to find and impossible to collate. Anecdotally, there are some centres on mainland Europe which are exploring independent reporting by sonographers. Similarly, some clinics in Australia claim to have recently developed teams of radiologists and sonographers who are providing independent sonographer reporting but, unless these groups publish their findings, the practice will remain anecdotal. It is vital that sonographers outside the UK publish their work in peer-reviewed journals to inform, direct and inspire others.

The importance of rigorous education and training

To ensure that sonographer report writing can be performed to the level required in the UK, it is important to provide adequate training and support for anyone undertaking an ultrasound qualification. Currently in the UK, CASE accredits both full training programmes (postgraduate certificate, diploma and MSc) in a range of clinical areas, and short focussed courses, including aortic aneurysm screening, first trimester screening, third trimester growth scanning, and ultrasound for rheumatology.[9] Training centres that apply for accreditation with CASE have to show clearly defined learning outcomes relating to the areas of practice, appropriate academic and clinical education and support, teaching of reporting writing and robust clinical competency assessment, which includes independent report writing. Training is mainly hands-on in the trainee's clinical department, with academic support from the training centre, often a university. Some courses provide additional clinical support via simulation and/or real time hands-on scanning practical sessions (Figure 1).

Many training centres require an element of report writing in the academic assessments, such as objective structured examinations (OSEs) where trainees are provided with clinical images and asked to write a report, offer a conclusion and suggest alternative investigations or management of the patient. During training, progress and competencies are monitored to ensure appropriate progress is being made and provide supportive feedback, not only in scanning, but also communication, report writing, and management of unsuspected findings.[29] The clinical competency assessments are usually undertaken in the student's workplace with real patients during a scanning list.[30] This allows assessment of clinical and communication skills, interpretation of the examination, report writing and demonstration of when to suggest additional investigations or ask for a second opinion from a more experienced colleague. In the UK, all these skills are expected of a sonographer undertaking any examination.[10] It is important that anyone performing ultrasound examinations, in any capacity, is aware of their limitations and when to ask for support, which is reinforced throughout the training of sonographers.

Sonography education within the UK is undergoing many changes.[31] In the last two years, CASE has accredited two direct entry postgraduate programmes, where non-healthcare professionals are trained during a two year MSc programme to become sonographers. There is also a direct entry BSc programme running in the UK, which started in September 2016. Additionally, the Government has recently launched an apprenticeship training scheme where employers with a staffing budget of more than £3 million have a proportion of that budget taken for an apprenticeship levy.[32] This can then be used by that employer to train staff using apprenticeship schemes. Currently a team of clinical managers are consulting with training centre staff to develop apprenticeship standards for ultrasound training. This is an area that will no doubt develop over the coming year, as a method of training sonographers. Whichever model of training is developed, UK sonographers will be expected to report on examinations and will be trained to perform this important aspect of their role.

With UK healthcare services under increasing pressures, the current Sutainability and Transformation Plans being developed by partnerships between NHS organisations and local councils are primarily focused on increasing efficiency.[33] Inevitably, this will include review and changes to the workforce. With sonography rapidly becoming the most widely used imaging technique in healthcare,[3] existing services are already stretched and more sonographers are desperately needed. Indeed, a recent review by the Centre for Workforce Intelligence (CfWI) highlights staffing as one of the main limiting factors for departments in England training low numbers of sonographers.[34] In London and the South East, vacancy rates are up to 25% and approximately 12% of sonographers are due to retire within 5 years.[34] This is a concern since all the new training initiatives currently being explored

require experienced staff to support and develop the future workforce. Simulation could potentially be utilised more in initial training, to help overcome this shortage, but is complementary to clinical practice rather than a substitute. Any new initialtives will need careful monitoring and audit of standards, on completion of training, to ensure high standards of ultrasound practice continue in the UK.

Lessons learnt from the UK experience, of ensuring high standards of education and clinical training, oversight of these programmes by a central multiprofessional body such as CASE, interprofessional working and learning in ultrasound, on-going clinical audit of report writing and clinical practice can all be used to ensure on-going high quality education both in the UK and for countries wishing to develop the sonography service.

Conclusion

In the UK a successful model for ultrasound services has been practised for almost thirty years, with sonographers performing and reporting on ultrasound examinations. This practice is evidence-based with studies showing that detection rates and accuracy for ultrasound examinations are similar for sonographers and radiologists.[13-15,24-26] Despite this, the model has yet to become established in other parts of the world.

Traditionally, in the UK sonographers work closely alongside radiologists and it is this team-working, along with escalating demand, which has helped lead to the success of the current model. Rigorous professional guidelines and training programmes for sonographers in the UK have helped to ensure high standards of practice. Interpretation and reporting of ultrasound findings is a crucial part of ultrasound education and is fully integrated into the curriculum.

Looking to the future, it is anticipated that more sonographer-led ultrasound departments will start to emerge and independent reporting will eventually become common practice for sonographers beyond the UK. In order to support this however, it is important that appropriate, rigorous training programmes are established, and those who aspire to be independent reporting sonographers will need to forge good working relationships with medical colleagues.

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Figure 1: Clinical skills facilities available at a typical UK University for sonography students, which include state of the art ultrasound scanning equipment, phantoms and simulation