



## **The Scope of Practice in Medical Ultrasound**

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### **Summary**

The Society and College of Radiographers (SCoR) is pleased to present this document, which makes explicit its role in the development of ultrasound practice and the support of ultrasound practitioners. For the purpose of this document, ultrasound practitioners are referred to as 'sonographers'. This title includes radiographers as well as those from other professional backgrounds. This document also identifies how the various policies of the SCoR apply in the context of ultrasound practice. It endorses the continuing professional development and education of sonographers and their role in the provision of an ultrasound service which meets the changing needs of patients and harnesses new technological developments.

### **Foreword**

The Society and College of Radiographers (SCoR) is pleased to present this document, which makes explicit its role in the development of ultrasound practice and the support of ultrasound practitioners. For the purpose of this document, ultrasound practitioners are referred to as 'sonographers'. This title includes radiographers as well as those from other professional backgrounds. All will hold accredited ultrasound awards as described later in this document. An application has been made by the SCoR to the Health Professions Council for the title of 'Sonographer' to become protected and for sonographers to be regulated: a decision is awaited. This document also identifies how the various policies of the SCoR apply in the context of ultrasound practice. It endorses the continuing professional development and education of sonographers and their role in the provision of an ultrasound service which meets the changing needs of patients and harnesses new technological developments.

### **Summary of Strategy**

The Society and College of Radiographers, as the United Kingdom's professional body for radiography and the wider radiographic workforce, has, for many years, acknowledged the contribution to the field of ultrasound practice in medicine made by sonographers both from radiography and from other professional backgrounds. Both groups hold equal status and are entitled to the same benefits of membership of the organisation, as each has the same level of skills and knowledge. It considers that the diversity of professional background of those practising in ultrasound enhances and enriches the clinical practice and service provided to patients. The Society of Radiographers has been pleased to welcome members of the United Kingdom Association of Sonographers (UKAS) which merged with the College of Radiographers on 1st January 2009. The

Society and College of Radiographers supports the professional development and the role development of sonographers. It works closely with other stakeholders concerned with the practice of ultrasound to lead in responding to changing service requirements and technological developments as well as promoting the development of management and leadership skills.

There has been rapid expansion of ultrasound services, not only in the diagnostic field but also in screening, interventional and therapy procedures. This has been coupled with advances in ultrasound such as harmonic imaging, power and colour Doppler, 3D/4D scanning and enhanced image processing facilities.

There will be an increasing need for ultrasound practitioners with the appropriate skills in advanced and consultant level practice to take on pro-active roles in service developments which combine experience, complex analysis and leadership.

Appropriate continuing education is required to underpin career development and must be able to support the maintenance, broadening and development of a sonographer's skills and knowledge. In recognition of this the National Health Service (NHS) and the SCoR have both published career frameworks. Examples are 'A Strategy for the Education and Professional Development of Radiographers' (2002), 'Education and Professional Development: Moving Ahead' (2006) and 'The Career Framework for the NHS' (2004). These will promote opportunities for career progression of the workforce at all levels of practice. As such, it should be possible for an individual to begin his or her career as a support worker and, with appropriate education and training, progress through the four tier career structure of assistant practitioner, practitioner, advanced practitioner and consultant. Descriptors for these four levels can be found in the SCoR publication 'Learning and Development Framework for Clinical Imaging and Oncology' (2007).

## Definition of the role

The mid 1950s saw the introduction of ultrasound for diagnostic use. Since then its use in medicine has proliferated and it is one of the fastest growing clinical imaging modalities. The scope of practice of sonographers within the field of imaging has continued to widen to meet the demand for an ever increasing range of ultrasound examinations. Ultrasound now forms an integral part of many patient care, treatment and screening pathways.

Historically, the development of diagnostic ultrasound practice in the United Kingdom has been multidisciplinary in nature. This has been driven by clinical need combined with evolving ultrasonic technology, underpinned by research into the efficacy of ultrasound applications. A range of professionals from varying backgrounds have therefore provided the service. For some of these practitioners sonography is their profession and for others ultrasound is a diagnostic or therapeutic tool that is used to support their main professional role. However, for over three decades, the largest group of professionals working in ultrasound has come from a radiography background via accredited programmes of education. These were offered initially by National Health Service based Schools of Radiography, but since the mid 1990s at post-graduate level. These latter courses have been delivered by Higher Education establishments and accredited by the Consortium for the Accreditation of Sonographic Education (CASE) of which the College of Radiographers is a member organisation.

Ultrasound services extend over a wide range of settings from primary to tertiary care in both the National Health Service and independent health care sectors. These services may be delivered in dedicated scanning suites or at satellite or remote locations such as out-patient clinics, at the patient's bedside or in the operating theatre. Some practice settings require the sonographer to work single-handedly and some within a multi-disciplinary team. However, all sonographers should be working within a clinical governance framework. For sonographers the conduct of ultrasound examinations forms the core of their practice which needs to be underpinned by a comprehensive body of knowledge. Sonographers in this role use ultrasound as a primary imaging modality in their daily work. Their work is their profession. This differs from other groups who use ultrasound

techniques as an additional tool in their practice and who require only relevant and selected parts of the body of knowledge.

The activities performed by sonographers predominantly require the application of ultrasound technology to the relevant speciality of clinical practice. This includes image interpretation, formulating a diagnosis/differential diagnosis, clinical problem solving, report writing and referring for further diagnostic tests. It may be necessary for the sonographer to administer drugs (eg ultrasound contrast agents, steroid injections) or undertake invasive techniques (eg biopsy) provided they have the necessary training and competency to do so. It may be necessary for the sonographer to refer the patient for further imaging or treatment depending on the findings of the examination they have performed.

### Scope of Practice

A sonographer is an individual who has obtained relevant and appropriate education and clinical experience. He/she will also have demonstrated competency to undertake diagnostic, screening or therapy procedures enabling effective management of the patient pathway.

Sonographers are autonomous practitioners who perform with high levels of accountability and responsibility. They exercise critical judgement and skills to ensure the efficient, effective and safe delivery of the ultrasound service, taking responsibility for the conduct, assessment and reporting of the ultrasound examination.

The scope of practice is therefore broad and the normal practice of sonographers includes at least one and usually more of the following clinical fields (each of which are in themselves wide ranging in scope):

- Abdominal and general medical applications
- Cardiac applications
- Obstetric applications
- Gynaecological applications
- Interventional procedures
- Musculoskeletal applications
- Paediatrics
- Superficial organs eg breast, thyroid and testes.
- Vascular applications

Additionally, sonographers practice in higher education, management, research, and assist with technological developments. Within the commercial/industrial sector they may be working as applications specialists or in sales and marketing.

Sonographers work within appropriate clinical governance frameworks and have a direct impact upon patient care, welfare and management. They report and act on their findings both in the light of expected and unexpected pathologies. As a result, their actions and diagnostic findings are pivotal in determining the appropriate future management of their patients.

### Education Requirements

The expectation is that educational provision anticipates, and is sensitive to, emerging and changing health care service and patient requirements, recognising that provision established today must anticipate tomorrow's needs effectively. The Society and College of Radiographers' education strategy for the profession and the wider workforce draws on existing policy and guidance

documents, notably 'Professional and Educational Development: Moving Ahead' (2003) and 'Education Strategy' (2005).

Educational requirements for ultrasound can be described broadly as follows:

- i. There is sub-division into specific fields of practice, therefore specific modules of education and training should be undertaken for each field of practice within ultrasound.
- ii. Skills are required to differentiate normal from abnormal anatomy, to characterise disease conditions and to monitor effectiveness of treatment or disease progression. This demands considerable specialist knowledge and understanding of anatomy, physiology and pathology.
- iii. The development of suitable verbal and non-verbal communication skills, report writing skills and an understanding of the implications for the patient of mis-diagnosis.
- iv. The incorporation of science, technology and contemporary advances in ultrasound equipment along with the implications of these developments for patients and practitioners. This includes the technical aspects of quality assurance, equipment performance monitoring, equipment selection, procurement and maintenance. Sonographers must be conversant with and apply current statements on the safe use of ultrasound. Skills are also required to optimise, record and archive the image and to recognise imaging artefacts.
- v. Additional components include personal scope of practice, professional and practice development, service provision, health policy and research and development. Medico-legal, professional and ethical issues related to health care and ultrasound practice should also be included.

The body of knowledge in ultrasound practice is growing continually. This growth is related to advances in ultrasound technology and to the increasing application of the use of ultrasound in diagnostic, therapeutic and interventional procedures, across an expanding range of clinical fields.

## Education

### Minimum requirements for practice as a sonographer:

1. The Diploma of Medical Ultrasound of the College of Radiographers (DMU)
2. The Certificate of Medical Ultrasound of the College of Radiographers (CMU)

The DMU and CMU were replaced by postgraduate qualifications in the early 1990s following the move to primary degrees for radiographers and the transfer of National Health Service based Schools of Radiography to the Higher Education sector.

3. A postgraduate certificate (PgC) or postgraduate diploma (PgD) or MSc that has been accredited by the Consortium for the Accreditation of Sonographic Education (CASE). The Society and College of Radiographers is one of the member organisations of CASE. Education provision at this level is required to take cognisance of postgraduate outcomes as identified by the Quality Assurance Agency's 'Framework for Higher Education Qualifications' (2008) and the SCoR's 'Learning and Development Framework for Clinical Imaging and Oncology' (2007).

Entry criteria to these postgraduate courses have built on an initial healthcare practitioner related qualification, or a relevant first degree, or equivalent. Hence courses are currently at post registration level leading to a minimum award of a postgraduate certificate. These courses prepare individuals for specialist or advanced practice rather than entry-level practice.

4. Competency based qualifications e.g. Accredited Vascular Scientist awarded by the Society of

Vascular Technology of Great Britain and Ireland and accreditation in adult, paediatric or community echocardiography as awarded by the British Society of Echocardiography.

## Direct Entry

There has been much debate about developing direct entry routes at first-degree level for sonographers. These are currently available in countries outside the UK, for example in Australia, Canada and the USA. A number of Strategic Health Authorities (England) have signalled the need to do this to meet patient and government expectations of the health service as there is currently a national shortage of sonographers. Direct entry will offer an educational route for those seeking to work in this field without the necessity to undertake a first degree (or equivalent) in another healthcare discipline and give rise to a more structured career progression for sonographers. The SCoR considers that it is particularly important to set the entry standard at first-degree (Hons) level so that those who currently fall outside any regulatory framework are not faced with insuperable difficulties in becoming regulated. However, it is also essential that for a significant period of time (at least five years) existing routes of entry to the profession be maintained. This is necessary to enable the NHS to maintain a competent sonographic workforce in the shorter term. It is also consistent with the SoR's framework for career progression (Education and Professional Development: Moving Ahead, 2003).

### **Educational provision at direct entry level will be required to meet:**

1. Graduate outcomes as identified by the Quality Assurance Agency's 'Framework for Higher Education Qualifications' (2008).
2. SCoR's 'Learning and Development Framework for Clinical Imaging and Oncology' (2007).
3. Occupational standards appropriate to the current scope of practice of ultrasound practitioners.

## Continuing Professional Development (CPD)

The Society of Radiographers has clear CPD policies; these are set out in 'A Strategy for Continuing Professional Development' (SCoR 2003) and 'Continuing Professional Development - Professional and Regulatory Requirements' (SCoR 2008). These documents define the responsibilities with regard to CPD for the individual practitioner, the employer and the professional body. To fulfil its commitment to members in relation to CPD, the Society and College of Radiographers provides a web-based CPD tool (CPD Now) to assist members with planning, undertaking and recording their CPD activities. This is available to all members and enables users to have their individual CPD portfolios accredited by the College of Radiographers under the auspices of the College's Approval and Accreditation Board. The CPD requirements for accreditation laid down by the College of Radiographers enable individuals to meet the CPD Standards set by the Health Professions Council (Your Guide to our Standards for Continuing Professional Development' and Continuing Professional Development and your Registration available on HPC website).

## Registration

### **Registration can be considered from two perspectives:**

1. Registration with a statutory regulatory body, for example the Health Professions Council (eg

radiographers, clinical scientists) or Nursing and Midwifery Council (eg midwife sonographers, nurse sonographers).

In 2008 The SCoR formally applied to the Health Professions Council for 'sonography' to become a regulated profession and 'sonographer' to become a protected title. At the time of this document's submission (May 2009) a decision is still awaited.

2. Registration with the College of Radiographers through accreditation of level of practice and via the Public Voluntary Register of Sonographers which was opened in 2007 in connection with the above application to the HPC.

All sonographers with an approved UK award in radiography as their initial qualification are expected to be registered with the HPC.

Sonographers whose route into ultrasound practice was not via radiography should be registered with the HPC or other statutory regulatory body, if they have a registerable qualification.

All qualified sonographers, including those registered with UK statutory regulatory bodies, should register with the Public Voluntary Register of Sonographers which is maintained by the College of Radiographers. This was set up jointly by the College of Radiographers and the United Kingdom Association of Sonographers to support the application in 2008 for 'sonographer' to become a legally protected title and 'sonography' a statutorily regulated profession. This voluntary register is also open to those sonographers who are involved in fields such as teaching, management and research.

Sonographers from overseas may be eligible to register with the HPC (eg as a radiographer or a clinical scientist) or other regulatory body such as the NMC (eg a midwife). To practice ultrasound in the UK they would be expected to demonstrate that they have met the standards equivalent to those of a CASE accredited PgC, PgD or MSc qualified Sonographer. Whether or not they are able to obtain state registration they should register with the Public Voluntary Register of Sonographers. Individual NHS Trusts and employers should have mechanisms in place to ensure that these standards are being met.

## Career framework

The SCoR has developed a career progression framework for clinical practice based on four clinical practitioner roles – those of Assistant Practitioner, Practitioner, Advanced Practitioner and Consultant Practitioner. These can be found in the SCoR documents 'Professional and Educational Development: Moving Ahead' (2006) and the 'Learning and Development Framework for Clinical Imaging and Oncology' (2007). These should be considered within the context of ultrasound and the SCoR's developing processes for the accreditation of advanced and consultant practice.

## Assistant Practitioner

Assistant Practitioners differ from the general support workforce in that, as part of their duties, they perform a limited range of imaging under the supervision of a qualified sonographer to agreed protocols. Specific roles should be identified and agreed locally, in accordance with service requirements, but the standard of work carried out must conform to the required competency for the task undertaken. For full details refer to 'The Scope of Practice of Assistant Practitioners in Clinical Imaging' (SCoR 2007) 'The Scope of Practice for Assistant Practitioners in Ultrasound' (SCoR 2008) and 'The Role of the Assistant Practitioner in Abdominal Aortic Aneurysm Screening' (SCoR 2008). There is currently no mechanism for the statutory registration of Assistant Practitioners. However, the College of Radiographers offers accreditation of Assistant Practitioners and registration through a voluntary public register. Accreditation can be obtained by completing a CoR approved education programme or by a portfolio assessment of the individual by the CoR. For more detail of these

processes please refer to the document 'The Approval and Accreditation of Education Programmes and Professional Practice in Radiography: Guidance on Implementation of Policy and Principles' (SCoR, 2004). Assistant Practitioners are expected to engage in CPD and SCoR members are able to use the SCoR web-based CPD tool to obtain individual CPD accreditation.

### **Practitioner**

The concept of a Practitioner level sonographer is not at the present time readily apparent in the United Kingdom. However, there are changes occurring that may lead to the establishment of a Practitioner level in due course. This may be achieved through direct entry to a BSc (Hons) programme, incorporation of ultrasound skills and competencies into undergraduate Radiography courses (Leeds/Bradford Universities pilot study, 2008) and focussed post-graduate short courses that are accredited by the Consortium for the Accreditation of Sonographic Education (CASE). If direct entry becomes a reality, the critical requirement in ultrasound practice of producing an independent report at the time of the examination will demand that practitioners go through an accelerated programme of development in order to be on pay band 6 in approximately twelve months (Annexe T to Agenda for Change). Development to Advanced and Consultant practice will then follow as a continuous process.

### **Advanced Practitioner**

Advanced Practice is a broad and diverse spectrum and forms part of the continuum from Practitioner to Consultant Practitioner roles. It is currently and likely to remain the predominant level for sonographers. At this level the sonographer has well developed knowledge and skills. In clinical practice the core function will be related to a range of diagnostic or treatment procedures in the delivery of patient services related to that expertise. Advanced Practitioner roles normally include elements of education, research, and leadership. Advanced Practitioners will be capable of autonomous practice and independent reporting. Advanced Practitioner roles are well established in ultrasound, in other imaging modalities and in radiotherapy. Work is currently underway to provide for the recognition and accreditation of Advanced Practice by the SCoR.

### **Consultant Practitioner**

The Society and College of Radiographers supports and encourages the development of Consultant Practitioner roles in Ultrasound. They are champions in the clinical, academic or research field who bring innovative solutions to patient management. The role defines professional development and influences at a strategic level. Consultant Practitioners play a pivotal role in the integration of clinical, education and research findings in ultrasound practice, working across traditional boundaries.

## **Professional Conduct**

All members of the SCoR are required to comply with the SCoR Code of Conduct and Ethics (2008). These set out the Society's stance on the legal, ethical and moral requirements of practice and are reviewed and updated regularly in accordance with statutory and other developments. In addition, those sonographers who are registered with a regulatory body such as the HPC or NMC must abide by their published ethics and fitness to practice standards.

Sonographers may be called to account for breaches of the above codes by either the SCoR, the HPC or other professional regulatory body. Sonographers whose work includes self-referrals, referrals outside a recognised care pathway or 'social' scanning in obstetrics should ensure that their practice falls within the above codes. Sonographers are reminded of the Chief Medical Officer's advice (1994) which states that: 'all ultrasound exposures should be justified and limited to the minimum necessary for the diagnostic purpose'. They should also be conversant with current statements

issued by organisations such as the British Medical Ultrasound Society with regards to ultrasound safety. It is essential that those practicing ultrasound work within the scope of practice in which they are competent. They must be prepared to undertake additional training and request supervision until they have acquired the necessary skills and knowledge to broaden their scope of practice.

Further advice on professional standards is also provided within the document 'Guidelines for Professional Working Standards - Ultrasound Practice' that was published by the United Kingdom Association of Sonographers in October 2008, just prior to its merger with the SCoR. This document is available via the document library section of the SCoR website.

## Professional Indemnity Insurance

Sonographers who are members of the Society of Radiographers or who receive Professional Indemnity Insurance through the SoR scheme should also ensure that they are working within the provisions of the scheme. Details can be found in the SCoR document 'Statement on Ultrasound Referrals and Professional Indemnity Arrangements' (2006). This includes statements on self-referrals and 3D/4D/fetal sexing. The document is available via the document library section of the SCoR website.

## Role Development

The Society and College of Radiographers has always supported role development provided that the individual practitioner has appropriate training, competence and underpinning knowledge. They should have authorisation from their employer (if applicable) to undertake the role and be working within a clinical governance framework. Sonographers should be supported to develop their personal professional scope of practice and to extend their role into supplementary diagnostic and interventional procedures. Examples of these are prostate and breast biopsies, contrast studies, amniocentesis and joint injections (Scope of Radiographic Practice, 2008).

Sonographers are increasingly involved with the administration of medicines and drugs. Examples include the use of ultrasound contrast agents, local anaesthetics for biopsy and steroids for joint injections. If a sonographer is regulated by, for example, the HPC or NMC, they are allowed to supply or administer medicines using Patient Specific Directions or Patient Group Directions. They may also train to become Supplementary Prescribers. Further details may be found via the SCoR website.

The practice of requesting additional imaging investigations is already performed by sonographers from a radiography background following locally agreed protocols within imaging departments and in accordance with the provisions of IR(ME)R (2000) and its (2006) amendment. Sonographers who have not previously qualified as a radiographer may also refer patients for further investigations providing they have the authorisation and entitlement to do so. If these investigations involve ionising radiation, sonographers must be regulated by a statutory body such as the HPC or NMC and must follow the provisions of IR(ME)R (2000) and its (2006) amendment. Advice is given in the SCoR documents 'Clinical Imaging Requests from non-Medically Qualified Staff' (2005) and 'Clinical Imaging Requests from non-medically Qualified Professionals' (2008)

The examples above do not form an exhaustive list but give an insight into the current and potential roles of a sonographer. As new service needs and challenges arise, it will be appropriate to meet them by reviewing skill mixes and initiate role development as required to provide optimum patient management.

## **Acknowledgements**

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