CoR
THE COLLEGE OF RADIOGRAPHERS



Education and Career Framework
for the Radiography Workforce (4th edition)

Start ›

Contents

Introduction

- Foreword
- Dedication
- Acknowledgements
- What is the ECF?
- Purpose of the review
- How was the review done and what does it include?
- Embedding the four pillars of practice
- Patient-centred approach
- Support workforce
- How can this tool be used?
- How to navigate this document
- College of Radiographers Education and Career Framework Wheel

1 **Support Workers**

2 **Practitioner**

3 **Enhanced Practitioner**

4 **Advanced Practitioner**

5 **Consultant Practitioner**

6 **Service Manager/Service Leader**

7 **Practice Educator**

8 **Academic**

9 **Undertaking research and innovation: supporting guidance for the radiography workforce**

Appendices

- ECF Modified Delphi Consensus Study
- Supporting guidance: radiation protection
- Education and Career Framework glossary
- References for the introduction
- References for sections 1–9



Case Study Index

1 **Support Workers**
- Alison Jenkins

2 **Practitioner**
- Sophie Farran
- Rupert Maclaren

3 **Enhanced Practitioner**
- Adele McGrath
- Amerdeep Davis

4 **Advanced Practitioner**
- Tamsin Arnold
- Andy Creeden
- Gary Kemp
- Claire Senior

5 **Consultant Practitioner**
- Paul O'Riordan
- Neill Roberts
- Steven Savage
- Morag Stout
- Yat Man Tsang

6 **Service Manager/Service Leader**
- Grainne Harte
- Darren Hudson
- Dr Jonathan McConnell

7 **Practice Educator**
- Mark Beattie
- Emma Dodd
- Karl Nottage

8 **Academic**
- Melanie Clarkson
- Victoria Hughes
- Alex Partner
- Jo Posnett
- Ian Simcock

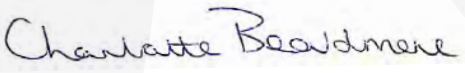
9 **Undertaking research and innovation: supporting guidance for the radiography workforce**
- Dr Jenna Tugwell-Allsup
- Fiona Rose
- Louise Jordan

Foreword

Since the last iteration of the College of Radiographers' (CoR) Education and Career Framework in 2013, the radiography profession has faced significant changes and challenges, together with many opportunities for professional development. As the landscape of healthcare shifts in line with emerging government policy, population health needs and technological advances, the radiography workforce continues to evolve. Through innovation and extending scopes of practice, new and emerging roles seek to improve patient outcomes and service delivery models. It is therefore very timely and necessary for the CoR to review and update the ECF to be supportive of the education and training of the entire radiography workforce, empowering them to meet both the current and future healthcare needs of the population.

This edition of the ECF has been underpinned by research and comprehensively captures the input of experts and members of the radiography profession as well as the patient voice. Patient representatives from the College's Patient Advisory Group (PAG) have been involved at all stages, from the initial scoping stage of the Delphi Study, as members of the writing groups, to the revision of all sections as part of the ECF Steering Group.

This framework is therefore patient centric and for use by all members of the radiography workforce from across the four nations of the UK, including those involved in managing the workforce and developing new roles, in education and training, and research. The ECF is also an information resource for those considering a career in radiography, current learners, and members of the public.



Charlotte Beardmore

Executive Director of Professional Policy,
Society and College of Radiographers



Dedication

This edition of the Education and Career Framework (ECF) is published in memory of a dear colleague and friend, Jacquie Vallis.

Jacquie was the project lead for this review in her role as Professional Officer for Education and Accreditation at the College of Radiographers (CoR). Jacquie was passionate about supporting the development of the radiography workforce through her work at the CoR.

Her organisational skills, leadership and sheer commitment to the profession resulted in a clear project plan for the ECF review and it is with sadness, therefore, that she was unable to see it through to completion.

Her vision was for the ECF to be inclusive of the wider radiography career pathways, showcasing the breadth of opportunity and development a career in radiography can hold. She saw the ECF as needing to be an easily accessible, interactive tool that would guide the radiography workforce into the future.

In acknowledgement of her role, the College of Radiographers thereby dedicates the publication of this Education and Career Framework to the memory of Jacquie.



Acknowledgements

The College of Radiographers wishes to thank all key stakeholders involved in the development of this fourth edition of the Education and Career Framework, particularly those who contributed through the various **writing groups**, including **experts and members of the radiography profession alongside patient representatives from the College's Patient Advisory Group** (PAG), and those who contributed through individual case study submissions.

Special thanks also to **Dr Rob Appleyard**, **Prof Julie Nightingale**, and **Temitope Labinjo**, Sheffield Hallam University, for their oversight and expertise in conducting the Delphi Study and drafting the final report which underpins this edition of the ECF.

CoR Education and Career Framework Steering Group

Chaired by: **Dr Karen Knapp**, Head of Health and Care Professions, Associate Professor in Musculoskeletal Imaging, Faculty of Health and Life Sciences, University of Exeter

Dr Christina Malamateniou, Programme Director, Postgraduate taught and research (MRI), Division of Midwifery and Radiography City, University of London

Dr Jonathan McConnell, Lead Radiographer, Yorkshire Imaging Collaborative, Visiting Professor University of Ulster

Rachel Nolan, Assistant Imaging Services and Professional Lead at Peterborough City Hospital

Prof Heidi Probst, Professor of Radiotherapy and Oncology, Director of the Health Research Institute, College of Health, Wellbeing and Life Sciences, Sheffield Hallam University

Linda Samuels, Patient representative and Member of CoR Patient Advisory Group (PAG)

Charles Sloan, Principal Lecturer & Professional Lead for Medical Sciences, Institute of Health, University of Cumbria

Dr Ruth Strudwick, Associate Professor, Head of AHP School of Health & Sports Sciences University of Suffolk, SNEE ICS AHP Faculty Co-Lead

Helen White, Associate Professor, School Lead for Practice Quality, School of Health Sciences, Birmingham City University

Dr Rachel Harris, Head of Professional Practice and Education, The Society and College of Radiographers

Jacquie Vallis, Professional Officer Education & Accreditation, The College of Radiographers

Kathryn Williamson, Professional Officer Education & Accreditation, The College of Radiographers

Michele Landau, Professional & Education Administrator (Education & Accreditation), The Society & College of Radiographers

Clare Leeson, Professional & Education Administrator. The Society & College of Radiographers

What is the ECF?

The College of Radiographers (CoR) Education and Career Framework (ECF) (fourth edition) provides guidance for the education and career development of the radiography profession.

The ECF defines the various levels of radiography practice and the educational standards related to each of them. The framework informs the CoR's pre- and post-registration programme approval process. It also informs the accreditation of individual members of the radiography workforce through the CoR accreditation schemes.

Importantly, the goal of the ECF is to support improved outcomes for patients through the education and development of the radiography workforce. The involvement of representatives from the CoR Patient Advisory Group (PAG) in this research has been important to ensure the framework is patient-centred.



Purpose of the review

Since the first edition of the ECF was produced in 2005, there have been many policy, technological and service delivery changes across imaging and radiotherapy services, as well as within radiography education and research settings. These changes have required the professional practice of the radiography workforce to evolve. As we consider how the workforce has developed, this fourth edition of the ECF reflects the changing knowledge, skills and attributes of the profession at each level of practice.[1,2] It aims to be visionary, reflecting the future trajectory of a range of careers and roles in radiography, aligned to service and individual needs.

How was the review done and what does it include?

The fourth edition of the ECF has been informed by the outcomes of a Delphi study.[3] The study sought to identify, through expert agreement, the knowledge, skills and attributes (KSAs) required across the four core levels of practice and associated areas that will meet both the current and future needs of the radiography workforce. Expert writing groups, made up of experts and members of the radiography profession as well as patient representatives, were tasked with drafting the various sections of the ECF. These expert writing groups were allowed the freedom to add any additional KSAs that were not identified by the Delphi study but which align with the national requirements of the different levels of practice.[4,5,6,7]

The ECF has been expanded to be inclusive of all roles, from support workers and assistant practitioners to consultant radiographers, and also to be inclusive of wider professional roles in radiography, such as practice educators, the emerging enhanced level practice and other roles including research, management and leadership and academia. This document will embrace and refer to the four pillars of practice for every level and define the educational expectations and outline knowledge, skills and attributes of each one.

Embedding the four pillars of practice

The ECF embeds the four pillars of practice — clinical expertise, leadership and management, education, and research and development — at each level of practice and within each role. It is the entwined combination of these four pillars at all levels that will deliver excellence for patients, with the goal of supporting delivery of evidence-based and radiographer-led service transformation. This is essential as services develop and change their focus, enabling wider staff and professional contributions beyond purely medical leadership modelling to work as more cohesive, multidisciplinary teams.[8]

Today's radiographers must be adaptive and agile practitioners, digitally enabled and, importantly, able to apply evidence-based practice[9]. Continuing professional development (CPD) is essential in supporting both evaluation of current practice and innovation through research and development, to ensure that patients always receive the best possible care and that the profession is always future facing.[10,11]



Revise your understanding of the four pillars of practice throughout the document by clicking on this icon.

Patient-centred approach

The ECF continues to reflect the importance of the patient at the centre of radiography practice. It acknowledges the importance of increasing the evidence base to ensure that values-based patient care is provided, that compassionate and patient-centred care personalised to patients' needs is core to practice[12,13,14] and that patient and public voice and involvement is embedded. Patients and the public were involved fully at all stages of the development of the ECF, and this approach is reinforced by the future vision that they will continue to be involved in all policies and processes that contribute to the development of radiography practice.



Support workforce

The radiography support workforce are important in the delivery of high-quality imaging and radiotherapy services and this framework recognises their important contributions as valued members of the radiography workforce. They deliver support in core areas of service delivery, providing safe and effective care within defined scopes of practice. They help to provide capacity, enabling radiographers to develop and extend their practice for patient benefit supported by post-registration education and training relevant to their scope of practice[15] for the good of improved patient outcomes. Importantly, the new degree level apprenticeships provide an excellent skills escalator route to enable Support Workers and Assistant Practitioners to develop to radiographer Practitioner level and beyond.[16,17]



How can this tool be used?

This framework can be used in a variety of ways depending on your role and what you would like to find out. Below are some suggestions on how to use the ECF:

Find out about the role of the radiographer and how to join the profession

To find out about the role of the radiographer visit the Practitioner section first. The Practitioner section details the entry level expectations in becoming a radiographer. Here you will find information on the role and scope of practice of the Practitioner, the knowledge, skills and attributes (KSAs) associated with this level of practice, how practitioners may contribute towards the four pillars of practice and the educational expectations at this level.

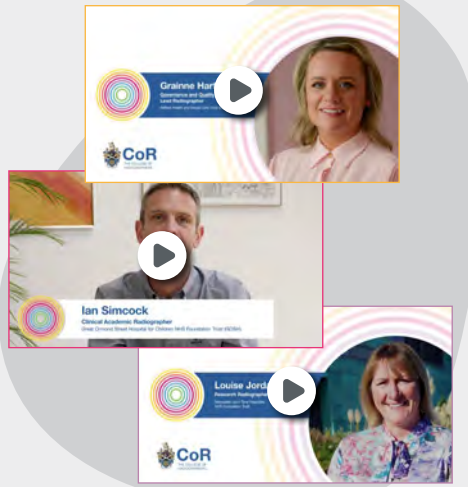
There is also an indicative curriculum to provide insight into course content should you embark on a pre-registration programme of study.

The ECF uses the Practitioner level as the basis for the expectations of practice for radiographers working at this tier, but also as the basis for all other extended roles. Enhanced, Advanced and Consultant Practitioner roles must be read as additional to each other, with the knowledge, skills and attributes (KSAs) building from the base of the Practitioner role.

Case studies from members of the radiography workforce are available within the various sections and help to bring the framework to life. Viewing the sections, alongside the case studies provided, will give insight into the various career progression pathways and opportunities which a career in radiography may hold.

If you are interested in finding out about alternative roles within the support workforce or how these can be used to gain entry into the radiography profession, visit the Support Worker section to find out more.

Click the case study thumbnails to watch members talk about their careers.



Plan your career

When using the ECF to plan your career, start off by reviewing the section related to your current level of practice, then browse the various sections that follow on afterwards. Radiographers already working at enhanced, advanced and consultant level can use this ECF to support further development of their roles, enabling them to respond to growing service needs and align with national frameworks across the devolved nations of the United Kingdom.[18,19,20]

Each section will give an overview of the level of practice, associated scope of practice, education requirements, KSAs and examples of how individuals at each level might contribute to the four pillars of practice.

Direct KSA outcomes from the Delphi study will be indicated to the reader using coloured font.

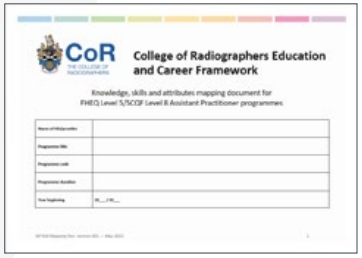
Viewing or reading the case study submissions within these sections is another good way of finding out about various roles and career development pathways that might interest you. Use the live links within the sections to view information on the CoR accreditation schemes, and other potential career development opportunities.

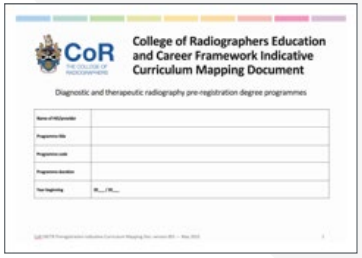
Use the ECF to assist with programme planning and/or CoR programme approval

The Practitioner section contains an indicative curriculum for pre-registration diagnostic and therapeutic radiography degree programmes.

Downloadable mapping documents are accessible within the Assistant Practitioner (Support Worker) and Practitioner sections to assist educational institutions seeking to develop educational programmes or when applying for CoR approval.

Post registration programme leads may use the KSAs of the Enhanced and Advanced sections to inform programme design and course content, as well as to determine the most appropriate level of practice to which their programmes align in terms of the educational expectations and mapping to the four pillars of practice.





Click the thumbnail to download a copy of the mapping document

Use the ECF to inform the development of new roles in practice

Service Managers/Service Leaders may use the ECF to inform them of the knowledge, skills and attributes, as well as educational expectations, of the various levels of practice. Links to various professional guidance documents and development schemes offer additional information. The ECF can therefore be used as a tool to aid discussions on role development needs and job evaluation.

Find out about getting involved in research

Visit the Research and Innovation section to find out about how to get involved in research at all levels of practice. This section also details information on the CoR Research Strategy, as well as information on funding and support opportunities available through the CoR Formal Radiography Research Mentorship (FoRRM) Scheme.

Find out about maintaining radiation safety in relation to your level of practice

Radiation protection is a fundamental part of working within diagnostic imaging or radiotherapy and oncology services. Visit the Radiation Protection section in Appendix 2 to find out details on how to implement the ionising radiation legislation relevant to your level of practice.

Find out about the CoR accreditation schemes

The CoR offers accreditation for Mammography Associates, Assistant Practitioners, Practice Educators, Advanced Practitioners and Consultant Practitioners. Visit the relevant section and click on the live links to the accreditation scheme to find out more. The Support Worker section contains live links to the Mammography Associate and Assistant Practitioner accreditation schemes.



How to navigate the ECF

- Each level of practice or role detailed within the ECF features within a coloured section.
- The contents page at the start of the ECF can be used to directly navigate to the various sections of the framework. Simply click on the coloured arrow to be taken to the section you wish to view.
- The ECF wheel can also be used to navigate to the various levels and roles named within the document. Simply click on the pin associated with the level of practice/role you wish to view.
- The navigation menu on the bottom right of each page enables users to:

Return to the main contents page

Return to the Education and Career Framework Wheel

View the relevant references for that section

View the Education and Career Framework glossary

View the Delphi Consensus Study

Return to the previously viewed page

Go to the previous page

Go to the next page

Once in a section

- The coloured tabs at the top of each page can be used to navigate between sections within the framework.



- Case studies may be viewed at the end of each section, or you can use the case study index to locate a specific case study.

If you would like to share your own case study please contact pande@sor.org for further details.

- There is a progress bar at the bottom left of each page to indicate your progress through the current section. As you progress the coloured dot will move along.



- Live links to various professional documents, guidelines and relevant schemes will take users to the relevant information.
- Outcomes from the Delphi study will appear in purple font to the reader throughout.
- Revise your understanding of the four pillars of practice throughout the document by clicking on this icon.

- Knowledge, skills and attributes are provided for all levels and roles within the ECF. For the Support Worker section each of these have an associated code attached. Having the KSAs coded in this way enables employers and academics to map to the KSAs relevant to the associated level of practice or role.

  For the Assistant Practitioner, the same coding is also used within the FHEQ Level 5 Assistant Practitioner Accreditation Scheme available through CPD Now. The code details the role, whether it is the knowledge, skill or attribute, and then the associated number of knowledge, skill or attribute.

  For example:

[SW.K.16]	Your role and responsibilities and duties of your job

relates to Support Worker (**SW**), knowledge (**K**) number **16**

[AP.S.01]	Practise safely and effectively within relevant legal, ethical, professional and managerial frameworks and protocols

relates to Assistant Practitioner (**AP**), skill (**S**) number **1**



College of Radiographers Education and Career Framework Wheel

Simply click on the pin associated with the level of practice/role you wish to view.

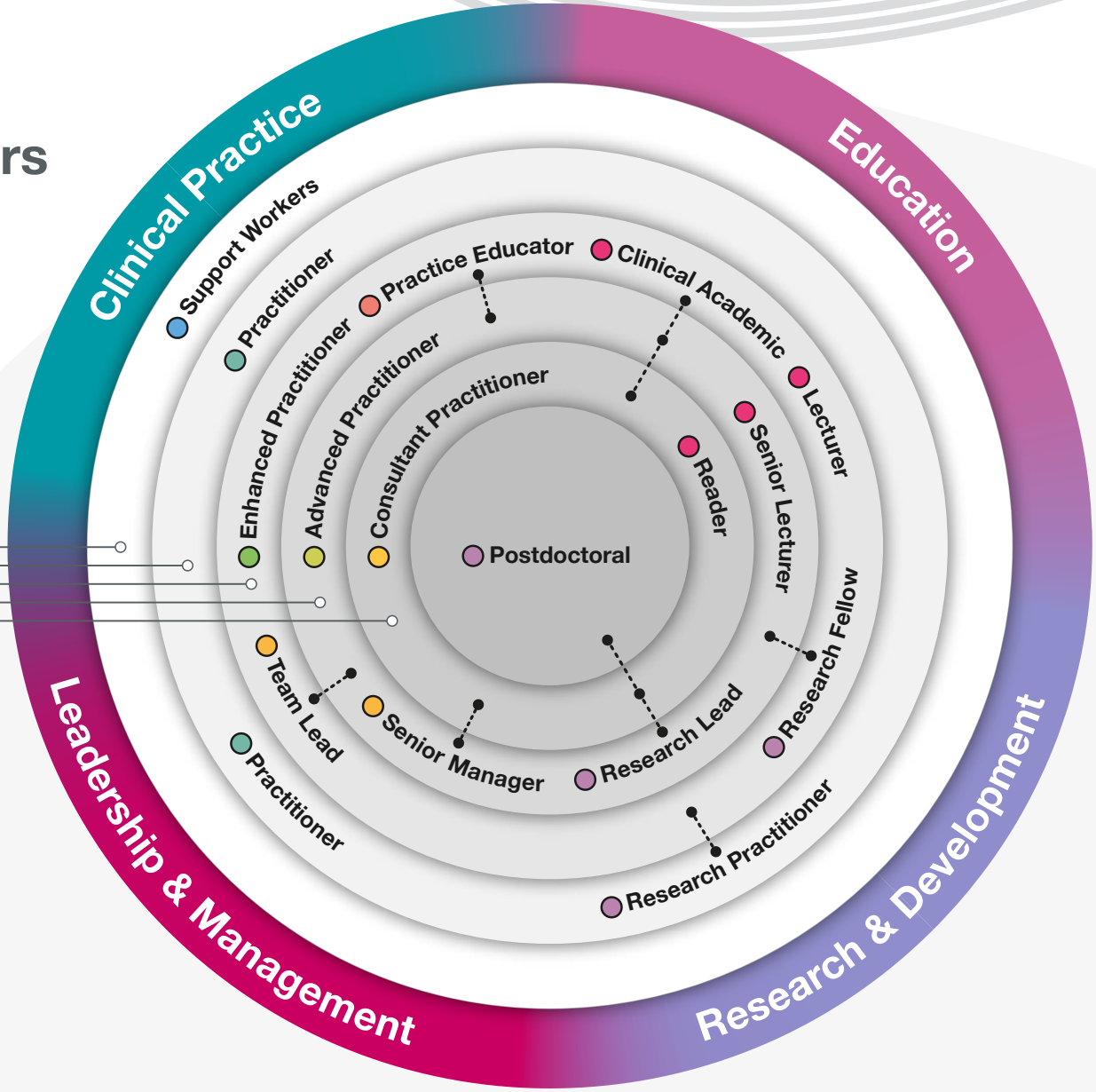
Clinical Support Worker/Senior Support — FHEQ Level 2/3
Mammography Associate — FHEQ Level 4/SCQF Level 7
Assistant Practitioner — FHEQ Level 5/SCQF Level 8

BSc (Hons) degree, BSc (Hons) degree apprenticeship: FHEQ Level 6/ SCQF Level 10
MSc (Pre-Reg): FHEQ Level 7/SCQF Level 11

PgCert/PgDip: FHEQ Level 7/SCQF Level 11

Masters: FHEQ Level 7/SCQF Level 11

Doctorate: FHEQ Level 8/SCQF Level 12





Support Workers



1 Introduction

Clinical Support Workers, Senior Clinical Support Workers, Mammography Associates and Assistant Practitioners play key roles in the provision of patient-centred imaging and radiotherapy services alongside Radiographers and associated professionals. They come into diagnostic imaging or radiotherapy services from diverse backgrounds.

Clinical Support Workers (entry level)

Clinical Support Workers have a basic factual knowledge and understanding of diagnostic imaging or radiotherapy services, supported by the Care Certificate (in England) and an appropriate qualification.[1] They use general skills and work to routine procedures or systems of work with close guidance and supervision. They carry out straightforward clinical, technical, scientific and administrative tasks; for example, supporting infection control procedures, performing routine administrative tasks, managing stock and assisting patients.

Senior Clinical Support Workers

Senior Clinical Support Workers know and understand facts, principles, processes and general concepts in diagnostic imaging or radiotherapy services. They carry out a range of delegated duties, including clinical tasks, with supervision and guidance available when needed. They will hold a profession-appropriate qualification at FHEQ level 3[1] or equivalent to support this work.

Mammography Associates

Mammography Associates operate specialist mammography equipment used to screen people for breast cancer. They perform routine two-view mammography in a hospital, mobile breast screening unit or medical centre under the supervision of a registered Radiographer with a postgraduate mammography qualification. They will hold an FHEQ level 4 qualification for Mammography Associates, such as the Mammography Associate Apprenticeship.[2]

Assistant Practitioners

Assistant Practitioners perform clinical tasks that might otherwise be undertaken by a radiographer or equivalent health care professional in clinical imaging or radiotherapy. Their work is protocol-driven within a defined scope of practice. They work under the supervision of Radiographers, Nuclear Medicine Technologists, Sonographers and registered nurses. The supervision model varies depending on the Assistant Practitioner's area of work, experience and scope of practice. They may also support patients during invasive procedures and on complex pathways or provide aseptic scrub support.[3]

Assistant Practitioners are primarily patient-facing, undertaking many of the roles and responsibilities of Senior Clinical Support Workers, such as cannulation and positioning of patients, as well as clinical tasks performed by Radiographers. They have the required level of factual and theoretical knowledge of principles, procedures, processes and concepts to perform their roles.

Assistant Practitioners work in non-complex, broadly predictable environments, recognising the need for, and accessing, more experienced assistance when required. When paediatric radiography is within their scope of practice, Assistant Practitioners should have specific paediatric focused education and training.

Assistant Practitioners with demonstrable additional education and training at the appropriate and correct level can develop their scope of practice in line with service needs.



2 Scope of practice

More detail on roles and responsibilities in clinical imaging are defined in the 2022 joint guidance produced by the Society of Radiographers (SoR) and Health Education England (HEE), Developing career pathways for diagnostic imaging support worker roles: guidance on roles and responsibilities.[4]



3 Clinical Support Worker knowledge, skills and attributes (KSAs)

Clinical Support Workers provide high-quality and compassionate care for a wide range of people. A Clinical Support Worker should enable effective patient care, undertaking clerical, administrative and housekeeping tasks to support service delivery.

For individuals looking to develop into, or those already in, a **Clinical Support Worker** role, the following knowledge, skills and attributes have been identified as relevant. Knowledge, skills and attributes (KSAs) attained in the role should support progression onto an FHEQ level 3 qualification or equivalent. Support Workers should develop level 2 functional skills[3] and complete the Care Certificate in England.[5]

Clinical Support Worker knowledge [SW.K]

A Clinical Support Worker requires knowledge and understanding of the following:

[SW.K.01]	Importance of effective communication: how to communicate with individuals and within clinical systems, including ways to make yourself understood; how to reduce problems with communication; how to recognise the need for a translator/hearing/other support service
[SW.K.02]	Legislation, policies and local ways of working, including using clinical IT systems to handle information
[SW.K.03]	Referral, appointing and reporting systems for relevant patient pathways, including how to input, access or amend patient and other data on relevant clinical management systems
[SW.K.04]	How to keep information confidential and why it is important to record and store patient information securely; what to do if you think information is not secure

Clinical Support Worker knowledge (continued)

[SW.K.05]	How to do routine tasks delegated by a radiographer or other healthcare professional, such as checking deliveries, completing paperwork and storing stock correctly, checking availability of reports/clinical information and managing patient documentation
[SW.K.06]	How to recognise an individual who is experiencing pain or discomfort
[SW.K.07]	How to support a person's comfort, wellbeing and dignity while in your work area
[SW.K.08]	Signs of a person whose health and wellbeing are deteriorating and how and where to report changes and escalate appropriately
[SW.K.09]	How to promote mental health and wellbeing, including knowing the main forms of mental ill health and their impact on people's lives
[SW.K.10]	Possible signs of limitations in mental capacity and what to do when you notice them
[SW.K.11]	Possible signs of mental ill health, dementia and learning disability in people and possible impacts on their examination/intervention
[SW.K.12]	How to perform basic life support
[SW.K.13]	The range of examinations/interventions that take place in your work area
[SW.K.14]	The roles and responsibilities of others within the team
[SW.K.15]	The normal pathway of care for procedures within your work area
[SW.K.16]	Your role and responsibilities and duties of your job
[SW.K.17]	Importance of working in ways defined by your employer and following relevant protocols/standards/codes of conduct

Clinical Support Worker knowledge (continued)

[SW.K.18]	Working relationships and the importance of working well with other people; know who or where to go for help and support for work-related issues
[SW.K.19]	The importance of personal development and how to reflect on your work; how to create a personal development plan
[SW.K.20]	Health and safety at work: legislation, policies and local ways of working; your responsibilities and responsibilities of others in relation to health and safety at work, including radiation safety and safe practice within magnetic high-field strength areas where appropriate
[SW.K.21]	Situations and environments that could cause harm within the work area and how to react: how to handle hazardous materials and substances, including blood and body fluids; what to do where there is an accident, incident or sudden illness
[SW.K.22]	The meaning of duty of care and why it is important; what support is available when you come across a difficult situation
[SW.K.23]	What to do if someone complains or gives a compliment
[SW.K.24]	Safeguarding legislation, policies and local ways of working; the signs of abuse and what to do if you suspect abuse
[SW.K.25]	The management of infection prevention and control: the meaning of risk and risk assessment; the importance of good personal hygiene and handwashing; how to select and use the right personal protective equipment (PPE); how infections start and spread; the importance of cleaning and safety in the work environment; disinfecting and maintaining dedicated imaging and treatment equipment (including accessories) correctly in the work area; the meaning of antimicrobial resistance
[SW.K.26]	Legislation policies and procedures for the safe handling of people and objects: how to move and position people safely in the work environment; how to move and handle equipment and other objects safely; agreed ways of working in the work area
[SW.K.27]	Equality and diversity legislation, policies and local ways of working; why quality is important; how discrimination can happen at work

Clinical Support Worker skills

Within an imaging or radiotherapy department, a Clinical Support Worker should be able to:

[SW.S.01]	Maintain a clean and safe environment, including cleaning imaging and radiotherapy equipment and accessories
[SW.S.02]	Manage stock and consumables
[SW.S.03]	Prepare equipment and environments for clinical imaging or radiotherapy interventions
[SW.S.04]	Manage data, including basic data entry
[SW.S.05]	Manage documentation, notes, images and correspondence appropriately
[SW.S.06]	Communicate appropriately with patients, carers, departmental staff and the wider healthcare team
[SW.S.07]	Provide appropriate care for patients, including responding to emergency or urgent situations
[SW.S.08]	Support Radiographers or other healthcare professionals (HCPs) with specific examinations, treatments or interventions
[SW.S.09]	Work safely in hazardous environments
[SW.S.10]	Identify possible hazards and take appropriate action
[SW.S.11]	Perform basic life support

Clinical Support Worker attributes

A Clinical Support Worker will actively uphold the following:



[SW.A.01]	Act as a guardian and proponent of patient safety, adopting safety-first behaviour
[SW.A.02]	Advocacy, seeking to empower the voice of those in your care
[SW.A.03]	Protect the public, colleagues and self from the harmful effects of ionising radiation or other hazards within the radiographic work area
[SW.A.04]	Reflect on and recognise one's own limitations, seeking support as necessary
[SW.A.05]	Contribute to change proposals to enhance service delivery
[SW.A.06]	Be honest, open and trustworthy
[SW.A.07]	Be compassionate and kind
[SW.A.08]	Be anti-discriminatory and inclusive
[SW.A.09]	Be adaptable and flexible
[SW.A.10]	Engage in healthy lifestyle initiatives
[SW.A.11]	Ethical and moral standards within work and when away from the workplace
[SW.A.12]	Be a good communicator

Clinical Support Worker attributes (continued)

[SW.A.13]	Be confident in performing own duties
[SW.A.14]	Be a willing learner
[SW.A.15]	Be a positive role model in attitudes and actions
[SW.A.16]	Supporting, welcoming and valuing contribution of learners within the service
[SW.A.17]	Challenging negative attitudes towards others
[SW.A.18]	Having self-awareness, behaving in a manner that promotes personal resilience, e.g. strive to develop self-awareness, self-reliance, relationship building, self-care and adaptability



4 Senior Clinical Support Worker knowledge, skills and attributes

Senior Clinical Support Workers will build on the knowledge, skills and attributes of a Clinical Support Worker. Their qualifications should satisfy the entry requirements for a pre-registration education and training programme. For further information refer to the SoR and HEE guidance **Developing career pathways for diagnostic imaging support worker roles: guidance on roles and responsibilities**.[4]

5 Mammography Associate knowledge, skills and attributes

The knowledge, skills, and attributes for Mammography Associates should support direct entry onto either the FHEQ level 5 Assistant Practitioner Programme or a pre-registration programme.

The indicative curriculum for Mammography Associate Practitioners will be a future addition to the Education and Career Framework (ECF) pending the outcomes of the Supporting Success project being undertaken by Health Education England and other breast imaging stakeholders. In the interim, Mammography Associate Practitioner programmes of study that are seeking College of Radiographers (CoR) approval should demonstrate alignment to the knowledge, skills and attributes as provided for in the Mammography Associate Apprenticeship.

Those holding a FHEQ level 4 qualification for Mammography Associates and who are currently working within a Mammography Associate role may be eligible to apply for CoR Mammography Associate Accreditation.



6 Assistant Practitioner knowledge, skills and attributes

For individuals looking to develop into, or those already in, an **Assistant Practitioner** role, it has been identified through the expert consensus panel of the ECF Delphi study and HEE Supporting Success project that the following knowledge, skills and attributes (KSAs) are relevant. These should provide the foundation KSAs required to progress towards practitioner level at FHEQ level 6/SCQF level 10, through higher education, if so desired.

Assistant Practitioner knowledge [AP.K]

An Assistant Practitioner should have foundation knowledge and understanding of the following, related to their scope of practice unless specifically stated otherwise:

[AP.K.01]	Theoretical principles underpinning the appropriate use of technology required for safe and effective radiographic practice, including quality assurance processes, record-keeping and managing equipment failure
[AP.K.02]	Principles of operation, purpose, use and advances in the technologies used within own scope of practice
[AP.K.03]	The role of imaging/radiotherapy in patient pathways and screening programmes
[AP.K.04]	Human anatomy, pathology, physiology and biological effects of radiation
[AP.K.05]	Normal and abnormal anatomy, including normal variants and changes related to age, disease or injury
[AP.K.06]	Their own scope of practice, role and responsibilities for effective service delivery
[AP.K.07]	Roles and responsibilities of others in the team and wider service delivery network

Assistant Practitioner knowledge (continued)

[AP.K.08]	Principles of delegation and supervision
[AP.K.09]	Professional behaviours needed for safe and effective practice
[AP.K.10]	Legal frameworks, national and local guidelines for safety and risk management in radiography, including the individual's role and responsibilities for safety and risk e.g. Ionising Radiation (Medical Exposure) Regulations (IR(ME)R), Ionising Radiations Regulations (IRR), Human Medicines Regulations, Medicines & Healthcare products Regulatory Agency (MHRA) guidelines
[AP.K.11]	Impact on practice due to processes such as ageing, disease and injury
[AP.K.12]	How to perform the required range of clinical imaging and/or radiotherapy procedures and techniques for the right person, at the right time, to the right standard and in the right way
[AP.K.13]	Current guidance, where to find it and how it impacts on own practice
[AP.K.14]	The principles of valid informed consent
[AP.K.15]	Principles of basic life support
[AP.K.16]	Infection prevention and control principles
[AP.K.17]	Principles of safeguarding
[AP.K.18]	The role of values-based practice in delivering person-centred care, promoting inclusive healthcare and practising in an anti-discriminatory way

Assistant Practitioner knowledge (continued)

[AP.K.19]	How own actions or inactions impact on other people
[AP.K.20]	All aspects of mandatory training and how to maintain skills
[AP.K.21]	How to use communication and information technology systems that support service delivery in radiotherapy or diagnostic imaging
[AP.K.22]	How to meet the requirement of the NHS digital competency framework
[AP.K.23]	Good governance processes and the role of research, audit, quality assurance and service evaluation in delivering safe, effective and compassionate care
[AP.K.24]	How to define health and illness, including the wider determinants of health and the role of the assistant practitioner in delivering wider public health agendas
[AP.K.25]	The core principles of medical ethics and application within a radiography context
[AP.K.26]	The need for sustainable resources and the effects on human health
[AP.K.27]	Strategies for effective, compassionate and timely communication
[AP.K.28]	How to access, undertake and record continuing professional development (CPD) and its importance as a reflective assistant practitioner
[AP.K.29]	Principles of good teamwork
[AP.K.30]	Leadership styles and behaviours

Assistant Practitioner knowledge (continued)

[AP.K.31]	How to support other learners within the work area
[AP.K.32]	The importance of professional and personal resilience and how personal health and wellbeing impact on practice
[AP.K.33]	How to recognise and respond to performance issues in self and others



The following table details the assistant practitioner skills. These also form the Assistant Practitioner outcomes, against which the College of Radiographers (CoR) awards individual Assistant Practitioner accreditation.

Assistant Practitioner skills and outcomes

Within their own scope of practice, an Assistant Practitioner should be able to:

[AP.S.01]	Practise safely and effectively within relevant legal, ethical, professional and managerial frameworks and protocols
[AP.S.02]	Demonstrate competence in the required range of delegated procedures within protocols, accurately appraising own work
[AP.S.03]	Operate equipment safely and effectively within protocol
[AP.S.04]	Accurately position patients and manipulate equipment within protocol
[AP.S.05]	Demonstrate practical understanding of the significance of the relationship between anatomy, pathophysiology and the imaging and/or radiotherapy process
[AP.S.06]	Demonstrate accountability, recognising and responding appropriately to strengths and limitations in own knowledge, skills and attributes
[AP.S.07]	Communicate effectively with patients and staff
[AP.S.08]	Ensure valid informed consent has been given prior to undertaking imaging examinations or radiotherapy
[AP.S.09]	Meet the care needs of individuals and their significant others sensitively and respectfully, having regard to the impact of illness and trauma and to sociocultural differences

Assistant Practitioner skills and outcomes (continued)

[AP.S.10]	Ensure the safety of all individuals in their care in the radiography/radiotherapy environment
[AP.S.11]	Participate in quality assurance and undertake equipment testing within protocol
[AP.S.12]	Demonstrate proficiency in basic life support techniques, infection prevention and control (IPC) and moving and handling
[AP.S.13]	Practise within a risk–benefit framework, having regard to the biological effects of radiation and other hazards in the radiography environment
[AP.S.14]	Understand the importance of evidence for safe, effective professional practice
[AP.S.15]	Manage self and work effectively, demonstrating problem-solving skills
[AP.S.16]	Demonstrate awareness of the role of imaging and/or treatment modalities
[AP.S.17]	Use IT and information management systems accurately and effectively
[AP.S.18]	Work individually, collaboratively and/or in partnership to deliver person-centred care
[AP.S.19]	Engage in continuing professional development

Assistant Practitioner attributes

An Assistant Practitioner should uphold the following:



[AP.A.01]	Act as a guardian and proponent of patient safety, adopting safety-first behaviour
[AP.A.02]	Be an advocate, empowering the voice of those in their care
[AP.A.03]	Protect the public, colleagues and self from the harmful effects of ionising radiation or other hazards within the radiographic work area
[AP.A.04]	Be conscious of the wider context of service delivery
[AP.A.05]	Be a reflective practitioner, reflecting on and recognising one's own limitations, seeking support as necessary
[AP.A.06]	Be open to change, contributing to change proposals to enhance service delivery
[AP.A.07]	Be honest, open and trustworthy
[AP.A.08]	Be compassionate, caring and kind
[AP.A.09]	Be anti-discriminatory and inclusive
[AP.A.10]	Have good levels of emotional intelligence
[AP.A.11]	Be adaptable and flexible
[AP.A.12]	Engage in healthy lifestyle initiatives

Assistant Practitioner attributes (continued)



[AP.A.13]	Uphold ethical and moral standards within work and when away from the workplace
[AP.A.14]	Be a good and open communicator
[AP.A.15]	Be confident, calmly assertive, yet respectful in the performance of own duties
[AP.A.16]	Be a willing learner, showing willingness to extend own scope of practice with appropriate supervision and governance in place
[AP.A.17]	Be effective at managing own time, be organised
[AP.A.18]	Be a positive role model in attitudes and actions
[AP.A.19]	Be supportive and welcoming to learners within the service and value their contribution
[AP.A.20]	Challenge negative attitudes towards others
[AP.A.21]	Be self-aware, behaving in a manner to promote personal resilience e.g. self-reliance, relationship building, self-care and adaptability
[AP.A.22]	Take appropriate action, seeking support when own fitness to practise may be impaired

7 Assistant Practitioner – four pillars of practice

The following details the FHEQ Level 5 Assistant Practitioner Outcomes for Level 5 CoR Assistant Practitioner Accreditation as mapped to the four pillars of practice. Examples of how each outcome may be fulfilled have been provided, but these are not exhaustive, other examples may also be relevant.

Clinical Practice

Click icon to revise your understanding of the four pillars of practice

[AP.S.01]

Practise safely and effectively within relevant legal, ethical, professional and managerial frameworks and protocols

Examples:

- Demonstrate compliance with legal and regulatory requirements relevant to role e.g. IR(ME)R, IRR, MHRA magnetic field safety requirements, Human Medicines Regulations
  - Adherence to relevant role entitlements, such as the role of the operator in accordance with IR(ME)R 2017 and its subsequent amendments
  - Adherence to local rules according to IRR 2017
- Demonstrate compliance with information governance and managing confidential information
  - Able to manage patient queries
- Demonstrate compliance with professional body guidance
  - Working in line with Developing career pathways for diagnostic imaging support worker roles: guidance on roles and responsibilities
  - CoR Education and Career Framework
  - Supervision and delegation requirements
- Demonstrate compliance with local policies
  - Scope of practice
  - Systems of work
  - Identification policy

[AP.S.02]

Demonstrate competence in the required range of delegated procedures within protocol, accurately appraising own work

Examples:

- Demonstrable safe and effective practice through signed competency documents and relevant qualification
- Work to a defined scope of practice, following systems of work and protocols under the supervision and direction of a suitably qualified practitioner
- Assess the technical quality of images produced
- Ability to correct technical errors
- Employ effective positioning and immobilisation
- Effective use of escalation and supervisory processes
- Entitlements within employer's policies, protocols and systems of work
- Supply and administer medicines under appropriate legal mechanism and within own agreed scope of practice e.g. patient specific directions (PSDs)

[AP.S.03]

Operate equipment safely and effectively within protocol

Examples:

- Safely and accurately manipulate radiographic and medical equipment
- Keep record of up-to-date and signed equipment competencies
- Accurately appraise own work and take appropriate action
- Manipulate exposure factors and image recording parameters appropriately
- Manipulate equipment settings to optimise patient outcomes appropriately
- Manipulate images accurately to achieve the desired outcome
- Move imaging/radiotherapy equipment safely
- Manipulate imaging/radiotherapy equipment to the accuracy required

[AP.S.04]

Accurately position patients and manipulate equipment within protocol

[AP.S.05]

Demonstrate practical understanding of the significance of the relationship between anatomy, pathophysiology and the imaging and/or radiotherapy process

Examples:

- Identify relevant surface landmarks and anatomy
- Recognise relevant pathology/disease processes
- Demonstrate awareness of the diagnostic/treatment pathway in relation to the intervention
- Take appropriate action when there is a need for urgent intervention or escalation



[AP.S.06]

Demonstrate accountability, recognising and responding appropriately to strengths and limitations in own knowledge, skills and attributes

Examples:

- Demonstrate understanding of when and how to seek assistance
- Demonstrate ability to identify and acquire the required knowledge, skills and authorisations:
  - before using new equipment
  - before using a new technique
  - when developing own scope of practice
- Demonstrate evidence of reflective practice and CPD
  - Use of clinical supervision
  - Mentorship/coaching
  - CPD records linked to role and scope of practice

[AP.S.07]

Communicate effectively with patients and staff

Examples:

- Provide clear and effective instruction to patients to enable successful completion of examinations/interventions
- Provide patients with information on how and when to expect results or follow-up appointments
- Signpost patients appropriately to additional support and information sources
- Be able to provide effective reassurance to patients
- Be able to explain complaints procedures when necessary
- Be able to de-escalate potential situations through appropriate means, including verbal and non-verbal communication
- Effectively hand over the care of patients to other staff members, sharing necessary and accurate information in the most appropriate format

[AP.S.08]

Ensure valid informed consent has been given prior to undertaking imaging examinations, radiotherapy or other interventions

Examples:

- Be able to apply the principles of consent
- Seek support when consent is not clear, is withdrawn or withheld
- Act as an advocate for individuals in your care

[AP.S.09]

Meet the care needs of individuals and their significant others sensitively and respectfully, having regard to the impact of illness and trauma and to sociocultural differences

Examples:

- Evidence of providing appropriate care
- Making valid assessments of people in your care
- Responding appropriately to their general wellbeing
- Seeking support for any indicators of abuse
- Recognising how to amend practice to meet the needs of the individual

[AP.S.10]

Ensure the safety of all individuals in your care in the radiography/radiotherapy environment

Examples:

- Contribute to safety improvement strategies within own work area
- Apply radiation protection requirements for self and others
- Apply magnetic/laser safety for self and others
- Record and escalate errors and near misses
- Act as role model for safety processes

[AP.S.11]

Participate in quality assurance (QA) and undertake equipment testing within protocol

Examples:

- Perform QA tests on equipment
- Maintain appropriate records for QA
- Take appropriate action on test results
- Conduct audits, analyse data and suggest improvements

[AP.S.12]

Demonstrate proficiency in basic life support techniques, infection prevention and control (IPC) and moving and handling

Examples:

- Mandatory training records complete
- Safely and accurately moving patients
- Demonstrable competence in assistive equipment
- Recognising and responding to emergency situations
- Demonstrating a range of IPC techniques
- Appropriate management of blood and body fluid spillages

[AP.S.13]

Practise within a risk–benefit framework, having regard to the biological effects of radiation and other hazards in the radiography environment

Examples:

- Effectively communicate on risk–benefit
- Record errors and near misses as required
- Use diagnostic reference levels appropriately
- Contribute to dose audits/quality initiatives

[AP.S.14]

Understand the importance of evidence for safe, effective professional practice

[AP.S.15]

Manage self and work effectively, demonstrating problem-solving skills

Examples for [AP.S.14] [AP.S.15]:

- Working effectively as part of the wider radiographic team
- Support the effective and efficient use of all resources
- Demonstrating appropriate use of supervisory mechanisms and management support
- Recognising and using relevant communication mechanisms for you, the people you care for and the team within which you work
- Demonstrating the ability to communicate effectively in verbal, non-verbal and written/electronic format
- Demonstrating compassionate leadership skills
- Reflecting on own leadership role
- Demonstrating good timekeeping
- Taking timely actions
- Demonstrate appropriate coping strategies and personal resilience, showing understanding of self-motivation and self-care
- Effectively managing own workload, working with others to prioritise the people in your care
- Communicate well with those in your care, their carers and comforters, close colleagues and the wider team, including the general public, as needed

[AP.S.16]

Demonstrate awareness of the role of imaging and/or treatment modalities

Examples:

- Diagnostic and/or treatment pathways within own area of practice
- Range of examinations and procedures performed within diagnostic imaging and/or radiotherapy

[AP.S.17]

Use IT and information management systems accurately and effectively

Examples:

- Operate relevant IT systems within organisational guidelines and legal frameworks
- Demonstrate digital literacy skills relevant to own scope of practice
- Record imaging examinations/radiotherapy interventions and their outcomes accurately

[AP.S.18]

Work individually, collaboratively and/or in partnership to deliver person-centred care

Examples:

- Make appropriate decisions with those in your care
- Support the team with care provision, making appropriate decisions within role
- Access appropriate support for people with additional needs
- Demonstrate effective interpersonal communication skills
- Signpost those in your care to appropriate and reputable sources of public health information as necessary
- Promote the best interests of service users and those in your care at all times

Education

Click icon to revise your understanding of the four pillars of practice



[AP.S.06]

Demonstrate accountability, recognising and responding appropriately to strengths and limitations in own knowledge, skills and attributes

Examples:

- Actively seeking out further development and/or training when a limitation(s) in knowledge, skills or attributes has been identified
- Act on feedback to develop own knowledge/skills/attributes

[AP.S.18]

Work individually, collaboratively and/or in partnership to deliver person-centred care

Examples:

- Make appropriate decisions with those in your care
- Support the team with care provision, making appropriate decisions within role
- Access appropriate support for people with additional needs
- Demonstrate effective interpersonal communication skills
- Signpost those in your care to appropriate and reputable sources of public health information as necessary
- Promote the best interests of service users and those in your care at all times

[AP.S.19]

Engage in continuing professional development (CPD)

Examples:

- Evidence of using supervision processes appropriately
- Awareness of transferable skills and how to use them appropriately
- Share knowledge
- Demonstrable impact on practice from CPD activities
- Support others with CPD activities
- Reflect on and review own practice and develop appropriate action plans
- CPD links to developments in scope of practice
- Support the learning of others e.g. students, assistant practitioners, support workers and other professional groups
- Contribute to learning resources and provide feedback on learning opportunities
- Define and agree on own learning needs
- Strive to achieve required education and training standards
- Provide supervision, pastoral care and support for others
- Support patients, carers and the public in accessing knowledge to improve health outcomes
- Learn from patients and service users in line with SoR guiding principles on public, patient and practitioner partnerships



Leadership and Management

Click icon to revise your understanding of the four pillars of practice



[AP.S.01]

Practise safely and effectively within relevant legal, ethical, professional and managerial frameworks and protocols

Examples:

- Demonstrate compliance with legal and regulatory requirements relevant to role e.g. IR(ME)R, IRR, MHRA magnetic field safety requirements, Human Medicines Regulations
  - Adherence to relevant role entitlements, such as the role of the operator in accordance with IR(ME)R 2017 and its subsequent amendments
  - Adherence to local rules according to IRR 2017
- Demonstrate compliance with information governance and managing confidential information
  - Able to manage patient queries
- Demonstrate compliance with professional body guidance
  - Working in line with **Developing career pathways for diagnostic imaging support worker roles: guidance on roles and responsibilities**
  - CoR Education and Career Framework
  - Supervision and delegation requirements
- Demonstrate compliance with local policies
  - Scope of practice
  - Systems of work
  - Identification policy

[AP.S.02]

Demonstrate competence in the required range of delegated procedures within protocol, accurately appraising own work

Examples:

- Demonstrable safe and effective practice through signed competency documents and relevant qualification
- Work to a defined scope of practice, following systems of work and protocols under the supervision and direction of a suitably qualified practitioner
- Assess the technical quality of images produced
- Ability to correct technical errors
- Employ effective positioning and immobilisation
- Effective use of escalation and supervisory processes
- Entitlements within employer's policies, protocols and systems of work
- Supply and administer medicines under appropriate legal mechanism and within own agreed scope of practice e.g. patient specific directions (PSDs)

[AP.S.06]

Demonstrate accountability, recognising and responding appropriately to strengths and limitations in own knowledge, skills and attributes

Examples:

- Demonstrate understanding of when and how to seek assistance
- Demonstrate ability to identify and acquire the required knowledge, skills and authorisations:
  - before using new equipment
  - before using a new technique
  - when developing own scope of practice
- Demonstrate evidence of reflective practice and CPD
  - Use of clinical supervision
  - Mentorship/coaching
  - CPD records linked to role and scope of practice

[AP.S.10]

Ensure the safety of all individuals in your care in the radiography/radiotherapy environment

Examples:

- Contribute to safety improvement strategies within own work area
- Apply radiation protection requirements for self and others
- Apply magnetic/laser safety for self and others
- Record and escalate errors and near misses
- Act as role model for safety processes

[AP.S.15]

Manage self and work effectively, demonstrating problem-solving skills

Examples:

- Working effectively as part of the wider radiographic team
- Support the effective and efficient use of all resources
- Demonstrating appropriate use of supervisory mechanisms and management support
- Recognising and using relevant communication mechanisms for you, the people you care for and the team within which you work
- Demonstrating the ability to communicate effectively in verbal, non-verbal and written/electronic format
- Demonstrating compassionate leadership skills
- Reflecting on own leadership role
- Demonstrating good timekeeping
- Taking timely actions
- Demonstrate appropriate coping strategies and personal resilience, showing understanding of self-motivation and self-care
- Effectively managing own workload, working with others to prioritise the people in your care
- Communicate well with those in your care, their carers and comforters, close colleagues and the wider team, including the general public, as needed



[AP.S.18]

Work individually, collaboratively and/or in partnership to deliver person-centred care

Examples:

- Make appropriate decisions with those in your care
- Support the team with care provision, making appropriate decisions within role
- Access appropriate support for people with additional needs
- Demonstrate effective interpersonal communication skills
- Signpost those in your care to appropriate and reputable sources of public health information as necessary
- Promote the best interests of service users and those in your care at all times

Research and Development

Click icon to revise your understanding of the four pillars of practice



[AP.S.01]

Practise safely and effectively within relevant legal, ethical, professional and managerial frameworks and protocols

Examples:

- Demonstrate compliance with legal and regulatory requirements relevant to role e.g. IR(ME)R, IRR, MHRA magnetic field safety requirements, Human Medicines Regulations
  - Adherence to relevant role entitlements, such as the role of the operator in accordance with IR(ME)R 2017 and its subsequent amendments
  - Adherence to local rules according to IRR 2017
- Demonstrate compliance with information governance and managing confidential information
  - Able to manage patient queries
- Demonstrate compliance with professional body guidance
  - Working in line with Developing career pathways for diagnostic imaging support worker roles: guidance on roles and responsibilities
  - CoR Education and Career Framework
  - Supervision and delegation requirements
- Demonstrate compliance with local policies
  - Scope of practice
  - Systems of work
  - Identification policy

[AP.S.11]

Participate in quality assurance (QA) and undertake equipment testing within protocol

Examples:

- Perform QA tests on equipment
- Maintain appropriate records for QA
- Take appropriate action on test results
- Conduct audits, analyse data and suggest improvements

[AP.S.14]

Understand the importance of evidence for safe, effective professional practice

Examples:

- Contribute to audit and quality improvement programmes
- Contribute to discussions on the introduction of new technologies or techniques
- Recognise the role of research and its impact on your practice
- Demonstrate awareness of where and how to find appropriate evidence for practice
- Contribute to service improvements, audit and research, and relevant local, regional or national projects
- Be aware of the role of evidence-based practice and your contribution to embedding changes in practice
- Challenge misinformation and falsehood
- Highlight new practices and research relevant to role

[AP.S.16]

Demonstrate awareness of the role of imaging and/or treatment modalities

Examples:

- Ability to support individuals with appropriate information on their diagnostic/treatment pathway
- Ability to recognise contraindications within the pathway
- Ability to support individuals' anxieties within their pathway

8 Education, qualifications and accreditation

The education and qualification requirements for assistant practitioners can be found in the joint SoR and HEE guidance Developing career pathways for diagnostic imaging support worker roles: guidance on roles and responsibilities.

Assistant practitioners may seek accreditation through the College of Radiographers assistant practitioner accreditation scheme.

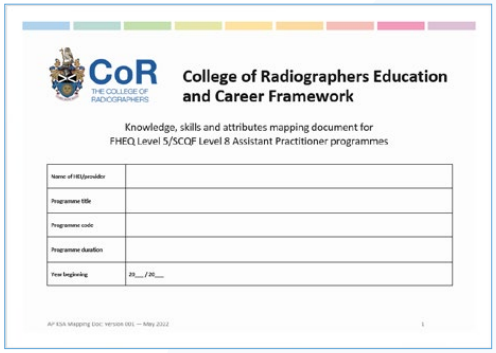


9 Indicative curriculum



The indicative curriculum for Assistant Practitioners will be a future addition to the ECF pending the outcomes of the Supporting Success Health Education England project and ongoing work on the Assistant Practitioner role in the devolved nations.

In the interim, Assistant Practitioner programmes of study that are seeking CoR approval should demonstrate alignment to the knowledge, skills and attributes as provided for the Assistant Practitioner. Please refer to the CoR ECF knowledge, skills and attributes for FHEQ level 5 Assistant Practitioner programmes mapping document found here.


CoR
College of Radiographers Education and Career Framework

Knowledge, skills and attributes mapping document for FHEQ Level 5/SCQF Level 8 Assistant Practitioner programmes

Click the thumbnail to download a copy of the mapping document

Case studies from members of the Support Workforce would be welcomed. Please contact pande@sor.org for further details.

Alison Jenkins

Case Study



What is your current role?

I'm an Assistant Practitioner working in MRI for the Circle Health Group at the Duchy Hospital, Harrogate. I also work at Harrogate District Hospital (HDFT), as a member of their Bank Staff within the general x-ray department.

Within my role at the Duchy Hospital as an Assistant Practitioner in MRI, I work alongside a Senior Radiographer who I have known and worked with for many years. The service provided is relatively new and involves predominantly musculo-skeletal (MSK) examinations, which is my background. The use of contrast mediums is also being introduced, which is enabling me to maintain my IV cannulation skills.

Undertaking bank shifts in A&E general x-ray at Harrogate District Hospital helps to maintain my skills in this area of practice; orthopaedics will always be a favourite pastime.

Read on

How did you get into this role?

I have worked extremely hard to develop my knowledge and skills to enable me to extend my scope of practice so that I can now work in three modalities.

I completed my Certificate of Higher Education with Distinction in General Radiography at Bradford University in 2012/13. One could describe my training as loosely based on the DCR format in that I worked four days clinically and one day at university each week for duration of the course. I was supported by a clinical supervisor (Senior Radiographer) at my place of work who facilitated the general radiography practical training and formal assessments. A wide variety of assessment methods were used as part of my course. This included the completion of a portfolio, presentations, case studies, written assessments, and examinations. My modules encompassed topics like patient care, human biology for clinical practice, radiation physics, IR(ME)R regulations etc. The course helped me to gain the necessary knowledge and skills to work as an Assistant Practitioner.

I then extended my scope of practice whilst working at Alliance Medical to include MRI and CT through formal work-based practical and written assessments. I also completed IV cannulation training at Alliance Medical (2018) to help gain further skills applicable to my role.

While working within my current and previous roles I have continued to maintain my personal record of continuing professional development (CPD). This, along with my formal education and training, enabled me to apply for College of Radiographers Assistant Practitioner Accreditation. This was awarded in 2020 for my Assistant Practitioner role in all three modalities. Assistant Practitioner Accreditation is an outward way of showing that I have met the College of Radiographers standards in relation to my role, with my name being held on the College's Public Voluntary Register for Assistant Practitioners (PVRAP). I know that to be able to remain accredited and remain on the PVRAP I will need to maintain my knowledge and skills and keep up to date with any developments in relation to my role and scope of practice.

Some assistant practitioners may go on to complete a BSc (Hons) degree in radiography, while others may choose not to. I have considered this myself, but I am currently enjoying my role within the various modalities.

What support have you had?

My colleagues at CARE UK were hugely supportive throughout my training and my supervisor was subsequently awarded “Clinical Supervisor of the Year 2013” from Bradford University.

I was supported by a mentor at Alliance Medical (MRI/CT Senior Radiographer) to extend my scope of practice initially into MRI in 2017 and CT in 2020.

What do you find most rewarding about your job?

Having the opportunity to extend my scope of practice to include three modalities. I love working with all the different technology involved.

I often work alongside another Radiographer in a very small team. That means I get to spend a lot of time one to one with patients which is really rewarding. I also feel a very valued member of the imaging team.

I was also proud to be able to support people during the Covid-19 pandemic working at a Nightingale Hospital in the CT department.

What advice would you give anyone interested in a similar career?

Having a dedicated clinical supervisor in the workplace is key, as well as time spent “hands-on” in the relevant department. Both of these things enabled me to feel supported while gaining confidence and competence within the role.



Practitioner

1 Introduction

In the context of this education and career framework (ECF), the term practitioner refers to the entry level into the profession of radiography and includes diagnostic radiographers, therapeutic radiographers, sonographers, nuclear medicine technologists, dosimetrists and others working at practitioner level. The use of the term practitioner here should not be confused with its use (as a holder of certain duties) in the Ionising Radiation (Medical Exposure) Regulations (IR(ME)R) 2017) and Radiation (Medical Exposure) Regulations (Northern Ireland) 2018 (IR(ME)R) (NI) 2018), hereafter jointly referred to as IR(ME)R.

Practitioners deliver high-quality medical imaging or radiotherapy services that meet the regulatory, ethical and legal requirements of their profession. They possess a unique body of scientific knowledge related to patient care and the use of technology to deliver safe and effective healthcare for a broad scope of practice in medical imaging, radiotherapy and associated contexts. This is blended with personal and interpersonal skills and attributes that enable practitioners to deliver patient-centred care in complex, demanding and changing healthcare environments. They are competent to practise to a high standard and may work in a wide variety of health and care settings, delivering services from before birth to after death. There are few other healthcare practitioners with such a broad scope; they are therefore integral to the healthcare team.





2 Scope of practice

Those working at practitioner level will typically have a broad scope of practice, being able to undertake a wide range of diagnostic examinations/therapeutic procedures. Practitioners work autonomously within their scope of practice and are accountable for their actions. They use their knowledge, experience and judgement to manage uncertainty and solve problems. Their practice is informed by evidence through engagement with research and continuing professional development (CPD).

A practitioner's professional values are aligned with those outlined in the NHS Constitution for England, the Society of Radiographers, (SoR) code of professional conduct and the Health and Care Professions Council (HCPC) standards of conduct, performance and ethics. They work proactively with service users and the public to develop and enhance the services they deliver. Practitioners play an important role in the education of the radiographic workforce, other healthcare professionals and the public. They have responsibility for the supervision of other staff and those in training. Practitioners play a pivotal role in healthcare, working in partnership with medical physics experts (MPEs) to secure the radiation protection of service users and the public.

3 Practitioner-level knowledge, skills and attributes

For individuals looking to develop into a **practitioner role**, or those already in one, it has been identified through the expert consensus panel that the following knowledge, skills and attributes are relevant. These provide the foundation on which the knowledge, skills and attributes for all other levels of practice in the profession are built.

Practitioner knowledge

A practitioner requires knowledge and understanding of the following, unless otherwise stated:

- Theoretical principles underpinning the appropriate use of technology required for safe and effective practice
- Human anatomy, pathology, physiology and the biological effects of radiations for use in clinical decision-making in the role
- Be able to differentiate between normal and abnormal anatomy within a range of planar and cross-sectional imaging modalities and apply this knowledge to clinical decision-making
- Principles of operation, safe use and advances in the technologies used both within and peripheral to own scope of practice
- Own scope of practice and the scope of others, understanding the limitations in relation to education and training undertaken and accountability
- Professionalism and the professional behaviours required for safe and effective practice
- How normal radiographic imaging appearances are altered by processes such as ageing, disease and injury
- Exposure factors, diagnostic reference levels and dose reference levels, and their impact on image quality and effective dose
- Occupational dose limits and the need for radiation dose monitoring
- Radiation safety and risk management and the legislative requirements surrounding its use
- Patient pathways and role of imaging/therapy in patient management
- A broad range of medical imaging and/or radiotherapy procedures and techniques

Practitioner knowledge (continued)



- The underpinning knowledge required to assess the adequacy of images
- Current professional body guidance, where to find it and how it affects practice
- The requirements for radiographers acting as IR(ME)R duty holders – operators, practitioners and referrers
- The process for authorising exposures under guidelines issued by the IR(ME)R practitioner and how this differs from justifying an exposure (usually an advanced practice role)
- Legal frameworks applied to radiographic practice and the responsibility of the practitioner to follow the employer's procedures
- Legal mechanisms for medicines supply and administration in imaging and therapy, including patient group directions and the pharmacokinetics of drugs within own scope of practice
- The principles of consent, as defined in SoR's Obtaining consent: a clinical guideline for the diagnostic imaging and radiotherapy workforce and Guidance on mental capacity
- Principles of safeguarding around vulnerable service users
- How to avoid making assumptions or being discriminatory to promote inclusive healthcare
- The diversity of patients and their associated care needs, including physical, psychological, neurodiversity and social care needs, and how to respond to enable patient-centred care
- How a practitioner's actions or inactions affect patients, other professionals and the effectiveness of clinical services
- The wider context of professional practice and healthcare delivery outside the immediate practice environment, and how this promotes effective teamwork
- Knowledge and maintenance of the core skills required for safe and effective healthcare delivery e.g. record-keeping, infection prevention and control, moving and handling, basic life support etc.
- The roles information technology systems and artificial intelligence play in the delivery of healthcare services
- The NHS allied health professional digital competency framework as applicable to own scope of practice
- Governance procedures and hierarchy of control in healthcare organisations
- Role of audit, quality assurance (QA) and service evaluation in delivering safe, effective and compassionate care

Practitioner knowledge (continued)



- Definitions of health and illness and the role the radiographer can play in delivering wider public health agendas
- The core principles of medical ethics and their application in the radiography context and management of the service user
- The impact of healthcare on planetary health, the sustainability of resources and the effects on human health within own scope of practice
- Principles of research and research ethics
- Knowledge of effective strategies to communicate with the diverse range of service users and colleagues
- The importance of listening to and understanding the views of service users to inform values-based practice

- Recognise the need for continuing education at all levels within the profession
- Be fully aware of the sources of support or development available for professional practice
- Recognise the limitations of the employer's resource base and the wider profession or healthcare delivery system
- Basic theories underpinning leadership styles and behaviours
- Recognise the contribution of learners to the future development of the profession
- Use theories and strategies effectively to support learners in practice
- Understand the concept of professional and personal resilience
- Understand fitness to practise in self and others, including awareness of how own health may affect this

Practitioner skills

A practitioner should be able to:

- Apply knowledge and practical experience in a broad range of diagnostic imaging/radiotherapy techniques
- Demonstrate the ability to consistently apply knowledge to ensure safe and effective clinical practice in familiar and new situations
- Demonstrate the ability to develop and maintain competence in performing a range of commonly performed procedures in medical imaging or radiotherapy
- Work within a given scope of practice and the scope of IR(ME)R entitlement, as defined by the employer
- Demonstrate awareness of what constitutes an extension to scope of practice and scope of IR(ME)R entitlement, and how to secure formal agreement of a scope extension
- Possess transferable skills, enabling development of competences in new environments through appropriate training and/or education, as necessary
- Identify and acquire further training as required to undertake new techniques, use new protocols or operate new equipment
- Demonstrate the skills for safe and effective professional practice within multidisciplinary environments
- Have the manual dexterity required to safely operate radiographic and medical equipment
- Use knowledge of anatomy and pathology to recognise the need for urgent interventions for optimal patient care and take appropriate actions
- Manage equipment settings to optimise patient outcomes
- Demonstrate optimisation of the delivery of radiation exposures in line with the principles of ‘as low as reasonably practicable’ (ALARP)
- Practise within the legal frameworks for medicines supply and administration in imaging and therapy, including patient group directions within own scope of practice
- Effectively communicate the benefits of radiation exposure proportionate to the risks to service users
- Recognise opportunities for practice benchmarking and contributing to radiation protection improvement strategies at a local level
- Critically evaluate radiographic procedures and suggest enhancements if required through audit and continual quality improvement
- Work as part of a wider multidisciplinary team

Practitioner skills (continued)



- Make informed clinical judgements about recent technologies and techniques
- Adapt to working with new/unfamiliar technology at edge of own scope of practice to build on the minimum requirements of IR(ME)R Schedule 3
- Accurately appraise and interpret images within own scope of practice
- Work in line with current professional body guidance and document reasoned decisions when practice deviates from this
- Use critical thinking skills to demonstrate appropriate clinical decision-making within own scope of practice
- Apply the principles of consent appropriately to diagnostic and therapeutic practice
- Make valid assessments of service users prior to and during the delivery of care, including assessment of general wellbeing and for indicators of abuse
- Respond appropriately to the patient care needs of all service users
- Possess digital literacy skills relevant to own scope of practice
- Be able to operate relevant IT systems within organisational guidelines and legal frameworks
- Take appropriate steps to maintain confidentiality
- Critically evaluate the value of evidence and be able to access and identify sources of evidence
- Present persuasive arguments to influence service development
- Access and recognise a wide variety of relevant high-quality research and other evidence needed to underpin professional practice
- Recognise the need for appropriate communication and be able to communicate effectively by verbal, non-verbal and written means
- Reflect and review own practice and develop appropriate action plans
- Effectively manage workloads and prioritise clinically acute patients
- Develop compassionate leadership skills and be able to reflect on own leadership style within own scope of practice
- Demonstrate effective mentorship and supervision skills
- Maintain resilience, networking and peer support, use coping strategies, self-motivation and self-care

Practitioner attributes

A practitioner should demonstrate/actively uphold the following:



- Exercise professional autonomy, responsibility and accountability within a given scope of practice
- Work autonomously within a team structure
- Constantly reflect on and recognise one's own limitations and identify the need for additional training, support or actions
- Protect patients from the harmful effects of ionising radiations by acting as an advocate for patients
- Protect the public, colleagues and self from the harmful effects of ionising radiations
- Seek an understanding of the radiation protection measures used internationally and how these relate to local practices
- Act as the guardian and proponent of patient safety by adopting safety-first behaviour
- Actively seek to understand the multitude of factors that affect healthcare delivery both inside and outside the medical imaging and radiotherapy department
- Assume responsibility for episodes of care and care pathways and make referrals where appropriate
- Be mindful that some patients may need more information than others to provide consent, and respect those who choose not to give consent or withdraw consent
- Act as an advocate for patients and service users when required
- Take the lead on raising concerns about patient care and service improvement suggestions, following these up as a duty of care
- Practise equity and inclusivity and challenge discrimination
- Demonstrate emotional intelligence by effectively reading and interpreting the emotions of others and use this to inform professional behaviour accordingly
- Demonstrate empathetic patient care – 'seeing the person in the patient'
- Strive to seek the truth and reject falsehood in relation to professional role and healthcare delivery in general
- Practise in a way that seeks to maintain the safety of patients, service users, colleagues and self at all times, following local, national and/or international guidance applicable to role
- Seek out and share best practice e.g. by engaging with or sharing audit outcomes

Practitioner attributes (continued)



- Demonstrate an openness to change and shape change proposals to enhance service delivery and patient empowerment
- Demonstrate adaptability and flexibility in practice and professional behaviour
- Actively encourage colleagues and service users to engage in healthy lifestyles, signposting to appropriate and reputable sources of information when necessary
- Apply the principles of medical ethics to promote the best interests of the service user
- Uphold ethical and moral principles/standards in decision-making
- Effectively and proactively use evidence in informing professional practice
- Confidently and effectively communicate with service users, colleagues and the public
- Express a confident, assertive yet respectful manner
- Practise with honesty and integrity
- Use knowledge of the views of service users to enhance care delivery
- Be primarily patient-centred and holistic in the application of patient care and professional practice
- Be willing to engage with continuing professional development and education networks
- Practise lifelong continuing professional development and reflective practice
- Demonstrate learning aligned with contemporaneous practice
- Critically evaluate all aspects of personal practice and service delivery
- Proactively seek solutions and apply entrepreneurial and innovative practice to manage resource limitations
- Be a positive role model in attitudes and actions
- Support, welcome and value the contribution of learners to service delivery and enable successful learning in the practice environment
- Fully include and integrate learners within the team and challenge negative attitudes toward students and learning
- Behave in a manner that promotes personal resilience e.g. strive to develop self-awareness, self-reliance, relationship building, self-care and adaptability
- Take appropriate action when fitness to practise may be impaired

4 Practitioner – four pillars of practice

Clinical Practice

Click icon to revise your understanding of the four pillars of practice

- Practise safely and effectively within their legal, ethical, and professional scope of practice.
- Be aware of and adhere to governance, protocols and procedures.
- Take professional responsibility and be accountable for their actions.
- Practise with values-based care.
- Be aware of and seek to maintain own fitness to practise.

Education

Click icon to revise your understanding of the four pillars of practice

- Facilitate the learning of others e.g. students, assistant practitioners, support workers and other professional groups.
- Take responsibility for own learning by engaging in continuing professional development to maintain and develop knowledge and skills.
- Play an active role in the supervision of those who are training.
- Provide patients, carers and the public with appropriate information to improve health outcomes.
- Learn from patients and service users in line with patient, public and practitioner partnerships.

Leadership and Management

Click icon to revise your understanding of the four pillars of practice



- Accept and contribute to the dynamic and changing nature of the profession.
- Take on leadership responsibilities within own scope of practice.
- Lead on service improvement within own scope of practice.
- Involve service users in evaluation of services.
- Work within wider team or other professional areas.

Research and Development

Click icon to revise your understanding of the four pillars of practice



- Be involved in research and/or audit.
- Collect primary and secondary data as required by the role.
- Scrutinise and evaluate evidence from research.
- Be aware of and use evidence-based practice.
- Use evidence to challenge misinformation and falsehood.
- Be involved in making recommendations for future practice based on the evidence base.
- Be aware of, and where appropriate integrate into practice, new and emerging evidence and professional body guidance.

5 Education and qualifications

- BSc Hons degree; FHEQ level 6/SCQF level 10
- BSc Hons degree apprenticeship; FHEQ level 6/SCQF level 10
- MSc (pre-registration); FHEQ level 7/SCQF level 11

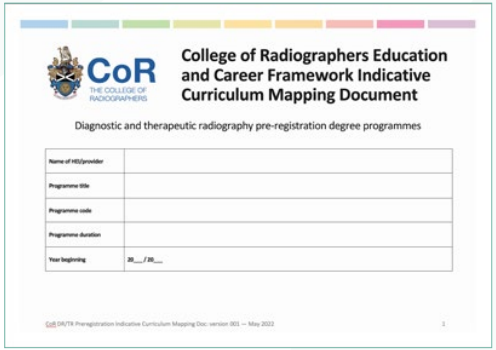
Associated degree titles may vary e.g. Diagnostic Radiography, Therapeutic Radiography, Radiotherapy, Medical Imaging, Ultrasonography.



6 Indicative curriculum (common)

The following details the indicative curriculum pertaining to both diagnostic and therapeutic radiography pre-registration education at FHEQ level 6/SCQF level 10.

For those developing or seeking CoR approval of a diagnostic or therapeutic radiography pre-registration education programme the **College of Radiographers Education and Career Framework Indicative Curriculum Mapping Document: diagnostic and therapeutic radiography pre-registration degree programmes** may be downloaded here.


College of Radiographers Education and Career Framework Indicative Curriculum Mapping Document

Diagnostic and therapeutic radiography pre-registration degree programmes

Click the thumbnail to download a copy of the mapping document



6.1 Culture of care philosophy

- Principles of patient and service user care
- Psychosocial models of patient care and being able to recognise and respond to physical, psychological, and social needs of patients, service users and carers
- Sensitive, non-discriminatory and inclusive practice
- Person-centred care
- Models of partnership working with patients, enablers and barriers to working collaboratively
- Theories and concepts of health and illness
- Empathy and compassion in practice

Further information: culture of care

- SoR: patient, public and practitioner partnerships within imaging and radiotherapy: guiding principles
- European Patients Forum
- NHS England: patient and public voice partners policy
- Local Government Association: empowering patients, service users and communities
- Health and Social Care Alliance Scotland: compassionate care
- NHS Wales Shared Service Partnership: supporting guidance – person-centred care
- College of Radiographers Patient Advisory Group

6.2 Communication

- Professional communication – written, verbal, non-verbal and presentation
- Interpersonal, interprofessional and intraprofessional communication
- Communicating with patients and carers, including those with additional needs
- Supervision of students and other staff, recognising the importance of communication in delegation
- Communication in context: patients, carers, other health and social care professionals
- Information and support for patients and their carers and/or families
- How to use all forms of communication appropriately and responsibly, including the use of social media in a personal and professional context
- Awareness of briefings and debriefings and the role they play in patient and service user care, service delivery and staff wellbeing
- Awareness of multidisciplinary team meetings and the role they play in patient and service user care
- Maintaining appropriate boundaries with patients and service users, keeping these relationships professional

Further information: communication

- HCPC: Standards of conduct, performance and ethics
- SoR: SoMeRAD: guidance for the radiography workforce on the professional use of social media

6.3 Professional knowledge and skills

- Demonstrate the ability to understand and work within a given scope of practice
- Legislation, policy and ethical frameworks that underpin, inform and influence the practice of radiographers, including in relation to caring for children and vulnerable adults
- Ethical and legal principles of professional practice: informed consent, confidentiality, record-keeping, data protection and fitness to practise
- Legal mechanisms for medicines supply and administration in imaging and radiotherapy, including patient group directions and the pharmacokinetics of drugs, within own scope of practice

6.3 Professional knowledge and skills (continued)

- Knowledge of contrast agent types, contraindications, correct administration and adverse reactions
- Identifying and responding to an anaphylactic event
- Intravenous cannulation theory and awareness of the practical skills required
- Perform routine quality assurance checks on equipment and report any malfunction, breakdown or faults
- Understand and, when necessary, initiate emergency procedures
- Report any accidents or injuries using the appropriate process
- Understand the importance of identifying, reporting and investigating incidents, including errors and near misses
- Know how to recognise and report a significant accidental or unintended exposure (SAUE)
- Know how to report a clinically significant accidental or unintended exposure (CSAUE) and how this links to duty of candour
- Be aware of the requirements of the quality management system and contribute accordingly
- Mandatory skills training: infection prevention and control, fire training, information governance, cardiopulmonary resuscitation (basic life support), moving and handling, safeguarding
- Principles and practice of clinical governance
- The organisation and management of health and social care services in the UK
- Developments and trends in legislation and health and social care policy
- The role and scope of practice of the radiographer: professional behaviour and values, conduct, attitude, accountability, attributes and dispositions
- Self-development: personal organisation, time management, effective prioritisation and managing workload
- Professional and regulatory body requirements, including fitness to practise
- Continuing professional development and lifelong learning
- Reflective practice, models of reflection, learning and clinical supervision
- Principles of leadership and management
- Principles of innovation and entrepreneurship in imaging and radiotherapy practice and service design
- Theories of judgement and decision-making in radiographic practice
- Accountability, responsibility and assessment of risk in relation to the role of the radiographer

6.3 Professional knowledge and skills (continued)

- The importance of self and self-awareness in developing and managing relationships
- Emotional intelligence, resilience and motivation
- Awareness of own health and the impact of this on own fitness to practise
- NHS allied health professionals digital competency framework and associated digital literacy skills as appropriate to the role of the radiographer
- Definitions and indicators of all forms of abuse, including neglect, and the role of the radiographer in safeguarding
- Have the courage to speak out and highlight shortfalls in service delivery though appropriate channels and to escalate if necessary
- Duty of candour within imaging and radiotherapy services and the wider healthcare environment
- Demonstrate a commitment to the profession, patient care and the health of the community
- The impact of healthcare on planetary health, the sustainability of resources and the effects on human health within own scope of practice
- Understand the importance of individualised care and advise on procedural side effects using the evidence base
- Support and promote public health for individuals and within the community

6.4 Teamworking

- Support and develop an inclusive culture
- Work collaboratively
- Support others to raise concerns openly, providing reassurance and/or escalating further when patient safety is at risk
- Interprofessional working: principles and practice, benefits and challenges

6.5 Academic and research skills

- Literacy and numeracy skills of a sufficiently high level to support learning and practice
- Digital literacy to support learning
- Critical thinking, making informed decisions/judgements and problem-solving skills
- Critical appraisal of the research evidence applicable to imaging and/or radiotherapy practice

6.5 Academic and research skills (continued)

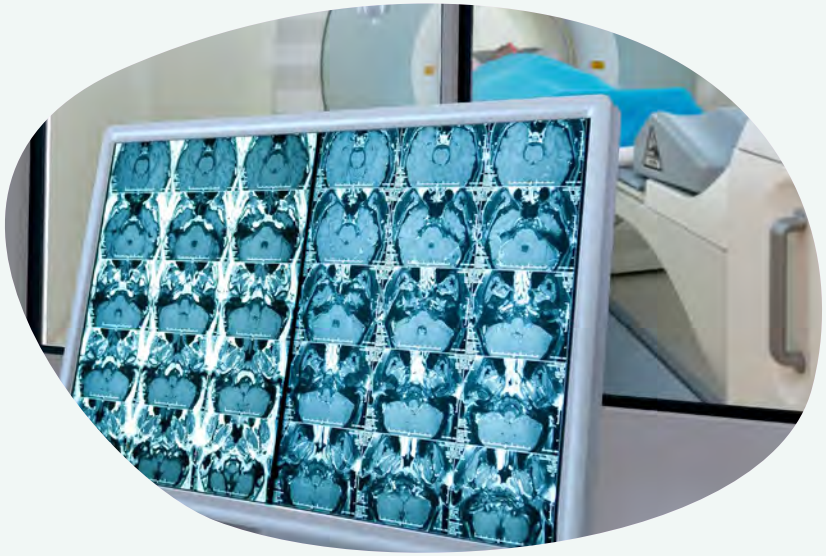
- Ability to search for and access relevant literature from a range of quality literature databases
- Skills for inquiry in conducting audits and service evaluation and involvement in research in health and social care
- Definitions of knowledge: scientific and constructivist approaches relevant to radiography and radiotherapy
- Hierarchies of evidence and how these underpin evidence-based practice in imaging and/or radiotherapy
- Selection and interpretation of evidence for imaging and/or radiotherapy practice
- Skills for reflective practice, including appropriate use of models of reflection, as part of lifelong learning
- Ability to engage with patients, carers and service users for education and development
- Ability to engage with peers and colleagues across the range of academic and clinical settings used in imaging and/or radiotherapy education and training
- Develop teamworking skills through education and research collaborations

6.6 Imaging science, technology and radiation protection

- Fundamental concepts of the science of ionising radiation imaging: radiation production, radiation protection and statutory obligations relating to ionising radiations as required by IR(ME)R Schedule 3 where relevant to medical exposures and scope of practice
- Fundamental concepts of occupational and public radiation protection and statutory obligations relating to ionising radiations as required by the Ionising Radiations Regulations (IRR) 2017
- Demonstrate autonomous practice e.g. knowing when an exposure is not justified and it is therefore not lawful to proceed because:
  - the clinical details provided by the referrer do not fall within authorisation guidelines issued by the IR(ME)R practitioner
  - the patient reveals additional information that means the exposure may no longer be justified or may need to be re-justified
  - the employer's authorisation guidelines do not identify the referrer/practitioner
- Know the difference between the need for re-justification and the ability to make autonomous decisions to undertake repeat exposures for technical reasons
- Be able to follow the employer's procedures relating to IR(ME)R Schedule 2(1)(i) and have the knowledge and confidence to provide adequate information relating to the benefits and risks of the exposure

6.6 Imaging science, technology and radiation protection (continued)

- Principles, components and operation of medical imaging equipment, including computed radiography, digital radiography, fluoroscopy, mobile, mammography and dual-energy X-ray absorptiometry, computed tomography (CT), magnetic resonance imaging (MRI), ultrasound, radionuclide imaging and positron emission tomography (PET)
- Application of legislation and regulations governing the use of ionising radiations
- Safe and competent operation of a broad range of imaging and/or treatment equipment and understanding the regulatory requirement for additional training for new and unfamiliar equipment
- Quality control (QC) measures and quality assurance (QA) frameworks, tests and implementation
- Principles of digital imaging, picture archiving and communication systems, image acquisition, processing, storage, retrieval, transfer and manipulation
- Knowledge of the interactions of exposure factors and technological algorithms for optimising exposure and image quality across a range of imaging modalities
- The use of artificial intelligence in radiography: benefits, challenges and opportunities
- Physical principles of matter, atomic structure, radioactivity, electricity, magnetism and sound
- The electromagnetic spectrum: heat, light and radio frequencies
- Primary sources of ionising radiation, interactions of photons with matter, relationship to image quality and radiation dose
- Scatter radiation and its relation to image quality and radiation dose
- The evidence base informing the reasoned decision for limiting use of patient contact shielding (e.g. gonad shielding) from standard practice
- New diagnostic and therapeutic technologies in line with the appropriate evidence base



7 Specific curriculum: Diagnostic Radiographer

- Demonstrate competence in all commonly performed medical imaging procedures and the operation of medical imaging equipment within scope of practice, including, as a minimum, the range of medical imaging equipment and commonly carried out radiographic procedures required by the HCPC standards of proficiency for radiographers
- Meet the appropriate requirements for diagnostic radiology of IR(ME)R Schedule 3
- Identify the correct patient before every action and interaction
- Assess patient wellbeing and condition throughout, including prior to, during and after imaging
- Radiographic skills and patient positioning techniques from neonate to elderly
- Adapt imaging procedures, including specific care required for the imaging of children
- Undertake radiographic techniques on a wide variety of service users at various stages in their life
- Understand the individual care needs of service users and be able to adapt diagnostic imaging techniques accordingly
- Patient presentation, symptoms and clinical indications to ensure appropriate justification and optimisation of the exposure
- Understand the role of an IR(ME)R operator, with particular reference to the difference between justification of an exposure (practitioner duty holder role) and authorisation (operator role) under guidelines issued by the practitioner duty holder
- Patient presentation, symptoms, clinical indications and selection of the correct imaging protocol in relation to optimisation of the exposure
- Assessment, monitoring and care of the patient before, during and after examination, including recognition of the deteriorating patient and appropriate actions to preserve life
- Image-guided procedures and management of controlled and supervised areas
- Nasogastric tube placement checks and appropriate actions
- Interventional radiography and procedures
- Basic awareness of the principles of forensic imaging within scope of practice
- Preliminary clinical evaluation of images relevant to ‘first post’ competence, including structure and terminology in preliminary clinical evaluation



7.1 Anatomy, pathophysiology and radiographic image evaluation

- Anatomy, physiology and pathology of the human body, including disease processes from fetal life to old age
- Recognise normal and normal variants on radiographic/ medical images
- Recognise abnormal or pathological findings on radiographic/ medical images
- Surface anatomy and radiographic terminology
- Fracture classification, healing of fractures and pathology of musculoskeletal system
- Image evaluation, including factors affecting the diagnostic quality of images
- Understanding the impact of treatments on disease pathways

8 Specific curriculum: Therapeutic Radiographer

- Demonstrate competence in all commonly performed radiotherapy procedures and in the operation of radiotherapy and treatment planning equipment within scope of practice, including, as a minimum, the range of treatment and planning equipment and commonly carried out procedures required by the HCPC standards of proficiency for radiographers
- Meet the appropriate requirements for radiotherapy of IR(ME)R Schedule 3
- Identify the correct patient before every action and interaction
- Surface imaging for patient set-up and patient identification
- Assess patient wellbeing and condition throughout, including prior to, during and after pre-treatment and daily treatment
- Recognise clinical changes or deterioration and the need for clinical review prior to radiotherapy or to make the decision not to treat
- Construct and evaluate immobilisation devices and evaluate implications of the plan if changes occur during treatment
- Understand the theory of, and perform, standard computed tomography (CT) and 3D surface scanning for planning procedures
- Understanding the impact of immobilisation and positioning of patients for planning MRI and PET/CT
- Localise the target volume precisely in relation to external surface and anatomical reference markings using a range of techniques
- Be able to use to best effect image processing and related technology, including computer-based imaging systems, for radiotherapy purposes
- Understand the role of, and assist with, fluoroscopic procedures
- Understand the role and use of contrast agents in the oncology population
- Understand patient group directions in the therapy setting, including when medication advice can be provided and when to refer to a non-medical prescriber or doctor
- Identify organs/regions at risk on treatment and planning images
- Generate a dosimetry plan and verify the treatment parameters ensuring optimal radiotherapy prescription delivery for a range of radiation types and energies
- Evaluate dosimetry plans for a range of cancer sites and modalities (photons, protons, electrons)
- Scrutinise and interpret the radiation prescription and the treatment plan in such a way that radiotherapy is delivered accurately and reproducibly

8 Specific curriculum content: Therapeutic Radiographer (continued)

- Perform the full range of radiotherapy processes and techniques accurately and safely
- Interpret and evaluate images obtained during radiotherapy planning and treatment and be able to make appropriate decisions to ensure accurate treatment delivery
- Provide individualised care and advice on side effects that is evidenced based

8.1 Anatomy, pathology, oncology and imaging

- Understand the structure and function of the human body in health and disease, including regional and cross-sectional anatomy of the head, neck, thorax, pelvis and abdomen in relation to oncology and radiotherapy
- Understand common pathologies and mechanisms of disease with a concentration on cancer, histology, haematology and the lymphatic and immune systems
- Knowledge of clinical and medical oncology and the pathophysiology of solid and systemic malignancies
- Knowledge of epidemiology and the aetiology of cancer
- Know the physiological signs and symptoms, clinical investigations and diagnostic procedures that result in referral for radiotherapy
- Know the biochemical science of radiation pathophysiology
- Be able to request and review appropriate biochemistry for patients on treatment
- Understand the evidence base of adjuvant treatment, including surgery and chemotherapy on radiotherapy dose prescription, timing of radiotherapy and post-radiotherapy complication



Sophie Farran

Case Study



What is your current role?

I'm a newly qualified Diagnostic Radiographer at the Countess of Chester Hospital.

Read on

What did you do before?

Having had a false start with degree level education in my early 20's, I really believed that a degree wasn't for me. However, when I underwent imaging for a seemingly mystery illness, I began to develop an interest in radiography. I was diagnosed with psoriatic arthritis, the arthritic condition linked to the skin form of psoriasis that I had been diagnosed with in childhood. My diagnosis meant I had many more experiences in the imaging department over the next few years. As a result of this, I became fascinated by the images that were produced. I was also extremely impressed by the professionalism and compassion demonstrated by the radiographers that cared for me. I subsequently went on to have a family, but my regular episodes of imaging maintained my interest and I finally decided that if I really wanted a career in radiography, it was time to do something about it.

How has your previous experience and development helped?

I began researching what was required for degree entry into radiography and initially enrolled on a college-based access to HE (social sciences) course. After beginning this, I began to feel that I needed something with more science content, so I changed to an online access to HE (science) course that was radiography focussed. Being online meant that I could fit my studies around caring for my child and supporting her in her transition from primary to secondary school. I also arranged work experience placements for myself before applying to university via UCAS.

In 2018, at the age of 39, I was accepted onto the BSc Diagnostic Radiography programme at Bangor University. Whilst studying for my degree, there were several challenges, not least the Covid-19 pandemic. Due to the immuno-suppressant medications needed to treat my psoriatic arthritis, I was placed in the clinically extremely vulnerable category and had to take 20 months out of clinical placement.
In November 2021 I was able to return to clinical placement and was placed at the Countess of Chester Hospital. Having time out from my studies significantly impacted my learning, but I worked hard to overcome this. In December 2021 I applied for a Band 5 Radiographer post at my placement site and in early 2022 I was thrilled to be successful at interview and be offered the job. After completing my degree, achieving first class honours, I began working at the hospital in June 2022. I initially worked as an assistant practitioner whilst awaiting my HCPC registration. This allowed me to make the transition from student to practitioner more gradually, whilst being able to start the process of completing my preceptorship. Once HCPC registration was received I moved into my band 5 role and continue to complete my preceptorship.

What support have you had?

During my first placement as a student, I was unfortunate to encounter some negative experiences. However, I received excellent support from the Society of Radiographers student support officers and local representative. I was also fully supported by my lecturers at Bangor University and given the skills and confidence to overcome the situation. When I returned to my studies, and to a new placement site, I was very fortunate to receive a huge amount of support and encouragement from the staff and my clinical tutor at the Countess of Chester Hospital. This support was instrumental in my success in completing my degree and it has inspired me to always try to achieve the very best standard I can whilst being kind and patient in the process. Over the coming years I hope to remain within projectional radiography and develop my skills and knowledge to a high level, with the aim of passing on my knowledge to others and supporting students within the department.

What do you find most rewarding about your job?

The most rewarding thing is making a difference to the patients that I image. This might be something as simple as giving a cold patient a blanket to keep them warm or holding someone's hand because they are afraid, or be more challenging, such as completing imaging examinations on seriously ill patients with the aim of aiding their diagnosis. Knowing that I have done my very best for my patients is very important to me.

What advice would you give other people in a similar position?

Try to gain some work experience within an imaging department; there was much more to radiography than I had realised as a patient. An online access course is a good pathway into a degree. It proves that you can manage your time efficiently and motivate yourself to complete work, which are important when studying towards a degree. Completing a radiography degree can be challenging when compared to other degree courses. You will be studying and attending clinical placement at the same time, so it takes up much more time than many other degrees do. Finally, I would say you are not too old! Your age, life skills and experience are an asset not a hindrance.

Rupert Maclaren

Case Study



What is your current role?

I'm a Diagnostic Radiographer (band 5) at Yeovil District Hospital in Somerset. I work predominantly in computed tomography (CT) but also rotate through projectional X-ray, including theatre imaging and fluoroscopy, as well as plain film for inpatients, outpatients and trauma (A&E), and lone working in peripheral hospitals.

Read on

What did you do before?

After 17 years in the wine trade, and with a master's degree already, I went part time and returned to college to complete an Access to Higher Education (Science) course. This enabled me to go back to university, graduating in 2020 with a BSc in medical imaging from the University of Exeter. Yeovil was one of my placement sites as a student and I started there soon after my graduation.

How has your previous experience and development helped?

Running sales teams previously has helped me take on mentoring roles and my work as an SoR student rep allowed me to step up as industrial relations rep for the department soon after joining.

In-house CT training consisted of achieving a number of detailed competencies, both per protocol-led scanning and additional elements such as post-processing, reconstructions, quality assurance (QA) and biopsies. I have separately also completed the eLearning for Health CT colonoscopy course as part of my CPD which enabled me to undertake our in-house training in this specialist area, which I completed very recently.

In addition, I am involved in running audits, quality assurance and supporting students, apprentices and assistant practitioners in their learning and development. I also undertake roles as a student assessor and as a workplace mentor for our final year apprentices. Until recently, I have been seconded to the University of Exeter one day a week to work as an academic mentor and associate lecturer, supporting students on the diagnostic radiography apprenticeship programme. I have since taken on a clinical tutor role with the university supporting their undergraduates whilst on placement.

Alongside my main 'day job', I am the Society of Radiographers (SoR) industrial relations rep for the hospital, which requires me to liaise with management and support my colleagues with a variety of issues as well as representing them at staff side and regional committee meetings. I am the newly qualified representative on the SoR Diagnostic Imaging Advisory Group, which helps advise UK Council on policy changes.

What support have you had?

As I returned to one of my previous placement sites, I already had good relationships with the team when I started. I have a very supportive manager who allows me to explore my interests in audit, mentoring and teaching as well as enabling me to move into CT less than a year after graduating.

There are several exceptional radiographers who I work with and to whom I have been able to turn for advice regarding my career path. I often feel like a kid in a candy store, there are just some many opportunities and I want to try them all. At the same time, I often feel the pressure of my age, not having as much time on my side to achieve my career goals as some of my colleagues, but being reminded that narrowing my focus in the short-term is likely to be more beneficial has helped immensely.

What do you find most rewarding about your job?

The wide variety of patients, cases and technology and the constant stream of new information to learn and adapt to is extremely rewarding. The main reason I made my career change was that I wanted to feel good about myself at the end of the day and feel that I had made a positive difference.

A key part of my role is to identify abnormal from normal, working as part of a close team, be it in A&E or theatre, for example, where good communication is vital, and knowing that I have helped the patient receive the appropriate care gives me exactly what I was looking for in a career. However, I am also finding that teaching and supporting others on their journey in radiography is equally satisfying. Whether through mentoring apprentice or student radiographers, or supporting my colleagues through the SoR, delivering CPD sessions on a paper I've read or an audit I've run, or delivering webinars or lectures, it feels great to make even the smallest difference.

What advice would you give other people in a similar position?

Get involved. There are so many opportunities for student, apprentice and newly qualified radiographers out there, you just have to grab them. Ask questions, despite how stupid you might think they are; I can guarantee you that there will be others who are wondering the same thing. Put your hand up and be counted. Take on a rep role and help shape the future of the profession into the image that you and your colleagues will want to be part of.



Enhanced Practitioner

There may be some variation in the title terminology used to describe roles at this level of practice across the UK (e.g. **Senior Practitioner** in Scotland, **Specialist Practitioner** in Wales and Northern Ireland, **Senior/Specialist Radiographer** in England) and also in relation to the individual's area of practice (e.g. **Senior Sonographer**).

1 Introduction

Enhanced-level practice makes a significant and essential contribution to patient care and clinical services. Enhanced Practitioners contribute to all four pillars of practice, but particular emphasis is placed on their senior expertise at a specific pillar, commonly but not exclusively in radiography, the clinical pillar of practice. Enhanced Practitioners in clinical imaging and radiotherapy therefore develop proficiency and skills that employ a higher level of knowledge, skills and attributes than those obtained for initial registration with the Health and Care Professions Council (HCPC) or its equivalent. They have developed beyond the practitioner level based on their clinical competence and/or expanded knowledge base in a specialist area. This may include, for example:

- Clinical reporting
- Radiation protection
- Specific modalities
- The delineation of organs and volumetric outlining
- Specific modalities, such as cross sectional imaging modalities, nuclear medicine or mammography
- Practitioner-led mark-up and 'on treatment' review
- Non-medical prescribing and/or
- Contribution to multidisciplinary decision-making about a patient's cancer management plan

They have enhanced knowledge, skills and attributes that may be underpinned by formal master's level 7 qualifications; for example, holding a postgraduate certificate or diploma relevant to their area of practice. Although they are not necessarily required to demonstrate fulfilment of the advanced-level practice requirements across all four core pillars of practice, there is an expectation that they will work and develop across elements of all four pillars, including, for example, research for those following a research radiographer or clinical academic pathway.[6]





2 Scope of practice

Enhanced-level practice therefore deploys critical thinking and problem-solving with guidance and support from experienced professional colleagues and across multidisciplinary teams. Enhanced Practitioners consequently work both autonomously and as part of a team, informed by the underpinning evidence base. Given the importance of evidence-based clinical practice, Enhanced Practitioners should be routine users of research, be able to appraise the evidence base and understand how that affects patient outcomes, their own practice and that of their department. They may also be actively engaged in clinical governance, including audit and service evaluation.

Enhanced Practitioners lead teams of staff relating to their specialist area within a local setting/service. They will have a growing knowledge of service development and evaluation methods in the context of their own role, including harnessing service user and public engagement to inform and improve service delivery and implement change.

3 Enhanced Practitioner knowledge, skills and attributes

Enhanced practice level knowledge, skills and attributes were not included in the Delphi study. Therefore, themes have been collated based on the advice of the education and career framework steering group, taking into account the work of relevant national frameworks, including: Scotland's nursing, midwifery and allied health professions development framework;[7] the modernising allied health professions post-registration careers framework in Wales,[8] Northern Ireland's Advanced AHP Practice Framework;[9] and also Health Education England enhanced clinical practitioner apprenticeship FAQs.[10]

The following knowledge, skills and attributes are relevant to individuals looking to develop into, or those already in, an **Enhanced Practitioner role**. These are in addition to those already determined as essential knowledge, skills and attributes required at practitioner level.

Enhanced Practitioner knowledge

An Enhanced Practitioner requires detailed knowledge and understanding of the following, unless otherwise stated:

- Legal, ethical and professional responsibility for the enhanced practice role, including autonomy, limits of own competence and professional scope of practice
- Extensive understanding of approaches to communication in the context of a situation and a person or people's needs, including psychosocial needs of service users, their families and/or carers
- Skills for persuading and influencing
- Disease processes within own scope of enhanced practice
- Current and emerging technology relative to own scope of enhanced practice
- Pharmacology relative to own scope of enhanced practice
- Principles and evidence base underpinning specialist interventions/activities within own scope of enhanced practice
- Developing knowledge of NHS issues that may affect the performance of service delivery in own area of practice, including healthcare policy and practice, evolving population needs, healthcare inequality, practice guidance and standards

Enhanced Practitioner knowledge (continued)

- Current models of care, and awareness of those that are developing, in the context of own scope of enhanced practice
- Anti-discriminatory practice for area of service, including approaches to reduce health inequalities, improve health outcomes and assess and implement change
- Relevant quality assurance (QA) and quality control (QC) measures for own scope of enhanced practice
- Mentoring, coaching and supervision theories underpinning development of those working in own team
- Service development and evaluation methods, including patient and service user engagement, and implementation of change for own area of enhanced practice
- Principles underpinning effective healthcare leadership to lead and empower others to safely prioritise and deliver care
- Developing knowledge of research techniques within and relevant to own scope of enhanced practice
- Knowledge of national and local research governance processes and local infrastructures and personnel available to support enhanced-level practice researchers



Enhanced Practitioner skills

An Enhanced Practitioner should be able to:

- Apply enhanced clinical reasoning skills and professional judgement to act autonomously, while seeking advice and/or the professional skills of others when necessary, to underpin and justify decision-making for the delivery of timely, safe and effective patient care
- Critically apply enhanced knowledge to enable evidence-based practice in the context of uncertainty or situations of multiple differential diagnosis/treatment pathway options, in own area of practice
- Use enhanced communication skills relevant to own scope of practice to frequently share information, ideas, evaluation and assessment of situations to form partnerships of care and promote teamworking
- Challenge, and be willing to support others who challenge, practice that does not appear to follow legal, ethical or clinical guidelines or is not in the service user's best interests
- In addition to self, facilitate others to implement legal duties, follow ethical procedures and seek or develop guidance to be followed for scope of practice
- Proactively review practice to prevent discrimination and remove barriers to support diversity of people and the implementation of fair practice
- Undertake and facilitate assessment processes as necessary in relation to health and safety and infection prevention and control measures
- Implement and support others to fulfil safeguarding duties and procedures in a timely and proactive manner
- Efficiently organise/manage workloads and minimise avoidable risk within own scope of practice to facilitate effective teamwork at maximum levels of performance and care in trusted, safe environments
- Proactively apply, and facilitate others to apply, the principles of patient, public and professional partnerships, person-centred care and values-based practice to enhance people's experiences of care and co-create services that meet service users' needs and preferences
- Practise critical self-awareness: seek feedback and undertake reflection, lifelong learning, clinical supervision and continuing professional development
- Support resilience and self-care through role modelling and the implementation of measures that assist with the maintenance of health and wellbeing for staff, service users, patients, families and carers

Enhanced Practitioner skills (continued)

- Support the training and development of others in the workplace by seeking out learning opportunities for all, sharing own enhanced knowledge and learning, and providing and seeking feedback to inform future practice and the learning needs of others and self
- Act as a learning mentor, coach or facilitator, as appropriate, to support a culture of enquiry, learning and development
- Demonstrate the ability to improve and enhance quality of care, including through engagement in audit, service evaluation and improvement projects within own scope of enhanced practice
- Evaluate own leadership skills in line with national leadership frameworks for healthcare and enhanced-level practice, seeking feedback and advice regarding barriers and challenges to leadership development
- Demonstrate effective leadership in relation to own scope of enhanced practice and related team, including to facilitate the delegation and leadership skills of others in own team
- Effectively manage projects within own scope of practice
- Contribute to research projects within own scope of enhanced practice: build research skills and seek advice and collaborative support to achieve research goals to provide evidence for assurance of practice or development



Enhanced Practitioner attributes

An Enhanced Practitioner should actively demonstrate and/or uphold the following:



- Work autonomously, performing in a way that reflects awareness of own ability and capabilities at enhanced-practice level
- Respect and uphold the governance requirements of the employer, local services and national initiatives, exhibiting accountability for actions, transparency and cultures of professional practice
- High standards, including at times of high pressure and volumes of work, ensuring safety, security and assurance for service users
- Role model enhanced communication skills that allow for open and honest discussion and sharing of information with service users, public and professionals across a range of situations in own scope of practice
- Actively value the range of people and cultures that present in clinical practice, demonstrating compassion or empathy that is appropriate to the context and people's needs
- Act to promote and support the good health and wellbeing of all people
- Work collaboratively to achieve shared goals of best care
- Proactively develop trust and support in services that value staff, clinical excellence and care
- Act in a manner that provides reassurance through considered, transparent and thoughtful decisions
- Actively promote a learning culture in own area of practice
- Champion enquiry, question and critically use the evidence base to inform services and engender learning across the team
- Actively seek opportunities to develop leadership, service development and research skills

4 Enhanced Practitioner – four pillars of practice

Enhanced Practitioners make significant contributions to patient care and service delivery. This section provides an overview of how those working at an enhanced level may achieve this through level specific contributions towards the four core pillars of practice.

Clinical Practice

Click icon to revise your understanding of the four pillars of practice

An Enhanced Practitioner's expertise is focused in a specific area or areas of clinical practice or service; for example within a modality of imaging, area of service provision or within a defined research post. Enhanced Practitioners therefore make a significant and essential contribution to patient care and clinical services.

Enhanced Practitioners will naturally contribute across the four pillars of practice, but particular emphasis is placed on developing their expertise within a specialist area. The specific roles that are undertaken in enhanced-level practice will vary across different specialisms. However, this level of practice has the common thread of employing a higher level of clinical skills than those obtained at initial registration.



Education

Click icon to revise your understanding of the four pillars of practice



Enhanced Practitioners will preferably complement their development from initial registration to enhanced-level practice with underpinning knowledge and education to the level of postgraduate certificate (PgCert) or postgraduate diploma (PgDip) relevant to their area of practice.[11] It is expected that skill development will largely be facilitated via workplace-based learning, with guidance and support from multidisciplinary and multiprofessional teams.

Enhanced Practitioners will engage with education to develop students, members of staff and other health and care professionals, as appropriate, in the workplace.

Enhanced Practitioners actively promote a positive teaching and learning culture encompassing students, staff and service users, with regular feedback and evaluation of the opportunities that are available. They will outwardly practise and role model critical self-awareness, including seeking feedback and undertaking reflection, lifelong learning, clinical supervision and continuing professional development.

Leadership and Management

Click icon to revise your understanding of the four pillars of practice



At Enhanced Practitioner level, leadership skills will be developed at service level and may include operational management on a day-to-day basis for their area and related team.

Enhanced Practitioners work with interprofessional teams, demonstrating leadership of self and own area of enhanced practice.

Enhanced Practitioners should seek feedback and advice regarding barriers and challenges to leadership development, helping them to evaluate their own leadership skills in line with national frameworks for healthcare and enhanced-level practice.

They will facilitate the delegation and leadership skills of others within their own area of service.

Research and Development

Click icon to revise your understanding of the four pillars of practice

As there will be a range of Enhanced Practitioner roles, some may not be undertaking primary research themselves while others may do, particularly if working within a protocol-driven, research-focused post. It is expected, however, that all Enhanced Practitioners must actively use research to inform their practice and that of their colleagues.

Clinical audit and service evaluation should be a developing part of Enhanced Practitioner roles, alongside working with the wider team and service users to ensure service improvement and innovation are implemented. Enhanced Practitioners may therefore lead service improvement projects and/or support others in the team to do so.





5 Education, qualifications and accreditation

- Skills development through workplace-based learning
- Knowledge development underpinned by further formal education and development at postgraduate level relevant to own area of practice:

Qualification level

- FHEQ level 7/SCQF level 11

Academic award

- Postgraduate certificate (PgCert)/postgraduate diploma (PgDip)

Enhanced practitioners do not necessarily progress to an advanced level across all of the four pillars of practice and will therefore not be expected to complete a full post-registration master's or doctoral level programme of study and research (unlike advanced and consultant practitioners respectively), although this should remain an option for those individuals who wish to do so.

6 Indicative curriculum

An Enhanced Practitioner will demonstrate postgraduate level expertise within an area of clinical practice or specialty that establishes a sufficient range of knowledge, skills and attributes to lead safely, effectively and efficiently. The development of that expertise may include the completion of underpinning PgCert/PgDip level education, but the practitioner may not necessarily be required to work across all four pillars of practice at an advanced level.

Enhanced-practice roles cover a multitude of practice and developing specialist areas and therefore there is no one indicative curriculum. However, as a minimum, any learning should enable them to demonstrate the knowledge, skills and attributes provided. It is possible that Enhanced Practitioners will have a competency-based background underpinning their role and will not yet have a formal qualification at this level, although further formal education relevant to their role and level of practice is encouraged. Alternatively, an individual may be studying for a full master's degree or complete master's level modules to underpin their development for this role, perhaps with an intention to move across to an advanced practitioner role, depending on local service and population needs and the individual practitioner's aspiration.



Adele McGrath

Case Study



What is your current role?

I'm an Enhanced Practitioner, working as a specialist breast radiographer at the Northern Health and Social Care Trust breast imaging and assessment unit. This is a busy department that provides breast screening, symptomatic, family history and oncology services to approximately a quarter of the population of Northern Ireland.

Read on

My typical day involves producing accurate, high-quality mammograms in either the hospital or out in a mobile screening van.

Both environments can be extremely busy and challenging but are slightly different in terms of the types of patients I see. Symptomatic clinics at the hospital are usually for patients who have been referred through their GP, with a concern regarding their breasts. These are 'one-stop' clinics where patients will be clinically examined, undergo imaging, such as mammography or breast ultrasound, and biopsy if needed, all on the same day.

While out on the mobile screening van I usually work with one other breast screening radiographer or assistant practitioner. Patients aged 50–70 who are registered with a GP in Northern Ireland are automatically invited to attend for breast screening every three years, with those over 70 encouraged to contact the unit to make their own appointment. (The age for invitation can vary slightly across the UK). Breast screening is intended to detect breast cancer at a very early stage, mostly before the patient is aware of any problem, to help provide a better long-term outcome. When a potential problem is picked up through screening these patients are invited back to the breast unit in the hospital for further assessment.

What skills and knowledge do you need for your job?

All aspects of my role require a high degree of emotional intelligence, excellent communication, good teamwork and time management skills.

As my hospital clinic patients are symptomatic, they can be extremely anxious, so it is important that the team and I provide a caring and compassionate environment for them. At the symptomatic clinic I will undertake mammograms and further additional views (as identified by the radiologist or, in some sites, a reporting radiographer), as well as help set up patients for stereotactic breast biopsies, and/or assist in ultrasound.

I will also regularly attend the weekly multidisciplinary team (MDT) meetings with the wider breast team, made up of our advanced practitioners, breast radiologists, oncologists, breast care nurses, breast surgeons and pathologists. At these meetings the team will discuss patient results (imaging and histology) from the previous week to determine the best course of action and treatment needed.

The mobile screening van is an extremely busy environment that requires multitasking to book in patients and undertake two-view digital mammography in a relatively short appointment.

Quality assurance (QA) is another very important part of mammography due to the need for high-quality images within the discipline. As a member of the QA team, I have to make sure all tests are within tolerances and if not, troubleshoot. Audit is also a big part of our job, as the service and individuals need to know that the whole process is functioning as it should; training and self-assessment form a major part of this.

I am also the unit's autism champion; a role I am passionate about and have personal knowledge of. This involves making the visit to my unit as easy and informative as possible for people with autism so their experience is as relaxed and as pleasant as it should be.

Being satisfied in my current role, I have no plans for future progression, but mammography can open a lot of different doors that can lead to advanced and consultant practitioner roles, such as film reading, clinical examination, ultrasound, interventional procedures, health promotion, management, education and training, and research and development.

How did you get into this role?

I completed a BSc Hons degree in radiography at the University of Ulster's Jordanstown campus. After graduating I worked as a locum for two years, followed by two years in a specialist orthopaedic hospital, before working in my local hospital in general radiography for another two years.

I then accepted a band 6 training post at the Northern Health and Social Care Trust's Breast Imaging and Assessment Unit where I currently work, completing my postgraduate certificate in mammography practice through the University of Derby in 2004. I have worked in this department ever since, developing my skills through annual in-house training, CPD and various other training events. These have helped me to keep my knowledge and skills current and up to date.

Have you had the support you needed to progress?

Because I trained while doing the job, the support was always there, but allocated study time would have been beneficial.

Having a mammography course closer to home would have helped with my work–life balance but I'm aware this isn't always possible. When I was completing my degree, mammography was only briefly mentioned – I think universities have a duty to highlight this area of radiography and give it the recognition it deserves as an interesting and progressive career pathway, and this will help with recruiting the future workforce too.

What do you find most rewarding about your job?

It sounds a cliché, but you are saving lives through early cancer detection. Most screening patients have no symptoms when they come for their three-yearly mammograms and to help them get diagnosed and onto the path to recovery is very rewarding. Also, putting patients at ease at one of the most difficult times in their lives, and seeing them come back every year for their follow-up appointments, makes you realise you are part of a very important service and are making a difference.

What advice would you give anyone interested in a similar career?

Experience general radiography first and then visit a breast unit if it's not a service they provide in your setting. Get a feel for it and ask loads of questions. Mammography is fast-paced, and it can be both physically and emotionally demanding, but it provides a great work–life balance, with opportunities for growth and progression while working as a member of a team.

Amerdeep Davis

Case Study



What is your current role?

I work in the Beacon Centre at Musgrove Park Hospital in Taunton, providing cancer care as a Palliative Specialist Radiographer.

Read on

Since being in post, I have worked on my clinical portfolio and extended my scope of practice. I can consent patients for palliative radiotherapy for bony metastasis and am currently working on a virtual simulation portfolio that will be supported by a full advanced practice master's qualification through Sheffield Hallam University. I support our on-treatment review service, seeing patients with all types of cancers and sites who are undergoing treatment, managing radiation acute side effects and referring accordingly. I also support our treatment team as a band 7 radiographer treating all cancer sites and stages.

I have started to work on a follow-up clinic that contacts most palliative patients two weeks after radiotherapy. This follow-up clinic is intended to help support patients who may be experiencing side effects from their treatment and to help them manage these. It allows us to collect information in addition to our referral information gathered so that we may audit our palliative service and ensure that our practice is evidence based. Weekly attendance is made to a peer review specific to our department. I am also part way through an advanced practice master's aimed at specialist roles such as this, with the intention of being accredited by the College of Radiographers (CoR) once completed (in 2023).

How did your career reach this stage?

I have more than 10 years of clinical experience in radiotherapy, working in both pre-treatment and treatment as a rotational radiographer. I have worked across three hospitals, supporting many students and newly qualified staff. I have been working as a senior radiographer for more than nine years, expanding my leadership role and skills. Having been rotational between pre-treatment and treatment, I have developed strong clinical skills on how to prepare and treat patients of all sites, especially palliative patients. In my previous role I also worked on a simulator, using a lot of the skills that are needed in a palliative specialist role, particularly ensuring that the treatment for each patient is safe, accurate and reproducible. I have developed problem-solving skills that have allowed me to flourish in such a role.

I am passionate about providing high-quality patient care, providing the best possible treatment for each patient that is tailored to their wants and needs. Undertaking my master's has been key to my development and my plans for my future career progression, particularly as I have been able to tailor the modules to suit this role. I will be completing the physical assessment and clinical reasoning course and the non-medical prescribing course, which will be very useful for a 'one stop service' for the palliative radiotherapy pathway. This will allow me to complete the entire pathway for most palliative patients, making the role completely autonomous.

What support has been helpful?

I am currently working alongside a consultant radiographer in palliative radiotherapy and this has been helpful in shaping my role and supporting my in-house competencies as well as my education. Without the consultant radiographer, the wider oncology team could have provided similar help. However, the consultant clinical oncologists (CCOs) have a huge workload so I may not have had the same level of support as when working with the consultant radiographer (CR), particularly since the CCOs see all patients in their site specialty while the CR sees palliative patients, making her the expert in palliative radiotherapy.

What do you find most rewarding about your role?

Helping patients through their treatment pathway and beyond. Palliative treatment should not be viewed purely as end of life treatment; it is about helping someone facing a terminal diagnosis to live out the remainder of their life with dignity and comfort. This can sometimes mean supporting the patient's family and friends as well. Developing my practice through additional education will ensure that all four pillars of advanced practice are met and will allow me to truly be an expert in palliative radiotherapy. Every module I do is to enhance my role; I enjoy learning towards this goal as I know this will unlock further knowledge and skills that I can use to enhance the care that I am able to provide our patients.

Any advice you can give to others interested in this area of work?

I would focus on seeking out further education and development once in the role as this will enable you to build up your experience, knowledge and skills so you can undertake more senior roles. In-house training can be supported with a portfolio and understanding the process of how this is implemented and supported by the department and wider hospital is important.

I would also advise others to seek out support within their department. Working with a consultant radiographer has really helped me in my training, in becoming more autonomous and in developing my role towards becoming an advanced practitioner in palliative care.



Advanced Practitioner



1 Introduction

Advanced practitioners will have developed advanced clinical competence in their specialist area or across a broad range of practice. They will display a high degree of autonomy and complex decision-making skills that are underpinned by a wider foundation of knowledge, skills and expertise from their previous roles to enable safe, effective and person-centred care. Possessing a full master's degree relevant to advanced clinical practice, they will meet the four pillars of advanced clinical practice (clinical practice, education, leadership and management and research and development), using critical thinking and problem-solving to research and analyse complex situations throughout their practice. Drawing on their education and training and clinical experience, and employing the available evidence base, they will have extensive clinical responsibilities and input into the education of interprofessional colleagues and service development. Advanced practitioners will demonstrate leadership capabilities, managing whole episodes of clinical care in their area of practice. Those wishing to progress to consultant practitioner level will need to embark on doctoral-level study to gain the education and training to support their future research activity.

2 Scope of Practice

Within the clinical practice component of the four pillars of advanced clinical practice, the Advanced Practitioner will have significant clinical and leadership responsibilities. They will often need to manage others, facilitating the development of staff through planning, education, supervision, mentoring and coaching. They will have leadership responsibility in their area of practice, responding to local and national developments, and will engage across professional boundaries at a local and national level. This may see some working within advanced clinical practice multi-professional roles and within advanced uni-professional clinical roles in imaging and radiotherapy.

Advanced Practitioners must be routine users of research, being able to critically appraise the evidence base to develop their practice and perform service innovation and improvement. They will be actively engaged in practice and service development along with research, seeking patient and public involvement to enhance patient care and service delivery. They will routinely undertake audit of their own practice and that of others to provide evidence and assurance of safe, effective clinical practice and to take immediate action when standards are not met.



3 Advanced Practitioner knowledge, skills and attributes

For individuals looking to develop into, or those in, an **Advanced Practitioner role**, it has been identified through the expert consensus panel that the following knowledge, skills and attributes are relevant. These are in addition to those already determined as essential knowledge, skills and attributes required at Practitioner and Enhanced Practitioner levels.

Advanced Practitioner knowledge

An Advanced Practitioner requires in-depth knowledge and understanding of the following, unless otherwise stated:

- Legal, ethical and professional responsibilities of the advanced practice role, including autonomy, limits of own competence and professional scope of practice
- Advanced communication, influencing and negotiating skills
- Disease processes within own scope of advanced practice
- Current and emerging clinical technology within own scope of advanced practice
- Pharmacology within own scope of advanced practice
- Principles and evidence base underpinning specialist interventions/ activities within own scope of advanced practice
- NHS organisations, the integrated care system and issues impacting upon own scope of practice and the wider healthcare agenda
- Multiprofessional working and the impact of working across organisational and system boundaries
- Mentoring, coaching and supervision theories underpinning development of those working within a multidisciplinary team
- Education theories underpinning development of those working within a multidisciplinary team
- Service development and evaluation within own scope of practice
- Patient, public and practitioner partnerships in the development of clinical pathways and service redesign
- Principles underpinning effective project management
- Principles underpinning effective leadership
- Research techniques within own scope of practice
- Research governance processes, local and national infrastructures and personnel available to support advanced practice researchers

Advanced Practitioner skills

An Advanced Practitioner should be able to:

- Demonstrate autonomy in clinical decision-making within own scope of practice
- Evidence a critical understanding of their broadened level of responsibility and autonomy when working at advanced practice level
- Utilise advanced communication skills
- Use shared decision-making skills to support person-centred care and manage complex clinical situations
- Develop practice in response to changing population needs and technological and professional development
- Operate critically in accordance with latest guidance and current evidence base
- Demonstrate ability to improve and enhance quality of care provided by self and others
- Efficiently organise and manage workloads for self and others
- Identify development needs of self and those in the team and act as a supervisor, mentor, coach and educator to increase the confidence and competence of others
- Contribute to the understanding of the impact of practice on planetary health by adopting and promoting sustainable and environmentally friendly approaches
- Support multidisciplinary team learning using a range of learning, teaching, supervision, feedback and assessment methods
- Demonstrate effective leadership in relation to own scope of practice, the team they lead and the multidisciplinary environment they are working in
- Effectively manage projects
- Engage in audit and evaluation projects and use the results to inform practice developments
- Contribute to research and implement evidence into practice
- Actively engage with patients and members of the public in relation to research and service delivery
- Use a range of techniques for the dissemination of research findings

Advanced Practitioner attributes

An Advanced Practitioner should actively demonstrate and/or uphold the following:



- Practise autonomously and in a way that demonstrates an understanding of the role of the advanced practitioner
- Role model high levels of professionalism to others in the team and nationally
- Show commitment to, and evidence of, operating at the highest standards across all four pillars of advanced clinical practice
- Works in a collaborative and inclusive way, promoting respect, tolerance and integrity
- Ability to work well under pressure, while caring for themselves and recognising when others may require further support
- Is dynamic and self-motivated and demonstrates a responsive leadership style to achieve results
- Communicate complex issues clearly to a wide range of stakeholders, with empathy and compassion
- Recognise the sustainability and environmental impact of decisions and actions and demonstrate a commitment to minimise any resultant negative effects on planetary health
- Ability to step into challenging situations involving patients and apply a values-based approach
- Positively lead on addressing concerns raised by patients, carers and members of the multidisciplinary team
- Support learners at all levels in the multidisciplinary environment
- Share knowledge, expertise and experience with others and create a culture of learning, mentoring and coaching
- Create a culture in which practice is continuously reviewed and improved
- Formulate plans that translate strategy into action and evaluate change, outcomes and impact
- An ability to lead research projects, dissemination and implementation

4 Advanced Practitioner – four pillars of practice

The Advanced Practitioner role is built on the foundations of working across all four core pillars of advanced clinical practice – clinical practice, education, leadership and management, and research and development. Advanced practice is embedded in a number of areas of imaging and radiotherapy practice, but needs to expand to meet the changing national agenda, service delivery models and demand, and in response to technological change.[12]

Clinical Practice

Click icon to revise your understanding of the four pillars of practice

Advanced practice is developed through education and expertise to support increased ability for problem-solving and clinical decision-making and for developing practice outside standard practitioner roles.

Advanced Practitioners have advanced clinical skills in their area of practice. They provide clinical support and advice to other practitioners and work with a high degree of autonomy. The Advanced Practitioner promotes critical thinking by analysing, evaluating and synthesising information in complex clinical situations. Using a range of skills and strategies, Advanced Practitioners communicate complex and uncertain findings to patients, carers and other stakeholders. They lead new practice and service developments, using evidence-based information to inform developments.



Education

Click icon to revise your understanding of the four pillars of practice

Advanced Practitioners will have a full master's degree; they will also contribute to the education of others as a routine part of their role. Advanced Practitioners will facilitate education and training, both inside and outside their own organisation, to develop others. They will promote a positive learning culture encompassing students, staff and service users. Advanced Practitioners will act as role models facilitating teaching, learning and assessment. In practice, this occurs through acting as a supervisor, mentor and coach to support others. Where applicable, they will engage with higher education providers to support curriculum design, development and delivery. Possessing the skills to critically assess educational provision through evaluation and learner feedback, they will be integral to providing and developing a high-quality and positive learning environment for all learners.

Leadership and Management

Click icon to revise your understanding of the four pillars of practice



There is a large and evolving body of evidence about leaders and leadership in healthcare.[13,14,15] At Advanced Practitioner level, leadership skills are essential for effective, efficient and timely person-centred patient care. Advanced Practitioners lead services and immediate teams, including operational management, and beyond this to influence and implement policy and practice. They may also lead interprofessional teams across pathways. Advanced Practitioners must be proactive, take the initiative and use leadership skills to further these qualities in other staff.

Research and Development

Click icon to revise your understanding of the four pillars of practice



Advanced Practitioners will be engaged with research as one of the four core pillars of advanced clinical practice.[16] Advanced Practitioners will be routine users of research, ensuring their practice and that of their team aligns with the most appropriate and current evidence base. Clinical audit and service evaluation are an important part of an Advanced Practitioner's remit but working with others to develop these skills is also key to ensuring that service delivery is optimised. Some Advanced Practitioners will be involved in clinical trials or in leading data collection for these in their area of speciality. Other Advanced Practitioners will be developing their own research or working with teams to deliver an evidence base; for example, collaborating with academics, industry and methodological experts to develop, deliver and disseminate their own research. A full master's degree provides the skills to underpin research activity, be that empirical or qualitative research.

5 Education, qualifications and accreditation

- Full master's degree (FHEQ level 7/SCQF level 11) as a minimum
- Completion of leadership training, such as that provided by the NHS Leadership Academy
- College of Radiographers advanced practitioner accreditation scheme

6 Indicative curriculum

Advanced practice roles in imaging and therapy services cover a multitude of practice and specialist areas and therefore there is no one indicative curriculum. However, qualifications to underpin advanced clinical practice for the profession must be at master's level. As a minimum, the curriculum should cover the knowledge, skills and attributes as provided for the advanced practitioner and enable the learner to fulfil the four pillars of advanced clinical practice, and therefore meet the College's requirements for advanced practitioner accreditation.

Further information

- NHS multi-professional framework for advanced clinical practice in England
- NI advanced AHP practice framework
- Modernising allied health professions' careers in Wales post-registration framework
- Framework for advanced nursing, midwifery and allied health professional practice in Wales
- NHS Education for Scotland nursing, midwifery and AHP development framework
- Health Education England Centre for Advancing Clinical Practice

Tamsin Arnold

Case Study



What is your current role?

I'm an Advanced Practitioner Radiographer based at St Richard's Hospital in Chichester, which is part of the University Hospitals Sussex NHS Foundation Trust that covers a large section of the south coast.

Read on

My specific position is as a computed tomography (CT) head reporting radiographer with an integrated role in radiology governance.

My reporting role focuses on providing a dementia imaging service. In the past CT was used to rule out differential pathologies. With the advent of isotropic detectors and the ability to perform multiplanar reconstructions, CT can now be used to assist in the diagnosis of dementia. This is achieved by providing a severity scoring of specific dementia features and identifying patterns that may indicate which type of dementia is present. This is a developing area, and I am constantly learning and improving my knowledge.

CT head reporting radiographers provide an excellent service in all areas of brain reporting, with some even looking at CT angiographic studies. The majority of the work is based in an acute setting and is time critical. The work I undertake is chronic and more suited to my part-time working hours. This provides me with an excellent work-life balance.

Working in governance requires a certain amount of patience and determination. I'm sure my colleagues sometimes wonder what I am about to say… but as we are all committed to providing excellent standards of care, we work together to make progress. I am interested in medicines management, but I will try to make improvements in any area where change is needed. I think it is particularly important to ensure that patients are represented and I try to support any changes they suggest if it is practical.

In addition to my job, I support the radiography profession in two ways. I am the co-chairperson of the **CT Head Reporting Special Interest Group**. We are an independent group of national and international practitioners who are supported by the Society and College of Radiographers (SCoR). Since the group was founded, it has been a forum to support colleagues with educational opportunities and professional issues. CT head reporting radiographers are often lone workers within their trusts and the group is essential in facilitating a relatively small professional group to connect with each other.

I have also been appointed to the SCoR **CT Advisory Group (CTAG)**. I hope to use this opportunity to influence best practice and develop opportunities for CT radiographers within our profession.

How did you progress to this role?

When I was a student working in the East Midlands I really enjoyed my time in CT and was inspired by the cross-sectional team. I qualified in 2001 after gaining my undergraduate degree from the Royal Military College of Science (Cranfield University). After qualifying as a radiographer, I spent time in X-ray consolidating my knowledge. I was able to rotate through CT quite quickly and became part of the on-call rota. This gave me some experience of lone working and taking responsibility for my own decisions.

I had to move to a different trust to gain a full-time cross-sectional imaging role. As I was relatively newly qualified, I am grateful to the operational manager for taking a chance on me. I loved working in MRI and found the work mentally challenging yet rewarding, but discovered I was more suited to the faster pace of CT. I gain quite a lot of satisfaction from knowing that a CT list is efficient and that we are maximising the number of patients we see while providing excellent standards of patient care and image quality.

I completed my master's degree in medical imaging (CT) at the University of Portsmouth over three years. It was difficult working full-time and participating in the on-call rota, but my employer gave me some study days. By completing this course, I gained a lot of practical knowledge in a short space of time that bolstered my relative inexperience. This gave me the confidence to suggest positive changes to the services we provided and to be able to deputise for the CT superintendent. The underpinning knowledge benefits me to this day as I am able to apply the principles of radiological physics to amend protocols and teach others. I am able to use the techniques I learnt to critically appraise professional publications, draw out the relevant details and apply this to the papers I am starting to write.

My dissertation explored the use of CT in cardiac imaging, which at the time was limited by the slice thickness that could be acquired. As scanner technology advanced, we were able to perform new techniques and I was able to use the knowledge gained in my dissertation to support the introduction of our CT cardiac angiography service. This has been successful, and we have been sharing our experiences through the Goodwood Cardiac CTA Course.

I have faced some personal challenges as a parent carer, and this has led me to be enthusiastic about governance. I uncovered some significant issues with our local education system and won a tribunal. Rather than place blame I wanted them to improve their services. I feel the same way about radiology governance and if we identify an area of improvement I feel it is important to take action.

What support has proved helpful or you'd like to see?

Without a doubt I receive a huge amount of support from my colleagues both in my own trust and on a national level through the groups I am involved in. The pandemic has really highlighted how much we rely on each other for advice, information and emotional assistance. I have met some amazing radiographers who have been dedicated to CT and have learnt a great deal from them.

I was incredibly lucky to receive funding for formal postgraduate education. I feel I have used this academic knowledge to influence my work and improve the services we provide. It would be great to see more formal academic opportunities provided for CT radiographers and the funding for attendance to be given the same priority as other modalities.

The biggest disappointment I have experienced is not being able to report scans, despite being qualified earlier in my career. Sadly, I was not alone in this situation and radiographers faced barriers such as lack of resources, radiologist mentors and managerial support during the early stages. The early pioneers of radiographer CT head reporting worked to overcome these hurdles by promoting this area of career progression while striving to meet and exceed the high standards required.

Radiographer reporters are now commonplace and the number of CT head reporters is on the increase. In retrospect, the additional experience I have gained working clinically has been beneficial to my current job. While it took some time to become recognised and established in my role, I have benefited from a supportive radiologist mentor and line manager. I maintain key relationships with the CT superintendents and the CT team by working clinically as required.

What do you find most rewarding?

The most rewarding part of my role is knowing that our patients have access to high-quality services. This is true in both aspects of my job. The dementia reporting service has a direct impact on patient care by improving diagnosis and treatment pathways. The governance work is more general, but it is a great feeling to give your colleagues positive feedback, especially when this comes directly from patients.

I really enjoy providing educational opportunities and feel that this is the key to developing an enthusiastic and knowledgeable team. I organise clinical governance sessions, provide workshops to other professional groups and talk on courses and external study days. I have benefited greatly from the knowledge of others and I feel that we all have a responsibility to participate in the education of others.

Do you have any advice for people looking at similar progression?

CT head reporting is becoming much more commonplace. I would urge anyone who is interested to consolidate their general CT knowledge and research the postgraduate opportunities available. I would encourage colleagues to get involved with their local neurological multidisciplinary team and spend time with other reporters. In my opinion it is essential to find a supportive mentor, usually a radiologist or experienced reporting radiographer, and ensure the management team agree with the plan.

Anyone interested in reporting can join the **CT Head Reporting Special Interest Group**. There are many introductory videos covering basic pathology and we hold a monthly educational meeting online. We have published examples of written schemes of work and job descriptions to support our members in creating their own role. We would assist any member who is not recognised for the role they undertake. We are a supportive group and welcome anyone with an interest in neurology.

The radiography profession is changing and there are many opportunities for extended roles. Anything is possible!

Andy Creeden

Case Study



What is your current role?

I am an Advanced Practitioner Radiographer at University Hospitals Coventry and Warwickshire NHS Trust, specialising in plain film X-ray reporting. I report on chest, abdomen and musculoskeletal X-rays. My role also involves 'hands on' radiography within the inpatient, outpatient and emergency department plain film settings, as well as teaching and mentoring, audit, radiation protection, IT liaison and quality assurance.

Read on

How did you reach this position?

I qualified in radiography, obtaining a BSc (Hons) from the University of Liverpool in 1997. Following qualification, I worked in a variety of general radiography positions, both directly for the NHS and via an agency. I also spent two years working overseas in a developing country. The experience I gained in these roles allowed me to develop a broader and deeper understanding of radiography and its place within wider healthcare systems. To obtain my current role, I undertook a postgraduate certificate in appendicular skeletal reporting at Birmingham City University. I have subsequently undertaken postgraduate courses in both axial skeletal reporting and chest and abdomen reporting. I then completed my master's degree by undertaking a 20,000-word dissertation project.

What support have you had?

As one of the first two advanced practitioners in my department I was very lucky to have the support of forward-thinking managers, who ensured that the new role was planned, approved and funded before I even started training. This ensured that once qualified I was able to transition smoothly into my new role. While training I also received a lot of support from a number of radiologists and radiographers who took the time to mentor and encourage me.

Throughout my work post-qualification, the ongoing support of many radiologists has been extremely valuable. Our growing team of advanced practitioners also provide excellent peer support, both from a professional and personal point of view.

What do you find most rewarding?

It's great to be able to make a real difference to patients' journeys. Identifying an injury or pathology and knowing that I have allowed the patient to get the right treatment or management is very satisfying. Completing a research or audit project or implementing a service improvement is also very rewarding since they have the potential to improve the experience or safety of future patients.

However, I think I most enjoy sharing my skills with others. Whether through mentoring trainee reporting radiographers or radiology registrars, arranging CPD sessions for colleagues, teaching student radiographers at the local university or delivering workshops for other allied health professional (AHP) groups, it feels great to pass forward the knowledge that others have shared with me.

What advice would you give to someone moving into advanced practice?

Radiography advanced practice is a much wider role than just reporting, so seek to gain the widest possible range of experience in your early career. As your experience develops, try to place more emphasis on activities relevant to the four core pillars of practice: expert clinical practice; education; leadership and management; and research and development (including audit and service evaluation). Having a CPD portfolio that demonstrates that you are working in this direction will really count in your favour when a training opportunity comes up.

Consider activities such as shadowing existing reporters, completing **elearning for healthcare** image interpretation modules, undertaking a small service improvement project, delivering teaching or training sessions for colleagues or students, getting involved in an audit or writing for the Society of Radiographers' *Synergy* and *Insight* publications. Most of all, get stuck into radiography and grab opportunities with both hands!

Gary Kemp

Case Study



What is your current role?

My area of advanced practice is in Palliative Radiotherapy and virtual simulation at Southend University Hospital. So a large part of my role and responsibilities covers autonomous palliative field placement with plan approval and prescription on behalf of the consultant for delegated patients. This involves localisation of treatment site and application of fields or, where necessary, outlining target structures with addition of appropriate margins to aid in field placement. I may also need to determine treatment technique and field arrangement, depending on the treatment site.

An integral part of my role is working with the consultant, getting advice and problem-solving to decide the most appropriate approach to treatment. We need to consider immobilisation and feasibility of treatment delivery, including technique and tolerability for those with considerable comorbidities, with reference to intended dose-fractionation in complex cases.

Read on

What advanced practice does your job involve?

As the palliative service has developed, I've gained additional responsibilities such as getting patient consent and acting as a non-medical prescriber for any treatment-associated side effects that can be managed with medication. The ability to accurately interpret and use diagnostic imaging and correlate this with planning scans is fundamental to accurate treatment planning, but also enables me to highlight to the referring consultant any areas of potential concern that could cause either acute or longer-term issues for the patient. Future proofing is key in making treatment-related decisions so there is scope to treat areas in close proximity if required at a later date.

Linked to the virtual simulation component of my job is breast field placement, including outlining tumour bed volumes and field placement while considering patient histology and risk factors for clinical decision-making. Extending from this is the autonomous outlining of nodal volumes; axilla, supraclavicular and internal mammary nodes.

Other sites integrated into the virtual simulation role include the outlining of critical structures as requested by consultants for certain specific treatment areas and other tumour sites, such as skin and lymphoma, to aid in expediting service delivery. For these sites, I work alongside the consultant to make clinical decisions on treatment technique and take a leading role in clarifying the most suitable technique based on clinical factors such as treatment location and intended depth of treatment (if superficial).

How did you reach this stage in your career?

I attained my master's degree in radiotherapy and oncology, but this was general to the profession and not linked to my area of advanced practice. So, I undertook further postgraduate modules in areas such as localisation and delivery of palliative radiotherapy, information giving informed consent and non-medical prescribing, as well as a Fellowship of the Royal College of Radiologists (FRCR) course which I was offered.

I continually gained experience through independent field placement/nodal outlining, supported by consultant review and approval, before I developed autonomous practice. I spent time with numerous different consultants to develop consultation and assessment skills to build into both my consent practice and non-medical prescribing. In addition, I developed an enhanced understanding of dosimetric principles to aid decision-making, as well as dose-fractionation schedules and their relative merit in different clinical scenarios that I could apply to my practice with reference to patient performance status and disease burden.

What support has been valuable?

The consultants have been very pro radiographer-led practice and so always very supportive during any discussions about my professional development and willing to help me gain experience. When I've undertaken further education that required additional time away from my routine daily role, such as shadowing in clinics/ward rounds, the service manager was always very amenable to providing cover, giving me sufficient time to learn and gain experience.

Another radiographer also had palliative radiotherapy as their area of advanced practice, but only had autonomous practice with one consultant. When I started working alongside them, we synergistically accelerated the development of the palliative and virtual simulation pathway to develop the service, supporting one another so that we both attained autonomy across all areas at the same time.

What do you find most rewarding?

The ability to have an area of advanced practice that has a plethora of nuances, which means I'm always seeing new things and learning different skills to apply to future practices. I also appreciate having the trust of the consultants that my work is at a level to be autonomous without having to have all volumes/plans reviewed for a group of delegated patients.

What advice would you give others moving into advanced practice?

I have been lucky to work in a department that supports such radiographer-led practices and development. It depends on how you intend to integrate further education modules into practice, but discussion with the service manager and consultants is important to gain an appreciation about what is expected from both sides from your learning and development.

Gaining experience by seeing many different clinical scenarios is of insurmountable benefit as it can be applied to your future practices and help with problem-solving and decision-making in a timely manner.

Claire Senior

Case Study



What is your current role?

I'm an Advanced Practitioner in rheumatology in the Rheumatology Department at Dorset County Hospital, working as part of a multidisciplinary team (MDT) to provide follow-up care and management of rheumatology patients. I see patients with predominantly inflammatory arthropathies, including rheumatoid arthritis, inflammatory and psoriatic arthritis subtypes, and osteoporosis patients, which is my subspecialty as a dual-energy X-ray absorptiometry (DXA) reporting radiographer.

Read on

I manage my own caseload of patients and contribute to answering the department's advice line enquiries and overseeing the blood test monitoring program. I have recently taken on coordinating the initiation of zoledronate therapy for patients with osteoporosis who are seen at both University Hospitals Dorset NHS Foundation Trust and Dorset County Hospital (DCH). I also report DXA scans for the radiology department and work closely with the lead DXA radiographer at DCH and osteoporosis specialists from University Hospitals Dorset to write the reporting and vertebral fracture assessment protocols.

I participate in the monthly Dorset osteoporosis MDT meetings held between University Hospitals Dorset and DCH and am part of the osteoporosis working group that develops guidelines for osteoporosis management with the local clinical commissioning group and county primary care services.

In my role I work alongside the lead rheumatology practitioner to manage the practitioner team regarding workplace protocols, staffing rosters and appraisals. This position requires meetings with senior members of the hospital management team and being involved in finance decisions, waiting list management and business and governance meetings.

In my DXA reporting role, I have participated in the training of the new DXA radiographer staff. I am a mentor for the current DXA reporting trainee, providing support in her learning and signing off her portfolio. Within the rheumatology team I have provided education regarding osteoporosis management. As part of my role I have qualified as a supplementary non-medical prescriber, which enables me to prescribe medications alongside the specialist pharmacist and rheumatologist according to clinical management plans that I write for each patient. I participate in the South West DXA Reporting Group, which meets quarterly to discuss topics of interest and current research.

Lastly, I am actively involved in research. I am part of an international research group investigating attitudes towards advanced radiographic reporting practice across Europe. I was invited to co-author an article for the Radiography journal regarding radiographer practice in osteoporosis care and fracture management that was published in October 2021. Within the rheumatology department I am clinical lead for a pilot trial into patient access to digital medical records.

I have recently completed a Master's (MSc) in Advanced Clinical Practice at the University of Exeter, which had an emphasis on developing research. As part of this master's, I have developed a new DXA reporting proforma that is in use clinically at DCH. Since completing my MSc I have applied for and been awarded a **pre-doctoral clinical and practitioner academic fellowship** (PCAF) with the **National Institute for Health and Care Research** (NIHR) with a view to developing a PhD proposal regarding osteoporosis and cervical spine fracture management.

What steps did you take to reach this position?

Following my A-levels I studied for a BSc in anatomy and physiology at Leeds University. After graduating I did work experience at a local major trauma hospital and decided to apply to the University of Exeter to study radiography, qualifying in 2009. I worked in general X-ray and the cardiac catheterisation laboratory before moving into DXA. I studied for a postgraduate certificate in bone densitometry reporting at Derby University in 2017 and took on the lead DXA reporting radiographer role at my previous trust.

I decided to apply for an MSc in Advanced Clinical Practice at Exeter University in 2019 to support my interest in pursuing research and teaching, and while studying the first year of my MSc the advanced practitioner role was advertised at DCH. The role was advertised as being suitable for allied health professionals, but I was wary because I had limited experience in therapeutic patient management. Luckily the interviewing team were very open to providing suitable training and I had a very supportive team and consultant who supported my development and guided me through achieving my competencies in rheumatology patient management to become an advanced practitioner.

What support have you had and is there anything else that would have helped?

My journey to this role has been hard at times and I'm very grateful to the support of my family and also to Dr Karen Knapp, who I've stayed in touch with since qualifying from Exeter University. My PgCert in DXA reporting was funded by my previous trust; however, there was no protected study time allocated, which made it a challenge to complete while working full-time with a young family. This stood me in good stead for taking on the MSc, which was self-funded and as such afforded me limited protected study time until recently.

I feel more people would pursue further education in radiography if there was support in terms of provision of protected study time, as well as funding support for postgraduate courses. I was lucky enough to win a scholarship for part of my MSc costs but funding the remainder of the course has been a challenge, so more access to scholarships or bursaries would open this opportunity to more people. I have been lucky enough to have support and encouragement from Dr Knapp to pursue my postgraduate studies, including my current PCAF, which is something I wouldn't have thought I could pursue due to my full-time clinical role.

What do you find most rewarding about your role?

The therapeutic intervention element – using my new skills to make a treatment decision and the benefits it can have when I see patients returning to the clinic for follow-up visits. I love the feeling of a clinical decision I've made making a difference to someone. The role is seriously challenging, and not something I ever thought I'd be doing as a radiographer. It affords a great deal of autonomy and responsibility so while I can develop my role and learning in accordance with my own personal academic interests to an extent, there is also a lot of pressure that comes from managing my own caseload.

I feel this role is the embodiment of the idea of advanced practice; it doesn't matter what our background is, we can train to use our experience and understanding to cross the boundaries of our profession and work alongside other allied health professionals and nursing staff to achieve the same goals. I feel proud of my radiography background and feel this role is a great example of what we can do beyond the traditional remit of a radiographer.

What advice can you offer others?

I would advise anyone wanting to pursue a similar advanced practice role to talk to other allied health professionals and nursing staff in the area you are interested in. What do they do? What could you bring as a radiographer to that area? Our skills are far more transferable than we think they are! Also, there are many postgraduate qualifications in advanced practice, and these are key to developing and demonstrating understanding of the advanced practice role and to gaining experience in research techniques, governance and leadership that are key parts of any advanced practice role.



Consultant Practitioner

1 Introduction

In considering the range of knowledge, skills and attributes of the highest levels of the four pillars of practice, Consultant Practitioners demonstrate expert clinical capabilities that are built on previously developed experience and learning. They display independent decision-making in complex situations to enable service development by generating an evidence base. They are at the forefront of their field and lead development of original thinking for fundamental change to achieve service evolution. The Consultant Practitioner strategically synergises the pathway, service, organisation and system by working with service users, partners and the practice community via local, regional, national and international perspectives to improve service delivery. Consultant Practitioners build and lead teams to facilitate strategic directional change. Possessing master's degrees or the equivalent and holding or working towards a doctoral level qualification, they have the ability to research and analyse complex situations. They will have significant clinical responsibilities and will usually also hold education responsibilities in both clinical and academic environments. They will demonstrate extensive leadership abilities.





2 Scope of Practice

Within the Clinical Practice component of the four pillars of practice, the Consultant Practitioner demonstrates innovation and professional clinical leadership, using values-based approaches towards patients, carers and all those working in the health and care environment that impact positively on the working of multidisciplinary services. Consultant Practitioners practise autonomously, have extensive expert knowledge of policies, procedures and guidelines and strategically analyse and apply evidence for evolving practice. They communicate via multiple media and educate those who require their expert knowledge while ensuring the clinical service adheres to legal and ethical requirements. They use and promote expert-level critical thinking and generate new evidence to improve services through strategic leadership and research. They actively lead engagement with stakeholders, including patients and the public, to strategically develop and enhance services.

They facilitate audits and supervise the performance of others while applying appropriate governance methods. This role is often performed at the leading edge of the profession and carries significant leadership responsibilities. Consultant Practitioners' accountability frequently translates into working beyond the local experience to include national and international contributions, and at professional and statutory regulatory body (PSRB) level as advisors and champions of the radiographic profession.

3 Consultant Practitioner knowledge, skills and attributes

For individuals looking to develop into, or those already working in a **Consultant Practitioner role**, it has been identified through the expert consensus panel that the following knowledge, skills and attributes are relevant. These are in addition to those already determined as essential knowledge, skills and attributes required at Practitioner, Enhanced Practitioner and Advanced Practitioner level.

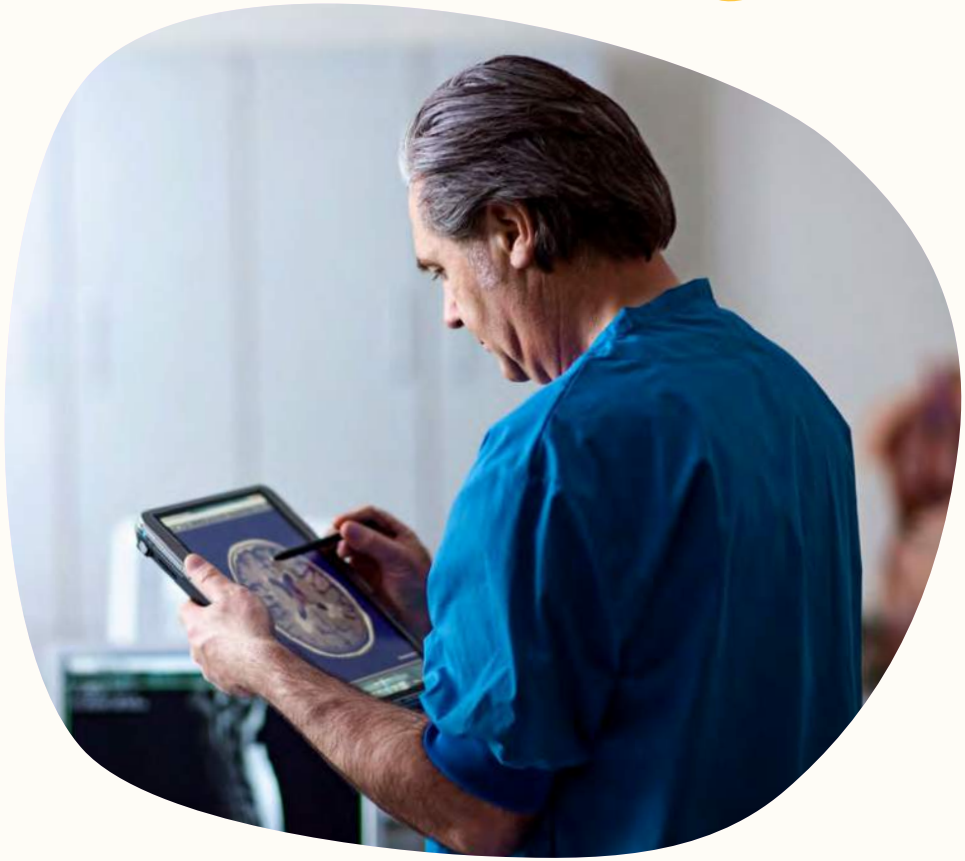
Consultant Practitioner knowledge

A Consultant Practitioner is required to have expert knowledge and understanding of the following, unless stated otherwise:

- Legal, ethical, and professional frameworks governing the consultant practitioner role and the wider healthcare agenda
- Advanced communication and relationship building at local, national and international level
- Disease processes within own scope of practice and how to clearly communicate these to others
- Current and emerging clinical technology and technological developments in the profession and how these might impact on the service
- Pharmacology relevant to the professional role and developments in the field
- Current and emerging radiation protection principles (where appropriate) within own scope of practice and to educate and advise the wider workforce
- Principles and developments underpinning specialist interventions/ activities within own scope of practice
- Application of existing and evolving professional body, national and international guidance relevant to own scope of practice and wider profession
- NHS organisations, the integrated care system, NHS and healthcare issues within and beyond own scope of practice
- Values-based practice across the care pathway, service, organisation and system
- Mentoring, coaching and supervision theories that support provision of service and wider development of the profession
- Education theories to support staff development and workforce transformation and to promote excellence

Consultant Practitioner knowledge (continued)

- Curriculum development, accreditation and learning cultures
- Theories relating to service development, evaluation and research
- Evaluating the impact of relevant service development, evaluation and research on health outcomes and person-centred care
- Shared decision-making and **patient, public and practitioner partnerships** in service development, evaluation, innovation and improvement to meet local and national health outcomes
- Values-based and strategic leadership and management theory
- Risk-management strategies
- Consultancy, influencing, negotiating and persuading approaches and techniques
- How to develop a research and inquiry culture of development, improvement, evaluation and innovation, capacity and capability



Consultant Practitioner skills

A Consultant Practitioner should be able to:

- Demonstrate expert clinical skills, a high level of autonomy and complex clinical decision-making within own scope of practice, whilst advocating for patients in an interdisciplinary environment
- Interpret complex data and, in situations where information is incomplete, make informed decisions
- Use expert communication skills relevant to own scope of practice and wider service arena and communicate complex information clearly
- Where relevant, prescribe drugs within own scope of practice and ensure governance is in place to enable safe prescribing practice within area of expertise
- Use expertise and the current evidence base to establish values-based practice across pathways, services, organisations and systems
- Lead on service development locally and nationally, review outcomes and communicate learning to the wider community
- Negotiate, persuade, influence, enlist and build links with the wider community of practitioners to enhance service delivery
- Provide values-based and strategic leadership across care pathways and services at a local, national and/or international level
- Lead development of others within their team, the multiprofessional community and the profession
- Advise at local, regional, national international levels within own scope of practice
- Provide expertise within own scope of practice that supports appropriate clinical decision-making in interdisciplinary teams while promoting patient advocacy and shared decision-making with patients and service users
- Influence and contribute to curriculum design, delivery and assessment to support pre- and post-registration education in the profession
- Evaluate and/or accredit the quality of education provision and support quality enhancements in education
- Lead on research and contribute to the evidence base
- Integrate research into education and clinical practice
- Collaborate on grant application submissions and draw on relevant expertise to maximise grant success
- Disseminate outcomes of research using a variety of methods
- Develop a research and enquiry culture of development, improvement, evaluation and innovation, capacity and capability
- Use expertise to provide consultancy that affects service, staff and professional development at a local, national and/or international level

Consultant Practitioner attributes

A Consultant Practitioner will actively uphold and demonstrate the following:

- Practises autonomously in a way that demonstrates an understanding of the strategic role of the Consultant Practitioner
- Role models high levels of professionalism and critical thinking at a local, national and international level
- Commitment to, and evidence of, operating at the highest standards across all four pillars of consultant-level practice
- Communicates highly complex and often uncertain issues clearly to a wide range of stakeholders, with empathy and compassion
- Extensive leadership qualities, having authority to successfully negotiate, persuade, influence and inspire others in the pursuit of improved professional and clinical outcomes
- Ability to take a broad view on the factors that impact on service delivery rather than focussing solely on clinical, research, management or education aspects of their day-to-day roles
- Through drive and commitment to the profession and patients, demonstrate an ability to focus on the immediate and long-term requirements of service provision
- Willingness to actively support, contribute to and promote the work of professional, regulatory and government bodies, professional networks, Higher Education Institutions (HEIs) and wider education provision
- Commitment to develop and support cultures of physical and psychological safety, health and wellbeing through strategic actions within teams and the organisation as a whole
- Personal attributes to engage and lead others in the wider team and nationally to adopt a research and enquiry culture of development, improvement, evaluation and innovation

4 Consultant Practitioner – four pillars of practice

The Consultant Practitioner role is built on the foundations of working across all four pillars of clinical practice, education, leadership and management and research and development, as well as consultancy. Consultant practice is embedded in a number of areas of imaging and radiotherapy practice but needs to expand to meet the changing national agenda, service delivery models and demand, and in response to technological change.

Clinical Practice

Click icon to revise your understanding of the four pillars of practice

Consultant Practitioners will undertake clinical practice at an expert level. They apply expert knowledge in the implementation and evaluation of protocols, guidelines and policies at operational and strategic levels within professional regulation, codes of practice and legislation to lead service development. The Consultant Practitioner models and promotes expert critical thinking by analysing, evaluating and synthesising information, which may not be complete, to address complex or novel problems so an informed judgement can be made. Using a wide range of skills and strategies to communicate on complex matters or situations, Consultant Practitioners influence the development of guidance and/or governance legislation, applying expert practice and knowledge to lead service developments.

This is likely to include evaluation of operational or strategic protocols, guidelines and policies that contribute to implementation of codes of practice. Consultant Practitioners are cognisant of equality and diversity principles in a values-led service, acting as a champion and role model of values-based practice and professionalism. In their scope of practice, Consultant Practitioners succinctly provide and share complex information that contributes to ongoing safety, management of risk and continuity of care. They promote the development and application of expert knowledge, skills and attributes to strategically lead and enable innovative and effective person-centred care, both in an area of service delivery and across the wider organisation.

Education

Click icon to revise your understanding of the four pillars of practice



The Consultant Practitioner should be able to demonstrate critical understanding and application of the principal pedagogical and andragogical theories to enable wide-ranging learning facilitation and assessment of skills to practise. They should be able to reflect in-action and on-action, while supporting others to develop their reflective practice skills. Consultant Practitioners should create opportunities for others to develop their learning, teaching and assessment skills (LTAs). They should be able to evidence the positive impact of their LTAs across organisations. The Consultant Practitioner will influence and implement organisational LTAs as part of a community with key stakeholders and act as an experienced facilitator, supervisor, mentor and assessor to enable others to embrace and act in these roles as their careers develop. By engaging with educational providers, the Consultant Practitioner will lead and contribute to curriculum development and delivery as a service evolves.

Leadership and Management

Click icon to revise your understanding of the four pillars of practice



Consultant Practitioners lead on the promotion, development and application of expert knowledge, skills and attributes in their own area of practice and the wider service.

At Consultant Practitioner level, leadership skills are essential for effective, efficient and timely person-centred patient care, to lead services and to provide operational management as necessary. Transformative and compassionate leadership is applied to influence and implement policy and improve practice by working with interprofessional teams across care pathways. Consultant Practitioners must be proactive, take the initiative and use leadership skills to develop these qualities in other staff. By collaborating across stakeholder groups and organisations to lead services, learning from and through leadership should be communicated at a strategic level using presentations, reports and policies at local, national and international forums. Consultant Practitioners should evidence positively impactful leadership skills and behaviours across organisations. This will develop the workforce in alignment with national

Leadership and Management (continued)

priorities within a culture that demonstrates exemplary policy creation and leadership qualities. Consultant Practitioner leadership skills provide healthcare staff with original and creative solutions to address complex problems that must be delivered on within the available resources. Consultant Practitioners lead on research projects and develop others to undertake their own research for service evolution.

Research and Development

Click icon to revise your understanding of the four pillars of practice



Consultant Practitioners have specialised knowledge, some of which is at the forefront of a field of work, which they use as the basis for original thinking and/or research. Consultant Practitioners demonstrate critical understanding of differing research approaches and methods of analysis, enabling the development of this by others through a supportive culture of sharing good practice generated from learning achieved by audit, research and quality improvement. By employing highly specialised theoretical and practical knowledge, consultant practitioners generate innovative solutions to complex problems and apply this knowledge and skills base to make decisions and help others to achieve the same.

Consultant Practitioners help others to develop evidence-based learning with methods that include the principles of learning from errors in combination with research data, statistics and contemporaneous issues and thinking. Consultant Practitioners encourage critical appraisal and synthesis of evidence to inform practice evolution in a thriving culture of audit, research and quality improvement. This is reinforced by recognition and application of strategic responsibility for the development, revision and embedding of best research governance, including the application of Good Clinical Practice (GCP) research principles when appropriate,[17] ethics, data protection and confidentiality. Consultant Practitioners promote a strong research culture at service and organisational levels that crosses professional boundaries. Consultant Practitioners lead by example to promote sharing of good practice, locally, nationally and more widely via peer-reviewed processes, supported by the lessons learned from audit, quality improvement and research activity, and encourage others to do the same.

5 Education, qualifications and accreditation

Minimum requirement

Master's degree (FHEQ level 7; SCQF level 11), with expectation of completing a doctoral qualification (FHEQ level 8; SCQF level 12), if one is not already held

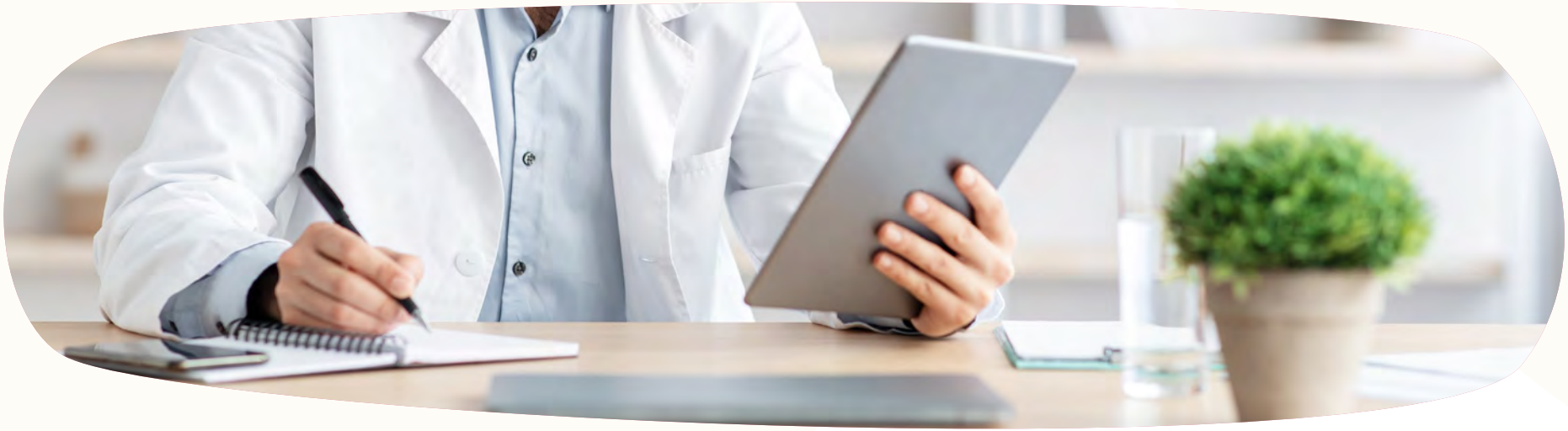
Expected requirement

Doctoral qualification (FHEQ level 8; SCQF level 12)

The College of Radiographers offers a **Consultant Practitioner accreditation scheme**.

Consultant practitioners may also be eligible to apply for a level of **fellowship with Advance HE** through alignment of their educational roles, responsibilities and activities with the **UK Professional Standards Framework for teaching and supporting learning in higher education**.[18]

Completion of leadership training such as that provided by the **NHS Leadership Academy**.



6 Indicative curriculum

Consultant Practitioner roles cover a multitude of practice and specialist areas and therefore there is no indicative curriculum. Qualifications and experience to underpin consultant practitioner roles should be at a master's level as a minimum, with doctoral aspirations and evidence to demonstrate working at this level to meet CoR consultant accreditation requirements. As an example, the Consultant Practitioner would be expected to produce and contribute to a wide variety of publications and professional networks.



Further information

- Health Education England multi-professional consultant-level practice capability and impact framework
- NHS Wales Modernising allied health professions' careers in Wales: A post-registration framework
- NHS Education for Scotland nursing, midwifery, and allied health professions development framework
- Macmillan Cancer Support allied health professional competence framework for those working for people affected by cancer

Paul O'Riordan

Case Study



What is your current role?

I'm a Consultant Radiographer in musculoskeletal (MSK) practice at the University Hospitals of Leicester NHS Trust. This was both a new role for the trust and a new role for me when I joined the trust in 2019. Working across modalities in an area as broad as MSK allows my clinical practice to be informed in a manner that I could not have achieved in single modality practice.

Read on

How has it helped you develop?

This system-specific (MSK) focus lends itself to developing the expert clinical practice of a consultant practitioner. Over my years of practice, I have gained an understanding of the resources required to develop teams of skilled individuals through consistently providing postgraduate higher education while also providing structured local mentorship to both special trainees in radiology and reporting radiographers and sonographers. My leadership and management skills have developed as my knowledge and experience have developed. I have progressed from being solely involved with local service development to regional and now national involvement in organisations where I can be a voice for the potential contribution of imaging practice in multiprofessional and radiographer-specific role development.

Focusing in an area of practice has allowed me to lead on projects that capture the patient journey from primary care and follow the patient's contact with imaging, ensuring that we reduce or eliminate unnecessary imaging while also making sure the right imaging test occurs at the right point in a patient's journey. Engaging with audit and service evaluation early in my career and leading on the development of local projects prepared me for progressing to research. Immersing my clinical practice in a defined area of practice and regular engagement with stakeholders in multidisciplinary forums or involvement in patient pathways highlights the necessary areas of interrogation and potential research and provides the opportunity for collaborative work with translational outcomes.

How did you reach this position?

I completed MSK appendicular reporting training at a London higher education institute (HEI) in 2004, followed by axial and specialised imaging in MSK postgraduate modules. I built on this by publishing some e-learning modules related to radiographic reporting. In 2008, I completed a computed tomography (CT) postgraduate certificate (PgCert) and again followed this with publishing some e-learning modules related to CT, including CT imaging of spinal fractures as I had an interest in multimodality trauma imaging through my combined reporting and imaging role.

In 2011, I had the opportunity to manage a reporting service and this allowed me to focus on the area of reporting, where I gained valuable insight into and experience of the complexity of managing a reporting workload in an imaging department. I also gained experience in developing enhanced and advanced practice to respond to these complexities. Through engagement with stakeholders from both community and within the trust I then worked for, I started to look beyond the established model of modality-specific practice to address patients' needs.

In 2013, I was granted the opportunity to undertake a PgCert in the reporting of selected magnetic resonance imaging (MRI); I discussed with the HEI my interest in focusing on the subject of MSK practice as opposed to a modality-based approach. In 2016, I negotiated the opportunity to complete a PgCert in MSK ultrasound and ultrasound-guided injections, and finally in 2019. I was able to bring my qualifications together in an MSc in reporting.

What sort of support have you found helpful?

People who supported my learning and development have provided me with great support throughout my career. I am grateful to those who set a high bar so that it ensured their trust in my development and safeguarded patient care but also facilitated development when it was at times contentious. On the few occasions that I have moved trust, it has always been for an opportunity that was not, at that time, available to me and I take this forward in discussing the expectations and opportunities of my colleagues.

As a newly qualified reporting radiographer, my reporting lead at the time provided me with a great understanding of how to develop change over time and to bring colleagues from different backgrounds with you on a journey that requires a transition of thought both among those who have concerns about the proposed change but also by those proposing and facilitating change. This ensures that change occurs in the correct and safe manner, with regular reflection and with patient care being at all times the motivation for decision-making.

What I lacked at times in my career development was someone to point towards to demonstrate that my proposed development was being done elsewhere successfully. There is a responsibility on all of us who have benefited from opportunities to make others aware so that they can point towards successes when pushing boundaries locally.

What are the next steps for you?

Pursuing doctoral study is the next academic target for me. Having focused on an area of practice this no longer seems as daunting but is instead a natural progression. I would hope that we will be able to work with our HEI colleagues to ensure the design and content of level 7 MSc pathways and doctoral-level study will support the development and evolution of advanced and consultant practice roles in the future. This may reduce the academic journey and burden on future advanced and consultant practitioners as more well-established and common roles emerge. I do not consider myself to be an academic as such and I would encourage people not to be put off by the postgraduate academic requirements when looking at a career in AP or CP as each step becomes a natural progression as your career progresses.

What do you find most rewarding?

The depth of knowledge that my career choices have allowed me to develop brings me great satisfaction. I have experienced the transition from an inexperienced radiographer sitting in meetings or educational forums where I felt my role was more of a listener and observer to becoming a confident and informed professional who feels empowered to bring my voice to those environments in the knowledge that I can add value by presenting or in joining the discussion. It brings me great satisfaction to see others observing the benefits of cross-modality practice in MSK and beyond and pursuing a similar pathway in their own career.

I initially struggled with my choice of profession but for those in a similar position I can assure you that through personal investment and application it is remarkable how interesting and rewarding our profession can become as we learn to understand its unique and powerful voice and its place in modern healthcare.

Is there any particular advice you can offer?

I have been fortunate to have met or worked with some of the pioneers of formal radiographer reporting and I thank them for their work that has helped facilitate my career. It is important for those who follow to demonstrate respect for their pioneering work in picking up the baton and looking towards the next boundary.

Just as we have all learned from their initial models of practice, I would ask that those coming into enhanced, advanced and consultant practice look at current roles and developments as the foundation for future roles and further development. I can see my own role pointing towards potential for further specialisation in areas such as rheumatology practice, adding value in a more focused manner to a patient pathway to add value to great patient care. Most of all I would say, maintain focus on the end goal and don't let stumbling blocks along the way send you off course, as the end result is justly rewarding.

Neill Roberts

Case Study



Click the video to watch Neill talk about his career.

8 min



What is your current role?

I am a Consultant Therapeutic Radiographer working at the Leeds Cancer Centre at St James's University Hospital and Sheffield Hallam University (SHU).

My specialist area of practice is in breast radiotherapy and oncology. My expert practice domain is radiotherapy pathway-wide with responsibility for a discrete patient caseload from referral through to discharge. Patient management also takes in certain systemic treatments for breast cancer (apart from chemotherapy). In this capacity I work independently alongside clinical and medical oncologists.

I have an academic/education role also, being seconded with SHU, where I lecture to undergraduate and postgraduate students on breast cancer radiotherapy and advanced practice and career development. Acting as an MSc dissertation supervisor maintains the link from clinical placement to the higher education institute (HEI) for our postgraduate students.

The research element of my role is fulfilled through acting as local principal investigator on breast radiotherapy trials and recruiting or following up patients into practice-changing studies such as **PRIMETIME** and **ATNEC**. In addition, my role with SHU has allowed me to collaborate with the team on grant applications for studies looking into the management of breast oedema and access to breast radiotherapy for certain patient groups.

Leadership and management encompasses all of these aspects when I engage and promote my role and passion for allied health profession (AHP) career development and, obviously, the development of breast radiotherapy. My input at a national level has included development of UK breast radiotherapy consensus guidelines, work with national bodies such as the National Institute for Health and Care Excellence (NICE) and Royal College of Radiologists (RCR), sitting on trial management groups and, most recently, helping to develop a regional framework for non-surgical oncology advanced clinical practice (ACP) training and development with Health Education England (HEE).

I am fortunate to be a sitting member of the Society and College of Radiographers (SCoR) **Consultant Radiographers Advisory Group (CRAG)** and actively participate in the **Breast Radiotherapy Interest Group (BRIG)**. Internationally I have presented on UK career development to the **European Organisation for Research and Treatment of Cancer (EORTC)** group, was invited to speak to the **European Society for Radiotherapy and Oncology (ESTRO)** conference on developments in breast radiotherapy techniques and joined the **European Federation of Radiographer Societies (EFRS)** as a member. I also sit on the international advisory board for the *Radiography journal*.

How did you progress to this role?

My career path and experience has been varied following qualification as a therapeutic radiographer from the University of Leeds in 2001. I have held roles in most areas of radiotherapy practice, from treatment delivery to being a pre-treatment advanced practitioner. I actively pursued opportunities to broaden my skill set in radiotherapy, including a secondment to the Yorkshire Cancer Research network.

I completed an MA in public health at SHU in 2012 to give me a broader understanding of the determinants of health, healthcare policy and qualitative research. This experience allowed me to identify my area of interest within breast cancer and the positive impact that therapeutic radiographers could play on patient outcomes and experiences through their cancer journey.

What support have you had?

I have been fortunate to enjoy an exceptionally supportive and nurturing environment at Leeds as my career has developed, initially from radiotherapy managers and latterly from the wider multidisciplinary team as my level of seniority has increased in the organisation.

In addition, I have engaged with and been supported by our professional body (SCoR) in identifying and accessing opportunities for self-development along the way. This has included engaging with various working parties, being invited to chair sessions at SCoR's national annual radiotherapy conference (ARC) and more recently the support of CRAG and the College of Radiographers (CoR) consultant practitioner accreditation process.

Opportunities that could help the wider profession have also been identified for me, through which I have hopefully affected practice in a positive way, such as reviewing for Radiography journal and representing SCoR at national clinical directors' meetings on the future of the oncology workforce. My work helping to develop training frameworks for the next generation of practitioners is a gift that I would have valued when I started, and I hope will help support and grow the next consultant radiographers.

What do you find most rewarding?

I always say how privileged I feel in this role. Not only does it afford me much personal satisfaction in its varied and broad scope, with the opportunity to have a direct impact on so many people (staff, students and colleagues), but I am also routinely able to affect many patients' outcomes and experiences by my actions at what is often a very low point in their lives. I feel very proud to be able to do this as a therapeutic radiographer, demonstrating what we can achieve with the correct skills, support and motivation.

Any advice for potential consultants?

Don't rush into it! Make sure you have experienced as much as you can in the fundamental aspects of your chosen discipline (whether this be therapeutic or diagnostic radiography). Seek out and take advantage of any opportunities you feel will help you to grow as a practitioner, even if they might seem a little daunting or 'left field' at the time.

Take the time to develop or grow your particular interest as not everyone wants to diversify from generalist practice, and these can be equally as rewarding as specialist roles. If you do, then advancing practice involves a significant degree of determination and motivation to optimise your impact, if you are not committed or motivated then it is ultimately the patients who will see through you!

Steven Savage

Case Study



What is your current role?

I am a Consultant Sonographer at Yeovil District Hospital, performing and teaching a range of interventional ultrasound procedures. I have specific responsibility for ultrasound clinical governance throughout Yeovil District Hospital NHS Foundation Trust. I provide and coordinate clinical ultrasound training for radiological staff (including consultant radiologists) and non-radiological staff (GPs and emergency and respiratory teams) and initiate and develop flow pathways for rapid-access diagnostics, especially of the head and neck.

Read on

I am an expert in musculoskeletal (MSK) and interventional ultrasound and ultrasound-guided steroid injections, presenting and teaching at many universities and professional groups on MSK ultrasound. I am a point of contact for sonographers wishing to enhance their career progression or for ideas regarding introduction of new services.

As a qualified sonographer, I perform and independently report general, obstetric and gynaecological, musculoskeletal, interventional, eye, vascular and neonatal hip ultrasound examinations. I request further imaging when required.

I have performed interventional MSK ultrasound since 2008, including steroid injections, paratenon stripping and joint aspirations. Following a shortage of interventional radiologists in the department, and an increase in complex referrals, from 2015 I trained to undertake core biopsies and fine needle aspirations.

I now perform 80% of ultrasound interventional cases. I both perform and teach interventional ultrasound procedures for chest and abdominal drainages, and during the early phase of the COVID-19 pandemic I used ultrasound as a diagnostic tool to identify positive patients before any rapid testing was available.

I have written national guidelines for musculoskeletal ultrasound for the United Kingdom Accreditation Service (UKAS) and recently assisted in writing the new book, *Musculoskeletal Ultrasound: How, Why and When*.

I provide national advice and support to the Society and College of Radiographers (SCoR) for a range of professional issues involving consultant and ultrasound practice. The most recent steering group I've been part of looked at radiographer prescribing and I helped write a document on consultant radiographer guidance.

What steps did you take to reach this position?

I completed my postgraduate diploma in medical ultrasound while serving in the army and qualified as a sonographer in 1993. I then did an MSc in ultrasound while working as a superintendent sonographer.

Previous combat medical training in the Royal Army Medical Corps stood me in good stead for interventional procedures.

What do you find most rewarding?

I enjoy teaching and providing a responsive ultrasound interventional service throughout the trust. Knowing my ideas and diligence to introduce or improve a service that makes a difference to the patient experience and speed of diagnosis is truly rewarding.

What support has or would have been helpful?

My MSc was self-funded and undertaken completely in my own time.

Funding would have been helpful, but this was not in place within my trust at the time. I was one of the first cohorts of consultant sonographers, so no defined pathway was in place.

Do you have any advice for others on progressing as you have?

Do take advice from those who have trodden this path before! SCoR is publishing guidance on the consultant radiographer role so please take time to read it.

Looking for gaps in the services on offer is also a good place to start. The shortage of radiologists was the catalyst for further extending my role.

Morag Stout

Case Study



What is your current role?

I have been a General Medical Consultant Sonographer with NHS Greater Glasgow and Clyde (NHSGGC) since 2010. While I am based at Glasgow's Queen Elizabeth University Hospital, I cover 10 sites that together look after a population of over 1.4 million people.

Read on

I work clinically around half the time, scanning across multiple acute and ambulatory care sites where I, like all of our sonographers, teach trainee radiologists and sonographers. I believe the clinical role of a consultant sonographer is crucial. I have had a passion for ultrasound since I was a student radiographer, and this has never waned.

I qualified as a radiographer at a time when it was difficult for radiographers to progress into general medical ultrasound. Nevertheless, my tenacity paid off and I qualified as a sonographer in 1998 and haven't looked back. Caring for the patient and the challenge of finding a helpful diagnosis in their journey excites me to this day.

I developed into this role through building up extensive clinical experience, completing an MSc, having active involvement in research, publication, presentations, strategic planning and lecturing, all enabling me to demonstrate my ability to work across all four pillars of consultant level practice and consultancy.

What skills have been important in your career to date?

I believe leadership starts from the ground up. In order to create a team that feels supported and indeed to continuously develop a service, you must keep sight of the challenges facing sonographers and the wider workforce in the NHS. I pride myself on being a good, objective listener and communicator. This helps me to identify service gaps and areas for improvement and expansion. Collaborating with sonographers, radiologists and clinicians serves to optimise patient pathways.

What are the main aspects of your role?

Since I've been in post, NHSGGC has formed an ultrasound steering group, which I chair. This includes representation from radiologists and sonographers from each sector and from management. We work together to ensure evidence-based practice is adhered to in regard to vetting, scanning and reporting of ultrasound. I facilitate sonographer audit, CPD and discrepancy meetings. As practitioners, we are all accountable for our actions but governance in ultrasound is predominantly my responsibility – whether it be clinical or otherwise.

As well as clinical teaching, I guest lecture at Glasgow Caledonian University on its general medical ultrasound postgraduate course and have mentored undergraduates in their final year dissertations. Strong links with educational establishments are key to the consultant role. Most recently, I have become clinical lead for the new NHS Scotland Academy, where we plan to start a national ultrasound training programme. I also guest lecture at national events such as those run by the British Medical Ultrasound Society (BMUS).

Involvement in audit and research is another key component of the role, both as a researcher and as a facilitator or advisor for sonographers and the wider medical workforce. I have been involved in many projects over the years but of late, these include the 'Galvani' study, in which immunocompromised patients have a line placed into their spleen to stimulate their immune system, and a national project with the Scottish Society of Gastroenterology that has shown huge variability in the vocabulary used in ultrasound of the liver. The group aims to develop a national protocol for patients being scanned for abnormal LFTs and in particular, look at language used in cases of suspected cirrhosis and fatty liver. We are shortly due to publish a paper on this work. I am proud that many of our sonographers have successfully completed their MSc and I help students identify a topic (that is often beneficial to our service) and then appropriate funding streams.

Professional leadership is the most significant part of my role. I am approachable and strive to maintain a supportive, collaborative workplace. I play a lead role in consultations with clinicians around imaging pathways. I am currently working with stroke physicians and radiologists to identify best practice and access for transient ischaemic attack (TIA) and stroke across NHSGGC and with orthopaedic oncology around the use of 'lumps and bumps' ultrasound.

I have a special interest in venous thromboembolism (VTE) and regularly contribute to our NHSGGC VTE group.

I am also a member of Society and College of Radiographers (SCOR) Consultant Radiographer Group and have served as vice chair of the Ultrasound Advisory Group; as a result, I have close links with SCOR colleagues and regularly discuss new guidance and issues. In addition, I am a member of the BMUS Professional Standards and Consultant Sonographers Group and an assessor for non-traditional route sonographers keen to register as a sonographer through the Institute of Physics and Engineering in Medicine (IPEM).

The Scottish Clinical Imaging Network (SCIN) aims to improve imaging services by developing a work plan to steer service modernisation, improve quality, ensure provision of an effective service and anticipate future needs and requirements. Nationally, I chair the SCIN Ultrasound Special Interest Group (SIG). This group's members include a lead sonographer from each health board, an equipment procurement lead, a SCOR representative and an educationalist. We have so far devised a governance framework for the use of locums and agreed a national job description for band 7 and 8A sonographers. We share information, discuss any equipment concerns and support each other.

Are there any particular projects you're involved in at the moment?

The Scottish Radiology Transformation Programme (SRTP) is an ambitious programme funded by the Scottish Government that aims to transform the way radiology services are delivered in Scotland. Its vision is of "a world class, person-centred, sustainable radiology service that continually improves the health and wellbeing of the people of Scotland". I lead the ultrasound stream for this programme, which involves participation in groups such as those focused on national workforce planning, quality and data, advancing practice and quality standards.

Part of the consultant role is pushing boundaries and involvement in talks at national levels helps facilitate this. In conjunction with SCIN SIG members, the SRTP ultrasound stream has produced a vision paper on what makes a quality ultrasound service in Scotland. Significantly, a questionnaire to all boards in Scotland last year allowed us to ascertain the current position of ultrasound in Scotland. This information demonstrated that there was a national sonographer shortage: demand outstripping capacity for years, multiple vacancies, imminent retirements and difficulties in recruiting good locums. There was also a need for more ultrasound rooms. Recommendations from this paper were for significant investment in training additional sonographers and radiologists. This would allow funded backfill of radiography staff, pressure to be taken off acute sites and specialist training for some boards.

Amid COVID-19 and Scotland's subsequent five-year recovery plan, the plan of the NHS Scotland Academy ultrasound programme came to fruition. This is an exciting opportunity for ultrasound in Scotland and I am excited by its potential to improve ultrasound services across Scotland.

As clinical lead, I played a large part in submitting a business case to Scottish Government groups outlining different phases of the project and scoping facilities required and staffing models. This programme will be a welcome addition to clinical ultrasound teaching in Scotland. It is hoped this will continue to grow and opportunities for training at the academy will be open to wider staff groups moving forward. We are also considering different training routes in the future.

What are the main challenges you face?

It is impossible to strategically plan for a service without an overview and involvement in the management team. This has taught me a myriad of information in regard to access, targets, finance, procurement, human resources and wider issues across the board. Mutual support with the management team is imperative to make a consultant role work. I value the support of our clinical director, consultant body and staff.

The COVID pandemic has been a remarkably challenging time for staff in the NHS. Staff sickness levels are high and morale is low. As a consultant, it is my responsibility to recognise this and try and improve things in the future. COVID has given us a chance to reflect on what we did before and change things as appropriate. Radiographers and sonographers are a very much in demand and rightly so. My biggest wish is for retention of staff and staff satisfaction at work to improve. We as a profession need to think outside the box at encouraging staff to work or stay working with us. While not always feasible to pay more due to Agenda for Change constraints, we can at least be flexible and, importantly, fair to all staff. Staff need to feel valued. Although UK and Scottish Governments are planning on increasing diagnostic capacity, we direly need the most important commodity – happy, well trained, supported staff – in order for this to work.

There are many other challenges in this role – not least the work-life balance and without doubt, the day-today firefighting (something many will recognise). I consider 'the juggle' incredibly hard as all aspects of the role are important and ploughing forward in one can come at the expense of another. You cannot have clinical credibility if your name is not on a report. You cannot expect staff to do something you would not do yourself. You need to be involved in education and research and be supportive of others who want to be involved. You must have a good understanding around the minutiae of management processes. Most importantly, you must lead by example, be hard-working, consistent and honest, show integrity, and be a great communicator.

What has proved most useful in your development?

One of the steepest learning curves for me personally was being able to hold my own at high-level meetings and with clinical colleagues. Forming good interpersonal relationships with lead clinical specialists and other consultant radiographer colleagues continues to be invaluable and is beneficial to all parties. Being part of a national forum makes you look at the bigger picture and hone your vision for a service. I am proud of the connections I have accumulated over the years, and these continue to grow.

As someone who at one time was the only consultant radiographer in NHSGGC, I am delighted to see and support more such roles in our board and nationally. Due to their unique combination of responsibilities and connections, a consultant is perfectly positioned to drive change in our NHS. All consultant posts are slightly different, and so most will be contributing to the four pillars of consultant practice and consultancy in different ways, and this is OK.

Do you enjoy being a consultant?

It is an extremely rewarding career that I often have to pinch myself is my job. Each week is different. I continue to learn, continue to meet new people and challenges, continue to try to improve things. It is certainly never mundane. But without doubt, the most rewarding part of my role is still to be with patients – that's why I loved ultrasound in the first place.

Any advice for those pursuing a similar career?

Approach other leads in your area, form relationships with clinical colleagues and get involved in research. Study to MSc level at least and, if possible, offer to help out with teaching at educational institutions. Be aware of the national picture and keep working hard and doing your best. Most importantly, never forget why we are in a job – the patient!

Yat Man Tsang

Case Study



What is your current role?

I am a Consultant Therapeutic Radiographer employed as the clinical and technical expert leading the specialised radiotherapy service at Mount Vernon Cancer Centre (MVCC) in Middlesex. In addition, I hold the position of Associate Professor (clinical academic careers) at London South Bank University's Institute of Health and Social Care to support the delivery of clinical academic career provision for healthcare professionals outside of medicine.

Read on

I am a senior member of the National Institute of Health Research (NIHR) Radiotherapy Trials Quality Assurance (RTTQA) Group, with experience in designing and implementing QA programmes for NIHR clinical trials. My executive committee memberships of the UK Stereotactic Ablative Body Radiotherapy Consortium and National Cancer Research Institute Clinical and Translational Radiotherapy Research Working Group have enabled evidence-based practice and research to be introduced into clinical practice. Being a member of the European Society for Radiotherapy and Oncology (ESTRO) Radiation Therapist Committee, I am accountable for leading and organising international radiotherapy-specific projects.

In my role as consultant radiographer at MVCC I act both as a clinical and technical expert to lead and coordinate the strategic planning of the trust's specialised radiotherapy service, including stereotactic radiotherapy. I am responsible for delivering and developing the technical standards for the radiotherapy service at MVCC. As the first consultant therapy radiographer accredited by the College of Radiographers (CoR), I always strive to demonstrate my experience and expertise across the four pillars of consultant level practice and consultancy.

How did you reach this position?

In 2002, I obtained my BSc in radiotherapy at the Hong Kong Polytechnic University. My interest in radiotherapy dosimetry arose from my original BSc thesis, which compared the dose distribution from a tailor-made wax compensator and a universal aluminium compensator in the head and neck region for total body irradiation. It involved the use of thermoluminescent dosimeters for in vivo measurements and the construction of phantoms.

My first job in the UK as a therapy radiographer at MVCC consolidated my professional knowledge and clinical experience in radiotherapy. In 2003, I began to pursue the academic part of my career and enrolled on an MSc in healthcare informatics and technologies at City, University of London.

The degree was a holistic approach to healthcare technology comprising seven modules: healthcare computing; healthcare data analysis; imaging for radiotherapy; operating systems and networking; research methods; total quality management; and healthcare database and electronic patient records. My MSc dissertation involved the implementation of a database solution for interim quality assurance (QA) data analysis for a clinical breast trial. This opened the door to the world of clinical trials QA. I was appointed as a trial QA radiographer within the National Institute of Health Research Radiotherapy Trials QA (NIHR RTTQA) Group in 2006.

My career progression to RTTQA radiographer brought me an entirely new opportunity for research and development. I have evolved as a clinical and technical expert in advanced radiotherapy technology, and now design and implement QA programmes for clinical trials that require the effective introduction of advanced radiotherapy in UK centres. Through my trials QA work, I have been heavily involved in the national development of changes in fractionation for breast cancer and the clinical implementation of advanced radiotherapy in the UK. These are evidenced by a number of publications arising from this work, which formed the basis for my PhD thesis. My national and international contributions to new knowledge in this area are validated through the citations of these publications.

What support has been helpful?

I have been extremely fortunate to have the support of my multiprofessional (clinical oncologist, medical physicist and therapeutic radiographer) clinical academic mentors on my career development journey.

What do you find most rewarding?

Across radiotherapy services, there has been national acknowledgement in documents such as the Cancer Reform Strategy for England, that the radiography career progression model, including the highest level of practice at consultant level, should be introduced across radiotherapy centres to meet local service need.

From my consultant practitioner's scope of practice, I always demonstrate my experience and expertise across the four core pillars of consultant practice through my clinical practice, professional leadership and consultancy, research and education. This has been further evidenced by my Fellowship of the College of Radiographers award, showcasing my significant positive contributions on advancing the radiography profession nationally. All of these have been extremely rewarding.

Do you have any advice for others?

Don't ever box yourself in! Obviously, you won't know what career will be right for you till you give it a go. But you should never force yourself into something that doesn't feel right to you.

Just step back and think of another alternative path to the goal. Or you can even walk away and try something new!



Service Manager/ Service Leader

Service Manager/Service Leader job titles may vary and could include, for example, **Clinical Manager**, **Radiology Manager**, **Professional Head of Service** or **Radiotherapy Manager**. Such roles may be found in the NHS or private sector, at regional or national level, or in imaging networks.



1 Introduction

The role of a Senior Service Manager/Service Leader in a radiology or radiotherapy service is to ensure the safe and effective provision of a highly specialised technical service. This will cover all aspects of management, clinical and professional practice, leadership, staff/workforce development and patient and service user experience. Service Managers/Service Leaders will maintain registration with the Health and Care Professions Council (HCPC), or an equivalent regulator where appropriate, to provide professional leadership. They will be involved in long-term strategic planning of service delivery, service transformation and developments by taking account of governance and legal requirements, technical innovation and advances in equipment and techniques. Their comprehensive knowledge and understanding of up-to-date legislation, national guidelines, professional standards, evidence-based policies and protocols and quality requirements will assist them in service improvement and development. They will manage change to ensure the imaging and/or radiotherapy services provided are up to date and evidence based, delivering excellence in care for patients and the public.

2 Scope of Practice

The Service Manager/Service Leader will ensure that services are delivered within robust clinical governance and quality assurance (QA) standards, taking a lead on risk management, incident and complaint investigation, research and audit. They will strive to gain recognition for the quality of service provision through the benchmarking of standards such as the Royal College of Radiographers (RCR) and College of Radiographers (CoR) **Quality Standard for Imaging** and/or the international quality management system **ISO 9001 standard certification**. They will develop local protocols and policies, as well as business cases for service development, and contribute to the development of local, regional and national policy, strategy and standards. They will often have significant financial responsibility, contribute to budget setting and cost improvement planning and be instrumental in the procurement of equipment and services.

Taking a leading role in service improvement and development, the Service Manager/Service Leader will actively promote and ensure appropriate **patient, public and practitioner partnerships** when assessing service quality and improvements. They will seek, evaluate and respond to regular service user feedback to ensure the delivery of **values-based practice** and person-centred care. Service Managers/Service Leaders will participate in patient engagement groups for the purpose of staff education and to develop local strategies and in the co-design of services such as patient leaflets, open days and departmental changes or improvements. They will promote and encourage public engagement and understanding with, and of, the profession.

Being an expert in their field, the Service Manager/Service Leader will integrate professional leadership with clinical practice and work collaboratively with stakeholders, both internal and external to the organisation, providing specialist clinical advice and using professional judgement to solve complex problems. They will represent their clinical speciality, the profession and the organisation at various forums, external committees and professional networks. Service Managers/Service Leaders have a responsibility in leading the clinical education of the future workforce by facilitating leadership with education providers to ensure access to education and training that supports service needs. The Service Manager will hold themselves and others to account and be a positive role model to others in the profession.

3 Service Manager/Service Leader knowledge, skills and attributes

For individuals looking to develop into, or those already in, a **Service Manager/Service Leader role**, it has been identified through the expert consensus panel that the following knowledge, skills and attributes are relevant. These are in addition to those at Practitioner and Enhanced Practitioner level and may also be in addition to those at Advanced and Consultant levels, depending on the clinical expertise held and/or required of the Service Manager/Service Leader.

Service Manager/Service Leader knowledge

A Service Manager/Service Leader should have detailed knowledge and understanding of the following, unless otherwise stated:

- Leadership strategies and management theory; how these apply and translate to own role and responsibilities
- Extensive technical knowledge of services, and continually updating this to ensure service remains current when developing local and network strategies
- Equipment evaluation, capital-replacement programmes, procurement processes and asset management, including how to coordinate a preventative maintenance and quality assurance programmes for all imaging and/or oncology equipment and project management for new installations
- Business management models and continuity processes, including financial management, service and capacity planning and workforce planning; and how to develop and embed these within own service provision
- Current local, regional and national developments, targets and initiatives in primary and secondary practice that will potentially change the activity profiles, impact on the service and require consideration in planning for future service delivery
- Relevant legislation, regulations and organisational and healthcare policy and how to deliver against current healthcare targets, with collaboration between the NHS and private sector to address demand

Service Manager/Service Leader knowledge (continued)

- How to establish systems for the development, dissemination and implementation of clinical policies, procedures and guidelines associated with relevant legislation, while keeping under review national, strategic and operational plans for the profession and the service and contributing own expertise to the development of policies and services nationally
- Ethical and professional frameworks governing own scope of practice
- Extensive knowledge of service specification, clinical and patient pathways and associated quality in healthcare, including the setting and maintenance of quality standards and development and implementation of robust quality management systems, including where relevant the **Quality Standard for Imaging** and **ISO 9001 certification**
- Principles underpinning service evaluation and development, including **patient, public and practitioner partnerships**, quality methodologies used for this purpose and a wider understanding of current drivers of quality and patient experience
- Develop and use systems to provide data and information for performance management adhering to SMART (specific, measurable, achievable, realistic and timely) principles and monitor the processes and performance of the service, KPIs, benchmarking with comparable organisations
- How to actively encourage improvement and transformation of services and be responsible for change management, implementing change in line with new evidence to ensure that evidence-based practice is current
- Risk, incident and complaints management, audit, research and clinical governance
- People, talent and change management, the principles underpinning recruitment and retention and human resource (HR) processes, guidelines and policies, including staff appraisal and staff development frameworks
- Understand workforce capacity and capability planning and development, including the development of the future workforce, involving development of students, apprentices, assistant practitioners and support workers, linking with higher education institutions (HEIs) and/or relevant government bodies in each devolved nation as appropriate
- Organisational culture and its implications for governance and how to facilitate a professional culture that is open to change, new ideas, concepts and innovation while reflecting organisational strategy and direction
- Supervision and mentorship principles and their application in clinical practice

Service Manager/Service Leader skills

A Service Manager/Service Leader should be able to:



- Design, set up, manage and deliver a high-quality imaging/radiotherapy service in relation to governance, workforce, performance and finance, which meets all national and local standards of care
- Take responsibility for operational management and provide overall professional leadership for the service and workforce, to ensure efficient and cost-effective service delivery to planned objectives, using resources effectively and efficiently to improve quality and productivity
- Take responsibility for: clinical governance and radiation safety, working closely with clinical leads and radiation protection advisors/ medical physicists; establishing and operating effective risk management, identifying mitigation and implementing any actions for risk resolution; investigating incidents and complaints; and ensuring SMART action plans are followed through, with learning shared with the wider team
- Ability to use appropriate management and communication systems and networks, including digital software packages such as radiology information systems, electronic patient and staff records, patient management systems and quality management systems
- Analyse data and develop business plans to support future service strategy and provide strategic direction to ensure efficient delivery of financial targets, including budget and workforce planning, and commissioning for imaging and/or radiotherapy services
- Work collaboratively across multidisciplinary and multi-agency teams inside and outside the organisation, drawing on evidence-based practice to provide expert knowledge to those teams to improve and enhance quality care pathways and develop local strategy
- Establish and deliver a service using appropriate project management skills
- Design and implement systems to monitor activity and effectiveness, including collection of workload statistics and waiting list monitoring
- Actively engage with patients, service users and the public, along with other key stakeholders, in the design, planning, innovation and evaluation of services provided
- Interpret, implement and disseminate national guidelines, policies and legislation, working closely with others to achieve compliance
- Actively encourage improvement and transformation of services and be responsible for change management, implementing transformation projects in line with agreed time frames, financial targets and new evidence to ensure that services delivered are done so in a timely, cost-effective and evidence-based manner

Service Manager/Service Leader skills (continued)

- Monitor trends and developments within the specialty, evaluating their potential impact on the service, and evaluate opportunities to enter new markets and to introduce innovations and improvements that transform the workplace and meet patients' needs
- Demonstrate diplomacy and advanced communication skills, adapt communication style to fit the situation and communicate effectively at a strategic level through presentations, reports and policies to build effective working relationships and demonstrate organisational leadership
- Demonstrate compassionate and inclusive leadership skills to create a positive and cohesive culture of teamwork and sense of belonging within the workplace
- Use own credibility in the clinical setting to influence, network and negotiate successfully, manage and resolve conflict and bring about positive outcomes for service delivery
- Apply high-level problem-solving skills that integrate and apply management and clinical knowledge to challenging and novel situations, being analytical, resilient and creative
- Demonstrate excellent organisational skills with the ability to manage and delegate appropriately, being able to work under own initiative to deal with competing priorities and to deliver outputs to multiple challenging deadlines
- Be comfortable with making informed autonomous decisions and demonstrate expertise in developing original and creative solutions to highly complex problems, often under pressure
- Be adaptable and flexible in addressing service, operational and staffing challenges, able to challenge and manage difficult behaviour, implement human resource procedures and act as mediator when necessary
- Promote and develop a learning culture that values and supports the development of all staff and learners through appraisal and staff development frameworks, clinical supervision, mentoring and coaching skills
- Demonstrate the use of excellent written, spoken and presentational skills and the ability to teach across professions, both inside and outside the organisation, for example, at professional study days, HEIs or workshops
- Draw on own emotional intelligence to work under pressure, assess situations, influence others and bring about positive change in services and others
- Promote the wellbeing of the teams they lead by nurturing the skills of self-compassion within themselves and others

Service Manager/Service Leader attributes

A Service Manager/Service Leader should demonstrate and/or actively uphold the following:



- Act as a role model, always being approachable and relatable, and demonstrating professionalism and confidence in supporting and encouraging a culture of openness, honesty and integrity
- Responsibility, accountability and reliability, taking ownership of own work and striving to provide high-quality, patient-centred services and experiences for all
- Confident, enthusiastic and motivated in all aspects of the role, seeking to develop a highly motivated and enthusiastic team, performing effectively against all national, regional and local targets, and ensuring all deadlines are met
- Value diversity and equality and promote inclusiveness by being a compassionate and effective leader, demonstrating a fair and equitable approach
- Show respect to patients and their carers and work in unity with colleagues, being respectful of the views of others
- Take pride in the profession and in the service delivered
- Be innovative, creative and visionary and be able to articulate that vision to others while ensuring organisational visions and values are embedded within the service they lead
- Promote, and ensure the team meet, regulatory and professional body requirements such as the SoR Code of Professional Conduct and HCPC Standards of Proficiency for radiographers
- Promote a culture of openness, demonstrating a willingness to listen and respond through, for example, listening events and other means
- Demonstrate high levels of emotional intelligence, being reflexive and nurturing
- Be self-aware to enable the growth of appropriate and effective relationships
- Understand own limitations and seek support when needed
- Demonstrate self-care and resilience to work effectively under pressure
- Willingness to reflect on experiences and use the lessons learned to guide future decisions and actions
- Engender a philosophy of continuing professional development among radiographers and associated staff within own team, ensuring the availability of education and training and other support mechanisms for the whole team
- Collaborate with other allied health professionals, maximising their potential to transform services for the benefit of patients and service users

4 Service Manager/Service Leader – four pillars of practice

Clinical Practice

Click icon to revise your understanding of the four pillars of practice



Those in the role of Service Manager/Service Leader will design, set up, manage and deliver a high-quality imaging or radiotherapy service in relation to governance, workforce, performance and finance that meets all national and local standards of care. Being responsible for delivering contemporary, innovative services and communicating developments and requirements within the local and regional strategy, they will ensure the service is delivering the clinical indicators defined in the service specifications while being aligned to national healthcare policy and plans, relevant legislation, professional and clinical guidelines and standards.

Service Managers/Service Leaders will effectively communicate the organisational vision and drive strategic direction. They will act as a champion and role model for values-based care and professionalism, evidencing leadership skills and behaviours that have a positive impact across organisations and service delivery. Having an in-depth understanding of workforce succession and development planning, they are accountable for ensuring all four pillars of practice are embedded in the service at all levels within the team.

Service Managers/Service Leaders will provide professional and specialist clinical leadership to the service, overseeing clinical practice and ensuring the highest possible standards of delivery of care are achieved. They will model and promote expert-level critical thinking by applying a constant and integrated approach to critical analysis, evaluation and synthesis to manage highly complex and/or novel issues and make informed judgements in the absence of complete or consistent data/information.

Education

Click icon to revise your understanding of the four pillars of practice



Service Managers/Service Leaders play an important role in facilitating and promoting the education and development of their imaging/radiotherapy staff and the wider healthcare team. Working with the organisational education and development team to develop and implement education and training programmes and strategies, they will seek to embed the use of reflection and feedback in healthcare education and implement learning from concerns, complaints and incidents through the promotion of a workplace culture that favours openness, honesty and sharing of good practice. Service Managers/Service Leaders will both access and deliver coaching and mentorship and encourage others to seek professional mentorship as required. They will participate in professional and multidisciplinary teaching, both formal and informal and internal and external to the organisation. Service Managers/Service Leaders will develop positive relationships with academic institutions to ensure the provision of educational opportunities for pre- and post-registration meets the needs of the changing workforce.

They will ensure there is an education lead in post within their imaging/radiotherapy department in line with the CoR priorities on developing a world-class workforce and the CoR's **Quality Standards for Practice Placements** where relevant. They will work collaboratively to develop career frameworks that align with, support and promote the CoR Education and Career Framework (ECF) in all areas of practice.

Leadership and Management

Click icon to revise your understanding of the four pillars of practice



Having excellent communication and interpersonal skills, Service Managers/Service Leaders will demonstrate high levels of integrity and self-motivation and the ability to motivate others. They will work with the multidisciplinary team to communicate the strategic direction of their department and service provision and be able to negotiate and influence at board level to steer decision-making accordingly. Taking the lead in identifying new opportunities for the service, they will also demonstrate good change management skills when implementing change.

Service Managers/Service Leaders will be accountable for their own personal conduct and actions and demonstrate the ability to lead themselves as well as others. Demonstrating highly developed leadership skills, they will seek to promote a culture where people are managed effectively using organisational policies and exemplary leadership qualities, and lead on the promotion, development and application of expert leadership skills and behaviours appropriate to their own role. Through compassionate, values-based leadership approaches, they will seek to ensure an open culture where staff and service users are encouraged to speak up. Service Managers/Service Leaders will provide and manage clinical supervision and mentoring to professional peer groups both in own department and as part of the multidisciplinary team.

Service Managers/Service Leaders will act as professional lead, advisor and advocate for the service in their own organisation and promote good working relationships within the multidisciplinary team. In addition, they will have an active role in organisational, regional and national allied health profession (AHP) networks, representing the profession and service within the organisation and across national AHP groups. Through collaborative working across stakeholder groups and organisations they will lead services and provide systems leadership in the setting of technical and patient care standards within the department.

Research and Development

Click icon to revise your understanding of the four pillars of practice



Service Managers/Leaders will facilitate and develop research capability within their staff at all levels, relevant to the individual's role and level of practice. They will actively encourage and provide support for the development of research programmes, including the securing of funding and practical support for staff to commence research or develop their research interests. Service Managers/Leaders hold strategic responsibility to develop, revise and embed research governance, including Good Clinical Practice, ethics, data protection and confidentiality in practice, and promote a strong research culture at service and organisational levels. They will lead on the promotion, development and application of research and innovation appropriate to their own role and the wider service. This may include leading and facilitating the development of new techniques, research and audit within the multidisciplinary team and/or sharing best practice within the profession and also more widely through engagement at national and international conferences or in poster presentations and publications. They will support and promote the CoR Education and Career Framework and CoR research strategy in all aspects of their role. In doing these things they will raise the profile of their organisation and the imaging and radiotherapy professions.

Through their daily activities and decision-making, Service Managers will lead by example to develop the capability of others to critically appraise and synthesise evidence to inform practice and create a culture in which audit, research, peer review and quality improvement thrive while being cognisant of human factors and civility. They will actively develop a supportive culture to promote the sharing of good practice and lessons learned from audit, research and quality improvement activity locally, through attendance at audit and radiology education and learning meetings (REALM), and nationally through professional and peer-reviewed processes. Service Managers/Leaders will oversee quality assurance for the department, benchmarking against national standards such as the Quality Standard for Imaging, implementing appropriate service improvement methodologies (e.g. lean thinking, SMART principles), and analysing and evaluating the outcomes both to establish the quality and safety of clinical practice and identify areas of interest for future research.

5 Education, qualifications and accreditation



Qualification level

- FHEQ level 6/SCQF level 10
- FHEQ level 7/SCQF level 11
- Appropriate clinical experience post registration

Academic award

- DCR or BSc Hons in diagnostic radiography/therapeutic radiography/sonography
- Postgraduate certificate/master's in clinical specialty

Other suggested qualifications

- Teaching, coaching or mentoring qualification
- Project management
- Chartered Management Institute (CMI) management and leadership qualifications
- Master's or equivalent in leadership or management in healthcare: NHS Leadership Academy or Institute of Leadership and Management (ILM) qualifications; Master of Business Administration (MBA)
- PRINCE 2 (Projects in Controlled Environments)
- Human factors training

6 Indicative curriculum

Service Manager/Service Leader roles in imaging and radiotherapy services cover a multitude of practice and specialist areas and therefore there is no one indicative curriculum. However, it is expected that in addition to considerable clinical experience, further formal education and/or professional development will be undertaken. As a minimum any learning undertaken in relation to a Service Manager/Leader role should enable the individual to demonstrate the knowledge, skills and attributes detailed above. In addition to the education and qualifications stated, other example programmes include:



Further information

- Elective Care Essentials
- The NHS Leadership Academy
- NHS statistical process control tool
- ILM level 5 diploma in leadership and management
- Healthcare management MBA

Grainne Harte

Case Study



Click the video to watch Grainne talk about her career.

10 min



What is your current role?

I have just been appointed as the Governance and Quality Lead Radiographer for the Imaging Services at Belfast Health and Social Care Trust (BHSCT).

How do you reach this stage in your career?

My career so far has led me into a number of different paths – clinical practice, education and leadership, with a sprinkle of research peppered throughout.

Being inquisitive by nature, the idea of being one of the first people to have access to 'the inside story' always intrigued and excited me, and so becoming a radiographer was the ideal career choice.

I completed a BSc Hons degree in diagnostic radiography at Ulster University. At the time the course was four years. It was an intense course but it prepared me well for the working world, and long hours in university meant we formed good friendships with our peers.

A highlight for me was going to Holland through the European Union's Erasmus training and education programme to study ultrasound for three months in my final year. During this stay I was lucky enough to be invited to meet the medical director of the European Space Agency, which is based in Holland. I had liaised with the medical director as part of my final year research project, Radiography rockets into space, and I was delighted when he invited me to visit the International Space Station simulator and view its on-board ultrasound system. I am still fascinated by the importance of diagnostic imaging in space for astronauts, and the extreme capabilities of teleradiology. I was also honoured to have an abbreviated version of my research published in the Society of Radiographers (SoR) magazine *Synergy*.

In 2005 I started work as a diagnostic radiographer in the Royal Victoria Hospital (RVH) which is the main acute adult hospital within the Belfast Health and Social Care Trust. I was very fortunate as within two years we moved into a new purpose-built state-of-the-art imaging centre within the hospital with all new digital equipment – a luxury many other hospitals were then only dreaming of. Although my time spent in darkrooms was relatively short, the memories of stamping ID, flipping and processing conventional film as the smell of developer and fixer filled the room, followed by the anxious wait as the film developed, are forever etched in my mind. We also had a hybrid of computerised radiography within the department, and it was through CR that my passion for accurate positioning and tight collimation developed with daily self-challenges, my favourite being a horizontal beam lateral hip examination using an 18x24cm cassette with 4 collimation marks present and anatomical marker within the irradiated field. I always enjoyed a challenge and got a real sense of accomplishment from achieving a textbook image, of course encouraged by a bit of healthy competition from like-minded colleagues.

My interest in learning and improving matured into teaching others, and in 2010 I was appointed as Practice Educator for RVH, a role I thoroughly enjoyed for over 10 years. I completed a postgraduate course on practice education facilitation through Ulster University.

It is a real honour to be in a position where you can support students and be part of their learning journey as they embark on their career. With RVH being the largest teaching hospital in Northern Ireland, we always received large cohorts of students that created a real buzz within the department as one placement rolled into the next.

In 2020 I studied through the Institute for Healthcare Improvement and qualified as an Improvement Advisor. This course made me more conscious of patient safety, service improvement and accountability, and augmented my desire to review processes and implement improvements within my own work.

Towards the end of 2021, I ventured into my role as QSI lead radiographer for the Belfast Health and Social Care Trust. Within the Belfast Trust, the Imaging services are spread across six hospitals, and include some regional services. I led the Imaging services through our first accreditation under the Quality Standard for Imaging, assessed by the UK Accreditation Service. Our assessment included an intense four-day onsite visit by nine assessors, during which they reviewed our practices, management processes and environment. This was a very steep learning curve for me, but one that has been so rewarding and fulfilling. I have utmost respect for all the work that is carried out behind the scenes by the senior management team and lead radiographers – meetings, deadlines, pressures, targets, more meetings, and unfortunately not nearly as much coffee as I had imagined!

In August 2022, I was appointed as the Governance and Quality lead radiographer for BHSCT.

What support has been helpful?

I have always been surrounded by supportive and encouraging leaders and colleagues, and I really believe that is key to personal development.

I have always valued the support of lead radiographers and their teams. As practice educator, it was important to me that students' clinical experience was optimised and this was aided by the lead radiographers' flexibility in rostering through departments to address any gaps in the student's experience or knowledge. When I stared my current role as QSI lead, engagement and commitment from the respective leads was key to our QSI accreditation journey. The dedication and passion evident throughout both the imaging senior management team and lead radiographers was really motivating and inspiring.

I am very lucky to also have a supportive family, and, on the same note, I appreciate the flexible work-life balance strategies offered by the Trust.

What do you find most rewarding about what you do?

I think there is nothing more rewarding than feeling you have made a difference to a patient's journey. Some might say it is the staff on the ground who carry out the 'real work', and I must agree it is these staff members who directly make that difference to patients on a daily basis. It can be something so simple, a conversation, an explanation, or even physical support. During the COVID-19 pandemic, when visiting was limited, as radiographers we had the ability to chat with patients while performing their examinations, and sometimes that new face and conversation made a difference to their day.

It is so lovely in my current role to see so many positive compliments coming through, often highlighting staff by name who have really made an impact on a patient's visit. It really is the basic things that can make the world of difference to a patient's experience.

From my time as practice educator, in every placement I could see improvement in students' knowledge base and clinical confidence, shown by their assessment marks. I get so much pleasure in seeing students mature into young professionals as they qualify, take up new graduate posts and choose their own career pathway.

As QSI lead, my biggest reward was obtaining our grant of accreditation by the United Kingdom Accreditation Service (UKAS) assessment team. I was delighted to see all our highly skilled staff recognised for the safe, quality and compassionate care that they provide to patients on a daily basis, not to mention their hard work behind the scenes ensuring that they have all relevant documentation in place to meet the standard. Being awarded accreditation was a momentous occasion for both the service and the Trust.

I am looking forward to continuing to improve and develop our Imaging services within BHSCT in my new role.

Can you offer any particular advice?

They say that we tend to emulate the people around us, so surround yourself with people whose qualities you admire. I recommend that wherever possible, even as a student, to shadow a radiographer who you recognise as highly skilled and with exceptional patient care.

Also, treat others as you would like to be treated. This applies to patients, students, peers and managers. Respect and encourage others.

Offer assistance – this often turns into opportunities that will help you grow professionally.

Darren Hudson

Case Study



What is your current role?

I'm the Magnetic Resonance Imaging (MRI) Clinical Lead at the InHealth Group – an independent sector provider of diagnostic and healthcare solutions. We primarily deliver services to support the NHS, as well as private healthcare providers, across a range of service delivery models, including mobile units and hospital and community-based locations. In the past year the organisation has provided a test, scan or treatment to more than three million patients, from over 850 locations across the UK.

Read on

My role is part of the clinical quality team reporting into the director of clinical quality. I provide centralised support to our 300+ MRI radiographers, operational teams and over 100 scanners to help ensure our services are safe and effective and offer a positive experience. I also provide wider clinical governance support as part of the team, beyond my specialty.

My primary purpose is to provide subject matter expertise that helps inform a strategic view across the modality. This draws on a background of clinical knowledge, as I have worked in MRI for over 20 years, to support service delivery, improvement and implementation of evidence-based practice. I also provide professional leadership for the many radiographers working within the modality.

The biggest component of my role is in providing consultancy on all matters relating to quality and governance across the modality. This includes providing advice on matters of MR safety, investigation of incidents and complaints, triage and report guidance, modality-specific policies, procedures and patient involvement.

Another significant part of my role is developing and delivering training within MRI, particularly to those new to the modality, as well as the overall staff performance and competency structure. Over the past four years I have worked with a higher education institute to establish an in-house route to attainment of a postgraduate certificate for staff. The training programmes we provide internally are either approved by the College of Radiographers (CoR) or endorsed by CoR's **CPD Now** so that we can evidence that their content meets professional requirements. More recently I have been involved in the introduction of apprenticeship roles within the organisation.

Since being in the role I have been fortunate to be able to pursue various small-scale projects to support and showcase different aspects of improvement across the business. Many of these have been shared via poster presentation at national conferences. In particular, much of the patient experience work conducted in collaboration with the **Patient Experience Network** was pivotal in our mobile service being rated outstanding by the Care Quality Commission. Moving forwards in my doctoral studies, I have successfully had several papers published in various peer-reviewed journals.

How did you develop to reach this position?

I qualified in 2000 with a BSc Hons in diagnostic radiography and went on to complete a Master of Health Science degree in 2004. My master's was coursework based and, whilst predominantly MRI focused, included aspects of computed tomography (CT), cross-sectional anatomy and quality assurance. Due to self-funding, this was an overseas course without a research dissertation requirement, which at the time was beneficial to balancing work and study but did leave a gap in my research knowledge and application in practice.

I completed a postgraduate certificate in health and social care management in 2011, which I undertook to support my development when working in an operational capacity managing a service and small team of staff. This looked at leadership and management theory, how to manage performance of teams and individuals, and the principles of change management. More recently I completed a postgraduate certificate in clinical education at the local medical school. This provided a great opportunity to learn from medical education, as well as other healthcare professionals, which has informed my own teaching development and that of the training programmes we offer as an organisation. In particular, the training provided an opportunity to reflect on and develop my own teaching skills and look at the principles of providing effective feedback and the different means of assessing performance.

I am currently studying for a doctorate in clinical research to support my foundational skills in research and applying these in my practice to enable effective service evaluation and implementation of evidence-based practice. The taught component of the course has provided a grounding in principles of research and the variety of different methodologies that can be used to address different research questions. As well as this, a module looking at clinical leadership has been really useful in reflecting on my own role as a leader and identifying areas for improvement. I am now in the main thesis stage of my studies, in which I am looking at the use of a virtual reality tool of an MRI experience and its emotional response by patients as a preparatory tool for those with claustrophobia or enhanced scan anxiety. So far through this study I have built confidence in my writing and successfully had papers published in peer review journals.

What support have you found helpful?

I have been fortunate enough to work with some great teams and had the support of some inspiring managers over the course of my career to date. With development of myself and others being one of my core values, this has featured heavily in my career, as demonstrated by the different postgraduate courses I have completed.

Whilst these have been supported by employers along the way, this hasn't always been financially, which perhaps would have been nice to have had and showed more recognition for the development undertaken. I think this is an important aspect to consider when wanting to develop our staff but expecting them to pay and study in their own time; there has to be a compromise so that both parties benefit.

Another thing I would highlight that I have found especially valuable has been the opportunity to complete some psychometric tests as part of my current role. In particular, the organisation used **Insights** to support its leadership programme across the business, and through the Patient Experience Network I have been able to complete **Service Animals** also. I have found both incredibly beneficial as a means of understanding both myself and others. While not taking it too seriously, both have really shown me where my strengths are and where I need to develop. They have also given me some useful tools to better communicate and interact with others who may approach things differently. This is worth a mention as it has hugely influenced and underpinned my work style during the past six years.

What do you find most rewarding?

My current role is wide and varied, with no one day being the same. Working in a national role allows me the opportunity to inform and influence practice at a high level across the organisation. I am in an unusual position because I work for the independent sector rather than directly for the NHS, which perhaps affords me different opportunities and challenges. I have been able to develop and shape my role over the past seven years and hope to continue to do so as I complete my doctorate and look for ways to advance my clinical skills beyond scanning.

Do you have any particular advice for others?

With such a split role between governance and training (although I think the two do work in parallel with one another), the role I am in appears unique.

The former is perhaps an unrecognised area for radiographers to specialise in, whereas working in the independent sector has offered this opportunity; and who better to support governance in imaging than a radiographer (and we're lucky our director of clinical quality is a registered radiographer). For those with an interest in this within a traditional trust setting, making contact with local governance leads could be useful, as well as involvement in departmental work towards Quality Standard for Imaging (QSI) accreditation that is embedded in good governance.

As for the latter, training and development should be something for everyone but I guess the main thing is to show this in your daily work through supporting and teaching junior colleagues. Increasingly in operationally pressured and short-staffed departments with short staffing this is becoming a challenge, but for those with a true interest in the development of others it can be a rewarding part of the job that also warrants recognition within the workplace.

Dr Jonathan McConnell

Case Study



Click the video to watch Jonathan talk about his career.

24 min



What is your current role?

I'm the Lead Radiographer for the Yorkshire Imaging Collaborative, which means I work across the Yorkshire region as well as Hull, Goole and North Lincolnshire.

This is a key leadership role that requires working with bodies such as the Society of Radiographers (SoR) and Health Education England and across trusts when focusing on local working. I contribute full time to service transformation while maintaining clinical contact. This role builds on a wide range of experience in both the clinical and academic environments of diagnostic practice.

How did you develop the skills and knowledge needed?

I've grown expert clinical knowledge as well as leadership and educational expertise getting involved with groups such as the SoR Consultant Radiographers Advisory Group and the College of Radiographers (CoR) Approval and Accreditation Board.

I've also been a CoR-accredited course reviewer. For over 15 years I've contributed to the Radiography journal, including as a special edition guest editor, and other journals as a reviewer. I've represented CoR in various projects, including setting the National Institute for Health and Care Excellence (NICE) spinal imaging standards and the Skills for Health diagnostic imaging national standards. I've had over 100 peer-reviewed articles either published or presented at conference, some using my international work experience. Several textbooks that I've written, co-edited or co-authored have been published.

What did you do before taking on this role?

My previous job was as a consultant radiographer. I led a team of advanced practice reporting radiographers (RRs) providing a plain radiograph reporting service for musculoskeletal examinations. This role made demands on my ability to teach as well as research. In fact it covered all four domains of practice. I had overarching strategic input as a subject matter expert for the Scottish Radiology Transformation Programme and NHS Education for Scotland, where role transformation was (and remains) a focus of service development.

As a clinical expert in radiographic reporting, I provided guidance for the development of the RR team and acted as a source of specialist knowledge across the whole of the NHS Greater Glasgow and Clyde Health Board, which serves about 1.2 million people. I taught in all the universities that deliver pre- and post-registration radiography education in Scotland, often with a focus on advanced practice, and have been an external examiner for five universities, covering both pre-registration and postgraduate education. I've also been the research lead on multiple studies and encouraged research performance within the various teams I've been part of. This has resulted in national and international recognition, culminating in me achieving visiting professor status at Ulster University, where our research team is building a strong profile in digital education and artificial intelligence. This kind of work provided access to academic and clinical experience that has knitted together in my current lead radiographer role.

How did your career in radiography begin?

People are often surprised to hear I do not hold a first degree in radiography, as I qualified in the days of the CoR three-year diploma in 1986. My career has essentially followed two phases – clinical, then academic, and a return to clinical. However, I took any opportunities that arose – for instance, during my training I won student awards in my school of radiography in 1985 and 1986 plus the Yorkshire region in 1985 – to help build my career and reach band 7 equivalence only four years after qualifying.

Some people say, 'you have to have a plan', so I made one and stuck to it! This plan involved completing an Open University degree in biomedical sciences soon after qualifying so that I had a wider clinical understanding. I think a further driver was to ensure I had recognisable equivalence with the degree qualification route which the radiographic profession was starting to adopt. I completed postgraduate certificates in reporting and teaching in higher education and my master's degree before eventually tackling a PhD. My kids tease me about all the letters after my name, but you have to have a hobby, don't you?

After becoming one of the first reporting radiographers in the UK in 1996, I moved to my first academic role, which resulted in me leading a new satellite school in 2001. I took the chances this offered to be involved in work across European radiography education and eventually moved to New Zealand to become head of department in Christchurch. I continued to take all opportunities offered. A spell in Melbourne, Australia, cemented many of my academic capabilities before a return to the UK, firstly in Aberdeen then to clinical consultancy in Glasgow in 2013.

What have you gained from your previous experience?

All this experience has given me wide insights and, obtaining a PhD along the way, I have contributed to many projects, whether by publishing, presenting, leading or being a member of the development team. These projects have frequently resulted in policy change and service development. The role I am now in is very exciting – we aim to transform practice across the Yorkshire region – and I can put my experience to good use.

It's hard to believe all the changes that have happened over the course of my career so far, but they are generally for the betterment of healthcare and the increasingly higher expectations and performance required of the role of the radiographer.

What has particularly helped you in your career?

Wherever I have worked, through leadership, insight gained through knowledge building, researching and giving/receiving education, I have benefited from equally forward thinking by those I have worked with, who have enabled a supportive and encouraging environment.

Recognising educational opportunities has been a key component and I've been able to gradually build from a CoR diploma at Leeds and add to it at degree and postgraduate level to eventually gain a PhD. This personal development has been a driver, and both an enlightening and challenging experience, as my career has developed. These opportunities have allowed me to gain insight and put it into practice and, increasingly in the last few years, to become a person who shares knowledge and helps others achieve. This is particularly rewarding and I hope will be the longer-term legacy that I contribute to my profession – a profession I was actually encouraged not to follow while on work experience before I applied for a place on the diploma course! I think this shows that if you have drive and determination, eventually you can achieve what you want to.

The CoR has been a big help in my career, though you must participate to be noticed and receive benefit from that recognition. I think that appreciation came in 2019 when I was awarded a CoR Fellowship, an award few achieve.

In retrospect, keeping track of what is changing or what may be 'the next big thing' is most important, as it could form the focus of how to move your career forwards. Remember, although hard to achieve, the expectation at consultant level includes doctoral-level working, from which many doors can be opened.

The potential now available via the clinical academic role, which is linked to advanced or specialist practitioner roles, may enable you to move from a purely clinical career to one with the much wider strategic perspective that is required of the consultant grade. Doctoral working could be a focus at a grade below consultant at an earlier point in your career.

This approach will give you a focus but expose you to strategic decision-making that often must be made without all the information you would like to have at hand. This is very much the gift (!) of the consultant position, but equally it can be exciting and provide opportunities that can lead to a long and satisfying career. I often remind myself that computed tomography was in its infancy while I was training (30 minutes or so to do a head scan) and compare that with what is being achieved today; the application of the four pillars of practice under the umbrella of strategic thinking means the consultant radiographer of the future will be a very exciting role.

What do you find most rewarding about radiography?

The radiographer is often one of the 'unsung heroes' of the health service and for many years this has certainly been the case. But it is now clear how much care delivery relies on imaging. The patient/technological interface that we learn to perform is second nature to us and mystical to others when they think they can 'have a go.' The skills that we learn and apply, the empathy we learn that allows us to deliver our service and the multidisciplinary role that others are now realising we possess – perhaps we have not expressed and explained all these loudly enough before, but they have suddenly been brought into the spotlight.

The professionalism that I see among my team makes me proud to call myself a radiographer. I feel that is a privilege bestowed upon me, my team and all of us in the imaging department by helping patients; people who may be at their lowest point as they fear what may be causing them to feel ill or have suffered trauma. Being that person who may be the first professional a patient can 'open up' to or who works with a child who leaves the department without fear of coming to us in the future – this gives me the most satisfaction, beyond all the high-level experience I enjoy as a senior member of the team. I hope that in my current role I can communicate this to all the teams across a large region, who are currently at a low ebb because of what we have faced recently in the pandemic and the subsequent need to address diagnostic and treatment backlogs.

What advice would you give others pursuing a career in radiography?

Achieving a similar role to the ones I've described doesn't happen overnight! However, have a path in mind and ensure you follow an educational and experiential route that will support it. I have been very fortunate to have experienced such a wide set of opportunities but consider how various chances that come your way may eventually reward your effort. Consider leading projects, completing a course or generating the evidence that might be required if you see a service improvement that is possible and you need to prove that it may (or may not) be appropriate. Try to publish your work, if possible, as this will hone your communication skills and get you noticed.

Don't be afraid of change – it's the one constant. That last comment sounds like an oxymoron, but use change to your advantage and, no matter how difficult, see how it can work for you as you drive your career forward. Finally, surround yourself with a network of people you can work with or know can support you in your quest. The old idiom is true – it's not what you know but who! They may be the people who can help you grow, make a difference and be successful.



Practice Educator

1 Introduction

A Practice Educator is a registered practitioner who supports learners in the workplace at all levels of practice. They lead and facilitate practice education with the support of clinical and academic colleagues. In addition, the Practice Educator is likely to hold responsibility for signing off competency and assessment criteria based on the standards produced by the education provider and relevant professional body, although it is recognised that local models of delivery and assessment will apply.[19] Practice Educators will be supported in their role by the wider radiography workforce as it is expected that all practitioners carry responsibility to work with, supervise and provide mentorship to all learners.



2 Scope of Practice

The role of Practice Educator can be varied depending on the learning environment. Some will be involved in the education of pre-registration radiography students and apprentices. Others will have additional or sole responsibility for the education, training and development of all staff, as well as those from other professions. Generally, the Practice Educator is responsible for the coordination and facilitation of integrating the practice and academic education of pre-registration student radiographers in the practice setting, according to the requirements of the education provider. They may also be involved in providing support for postgraduate students, preceptorship programmes and the continuing professional development (CPD) of staff.

Practice Educators provide pastoral support for the learners they are responsible for, looking after their wellbeing when they are in the practice setting. The Practice Educator will also ensure the maintenance of effective lines of communication between the hospital and the education provider through liaison with relevant staff.

Practice Educators will seek to ensure the safe and appropriate involvement of patients and service users in the learner's education. They will do this through a variety of means; for example, they may encourage patients and the public to provide feedback to learners in practice on their performance. Practice Educators have a duty to ensure learners are adequately supervised, according to their level of education, to ensure optimal radiographic practice and technique and that good patient care is maintained. Practice Educators, or those supervising students, must seek permission from patients for learners to be involved in their imaging or treatment. The Health and Care Professions Council (HCPC) expects students to introduce their learner status to every patient.

There are a number of accreditation schemes that serve to support and encourage development in this role, including the College of Radiographers (CoR) **Practice Educator Accreditation Scheme (PEAS)**, which supports and recognises implementation of the **Health and Care Professions Practice Education Guidance**. Advance HE's fellowship scheme is also available to those working in a practice educator role. It should be recognised that some practice educators may also hold other clinical roles and responsibilities, having undergone appropriate further education to full master's level. Those who have done so and who are able to fulfil all four core pillars of advanced practice may therefore hold the title of Advanced Practitioner in addition to their title of Practice Educator. Refer to the Advanced Practitioner section for further details.

3 Practice Educator knowledge, skills and attributes

For individuals looking to develop into, or those already in, a **Practice Educator role**, the following knowledge, skills and attributes are relevant. These are in addition to those already determined as essential knowledge, skills and attributes required at Practitioner and Enhanced Practitioner level.

Practice Educator knowledge

A Practice Educator is expected to have an in-depth knowledge and understanding of the following:

- Education theories; knowledge and understanding of learning, teaching, assessment and feedback theories and strategies for a range of learners and situations
- The role and requirements of practice placements within the curriculum and the overall programme
- Wide radiography knowledge including current and future developments
- The role of educational technologies and simulation in the education of learners
- Supervision and mentoring techniques and strategies
- Principles of reflective practice in promoting learner development and quality practice
- Development of action plans and how to set goals with learners
- Educational psychology relating to the motivation of learners
- Awareness of equality, diversity and inclusivity issues and strategies that actively promote inclusive practice
- Awareness of learning support needs, including how to work alongside those with specific learning needs; considering and facilitating reasonable adjustments that may require additional resources or changes in working patterns or practices
- When and how to signpost learners to further guidance and/or support when necessary e.g. for financial advice or psychological support
- How to maintain own knowledge, skills and clinical credibility to demonstrate high standards of practice

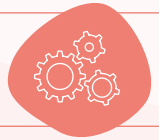
Practice Educator knowledge (continued)



- The importance of, and appropriate methods relating to, the continual evaluation and monitoring of the quality of the learning environment, assessment practices and feedback provided to learners
- The importance of sharing best practice through experience and knowledge
- Local and national policies, procedures and regulations relevant to the learners under their supervision
- How different research methodologies develop the evidence base for clinical and educational practice

Practice Educator skills

A Practice Educator should be able to:



- Be creative and innovative to coordinate and facilitate work-based learning
- Effectively apply the right learning and teaching theories and strategies suitable for a range of learners and situations
- Deliver practice-based teaching sessions using a range of methods, for example, group work, one-to-one sessions
- Implement evidence-based teaching and learning
- Demonstrate critical thinking and reasoning
- Where appropriate facilitate peer learning within the clinical setting
- Demonstrate good digital literacy skills in relation to their role
- Effectively utilise a wide range of educational technologies
- Effectively utilise simulation-based education strategies
- Enable assessment in practice by supporting both learners and assessors
- Effectively apply assessment strategies in the learning environment
- Provide feedback in a constructive and timely manner
- Demonstrate excellent communication skills, both written and verbal
- Manage learner expectations through transparent and timely communication
- Motivate and engage learners in the clinical practice setting
- Facilitate reflection in and on practice
- Offer expert professional development advice to staff
- Support emotional wellbeing of learners in practice by regular contact throughout placement and mentor support
- Be adaptable and flexible to meet the evolving and diverse needs of educating the current and future workforce
- Strategically plan and apply safe models of supervision in practice
- Ensure learners are aware of current departmental policies and procedures relevant to their training
- Effectively monitor the quality of the learning environment, assessment practices and feedback provided to learners
- Use and apply skills associated with lifelong learning
- Maintain own knowledge, skills and clinical credibility, demonstrating high standards of practice
- Demonstrate excellent organisational skills in relation to the role
- Work well within a team and promote effective teamworking skills
- Maintain regular and proactive communication between the higher education institution (HEI) and the department

Practice Educator attributes

A Practice Educator should actively demonstrate/uphold the following:



- Enthusiasm and high motivation for the profession and their role
- Ability to be flexible and adapt to change
- Innovation and creativity in the facilitation of teaching and learning in practice, underpinned by evaluation
- Effective written, verbal and non-verbal communication skills
- Reliability in the application of all facets of the role
- Resilience when faced with challenges that relate to the practice educator role
- Be supportive and nurturing towards the development of all learners in the clinical setting
- Be open and approachable
- Autonomy and confidence in the delivery of their practice education role
- The ability to work collaboratively across the organisation
- Ability to engage with a diverse range of learners
- Encourage all staff to welcome learners to the department and ensure that learners feel part of the team
- Compassion and care when providing pastoral support and/or guidance
- Seek to maintain a confidential approach towards learners when providing pastoral support and/or guidance
- Willingness to engage in initial practice educator preparation and training
- Commitment to, and evidence of own continuing professional development (CPD) and that of others
- Be reflective and reflexive in responding to situations and others' feedback to promote best practice
- Maintaining professional standards and being a positive role model
- Be accountable for creating an environment conducive to supporting all learners
- Seek to promote the role of the practice educator and learner within the health and care team

4 Practice Educator – four pillars of practice

Clinical Practice

Click icon to revise your understanding of the four pillars of practice

The Practice Educator will be a stalwart for the facilitation of learning in the workplace. They will demonstrate enthusiasm and passion for the profession of radiography and practice education. Having subject expertise as an educator in their field, they will oversee the education and assessment of learners in the workplace. They should have undertaken appropriate education and training to fulfil the role of practice educator and may be working towards or already hold CoR practice educator accreditation. Practice Educators will continually seek to maintain and further develop their knowledge and skills via CPD to provide the necessary expertise for the role. They will offer expert professional development advice to all levels of practice.



Education

Click icon to revise your understanding of the four pillars of practice

Practice Educators should be able to identify and facilitate access to experiential and taught opportunities as they arise to enable learners to thrive. They will demonstrate innovation through the development of new ideas to enhance the learning environment and the opportunities offered to learners.

Practice Educators will oversee the effective supervision of learners appropriate to the level of their education and training. They will do this by facilitating learning for supervisors and mentors, ensuring staff understand the expectations of the placement and their role in supporting learners. Practice educators will ensure that strategies are in place to manage the expectations of learners, for example, through induction, providing departmental information to learners, learning contracts etc.

As advocates for workplace learning, practice educators will actively promote a culture in which professional learning and development will flourish. They will do this for the benefit of all learners and staff through continual encouragement and support, the facilitation of induction, education and CPD. They will actively promote, facilitate and support self-reflection and peer learning.

Practice Educators will assist staff to identify professional development needs to ensure staff maintain and appropriately develop their knowledge and skills for their chosen area of practice. They will be able to identify when learners have difficulty relating theory to practice and will employ appropriate mechanisms to bridge the gap.

Practice Educators will seek to maintain good working relationships with education institutions, the Society and College of Radiographers (SCoR), regulators and other organisations to ensure alignment to educational, professional and regulatory expectations and requirements.



Leadership and Management

Click icon to revise your understanding of the four pillars of practice

The Practice Educator will provide leadership in relation to education within their department. They will demonstrate leadership qualities to their learners through role modelling and promoting a culture of lifelong learning.

Practice Educators will take the lead in providing mentorship to others in the department who supervise learners. They will have lead responsibility in the teaching and supervision of the practical training of learners.

They will promote the role of practice education across the organisation, working with Practice Educators from other disciplines to share good practice and develop opportunities for interprofessional learning. They will participate in regional and national discussions to transform and strategically influence practice education for the profession.

Research and Development

Click icon to revise your understanding of the four pillars of practice

Practice Educators will continually look towards the research evidence base to inform their educational practices. They will participate in and promote educational research, particularly in the clinical setting.

They will continually evaluate the effectiveness of their role and the experiences they provide to their learners.

Practice Educators will be involved in research projects and publication. They will encourage learners to engage in research and to share and contribute to potential service improvements.



5 Education, qualifications and accreditation

- Local training organised by education institution, department or trust
- Master's (FHEQ level 7; SCQF level 11) module on practice education
- Postgraduate certificate (PgCert) in learning, teaching and assessment as a minimum, with aspiration to complete a full master's qualification (FHEQ level 7; SCQF level 11) aligned to their role
- College of Radiographers Practice Educator Accreditation Scheme (PEAS)
- Advance HE Associate Fellowship or Fellowship

6 Indicative curriculum

It is expected that Practice Educators will be supported by their employer to undergo formal education at level 7 to fulfil the requirements of their role. Ideally, this should be a full master's (FHEQ level 7/SCQF level 11) qualification, but as a minimum should be a postgraduate certificate (PgCert) in learning, teaching and assessment. Any programme of learning should cover the knowledge, skills and attributes as expected for a practice educator. Programmes seeking CoR approval in relation to practice education are expected to align with the health and care professions practice education guidance.



Mark Beattie

Case Study



What is your current role?

My main role is that of Radiography Practice Educator and Sonographer at the Ulster Hospital in Belfast. In my practice educator role I facilitate the academic placements of students from Ulster University's diagnostic radiography BSc (Hons) undergraduate degree programme to our department.

Read on

This involves day-to-day management of each student's placement, including creating a rota to allow them sufficient experience in relevant areas to meet the specific learning outcomes for their placement.

As part of my direct supervision of the students I try to work with each one as much as possible in the clinical environment to encourage development of their clinical practice skills and give them relevant and accurate feedback when required. I aim to lead by example and ensure that all my clinical work is to the highest possible standard so that students are aware of the standard that they should eventually be able to demonstrate.

I either carry out professional practice assessments myself or train senior staff members to perform them to a suitable standard, as required by the university and to ensure parity across all students.

I aim to conduct two or three tutorial sessions per week to consolidate the theoretical knowledge that students have already gained from their university modules. These tutorials will vary in style, from film-viewing sessions and PowerPoint presentations to practical positioning sessions, depending on the learning needs of each placement group and the learning outcomes for each placement module.

While on placement each student has a number of written tasks to complete that are in keeping with the learning outcomes for their placement. Part of my role is to review these tasks. I ensure that students have access to the relevant information they need to complete them. I then review their tasks and give advice on improvements that could be made.

At the end of every placement, I give each student feedback on the progress they have made and if they have achieved their aims. I collate all relevant documentation and send written feedback back to the university.

I also aim to provide pastoral care to all students during each placement. Ensuring that they feel supported and valued helps them to develop. My role includes working closely with the university to support students who may be struggling to meet the demands of their placement. Together we devise an action plan to help overcome any issues that a student may be having. I then monitor their progress and give feedback to the university.

A wider aspect of my role is to promote the radiography profession. Prior to the pandemic restrictions I would have attended careers days in schools to try to promote radiography as a potential career opportunity, and would also coordinate work experience opportunities by facilitating school pupils to visit the imaging department, giving them further insight into the role of the profession.

I attend practice educator meetings that allow me (and others) to be kept up to date with changes to the course and to feed information back to the university.

I am to maintain up-to-date clinical knowledge to ensure that what I am teaching is accurate and relevant to current practice. I also keep up my ultrasound skills. I was a sonographer for a number of years before becoming a practice educator; this is a very valuable skill for me, and I aim to scan at least two sessions per week to maintain it.

How did you reach this point in your career?

I completed my BSc (Hons) radiography degree at Ulster University in 2006. When I had been qualified as a radiographer for two years, I got the opportunity to train to become a sonographer by completing a postgraduate diploma in medical ultrasound at Ulster University.

I had always taken a keen interest in working with newly qualified members of staff and student radiographers in the department. When the previous practice educator retired, I saw it as a great opportunity to further develop my role in an area that I greatly enjoyed and was passionate about. Once successful at interview, I soon completed a postgraduate module titled 'Enhancing teaching and learning in the practice setting'. This gave me valuable knowledge about learning theories and how to apply these in the clinical setting.

As it was an approved programme, this module gave me sufficient evidence to fulfil the College of Radiographers (CoR) criteria to be recognised as an accredited practice educator. In 2021 I renewed my accreditation with the CoR via the experiential route.

What support has been helpful to you?

When I took on the practice educator role, I was very fortunate to shadow my predecessor for a full placement and then to have her support me as I supervised my first full placement. This gave me a great insight into all aspects and intricacies of the role. Her knowledge and experience were invaluable to me at that time. The role has changed significantly since then, which has required me to continuously adapt my approach to each placement.

The support of management in the department is essential to the success of a placement centre. I am very fortunate that the management team recognise the importance of the practice educator role and allow me sufficient non-clinical time to complete all the administrative tasks and teaching required during each placement.

I am lucky to be working in a department where the staff are extremely keen to support students. This means that I know that they will feed back any issues to me, ensuring that I am well informed at all times.

I am also very fortunate that there are now two other radiography practice educators working at other hospitals in the trust. Our close relationship allows us to take a trust-wide approach to how we run our placements and to share ideas and knowledge.

What do you find most rewarding?

For me, the most rewarding part of my role is seeing the development of students during a placement, especially those that have been struggling with particular aspects of their practice. It is great being able to support students during their journey and ultimately seeing them achieve their goals.

Do you have any advice for people considering becoming a practice educator?

I would say that the practice educator role is best taken on by someone who has a genuine interest in teaching and supporting students. It is a role that comes with more challenges than I had expected. In particular, I don't think that I fully appreciated the amount of pastoral care that some students require. I have had to support students with a very varied range of abilities, needs and issues.

One thing that I find essential is having the support of an assistant practice educator. In my case, as a male practice educator, it is great having a female assistant practice educator. She can act as a second point of contact in the department for the students in my absence. I always make students aware that I will keep her informed of everyone's progress during the placement or any issues that anybody may be having. I highlight to students that my door is always open to help them out in any way that I can, but also point out that if they would rather speak to a female then I am perfectly happy for them to go directly to my assistant as an alternative if they would prefer.

Emma Dodd

Case Study



What is your current role?

I'm Lead Practice Educator at Bolton NHS Foundation Trust, where I take responsibility for all of our undergraduate student radiographers here on clinical placement, so my role includes managerial and pastoral skills. My role also extends to recruitment of qualified staff, and I have oversight of our local preceptorship programme to support newly qualified members of our team. I have completed a postgraduate certification in clinical education (PGCE) so that I can take an informed and measured approach to the learning opportunities that I provide.

Read on

I'm also a reporting radiographer. My job includes musculoskeletal, chest and abdomen plain film imaging and I also perform and report hysterosalpingogram examinations for patients on the fertility pathway. I've completed an MSc in advanced medical imaging and subsequent postgraduate modules to extend my reporting scope of practice. This increased skill set means that I'm well placed to support student and qualified radiographers in their day-to-day practice and commitment to lifelong learning due to the broad range of experience and knowledge that my role requires.

What did you do before?

Since qualifying in 2007, I have worked in all areas of general imaging, CT and MR and previously took the lead for our paediatric services. This rotational approach, coupled with my postgraduate further education, has given me a broad range of experience and meant I could bring an extended skill set to my role as an educator. This was supplemented with my PGCE and afforded me the opportunity to secure a post as a lecturer on both undergraduate and postgraduate programmes at my local university.

What support have you had?

I have always been encouraged by line managers to push the boundaries and also to push myself to develop in all areas of my practice. I was also lucky that this approach was supplemented by the opportunity to complete formal qualifications at postgraduate level.

What do you find most rewarding about what you do?

Meeting student radiographers on day one of their practice placements and watching them grow over the course if their programme and study and then as qualified members of our team never fails to make to me smile. I feel privileged to be able to help them to find their path and navigate their way through formal education processes to a career that they can be proud of.

What advice would you give anyone thinking of a similar career?

Take every opportunity that comes your way and have as much self-belief as possible. Your style as an educator is fuelled by experience and this will inevitably change as your experience and confidence grows. Sometimes too structured a plan can inhibit your development and experience if you are not open to things that you may have never considered. Take a chance on yourself. There will be many people along the way who are keen to support your development.

Finally, be as creative as you can in your outlook on your career. This will shine through to those who will inevitably look to you as a role model.

Karl Nottage

Case Study



What is your current role?

Since 2017 I have been the Lead Dual Energy X-ray Absorptiometry (DXA) Radiographer at North Devon District Hospital in Barnstaple, and a reporting DXA radiographer since 2021. I am also the department's lead practice educator since 2018.

Read on

As the DXA service lead, my role includes a range of day-to-day duties, overseeing the running of the service, monitoring and evaluating the quality assurance and quality control programme, writing protocols and managing the DXA team as well as performing and reporting on DXA scans and meeting with service users and stakeholders regarding service provision. Mentoring and training our DXA trainee assistant practitioner, to teaching them DXA and supporting their clinical and education needs is another aspect undertaken.

In my practice educator role, acting as the workplace mentor for our six apprentice radiographers is important. This involves meeting with them regularly to support their development. In addition, my role includes being one of the 'link radiographer' responsible for the student radiographers on placement with us (usually around five students at a time). Overseeing and facilitating elective placements on site is also part of this role.

The preceptorship programme for newly qualified radiographers is delivered by myself, meeting each person weekly as their mentor to ensure they are OK and making good progress. This is also a responsibility for our international radiographers, with regular weekly meetings to support their development. In addition, my role includes supporting the education and development of other radiographers and staff, as well as delivering clinical supervision sessions to our diagnostic radiographer learners.

Overseeing the work shadowing placements is also undertaken for all those wishing to experience the department when considering a career involving radiography, including school leavers and medical staff considering radiology as a specialism. An additional aspect of this includes visit schools and universities as part of career promotion and outreach.

I am fortunate to be able to undertake guest lectures at the University of Exeter, as well as deliver in-house teaching and mentoring for all the learners in the department.

How did you reach this position?

My journey to radiography has been interesting. Initially wanting to be a nurse and in 1993 the advice given was to gain experience in the NHS by taking any job in the hospital. At the time my academic qualifications were very limited, although I had undertaken lots of courses with St John Ambulance, so had numerous vocational qualifications. Fortunately, I was offered the role of radiology helper in the X-ray department, which I found I liked.

Doing the NVQ level 3 in diagnostic and therapeutic support, while also attending night classes to upgrade to better GCSEs, helped me reach a position where progress was finally possible. Fortunately, the opportunity to do the pilot University of the West of England (UWE) trainee assistant practitioner course to achieve a higher education certificate was offered to me. This was completed in 18 months and then the opportunity to upgrade this to a full radiography degree with Anglia Ruskin University was further offered, which I completed in 2010. Since then, and with a lot of hard work and support, I have continued to progress to where I am today.

To become the DXA lead, I started as a radiographer in DXA in 2012, training to perform the scans. In 2014 I undertook the Royal Osteoporosis Society National Training Scheme for Bone Densitometry. Promotion came a few years later to senior radiographer for DXA in 2016 and became the acting DXA lead in 2017. To further develop myself a management course was undertaken to enhance my skills and finally became the formal DXA lead in 2018. Once achieving the formal lead role my mission has been to develop the service further. Therefore, in 2020 the next stage for this was to undertake the University of Derby's DXA reporting course for clinicians (at master's level), completing it in 2021, which enabled me to then formally take on DXA reporting for the whole service.

My other role as practice educator has followed a different path. In 2012 I initially undertook a mentoring module (at master's level) with the University of Plymouth, and later became a part of the student support team. In 2015, this led to an opportunity to go on secondment to the University of Exeter as a university clinical tutor. Initially my responsibilities with this role were for the students at one site, this developed to cover a second site as well as some teaching at the university. Through this role further qualifications Have been achieved including the Learning and Teaching in Higher Education (LTHE) programme at master's level, which allowed me to apply for accreditation as a practice educator with the College of Radiographers.

What support has proved helpful?

I had a great mentor for all my studies, which was amazing. They remained my mentor until they retired. I have since been supported by others for the different areas of my studies.

Also, in November 2021, after a lifetime of difficulties with spelling and grammar, I was diagnosed with dyslexia. I have always worked hard to achieve the best I could, but nobody (including myself) had ever thought of dyslexia. However, this has explained a lot and I am now working towards being able to support myself better with this, and I have future plans to support other learners with dyslexia going forward. This has changed my life and although as you can see this is not the most eloquent piece of writing my strengths lay elsewhere in supporting others.

What do you find most rewarding?

Delivering high-standard scans and high-standard reports for DXA scans. My professional pride is being the lead for the service as it allows me to make decisions to improve it going forward.

In my practice educator role, it is all about supporting all learners as I enjoy these interactions, and this is the most rewarding aspect of my role. I love being a radiographer and supporting all types of learners to be the best they can be.

Any advice for others pursuing a similar career?

You need to be focused to the bigger picture, as it has taken me over a decade to get to where I am now. It is certainly easier with a good support network behind you. Also, if you do not initially get to where you want to be, there is always another way, so do not give up. Listen to any feedback and have a look at what you need to achieve you dreams, then try again.



Academic

Variation in the title of this role may exist across the UK, depending on the specifics of the role to which an individual is appointed, for example: **Academic Radiographer**, **Radiography Lecturer/Educator**, **Lecturer in Ultrasound**, **Research Academic or Clinical Academic**, among others. In this document, the term Academic will be used to cover all members of the imaging or radiotherapy workforce who work in higher education institutions (HEIs) and/or wider professional environments that are involved in the planning and delivery of education across all levels and specialisms of the profession. This is separate from the role of Practice Educator.

1 Introduction

In the context of the radiography profession, academics hold considerable clinical knowledge and expertise and build on these to deliver high-quality, inspiring and innovative education while driving the research agenda. Through their delivery of high-quality education and research, academics facilitate and enable the next generation of radiographers and other healthcare professionals to develop professionally and personally to improve person-centred care. As an academic working in higher education or the wider professional environment, core motivations are likely to include a passion and enthusiasm for the development of the profession. Academics will engage in scholarly practice, sharing innovative educational practice and research that affects and steers the direction of radiography education, the profession and service delivery. Academics may be appointed to a learning and teaching post, a research post or a learning, teaching and research post.



2 Scope of Practice

Academics draw on their expertise to deliver teaching and learning across the full range of professional areas. Having a passion for the profession, learning, teaching, research and innovation, they support learners across a wide range of academic levels and programme types. Academics are motivated by the desire to ensure the patient is at the centre of everything they do, and this underpins both educational and research aspects of the role. They therefore work collaboratively with clinical service providers in the development of the curriculum as well as with academics from other institutions to ensure collective challenges are overcome and good practice is shared. Academics actively promote patient and public involvement and engagement across the full remit of their role, including in curriculum design, applicant review, teaching, learning and research. They work with learners as stakeholders, partnering in the design and co-planning of learning, teaching and assessment methods. Academics also partner with a range of other stakeholders to deliver clinical, professional and educational research, which optimises cost-effective education, care pathways and services. They provide leadership to the learners they work with and to the wider healthcare community. Overall, the core expectations of an academic are to educate learners while using and developing the evidence base for imaging and therapeutic service delivery.



3 Academic knowledge, skills and attributes

For individuals looking to develop into, or those already in, an **Academic role**, it has been identified through the expert consensus panel that the following knowledge, skills and attributes are relevant. These are in addition to those already determined as essential knowledge, skills and attributes required at Practitioner and Enhanced Practitioner levels and, given the expected level of clinical knowledge and expertise for academic roles, may also be in addition to those required at Advanced Practitioner level.

Academic knowledge

An Academic requires in-depth knowledge and understanding of the following, unless otherwise stated:

- Specialist knowledge relating to own scope of practice, including current and future developments
- Professional standards and regulatory requirements in relation to radiography practice
- Learning and teaching strategies applicable to adult learners
- Assessment strategies appropriate and relevant to a broad range of teaching and learning activities
- Educational and learner theories – 'scaffolding of learning'
- Support strategies which recognise and meet the diverse needs of learners; including approaches to supervision and mentoring, personal tutor roles, supporting neurodivergent learners
- Knowledge and awareness of educational technologies and how they best support learners
- Local and national policies in relation to education and research and how these relate to the education and development of the radiography profession
- Curriculum design and development
- Educational psychology relating to the motivation of learners
- Effective feedback strategies applicable to a range of learning, teaching and assessment methods
- Patient pathways aligned to areas of teaching
- Simulation and virtual placement and how these relate to radiography education, including their benefits and limitations

Academic knowledge (continued)



- Academic levels and how to align teaching and assessment to the correct level for the qualification
- Sociocultural diversity and how to proactively enable inclusivity within radiographic practice
- How to reduce biases within a diverse student/learner and professional community
- Keeping up to date with practice in own specialist area and working within this scope of practice
- Innovative approaches to the education of healthcare professionals
- The impact of healthcare provision and healthcare education, including of radiography on planetary health
- The importance of, and appropriate methods relating to, the continual evaluation and monitoring of the quality of the learning environment, assessment practices and feedback provided to learners
- Local and national metrics and how the quality assurance of radiography education provision contributes to these
- Principles of research-informed teaching and scholarly practice
- Research methodologies, theories and practicalities of carrying out research, including grant writing and dissemination practice

Academic skills

An Academic should be able to:

- Deliver engaging teaching to facilitate learning across a range of both face-to-face and virtual learning environments, including skills and simulation-based sessions, to most effectively support students in their learning
- Use educational, technological skills and digital skills, for example, the use of typical online office-based software packages, and virtual learning environment software, as well as radiographic and simulation-based technologies, to best enhance the student/learner experience
- Demonstrate curriculum-implementation skills to enable alignment of theory and practice
- Demonstrate excellent organisational skills in all aspects of the role
- Demonstrate critical thinking and reasoning skills across the full remit of the role
- Demonstrate excellent communication skills in their ability to communicate with learners, patients and the public, other healthcare professionals, clinical partners, employers and industrial partners (or other external collaborator organisations)
- Be motivational to engage learners
- Adapt teaching and learning practices to meet the needs of their learners, promoting inclusivity and accessibility for all learners
- Apply cultural competency skills for inclusive educational delivery
- Demonstrate positive transformational leadership
- Deliver coaching and/or mentoring skills as appropriate, being able to manage and support underperforming learners appropriately
- Work with a range of different professional groups to support learners
- Through self-reflection, facilitate the evaluation of own educational practice and that of others in a supportive way
- Use metrics and feedback to positively affect and develop own educational practice
- Demonstrate research skills, including the ability to deliver research-informed teaching and research supervision and to undertake own research practice, including dissemination of results

Academic attributes

An Academic should actively demonstrate or uphold the following:



- Be a positive academic role model, leading by example through own actions and behaviours
- Support and nurture others in learning to raise aspirations and encourage professional and personal development for the benefit of the profession
- Be self-motivated and able to motivate others to achieve goals
- Demonstrate enthusiasm for radiography and the profession
- Express confidence in support of the profession and within own role
- Through autonomous practice be innovative, creative, adaptable and flexible
- Professional and ethical behaviours in their role
- Be patient and empathetic towards the needs of all learners
- Champion the engagement of learners from diverse backgrounds across a range of learning activities and settings through inclusive practices
- Self-awareness through adopting active approaches to managing own behaviours
- Team worker – work collaboratively across own institution, professional networks and external organisations
- Have commitment to and evidence of CPD, maintaining professional currency
- Be reflective and reflexive as an educator and researcher
- Actively contribute to professional networks, the work of professional and regulatory bodies, government bodies and wider education provision
- Champion the development and application of the research evidence base
- Promote dissemination of research within own teaching practice and to the wider profession and organisational networks

4 Academic – four pillars of practice

Clinical Practice

Click icon to revise your understanding of the four pillars of practice

Academics inspire, motivate and raise the aspirations of learners through their enthusiasm and in-depth knowledge of the profession, their own area(s) of clinical expertise and teaching practice. They seek to maintain and update knowledge in relation to professional practice as an educator, continuing to maintain professional registration as appropriate.

Academics are aware of political, market and clinical service drivers that impact on the education of healthcare professionals. They use evidence-informed approaches and the outcomes from research, scholarship and continuing professional development (CPD) to design appropriate and inclusive learning, teaching and assessment strategies, maintain digital literacy skills and maintain and enhance their knowledge of professional practice.

Academics work in partnership with service users and stakeholders while liaising with regulators and the professional body to design programmes that are fit for purpose and fit for future practice needs. Academics therefore need to be adaptable, creative and innovative in their approach to problem-solving and in meeting the demands of clinical service as well as education. They must actively engage in continuous review of current and future developments. In striving to maintain and enhance their practice and that of others, academics will also engage in quality assurance and audit of teaching practice, programmes and clinical education, using this feedback to ensure a high-quality learning experience throughout the programme. They will use local and national metrics to continually evaluate and challenge their own practice, values and beliefs.

Academics act as a role model for future healthcare professionals, demonstrating professionalism, reflective practice, inclusivity, effective communication, patience and continuing professional development. Those in an academic role will provide pastoral and academic support to learners, being responsive to their needs, using effective listening and interpersonal skills and knowing when and where to signpost for further support. Those more senior to the role will also support or mentor colleagues with less experience, advising on academic and personal development.

Academics will provide risk assessments of teaching, learning and assessment activities, as appropriate, to ensure the safe use of equipment, maintaining their colleagues' and learners' safety.

Education

Click icon to revise your understanding of the four pillars of practice



Academics are required to have an in-depth understanding of the learning, teaching and assessment methods used in higher education, along with underpinning knowledge of how students learn. This will be gained by completing a teaching qualification and engaging in teaching, learning and assessment activities. Some roles will stipulate that a teaching qualification is a prerequisite, whereas other institutions will provide this within the first few years of an academic's career. This also applies to professional qualifications, when requirements may vary depending on the education level at which they teach. For example, to teach undergraduate and postgraduate students, many roles will require a full postgraduate master's degree as essential and working towards or holding a doctoral-level qualification as desirable.

In the initial stages of their career, academics are likely to start teaching learners at pre-registration undergraduate and/or postgraduate level, depending on factors such as their job description, level of academic qualification, underpinning skills and clinical experience. The educational aspects of the academic's role include lecture planning, linking the lecture content to learning outcomes and delivering lectures, tutorials, seminars and possibly clinical skills teaching sessions using simulated or real patients. Academics will use teaching and learning strategies to facilitate learning, enabling learners to make connections between theory and practice and develop critical thinking skills. This may include classroom teaching and lecture capture facilities, interactive tools that allow real-time feedback to engage large groups, as well as online platforms and technology to deliver online and blended learning sessions. Academics will develop their skills to be able to assess different learners' needs and adapt learning and teaching strategies to enable inclusive learning, and will "act as a role model, educator, supervisor, coach and mentor, seeking to instil and develop the confidence of others".[21]

A key aspect of the academic role is the setting and marking of formative and summative assessments, providing good quality feedback and feedforward advice, to enable learners to develop their skills as they progress through the course. In the initial stages of the role, academics will learn how to write clear assessment criteria that challenge students and meet learning outcomes. It is likely that those in an academic role will have personal tutor responsibilities in which they provide pastoral support in addition to the academic support offered to their learners. This can be extremely varied in nature and often involves signposting learners to appropriate support within the institution.

Education (continued)

As pre- and post-registration radiography programmes are linked to clinical practice placements, academics may have additional responsibilities for liaison with clinical staff and students when on placement. The role might also include education and support for practice educators, to facilitate them in developing their skills to support students.

As academics develop in their career, they may become more involved in curriculum design and development, innovations in learning, teaching and assessment, the teaching, mentoring and supporting of new teaching staff, and developing strategy within the education institution or more widely. Career progression can be from associate lecturer, lecturer or senior lecturer/principal lecturer (depending on the university structure), then to associate professor/reader and professor.

Academics will support the wider education and development of the workforce through engagement with the College of Radiographers (CoR), participating in events and special interest groups and undertaking voluntary roles within CoR, such as becoming a CoR assessor to assist the College in its work around programme approvals, endorsements and individual accreditations.

Academic staff engaging in teaching roles may seek fellowship with the **Advance HE Fellowship Scheme** and/or the **Staff and Educational Development Association** (SEDA). See Education, qualifications and accreditation.



Leadership and Management

Click icon to revise your understanding of the four pillars of practice

As gatekeepers to the profession, academics seek to uphold the standards of the profession through their own practice and the expectations of professional knowledge, skills and attributes placed on their learners. They actively seek to recruit individuals into the profession who will positively contribute to the growth and development of the radiography workforce. They do this through collaboration with expert clinical leaders in this area, as well as taking a lead in careers promotion, school liaison and outreach events.

Academics effectively lead the delivery of a module or a programme and/or team to ensure a high-quality learning experience and a programme that meets the needs of the future workforce. Using their organisational and management skills, academics plan and develop curriculum and practice education based on evidence-based practice, their knowledge of the profession and national strategy in education and workforce planning, collaborating in the design with service leaders. They contribute to national discussions concerning education within the profession, developing a synthesis of the wider professional issues and challenges, and contribute to the positive development of the profession for the future, including where appropriate to policy.

Academics lead research that will inform and develop the profession, ultimately to the benefit of the patients and public who interact with the radiography workforce. They engage externally to share work, collaborate and use expertise to enhance professional practice, education, workforce development and research.

Academics supervise, mentor, support and manage students and other members of academic staff in relation to academic and professional practice.



Research and Development

Click icon to revise your understanding of the four pillars of practice

Research is integral to academic roles and underpins research-led teaching and learning as well as creating the evidence base for the profession. Different higher education institutions (HEIs) may have different focuses for their research, based on themes and expertise within their department. Academics who engage with those in clinical practice to undertake clinically focused research play a key role in enhancing professional practice, improving patient outcomes and the cost-effectiveness of diagnostic techniques and/or therapeutic interventions. Academics focusing on educational research and pedagogical innovations in learning and teaching are key to the development of academic practice for the profession and wider healthcare education. No matter the focus of the research, however, all radiography groups should have a research strategy with measurable targets and appropriate time for staff to undertake research.

Research must be funded, and part of the academic's role will therefore include writing grant applications and bids. Engagement with service users and service providers is integral to developing research questions, understanding the feasibility of proposed methods and for ethical approval of applications. Project management skills are important for those academics delivering on research projects and for dissemination through reports, conference presentations and manuscripts, and feeding back to service users.



5 Education, qualifications and accreditation

Note that different HEIs have differing minimum expectations for appointment to post. This may be linked to the courses that academics might be expected to teach on but also to the scope of the individual's role in relation to teaching and research, as different posts are likely to have varying emphasis.

Supporting clinical expertise

- Clinical experience in area of practice and at appropriate level for the academic award
- First qualification in diagnostic radiography or therapeutic radiography or sonography, or alternative qualification (depending on the role)
- Postgraduate qualifications held or willing to work towards typically include a master's qualification
- Registration with the Health and Care Professions Council (HCPC) or equivalent regulatory body

Supporting learning and teaching

- Teaching qualifications held or willing to work towards typically include a PgCert in learning and teaching/higher education practice
- Practice education qualification(s) to support clinical education and clinical learners

Supporting research aspects of the role

- Postgraduate qualifications held or willing to work towards typically include a master's qualification
- Willingness to work towards a doctorate-level qualification if not already held

Accreditation

- Advance HE fellowship scheme – enables progression from Associate Fellow (AFHEA), Fellow (FHEA) and Senior Fellow (SFHEA) to Principal Fellow (PFHEA) by mapping against the UK Professional Standards Framework (UKPSF) descriptors[22]
- Staff and Educational Development Association (SEDA) fellowship scheme

6 Indicative curriculum

Academics in diagnostic imaging and/or therapeutic radiography education deliver teaching across a multitude of practice and specialist areas; there is therefore no one indicative curriculum for the role. Education providers may have differing minimum expectations for appointment to post. However, it is expected that all individuals appointed will hold considerable clinical knowledge and sufficient expertise to underpin their academic role, and are therefore likely to hold postgraduate qualifications, typically at master's level. This is overseen by the College of Radiographers as part of its **programme approval** process in which staff experience and CVs are reviewed prior to programme approval being granted. Any curriculum surrounding professional development into teaching and learning, such as a PgCert in learning and teaching should serve to facilitate the development and enhancement of those knowledge, skills and attributes as provided for the role.



Melanie Clarkson

Case Study



Click the video to watch Melanie talk about her career.

16 min



What is your current role?

I'm a Senior Lecturer in Radiotherapy and Oncology at Sheffield Hallam University. I support undergraduate students through my role as a placement learning tutor (PLT) at radiotherapy departments in Middlesbrough and Newcastle-upon-Tyne. Within this role I provide academic and pastoral support while students are on clinical placement.

I'm also the clinical lead for the undergraduate programmes; I maintain strong relationships with our clinical partners and provide support to clinical staff to ensure good quality placements and learning environments. I use my collaborative skills from clinical practice to work as part of a large team in providing undergraduate education. I provide wellbeing sessions to all cohorts on the undergraduate programme, as well as collaborative and interprofessional teaching on topics such as mental health capacity, working in teams and service improvement.

I'm involved in postgraduate education as the programme lead for the MSc advanced clinical practice radiotherapy and oncology course, with additional roles as module leader for two core modules (in expert practice for extended roles and advancing specialist practice).

Do you still make time for your own development and further progression?

Working with practitioners in a variety of scopes of practice is extremely interesting. It is exciting to see where practitioners are working, pushing the boundaries to provide excellent care and supporting patients, families and the service. This has enhanced my passion for advanced practice and has seen my external roles develop to include working with Health Education England (HEE) on writing the non-surgical oncology Advanced Clinical Practice (ACP) framework. I also work for HEE as a reviewer for portfolios, credentials and accreditation for the **Centre for Advancing Practice**. I applied for this role to enable the voice of our small profession to be represented at a national level.

To further expand my advanced practice knowledge, I am a member of the **Association of Advanced Practice Educators UK (AAPE UK)**, attend the ACP workstream for the **Aspirant Cancer Career and Education and Development (ACCEnD)** programme and I am an external examiner for the advanced clinical practice programme at the University of Teesside. I am extremely passionate about my profession, and I am honoured to be a member of the therapeutic radiography family. Being involved in these projects means I have a role in directing the profession in a positive manner.

In 2021 I became a senior fellow at the Higher Education Academy **(now known as Advance HE)**, which recognises leadership within the educational field.

My areas of research are around wellbeing and advancing practice. Collaborating with the wider international community and other professions is something I am passionate about to ensure advanced practice is recognised for its impactful role worldwide.

How did you reach this point in your career?

I qualified as a therapeutic radiographer from the University of Central England in Birmingham in 1999. Six months later I went back to college to complete my postgraduate certificate in education (PGCE), qualifying in January 2002. I also gained status as an NVQ level 3 assessor, using my skills in support and assessment across numerous educational pathways. From this early stage in my career, I knew I wanted to be involved in the education and training of others. As well as a passion to teach, I was also keen to learn myself. In September 2002 I embarked on my MSc in health sciences (cancer care) at the University of Teesside, completing the programme in 2005.

In October 2007, I was seconded to Sheffield Hallam University (SHU) as a professional development facilitator (PDF). I adored this role as I was able to support undergraduate learners following different pathways such as the diploma of higher education, BSc, postgraduate diploma and, more recently, the pre-registration MSc. This secondment allowed to me to adapt my teaching styles to different levels of education and to learners with different learning requirements.

In 2009 I became a superintendent therapeutic radiographer in education and training. This clinical leadership role supported my development as a leader in the academic setting. In 2014, a senior lecturer and PDF role was advertised at SHU, which provided the opportunity to bring all my previous education and clinical skills into the education arena.

Once in my role as an academic I applied my transferable skills and took leadership roles as clinical lead for the undergraduate programme and course leadership for the MSc in advanced clinical practice in radiotherapy and oncology.

What support have you found helpful along the way?

Throughout my career I have had supportive managers in both clinical practice and academia, who have encouraged and supported my development through my own learning such as my PGCE and MSc.

I've also been able to access teaching opportunities in neighbouring trusts and charities to further expand awareness of the role of radiotherapy in the cancer pathway and of therapeutic radiographers. Educating others about the pathway increased my confidence in front of an audience and to develop suitable resources. It also allowed further networking; this is an underrated skill, as once you are 'out there' other opportunities follow. So, it is really important to talk to others at any event you attend.

Access to secondments has also been important in my development. My managers were again supportive in allowing me to develop in those roles when they arose.

What's the most rewarding part of your role?

Definitely seeing the development of the individual, both as a professional and as a person. Seeing individuals reach their full potential and have a positive effect on patient care means you still have that connection to the patient and an impact. Networking has been key to my development, as speaking with like-minded people means you can develop education and training that is fit for purpose and further develops the workforce.

What advice would you offer anyone who wants to become an academic?

If you have an interest in education, I strongly encourage you to look at opportunities at your local higher education institute, where you could become a visiting lecturer in your area of expertise or have an impact on students' development as part of the student liaison/assessment team.

You could become a **STEM ambassador** to promote science, technology, engineering mathematics (STEM) professional careers and educate others on your role. Alternatively, you could mentor or inspire prospective students via **Inspiring the Future**, which encourages professionals to talk about their job, career and educational route to inspire and motivate young people.

Networking within your trust and external organisations can open opportunities to work in different areas that can then lead onto to other projects. Don't be frightened to reach out to people you would like to work with.

Victoria Hughes

Case Study



What is your current role?

I'm a Diagnostic Radiography Lecturer at the University of Liverpool's School of Health Sciences. I teach primarily on the BSc (Hons) and MSc (pre-registration) diagnostic radiography programmes at the university. However, I also contribute to teaching on a range of other multiprofessional programmes of study within the school. My primary areas of subject expertise are anatomy and pathophysiology, clinical skills teaching and cross-sectional imaging, and I have research interests in the areas of radiation dose optimisation, and both patient and student experience.

In addition, I am currently the practice placement tutor for both the BSc (Hons) and MSc (pre-registration) programmes, which involves coordinating student placements across the Cheshire and Merseyside region, liaising closely with clinical colleagues to manage the clinical placement experience of our students.

Read on

What steps did you take to reach this point?

I studied diagnostic radiography at Bangor University from 1993 to 1996. Post-qualification I worked for many years as a clinical radiographer in NHS trusts within the North West region of England, specialising in oncology (cancer) imaging and further into cross-sectional imaging (computed tomography and magnetic resonance imaging scanning).

Having a particular interest in computed tomography (CT), I gained an MSc in diagnostic radiography in 2000, with a dissertation on the subject of radiation dosimetry and staff education in CT scanning. As I progressed into more senior radiographer roles, I became responsible for staff training and education and trained as a learning representative for the Society of Radiographers (SoR), supporting both diagnostic and therapeutic radiographers in my workplace with continuing professional development (CPD), and supporting students in practice.

As time progressed, I also began to undertake formal training in teaching and assessing, including an NVQ award in assessing for health care assistants in 2003 and eventually a postgraduate certificate in teaching and learning in 2011, gaining fellowship of the Higher Education Academy (now **Advance HE**).

Following this, I branched away from radiography to undertake a secondment as a trust practice education facilitator, managing placements for multiprofessional healthcare students across the trust. I also began working as an honorary lecturer, teaching on trust training programmes for health professionals new to oncology, including teaching communication skills in cancer care.

Following my secondment and returning to radiography, I unexpectedly moved into management roles for several years – first as a superintendent radiographer, then principal radiographer, followed by a senior management role as lead allied health professional for diagnostics (a role encompassing radiology, pathology and cardiorespiratory services). During this time, I undertook an additional postgraduate certificate in healthcare leadership.

These roles provided valuable experience in operational and financial management, clinical governance, strategic planning, multiprofessional leadership and, importantly, pastoral care and support of staff. My work in education and management resulted in a career award of which I am very proud – North West Radiographer of the Year 2015 – having been nominated by my department colleagues. Eventually, my love of teaching drew me to the university, where I have worked since 2018.

What support has been helpful?

I have always been fortunate in having significant support from my NHS employers and colleagues to pursue different avenues and undertake additional training for each of my roles. The Society and College of Radiographers (SCoR) has also been a great source of support, providing training and advice with my former role as union learning representative, and invaluable access to a network of colleagues regionally and nationally. I continue to work closely with SCoR in voluntary external roles, including as education rep on the North West Committee and as a member of the SCoR **Diagnostic Imaging Advisory Group**.

Undertaking and publishing research is now integral to radiography education and essential to the development of the profession. While I was involved in research from an early point in my career, through undertaking my MSc, additional support in developing and disseminating my work would have certainly helped me – this is much more widely available now through professional and regional research networks.

What do you find most rewarding?

Seeing the students' progress, from first-year entrants to the programme through to fully fledged diagnostic radiographers, is incredibly rewarding. I hope that my many years of experience in a variety of clinical roles contributes to not only students' learning but also their personal development to enable successful completion of their training. Graduation day is very special!

Do you have any advice for others?

As a radiographer there are many opportunities to become involved in education within your clinical department, from supervising students to facilitating lunchtime CPD lectures and journal clubs. Try approaching your trust education department or local university about undertaking guest lecturing or undertaking some formal educator training.

It is important to have had research experience, so take opportunities to join a local research group and develop your skills – there is a lot of support available from SCoR and the **Council for Allied Health Professions Research (CAHPR)** for early-career researchers.

Finally, don't be afraid to step out of your comfort zone to try a secondment or role in a different career direction – everything adds to your experience.

Alex Partner

Case Study



What is your current role?

I'm Assistant Head of Diagnostic Imaging, Operating Department Practice and Osteopathy at the University of Derby.

Read on

This is a varied role. I strategically lead and operationally run the discipline area, which covers three main professional activities. Diagnostic imaging is one of these. It houses the pre-registration radiography programmes but also the postgraduate reporting programme, apprenticeships, foundation degree, ultrasound and dual-energy X-ray absorptiometry (DXA) provision. I directly line manage academic staff and associate lecturers. I am involved in decision-making around budgets, procurement, portfolio reviews, quality, action planning, audit, validation and approval. I still maintain an academic and student-facing role, meaning I undertake module leadership, teaching, personal academic tutoring, marking and assessment moderation. This is a good balance for me of undertaking leadership, management and research while maintaining student contact.

My role has taken me into research, and I've found this particularly rewarding. I enjoy undertaking projects to evaluate pedagogical methods or aspects of patient care. This is an area I see my role expanding into, which also allows me to motivate and encourage my staff to do the same.

I have various external roles that enhance my professional knowledge, communication and experience. I am a fitness to practise panel member at the Health and Care Professions Council, an external examiner at another university and a National Institute for Health and Care Excellence (NICE) adoption and impact reference panel member. I am also a College of Radiographers (CoR) assessor and a member of the Society and College of Radiographers (SCoR) Diagnostic Imaging Advisory Group. I'm on the editorial board of SCoR's Insight magazine and on the Radiography journal international advisory board, and deputy chair of the Heads of Radiography Education group.

How did you get to this position?

I moved from clinical practice into education part-time as a clinical academic, where I worked for nearly two years. I found dipping my toes in while keeping a clinical role was the best way for me to see if I could do it and if I liked it. I undertook a postgraduate certificate in higher education and became a fellow of the Higher Education Academy (now Advance HE).

I then plunged into higher education full-time and took on the role of programme leader for BSc (Hons) diagnostic radiography. I found there was lots of support from mentors and continual professional development on offer. I enrolled on a master's in health and social care course, gained senior fellowship of the Higher Education Academy and then progressed to start a PhD by publication. I also completed **Advance HE's Aurora women in leadership programme**, which boosted my confidence and drive. I really found that by volunteering for tasks or projects that were for more senior roles this put me in a good position for progression.

What support has been helpful?

I was fortunate that I had a supportive line manager and good peer support. I networked across conferences and other professional groups, building a good range of role models for myself and people who could offer advice and support.

I think earlier research support would have been helpful, so it is great to see this is on offer through the College of Radiographers.

What do you find most rewarding?

Students' gratitude for supporting them with their studies and seeing how they grow with confidence is truly rewarding. I also like seeing new staff transition from clinical practice into academia and to be able to support them to develop. My goal is to always affect clinical practice for radiographers and patients positively and I am fortunate to have many ways of doing this.

What advice can you offer?

I would say, push yourself – it is OK to have ambition or a goal you would like to achieve. Take every opportunity you can to progress, whether that is shadowing someone, having a mentor or doing a course or formal piece of study. Get involved in research at an early stage by working with other more experienced researchers first. If you remember why you are doing something – for the students or for patients, for example – then it is difficult to go wrong.

Jo Posnett

Case Study



What is your current role?

I am the Deputy Head of the Allied Health Professions Department at Sheffield Hallam University. My job is to support the head of department by leading on the operational aspects of the management of the department and providing a strategic link between the department head and operational academic groups responsible for the implementation of the teaching, learning and assessment strategy.

Read on

What steps did you take to reach this position?

I qualified with College of Radiographers (CoR) diploma in therapy radiography and as part of my interest in education I then completed an MSc in healthcare education. In fact, I was the first accredited practice educator for radiotherapy.

I had a responsibility for staff development while in a superintendent radiographer post and I created educational packages around new software and use of new kit, including developments in imaging.

I then moved into a split educational post, initially with Leeds University and the radiotherapy department, covering support and teaching of the undergraduate provision.

After first applying unsuccessfully for a lecturer position at Sheffield Hallam University, I was appointed to a full-time professional development facilitator role there and then became a full-time lecturer, taking various roles, such as module leader, clinical lead and course leader.

When I was made a team leader in the radiotherapy team, I became more interested in people management. I was appointed subject group leader for radiotherapy and oncology and then successfully applied for an interim deputy head of department role for allied health professions. This covers eight professional areas, with responsibility for the undergraduate and pre-registration MSc portfolio plus additional management, including work planning, staff CPD and quality.

What support have you had in your career?

I was lucky to have very supportive managers; they were forward thinking and supported opportunities for my role development. I have also been on various leadership courses that aided my skill development during my career.

Peer support has also been important, acting as a sounding board for my views and ideas and considering how to manage tricky issues, this helped me develop and recognise my own skills. Many of the modules and programmes I ran focused on personal and professional development, which also helped me in my role, managing students and then staff. Exposure to a range of people in leadership roles (clinical and academic) was really important in shaping how I manage and approach projects and issues.

What do you find most rewarding?

I still have a passion for radiotherapy specifically but also for all allied health professions because I believe that it is a privilege to work with patients. Now I see my role as looking after and leading in education to ensure that the staff can do their roles to the best of their ability. This allows them to create a fantastic student experience, and this results in practitioners who provide high quality, safe and compassionate care for the patients and their carers, I see my role as still having an impact on the patient.

I enjoy problem-solving and supporting or helping staff to develop and I get satisfaction from helping staff meet their full potential alongside improving the workplace setting.

I enjoy looking at different ways of learning, teaching and assessment and particularly working with clinical colleagues around the practice-based education for students. I enjoy being able to remove barriers where I can so that staff and students have the same opportunities that I did.

Do you have any advice for others considering similar career progression?

Moving from the NHS to education is a big step so I think you need to be sure this is what you want. I would suggest that you get involved in student education in clinical practice and build up your teaching experience.

Look for opportunities to deliver teaching in the university setting, in specialist or associate lecturer positions. This allows you to test the environment before making that full commitment. It is helpful to complete your post graduate study (Masters), even if jobs are not always being advertised, it is good to be ready and be slightly ahead of other candidates. Speak to people in those roles, see when the next recruitment round might happen and be prepared.

Ian Simcock

Case Study



Click the video to watch Ian talk about his career.

12 min



What is your current role?

I'm a Clinical Academic Radiographer at Great Ormond Street Hospital for Children NHS Foundation Trust (GOSH).

What did you do before and how did you move into this role?

I've worked as a clinical radiographer for over 25 years, both overseas and in the UK, since I finished my diagnostic radiography degree at Keele University in 1996. I developed my skills through dedicated training in both CT and MRI to become a senior radiographer teaching others advanced techniques within these areas.

Throughout my career I've been involved in research and have always looked for ways to develop this aspect. To further realise my potential, I completed my MSc with distinction in diagnostic radiography at the University of Hertfordshire in 2010. My research dissertation was on MRI and diffusion imaging, an area I was developing as part of my clinical role. During this period, I worked in an oncology centre as the deputy superintendent of research for 10 years, yet I was frustrated at not completing my own studies and was looking for opportunities to expand my skills to become a principal investigator.

In 2016 I was seconded to a team at GOSH to develop post-mortem imaging at the hospital and was successfully funded in 2018 by the **National Institute for Health and Care Research (NIHR)**, one of only a handful of radiographers, to complete my doctoral study into developing micro-CT for human fetal post-mortem imaging following a miscarriage, which I've now completed. Alongside a team of radiology and pathology professionals, I've developed a novel clinical post-mortem micro-CT service that scans over 250 patients a year.

I'm continuing to develop my postdoctoral research funding strategies and studies. I have been funded through two postdoctoral bridging grants from the **University College London (UCL) Great Ormond Street Institute of Child Health (GOS ICH)** and Health Education England (HEE). I've also obtained the **NIHR Development and Skills Enhancement Award** to prepare me by developing key academic research skills to successfully attract further funding and complete clinically impactful research for patients and families.

How else have you developed skills and knowledge to become a clinical academic?

I've actively sought opportunities to be involved and develop my research role and career. Sometimes this has meant moving to be able to maximise these opportunities. I've also seized any possibilities I could find and regularly pushed myself out of my comfort zone to be able to advance as a researcher. This has involved being on panels and groups, both inside and outside radiography, leading journal paper submissions and developing national guidance documents with other professional colleagues. Having these outside interests has been extremely rewarding and has allowed me to be influential in new and exciting areas of research and career development.

What support has been helpful?

I've benefited hugely from a team of supportive colleagues at GOSH, including the lead radiographer and academic lead radiologist, and the **Centre for Outcomes and Experience Research in Children's Health Illness and Disability (ORCHID)** team, a diverse group of health professionals experienced in developing clinical academic careers, as well as, of course, support from my family. Without this support I would not have been so successful or have navigated this complicated clinical academic pathway. Motivation and encouragement are so important in these roles.

What's the most rewarding part of what you do?

I really enjoy working alongside other clinical and academic staff, both within and external to radiology, to make a real difference to patients and their families. The clinical micro-CT service for human fetal post-mortem imaging following a miscarriage is a novel and innovative way for parents to try to find out (in a non-invasive manner) why their baby died. Without this technique, parents may feel unable to consent to an invasive conventional autopsy and therefore never find out the reasons for their baby's death. Completing research to help these parents and provide a genuinely innovative clinical service is immensely rewarding and I look forward to continuing my future research.

Is there any advice you can give potential clinical academics?

Go for it! By talking to other staff members and experts in the field, radiographers will find that researchers often relish the opportunity to discuss their work and will be only too happy for you to get involved in research. If you are interested, it is invaluable to gain experience of research in any format, whether that is reading journal papers, helping out in a study, completing audits in your department or completing courses to develop your skills. My main advice would be to get involved!

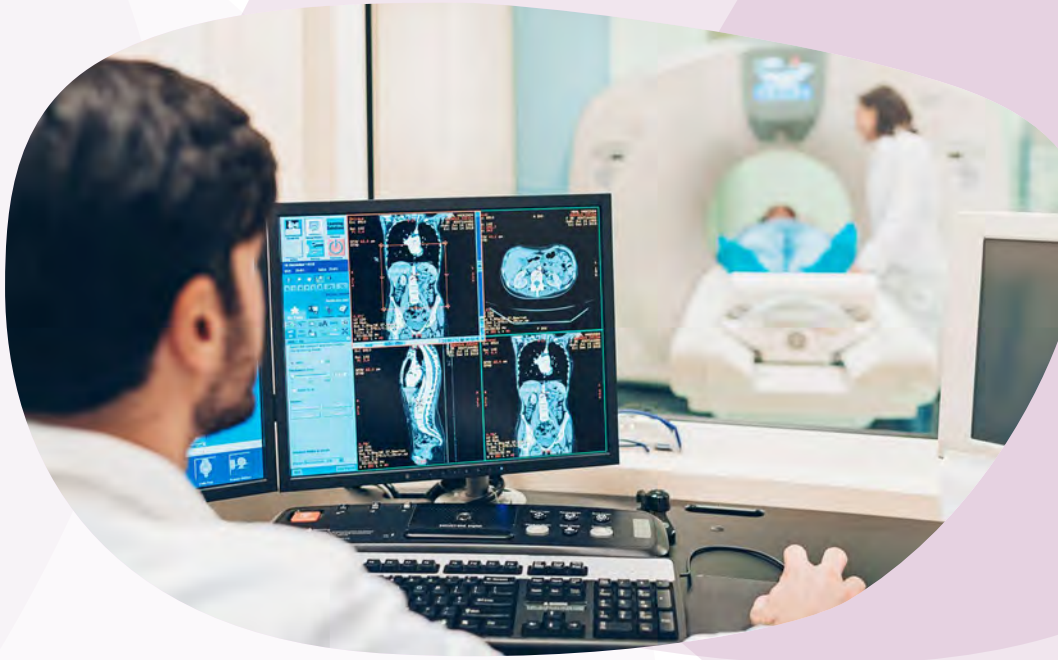


Undertaking research and innovation: supporting guidance for the radiography workforce

1 Introduction

The College of Radiographers (CoR) Education and Career Framework (ECF) (fourth edition) encourages involvement in research across all levels and specialisms of imaging and radiotherapy practice. A wide variety of research roles exists within the profession. These often have differing titles but all of them collectively serve to develop the profession, clinical practice and service delivery for the benefit of patients and the public. This section of the ECF is therefore intended to act as a guide detailing the essential knowledge, skills and attributes considered necessary for differing levels of engagement or involvement in research and innovation roles.

In addition to these essential knowledge, skills and attributes, the framework presents some relevant background and context about radiographic research, starting with the importance of patient and public involvement in research and innovation (subsection 3). This is followed by an introduction to the CoR research strategy and how this could be used in your role (subsection 4). Subsection 5 is on career planning, including a pointer to research training that is available in a variety of formats and can be accessed at a range of educational levels. It offers an insight into doctoral training options you may be interested in and indicates what an academic radiographic research career may look like across the spectrum at pre-doctoral, doctoral and postdoctoral career stages. Subsection 4 focuses on the importance of collaboration, both internally with different disciplines and externally with other organisations and industrial partners. Subsection 5 looks at the importance of innovation, the creation of intellectual property (IP) and what researchers need to think about to protect IP. Subsection 6 offers a reminder of the importance of the dissemination of research to support evidence-based practice in radiography.



2 Essential knowledge, skills and attributes

For individuals looking to develop into a research career or undertake a research role, or those already working in this type of career or role, it has been identified through the expert consensus panel that the following knowledge, skills and attributes are relevant.

Research role knowledge

- Methods for involving patients, public, service users in research
- Detailed knowledge of local, national and (where relevant) international research ethics and governance procedures and frameworks
- Research priorities within own practice scope
- Literature searching methods
- Detailed knowledge of the Good Clinical Practice (GCP) standards and frameworks
- Current and emerging research/trials within own scope of practice
- Regulatory frameworks (e.g. MHRA, HRA) clinical and research governance frameworks
- Evaluation/research methodologies
- Robust knowledge of qualitative or quantitative research methods
- Knowledge of approaches to quantitative or qualitative data analysis
- Methods to minimise researcher bias
- Knowledge of intellectual property, copyright or trade marking as part of the research and innovation pathway
- Approach to evaluation/synthesis of literature
- The clinical trials process
- Knowledge of the innovation pathway
- Knowledge mobilisation or knowledge exchange methods and processes

Research role skills

- Identify and work with research networks
- Demonstrate rigour in data collection and data analysis
- Demonstrate critical thinking and reasoning
- Demonstrate excellent communication skills (sometimes across agencies)
- Report on outcomes of research in appropriate formats and according to requirements
- Translate research knowledge
- Develop research protocols/proposals
- Demonstrate ability to manage projects effectively and efficiently
- Demonstrate excellent organisational skills
- Lead on research and contribute to evidence base within own scope of practice
- Utilise software effectively in research and evaluation
- Able to co-ordinate grant application submissions and draw on relevant expertise to maximise grant success
- Demonstrate effective mentoring skills
- Demonstrate effective supervision skills
- Disseminate research



Research role attributes

- Passionate about research
- Ethical
- Rigorous/meticulous
- Critical thinker
- Show initiative
- Autonomous
- Open minded
- Enthusiastic and motivated
- Resilient
- Flexible/adaptable
- Curious
- Innovative
- Emotionally intelligent
- Reflexive
- Patient focused
- Compassionate
- Team worker
- Able to lead



3 Patient and public involvement in research

Listening to patients and service users is at the core of the CoR mission statement. In 2018 CoR published the patient, public and practitioner partnerships within imaging and radiotherapy guiding principles, confirming the importance of the patient voice in radiographic service delivery, radiography education and radiographic research. That document is a helpful read for those working in research roles or planning to develop their career in research and innovation. Patient and public involvement should be integrated throughout the entire research and innovation pathway. It is necessary to be cognisant of the value that patient and public involvement can have on the design and delivery of research programmes. Examples of how patients and the public can be partners in programmes of research can be found at the National Institute for Health and Care Research (NIHR) INVOLVE website but may include patient representatives:

- as joint grant holders or co-applicants on a research project
- being involved in identifying research priorities
- as members of a project advisory or steering group
- having an input on participant information leaflets or other research materials
- interviewing research participants
- as carer researchers carrying out the research

There are useful documents and frameworks available that can support researchers in working with patient representatives throughout the research and innovation pathway, including the following articles:

- Frameworks for supporting patient and public involvement in research: systematic review and co-design pilot
- Patient involvement in clinical research: why, when, and how





4 The College of Radiographers research strategy

The overarching vision of the Society and College of Radiographers (SCoR) is for research to improve patient care and outcomes by continuing to develop, grow and implement a high-quality evidence base that addresses key patient-focused research priorities.

The three aims of CoR research strategy are:

Aim 1 Embed and enable research at all levels of radiography practice and education.

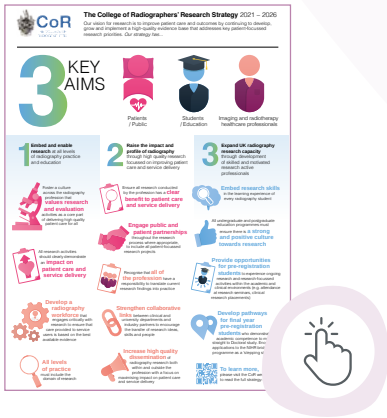
Aim 2 Raise the impact and profile of radiography through high-quality research focused on improving patient care and service delivery.

Aim 3 Expand UK radiography research capacity through development of skilled and motivated research active members of the profession.

The CoR research strategy 2021–2026 is inclusive and is targeted at all levels of the profession, from student to consultant practitioner, and at all levels of research, from novice through to research professor. Patients and carers are also key contributors to both the research strategy and research within radiography, working in partnership with healthcare professionals. The research strategy supports the radiography profession in delivering research-based practice and research priorities for the radiographic profession.

The research strategy can be used to support the development of a research career. Each of the strategy aims is broken down into recommendations that assist the reader in understanding how to implement elements of the strategy in their own career development. For example, practitioners can see how they can develop their career and work towards advanced or consultant practice and there are suggestions for research activities that they can engage in. Academic staff can use the strategy to embed research in their curriculum and help to encourage a research culture among students and within their university.

The strategy encourages service user involvement, strong research leadership, collaboration with others and the dissemination of findings.



5 Research career pathways

5.1 Career planning

The Health and Care Professions Council (HCPC) standards of proficiency for radiographers sets out expectations that radiographers must engage in evidence-based practice and be able to evaluate research. The Society of Radiographers (SoR) guide for members on getting into research explains that a core function of radiography research is to provide and update the evidence base for practice, research and evaluation and recognises that innovation activities are integral to delivering high-quality patient care and improving services.

The development of sustainable research and innovation cultures requires the involvement of everyone in clinical imaging and radiotherapy teams, in all roles and at every stage of their careers. Beyond this collective team responsibility, individual professionals may wish to progress their skills and capabilities further by considering the range of research and innovation careers that are available. The Council for Allied Health Professions Research (CAHPR) research practitioner's framework describes the knowledge and skills an allied health professional (AHP) needs to perform applied research within a range of practice settings and at different levels of competency, from basic competency to advanced and research leadership levels. The Vitae researcher development framework also describes the knowledge, behaviour and attributes of successful researchers.

There is a range of support available for professionals who wish to develop a research career plan. The SoR getting into research guide provides an initial overview. Professionals are advised to take part in team audit, service evaluation and quality improvement projects locally. Employing organisations' research, development and innovation departments will provide advice and support, which may include research and innovation workshops and events or signposting to local resources. CoR provides an online research network workspace and discussion board while CAHPR has regional hubs that facilitate face-to-face (in person or virtual) AHP research training and collaboration.

The transferable skills that diagnostic and therapeutic radiography professionals possess, such as leadership and teamworking capabilities, are directly applicable to the development of research and innovation careers. Building on these skills, professionals may be able to undertake research secondments and internships to experience elements of research roles. Training, learning and development should be recorded regularly, for example, in SoR's CPD Now online portfolio for members, and be included for discussion during local personal development and educational development reviews. SoR members can apply for competitive College of Radiographers Industry Partnership Scheme (CoRIPS) research grants or CoR doctoral fellowship grants (see Table 1 for an overview of routes to doctoral training). In addition, there are a range of charitable research and national healthcare research organisation grants, awards and schemes open to applicants.

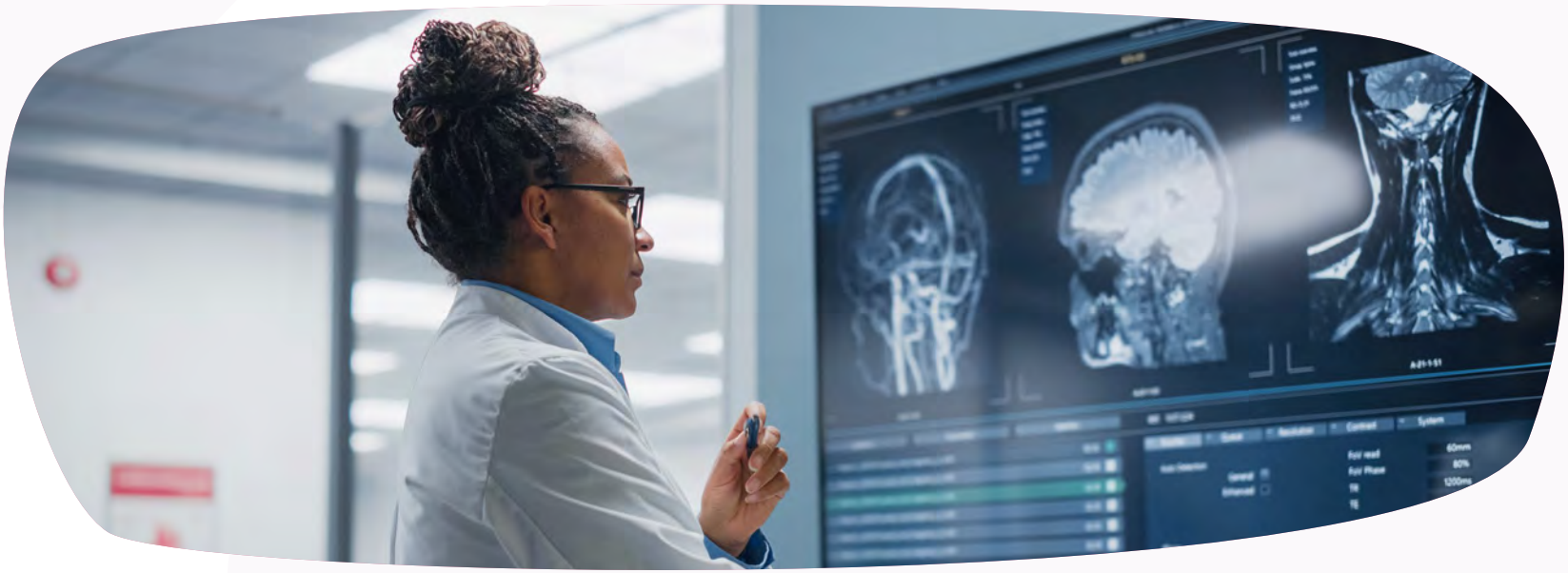


Table 1 Research degree options

Degree training options	Characteristics	Limitations for research practice	Benefits for research practice
Standard subject/ discipline MSc	Research training may include a 15/30 credit research methods module. There may be a 45/60 credit dissertation module that may allow for a small primary research study in a narrowly defined area, secondary research or service development or evaluation projects.	Provides limited research methods training to allow the practitioner to practise in a research role. May not provide any opportunity for experience of primary research. Unable to act as principal investigator (PI) for a research project that requires NHS Health Research Authority and Health and Care Research Wales ethics approval. May limit opportunities to gain significant research funding.	Provides introduction to research and allows the practitioner to evaluate research and apply research to practice.
MPhil (Master of Philosophy)	A substantial research project assessed by a written thesis (with or without an oral viva).	May only include a programme of research training aligned with the focus of the project. May not allow for understanding a broad range of research methods.	Individuals have research expertise in the research methodology of the chosen project area.
MRes (Master of Research)	A substantial research study or a focused taught programme of research training leading to a primary research study.	May not allow for understanding a broad range of research methods.	Experience of leading a substantial research project. Focused research methodological expertise in a specific research area.

Table 1 Research degree options (continued)

Degree training options	Characteristics	Limitations for research practice	Benefits for research practice
PhD (Doctor of Philosophy) standard route	A substantial programme of research that is novel and makes a significant contribution to the existing knowledge base. Includes a programme of research training that should extend beyond the methodological focus of the research study.	Some healthcare organisations will not fund PhD study; in some cases they may instead encourage staff to undertake a DProf. Post-doctorate jobs can be fixed and short-term, and it can be difficult to get a substantive post straight away if taking a standard PhD research route into academia.	Opportunities to apply for National Institute for Health Research (NIHR) advanced/career fellowships.
DProf (Doctor of Professional Studies)	Usually involves a taught programme of research methods followed by a programme of research that is novel and makes a significant contribution to the existing knowledge base.	Those with a DProf are not currently eligible for National Institute of Health Research (NIHR) career fellowships in England.	Often has a very clinical/educational focus directly relevant to practice.
PhD by published works	Only available to individuals with a university contract (including honorary contracts or alumni). Usually for those individuals with a long history of research practice who have already built a substantial body of published works.	No formal research training programme.	Research is published (disseminated) as it is completed.

5.2 Research roles

Research roles in radiography span a number of different spheres of practice. Figure 1 presents areas where radiographers across clinical and academic roles may have input on or lead research activity.
In addition to the knowledge, skills and attributes identified from the consensus panel (listed in subsection 2), practitioners moving into a research role should consider the importance of being able to write research grant applications and should work to develop knowledge and understanding of what a successful grant application would look like.

SoR provides further advice on developing clinical academic roles in its clinical academic radiographer guidance for the support of new and established roles.

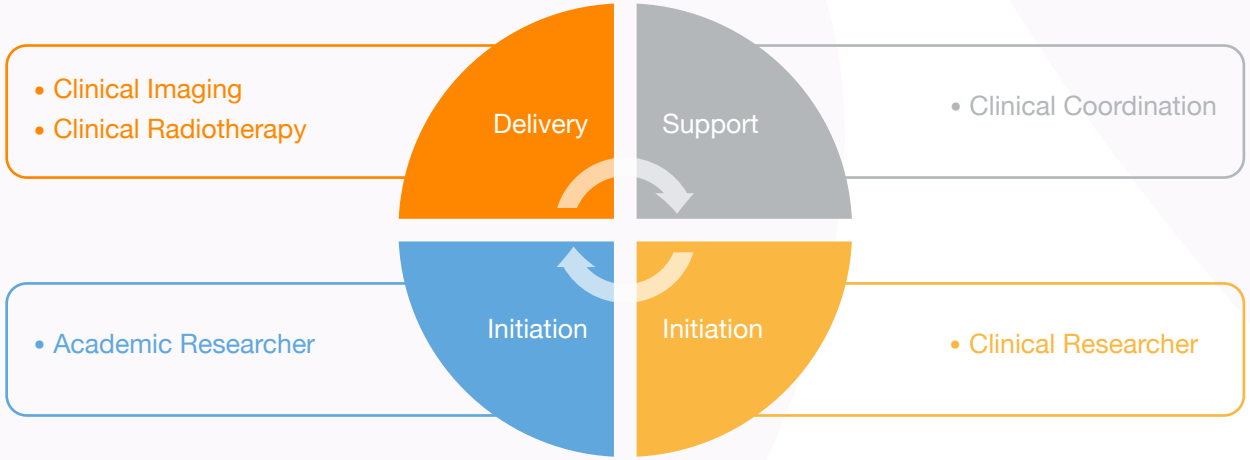


Figure 1 Areas for radiographer involvement in research.[23]

5.2 Research leadership

Whether you are based in a university setting or in a clinical setting, it is not necessary to have a PhD to be involved in or lead a research project. However, a PhD or doctorate confers a level of research methodological expertise that is seen as the minimum level required to be a principal or chief investigator for research ethics submissions to national review bodies, such as the Health Research Authority. Figure 2 demonstrates the different levels of research activity and leadership expected at different stages of the academic research career pathway.

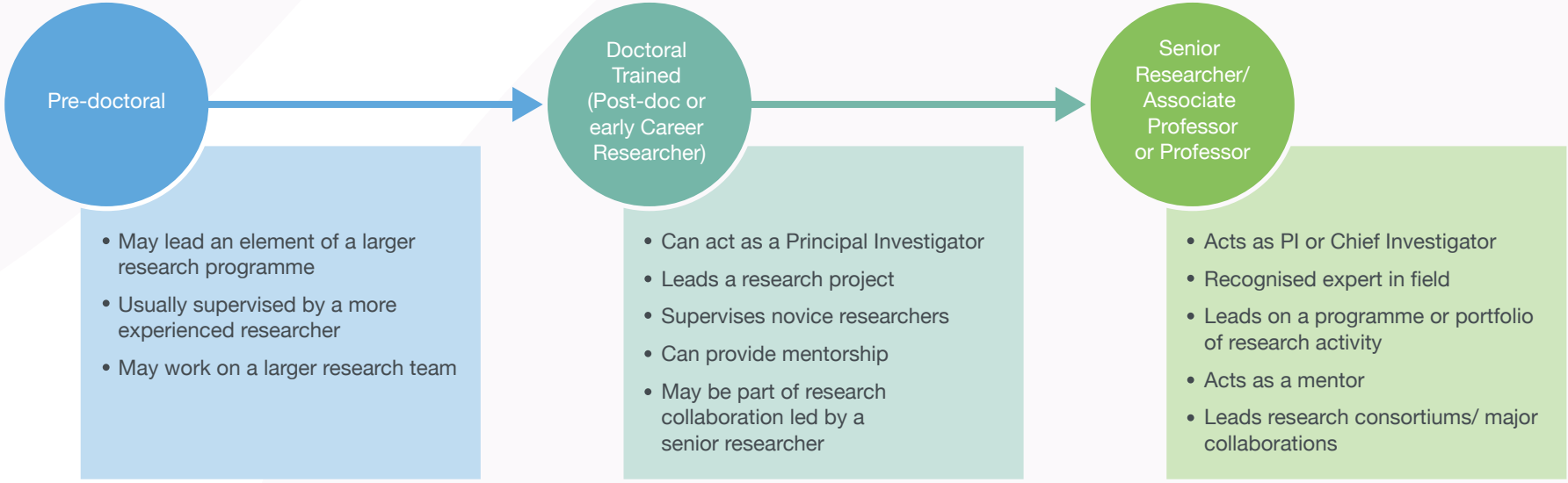


Figure 2 Expected research leadership activity during academic career.[24]

In **Figure 2** it is worth noting that mentorship can be undertaken at many levels. Peer-mentoring may be appropriate at all levels of the pathway and pre-doctoral researchers may be required to mentor junior staff considering a research career pathway, or to mentor practitioners undertaking master's level research dissertations.

A number of research leadership courses are available for healthcare staff, including courses offered through the NHS Research and Development Forum.

The leadership role increases as researchers develop through the research career pathway. Initially, as a pre-doctoral or novice researcher, practitioners will most likely be a member of a larger team of researchers led by an experienced research lead or principal investigator (see Figure 2). As researchers develop their expertise and progress to leading research projects as principal investigators, the need for good leadership skills increases. As a principal investigator (PI), researchers are required to have the same leadership skills as other practitioners who lead clinical teams. For example, a PI is required to negotiate within the research team and across agencies to ensure the project is completed to a high standard and on time. Managing the research project budget, the research team members and the day-to-day running of the project requires a range of leadership skills including:

- conflict management
- providing constructive feedback
- developing and delivering a vision for the project
- motivating team members
- effective communication
- supervision
- negotiation
- project management
- contract management

This is not an exhaustive list and the extent of the skills required to lead a research project will depend on the scale of the programme of research. As practitioners progress to stage 3 of Figure 2, they may become involved in more strategic research leadership.

Research leaders are required to lead on research strategy development, manage change, deal with complexity and provide leadership to junior or novice researchers as well as influence in a range of settings. Those working at a strategic leadership level may require additional leadership skills in strategy development, cross-agency collaboration, priority setting, horizon scanning and engaging with funders for agenda setting. A number of research leadership training opportunities exist, including the NHIR Leadership and Support Development Programme or the NIHR leadership resources available through NIHR Learn. Professionals employed by a devolved nation will find that their respective administration – the Health and Social Care Research and Development (HSC R&D) Division in Northern Ireland, NHS Research Scotland (NRS), or Health and Care Research Wales (HCRW) – will also offer programmes and support.

6 Research collaboration

6.1 Working in collaborative research teams

Research is rarely a lonely pursuit and staff employed in clinical imaging and radiotherapy will work in research teams to deliver individual projects. While sometimes these teams will include multiple radiographers and other practitioners, it is important to also consider skills and expertise from outside the profession because interdisciplinary teams draw together different, but complimentary, skills that create outcomes frequently greater than the sum of the individual skills involved. Healthcare professionals may find themselves drawn to either quantitative or qualitative research and may choose to specialise in a particular research methodology or paradigm. However, it is often necessary to collaborate with others to bring together the relevant skills to support a successful research project. Methodologists play an important role in research, including when relevant statisticians, health economists or operational researchers within a project can strengthen the design, completion and outputs. Radiographers and imaging professionals will increasingly find themselves working with physicists, computer scientists, engineers and mathematicians as we move into a world with more artificial intelligence software and robot-assisted activity. It takes time and effort to work in such an interdisciplinary way and to understand each other's fields and languages, but the returns are worth the effort.

6.2 Industry partnerships – collaboration agreements

In many areas radiography is a fast-moving and commercially driven profession, with drivers for innovation and new technologies and techniques frequently developing from industry. However, the evidence base to support this innovation frequently slips behind the implementation of the new techniques and technologies. It is therefore increasingly important for radiographers and healthcare professionals to work with industry to identify how best to implement new technologies and techniques, but also for those radiographers and healthcare professionals to drive innovation themselves where they see advantages for patients, safety and efficiency. The UK government is driving industrial partnerships through UK research and innovation funding, which includes the **Industrial Strategy Challenge Fund**. The NIHR has funding rounds such as **Invention for Innovation (i4i)** in which industrial partnerships play an important role in ensuring research can be developed into products and therefore implemented in practice effectively in a short time frame.

7 Innovation and radiographers creating intellectual property

The UK health system has always been bound by the limits of budgets and national funding caps. This is unlikely to change; if anything, pressures to produce more for less will increase. Now more than ever we need innovators within the health system to develop and implement new devices, technologies and services that can improve patient outcomes and improve the working lives of healthcare staff, and do so at reasonable cost.

Many healthcare innovations fail to make it to widespread adoption. Anecdotal evidence suggests adoption of approved medical technologies or new innovations takes on average 17 years. A 2020 *Science and Public Policy* article by RAND Europe, **Innovating for improved healthcare: Sociotechnical and innovation systems perspectives and lessons from the NHS**, concluded that professional communities should embed innovation-related training in continuing professional development (CPD). The first key driver of innovation is the strengthening of skills, capabilities and leadership.

Radiographers frequently contribute to studies by providing their expertise and know-how. Know-how is the technical or practical knowledge resulting from their experience or from research and relates to how something is performed. For example, a radiographer may have developed a new pulse sequence that speeds up image acquisition while still yielding diagnostic images or a new positioning aid for radiotherapy. This would constitute their know-how if it is not generally known, used or easily accessible and is useful for production in the future.

Increasingly radiographers are, and will become, involved in research where significant intellectual property (IP) is developed; in some cases this will underpin products of the future. It is important for radiographers to realise the contribution they make to the development of tools and products. While some tools will have patents associated with them, copyright is a common form of intellectual property in the UK. Copyright is applied automatically without having to apply or pay a fee, but there is no copyright register in the UK. **Copyright applies to written work such as software, web content and databases**.

When entering a research collaboration in which IP may be created, it is important to have conversations at an early stage regarding the IP and the way this will be split in the future if a successful product is created. While it may be uncomfortable to have these conversations, it is important to hold such discussions during the early stages of a collaboration to prevent tension at a later point. When initially engaging with partners, non-disclosure agreements (NDAs) should be used before full details of an idea are shared. Universities and the NHS will have legal teams that can assist with NDAs and can also implement collaboration agreements. It is important to define the ownership of data and publication rights at the development stage, but it must also be considered that dissemination can prevent patents from being sought, so early engagement with and following guidance from intellectual property teams is essential.



8 Dissemination

It is important for researchers to be cognisant of a range of dissemination methods for research outcomes. For research to have impact, the results must be disseminated to the appropriate audiences. Researchers should develop a dissemination and impact strategy and include this in the project proposal; the dissemination strategy should include consideration of patient and public involvement as both the audience and as partners in delivering the project outcomes. This process is essential for the development of evidence-based radiographic practice.

Dr Jenna Tugwell-Allsup

Case Study



What is your current role?

I'm a Research Radiographer at Betsi Cadwaladr University Health Board, the largest health board in Wales, serving over 700,000 people.

Read on

My role and expertise include radiology-specific research such as radiation dose and image quality optimisation as well as general transferable research skills and knowledge. I lead and conduct my own research, support and facilitate research that involves imaging, and generate and review radiology and the health board's research governance policies and procedures, including the radiology research strategy, clinical trials and RECIST (response evaluation criteria in solid tumours) standard operating procedures. I also have teaching and educational responsibilities, which include mentoring and training of students and staff within and beyond radiology.

In addition, I am a journal peer reviewer, deputy chair of the research and development (R&D) board meeting and a member of the Society of Radiographers Research Advisory Group. I get involved in grant application writing, perform RECIST measurements for oncology clinical trials and run a journal club. I am an audit/quality improvement lead at one of the district general hospitals too.

What was your previous experience and how have you developed in the role?

I had no previous research experience when I applied, other than conducting a research project for my undergraduate BSc (Hons) degree, which won a university award and was the basis of my first publication. Having worked clinically for a few years in general radiography and magnetic resonance imaging (MRI), an opportunity arose for the research radiographer role. Following my successful appointment, I initially completed an MPhil (Master of Philosophy) degree, and two years later decided to pursue a PhD 'by published work' (based on six of my peer-reviewed international publications), which I completed in August 2021.

The roles and responsibilities I've mentioned have evolved over time as my experience in research has developed. In addition to my two postgraduate degrees, I've undertaken other very useful research training and activities as part of my role, such as completing certification in informed consent, managing essential documents in research and Good Clinical Practice (GCP) research principles, as well as participating in annual OPTIMAX research summer schools, exploring new ways of optimising dose and image quality.

What has proved helpful in your career to date?

Research is a very niche area, especially within the radiography profession, but over the past 10 years, more and more radiographers are pursuing a career in research or want to conduct/engage with research.

I have benefited from support and guidance from numerous individuals and institutions. My line manager has been extremely supportive of the research radiographer role from the start, and the local radiology and R&D departments have also played a significant part as well as providing me with the necessary emotional, financial and educational support. I completed both my postgraduate degrees (MPhil and PhD) with Salford University and there have been a number of colleagues and ex-colleagues from Salford who have provided me with a wealth of knowledge and skills, encouragement and support.

In addition, I was fortunate to be part of two European research summer schools with Salford University, which provided me with further opportunities to develop as a researcher in terms of advancing my skills and knowledge as well as offering new and valuable networking opportunities for future collaboration. I have joined the Society of Radiographers Research Advisory Group and this has already proved extremely valuable in terms of collaboration and generating a support network for the role.

What's the most rewarding aspect of what you do?

Unlike working clinically, where it is possible to get instant gratification or reward from a successful examination when a patient gives you positive feedback, a smile or a thank you, you may have to wait longer to glean the rewards from research. Nevertheless, when you do have a successful grant application, a paper published, consent a patient into a trial, disseminate your research findings or deliver research training or a lecture, the feeling of achievement is enormous. Some rewards can seem time consuming and difficult to achieve, such as completing a PhD or publishing a paper, but that feeling of success and achievement once you do is like no other. Knowing your work will be disseminated among peers while having the potential to impact on clinical practice and have patient benefits is extremely rewarding.

What advice can you give on moving into research roles?

You develop and learn while in the role, so having no prior research skills and knowledge does not mean you cannot succeed in a research role. The characteristics that are most important are enthusiasm, open mindedness, ambition, critical thinking and passion. It's about having an enquiring mind and an interest in discovering new knowledge and finding and generating new evidence to help inform clinical practice, protocols and policies, while encouraging others to do the same.

Having resilience and patience is also very important in a research role. Not every grant application or attempt at publishing your work will be successful, and sometimes encouraging change in others can be a slow process. Remember that research is an integral aspect of the radiography profession, and such a role is important to drive the profession forward, both by conducting research and encouraging and supporting others to do so. It's about creating a culture that wants to engage with research as opposed to seeing it as a complex expertise area that they are afraid of delving into.

Fiona Rose

Case Study



What is your current role?

Six months ago, I decided to make the jump from working as a Magnetic Resonance Imaging (MRI)/Projectional Radiographer to becoming a full-time Research Radiographer in Newcastle upon Tyne. I always knew that the field of medical imaging was a constantly evolving environment with regard to emerging technologies and research, and this is what really grabbed my interest in the role.

Read on

One aspect of my current role is that I am linked to the National Consortium of Intelligent Medical Imaging (NCIMI). This is a sort of collaborative, involving the NHS, private industry and academic institutions, all with the shared goal of transforming healthcare through artificial intelligence and medical imaging. At present, I am involved in collecting and curating a vast dataset of chest radiographs. These images will then be anonymised and used by a private sector company to develop an algorithm for the automatic detection of pneumothorax and correct tube placement. The work involves having to communicate regularly with a wide variety of people, including engineers, academics and medical professionals. When I first qualified as a radiographer, it never occurred to me that I could be involved in such cutting-edge research, so it really does demonstrate that opportunities for role extension exist.

As a research radiographer, I am also still heavily involved in clinical work across many modalities, including MRI, computed tomography (CT) and projectional radiography. Much of the work carried out is directly linked to ongoing clinical trials and so a lovely aspect of the role is getting to know patients who often return regularly as part of a study.

The largest clinical proportion of my role is dedicated to MRI and as a team we are very well supported in terms of having access to further educational resources to develop and refine our practice. I recently had the opportunity to attend a cardiac MRI course and also completed an Excel specialist course offered by Microsoft.

How did you reach this stage in your career?

I took a bit of an unusual route into radiography. I originally completed a music degree at the University of Sheffield. This might seem miles away from my current role, but it provided me with the tools to be able to develop research ideas and follow them through. It was a module in the physics of sound and hearing that got me thinking about a career in the healthcare/technology field and radiography provided a good combination of both elements.

I obtained my BSc in diagnostic radiography from Teesside University in 2015 and went on to work as a rotational radiographer at Newcastle's Freeman Hospital. It was here that I developed an interest in MRI, and two years later I started working as a senior radiographer, specialising in MRI, at the Royal Victoria Infirmary (part of the same trust). This post provided me with a wealth of general MRI experience and gave me the confidence to apply for my current role of research radiographer.

The transition has been a huge learning curve as working in research requires the ability to manage your own workload. I completed my Good Clinical Practice (GCP) and non-medical referrer training, and have had to become familiar with research terminology and carrying out tasks such as anonymising data.

What support has proved useful?

Since stepping into my new role, I have been actively supported and encouraged by both my manager and the other members of my team to really go looking for learning opportunities. I have been given the time and understanding to adapt to a role that is quite different from anything I have done previously. It is not unusual for my colleagues to send me details about a course they think would interest me.

Regular constructive feedback has also been very helpful, and the opportunity to raise any issues or difficulties in a supportive environment has also demonstrated the hallmark of positive and successful team dynamics.

What do you find most rewarding?

I think that the amount of support that I am given when it comes to having the time for, and access to, learning opportunities is definitely very rewarding. There is a shared understanding that competence and ability stem from real encouragement from those around you. It is also very rewarding to be able to work a bit more autonomously than in previous roles and to know that my work is contributing to positive changes for patients.

Do you have any advice on pursuing a similar career?

I think many people have a very preconceived idea of what working in research involves and I would like to tell them that it doesn't just involve talking about methods and reading articles all day!

I think if you've ever had an interest in how healthcare is changing or you've wanted to be actively involved in seeing how clinical trials can improve patients' lives, then you should consider research. Spend time becoming really competent in your current role/modality by actively engaging in CPD and looking for learning opportunities. There is always the option to shadow other radiographers in areas you might not have much experience in, and this a great way of building confidence.

Some of my current work is quite unusual, particularly being involved in areas such as artificial intelligence and carrying out cadaveric imaging for a hip-resurfacing trial, so seek out new experiences and projects to get involved with.

Louise Jordan

Case Study



Click the video to watch Louise talk about her career.

5 min



What is your current role?

I am a Research Radiographer, part of a Research Network at Newcastle upon Tyne Hospitals NHS Foundation Trust. My role entails carrying out medical imaging required as part of research studies and clinical trials within the trust. This means my duties are varied and change from day to day, with a multitude of imaging requirements. This could, for instance, include a chest X-ray for a therapeutic study in pre-intensive care unit patients admitted with COVID-19 or computed tomography (CT) scans to assess disease progression after a course of trial drugs.

The majority of my work, however, is in magnetic resonance imaging (MRI), which is the area I specialise in. I love MRI as I find it challenging yet very rewarding, and think the images produced are astoundingly detailed. There is always something new to learn in MRI, with technological capabilities being updated and improving constantly. Because of this, education and professional development are extremely important in my job, and in an effort to keep abreast of technical advances I attend training days and conferences.

There is also scope to carry out my own research and I am encouraged to do so. I have completed an original research project, have presented posters at professional conferences and have been guest speaker at scientific conventions. In my position I am part of a multidisciplinary team, liaising and working with a variety of other staff, including medical consultants, clinical and research staff, academic colleagues and research study sponsors.

How did you reach this position?

I have always had an interest in biology and health and originally attended Durham University when I left college to study health and human science. I took a gap year, which turned into almost 10 years travelling and working abroad, before training as a radiographer as a mature student, studying at Teesside University and qualifying about 12 years ago. After graduating, I was recruited onto a postgraduate training programme with a private healthcare provider to train on the job as an MRI radiographer. I left there to work at Newcastle as a research radiographer just over 10 years ago.

In this role I have developed my clinical skills while also completing postgraduate learning and progressing academically. I have gained an MSc in MRI medical imaging and am in the process of writing up my original research into a paper for publication in a peer-reviewed journal. I also presented another poster at the 2022 UK Imaging and Oncology Congress (UKIO). I think continuous education is extremely important, not only to improve your own personal skills and interests but to enhance the capabilities of the department and team. I will carry on attending training courses for professional development Most recently, I completed a cardiac MR study day covering theory and practical applications.

What support has benefited you?

I studied radiography at Teesside when the course fees were covered by a non-repayable NHS bursary. Not having to repay fees made it an easier decision to forego a salary for three years and retrain as a mature student with household bills and living costs to consider. Completing the postgraduate training programme also helped to fast-track my career in MRI so I am grateful for that opportunity.

Throughout my time in my current role, I have been fully supported by my line manager to take part in extra training to develop my skills. I have been supported both financially and with time away from the department. This has helped me achieve a high level of competency and confidence to enable the radiology research service to expand and deliver.

What do you find most rewarding?

I take great pride that my hard work and commitment to personal development has made me a valued member of the team. I get immense satisfaction from training other members of the team and sharing the knowledge I have learnt. It is also really empowering to know that I am a trusted point of contact for queries and problem-solving.

Is there any advice you can offer?

I have always enjoyed studying and think you are never too old to learn something new. Being a research radiographer comes with the challenge of a varied working day, having to think fast and problem-solve, being responsible for your own workload and striving to keep your knowledge updated, while also understanding and adhering to research procedures and good clinical practice. I am often required to work autonomously, and while that can be challenging, it is also very rewarding.



Appendices

Appendices

1	Informing the development of the Education and Career Framework for the radiography profession using a modified Delphi consensus study	281
2	Supporting guidance: radiation protection	365
3	Education and Career Framework glossary	382
4	References for the introduction	389
5	References for sections 1–9	392





Informing the development of the Education and Career Framework for the radiography profession using a modified Delphi consensus study

Final report to The College of Radiographers

24.05.21

Sheffield Hallam University

Dr Rob Appleyard, Prof Julie Nightingale, Temitope Labinjo

With grateful thanks to Prof Heidi Probst, Jacquie Vallis, Dr Karen Knapp and members of the College of Radiographers ECF Steering Group.

Sheffield Hallam University | Faculty of Health and Wellbeing

Executive summary

1 The Society and College of Radiographers Education and Career Framework (ECF) supports education providers to design effective programmes, assists radiographers to plan their career development and supports managers to review departmental workforce strategies. Since the third edition of the framework was last updated in January 2013, numerous changes have taken place, both within and external to the profession, that have had an impact on the role of radiographers. A refreshed ECF is required to support the development of a diverse and innovating radiographic workforce. This research commences this process by exploring the knowledge, skills and attributes (KSA) required within different levels and domains of practice in the radiography profession.

2 The study used a Delphi consensus methodology to identify through expert agreement the KSAs for the radiography profession that will meet the current and future needs of the imaging and radiotherapy workforce. With the support of the College of Radiographers (CoR) ECF Steering Group, an expert panel was recruited to represent expert practitioners from across all levels and domains of practice (including education, research and management and leadership roles). The expert panel members were invited to complete three surveys:

1. Delphi panel preparatory questionnaire (to capture demographics and expertise to enable analysis of representativeness)
2. Delphi panel round 1 questionnaire (a series of open-ended questions related to KSA for different levels and domains of practice)
3. Delphi panel round 2 questionnaire (a series of closed Likert statements for review)

A third round questionnaire was available but not required due to high levels of consensus achieved after round 2.

3 The Delphi preparatory questionnaire was completed by 115 participants and data analysis demonstrated that this sample was representative. 75 participants went on to complete the round 1 questionnaire and 49 completed the round 2 questionnaire. Participant attrition is an expected consequence of multiple rounds.

4 Analysis of the round 1 questionnaire was peer-reviewed by the project steering group and led to the development of 297 statements of knowledge (96), skills (97) and attributes (104) across the four levels of practice and associated areas; 291 of these achieved consensus in the round 2 questionnaire. The criteria for achieving consensus in this study were stringent and the levels of consensus were consistently high; the overall level of consensus for statements meeting the criteria ranged from 80.4% to 98%. The list of statements achieving consensus do not represent an exhaustive list of final statements for the refreshed ECF, nevertheless the consensus seen in this study provides high levels of confidence that the statements identified and agreed by the expert panel are valid.

5 This Delphi study has provided a robust process for identifying the important KSAs that need to be incorporated into the refreshed ECF. Experts representing the breadth of the profession have identified these priorities and levels of consensus were high. Recommendations arising from this study include the need for clarification related to some role definitions, educational requirements and expectations of practice. A refreshed framework needs to be user-friendly, incorporating infographics and video clips to provide context and exemplars for the user. It is advised that the new framework emerging from this report is shared for consultation with the Society of Radiographers (SoR) membership, with representatives of professional bodies working closely with radiographers and with service user and public involvement representatives.

Table of contents

Executive Summary 283

1 Introduction 287

2 Design and methods 291

2.1 Aims 291
2.2 Research questions 291
2.3 Project outcomes 291
2.4 Study design 291
2.5 Ethical considerations 293
2.6 Sampling and recruitment strategy 294
2.7 Delphi panel preparatory questionnaire 298
2.8 Delphi panel round 1 questionnaire 298
2.9 Delphi panel round 2 questionnaire 299

3 Results 300

3.1 Results from Delphi panel preparatory questionnaire survey 300
3.1.1 Personal demographics 300
3.1.2 Employment characteristics 304
3.1.3 Professional role 308
3.1.4 Diagnostic radiography disciplines 310
3.1.5 Therapeutic radiography disciplines 313
3.1.6 Other specific areas of interest or expertise 315
3.2 Results from Delphi panel round 1 questionnaire 316
3.3 Results from Delphi panel round 2 questionnaire 320
3.3.1 Assistant practitioner level: knowledge 321
3.3.2 Assistant practitioner level: skills 322
3.3.3 Assistant practitioner level: attributes 323
3.3.4 Practitioner level: knowledge 324
3.3.5 Practitioner level: skills 325
3.3.6 Practitioner level: attributes 327
3.3.7 Advanced practitioner level: knowledge 328
3.3.8 Advanced practitioner level: skills 330
3.3.9 Advanced practitioner level: attributes 332
3.3.10 Consultant practitioner level: knowledge 333
3.3.11 Consultant practitioner level: skills 335
3.3.12 Consultant practitioner level: attributes 337
3.3.13 Academic/education roles: knowledge 338
3.3.14 Academic/education roles: skills 339
3.3.15 Academic/education roles: attributes 340
3.3.16 Management/leadership roles: knowledge 342
3.3.17 Management/leadership roles: skills 344
3.3.18 Management/leadership roles: attributes 346
3.3.19 Research roles: knowledge 348
3.3.20 Research roles: skills 350
3.3.21 Research roles: attributes 351
3.3.22 Practice educator roles: knowledge 352
3.3.23 Practice educator roles: skills 353
3.3.24 Practice educator roles: attributes 355

4 Discussion 357

5 Conclusion 360

6 References 361

Table of figures

Figure 1.1 Visual depiction of the College of Radiographers Career Framework 2016 288

Figure 3.1 Respondent gender 300

Figure 3.2 Age of respondents 301

Figure 3.3 Respondents' ethnic group 302

Figure 3.4 Highest qualification of the respondents 303

Figure 3.5 Employing organisation 304

Figure 3.6 Employer region or home location if not currently employed 305

Figure 3.7 Respondent registration 309

Figure 3.8 Respondent post-registration experience 307

Figure 3.9 The primary role of the respondents 308

Figure 3.10 Other significant roles held by the respondents 309

Figure 3.11 Diagnostic radiographer disciplines or specialisms. Some respondents indicated more than one specialism (e.g. education and research). 311

Figure 3.12 Diagnostic radiographer examples of areas of specialist or innovative practice 312

Figure 3.13 Therapeutic radiographer disciplines or specialisms. Some respondents indicated more than one specialism (e.g. education and research). 313

Figure 3.14 Therapeutic radiographer examples of areas of specialist or innovative practice 314

Figure 3.15 Other areas of expertise beyond specialist or innovative practice 315

Figure 3.16 Reasons for using current ECF 316

Figure 3.17 Reasons for not using current ECF 317

Figure 3.18 What aspects of the current ECF need to change and why? 318

List of tables

Table 2.1 Characteristics of Delphi studies of relevance to this project 292

Table 2.2 Eligibility criteria for participant specialisms. Participants should be aligned to one or more of the specialist and sub-specialist groupings. 295

Table 2.3 Eligibility criteria for participant roles. Participants should hold one or more of the roles listed. 296

Table 2.4 Society and College of Radiographers advisory groups and special interest groups invited to participate in the study 297

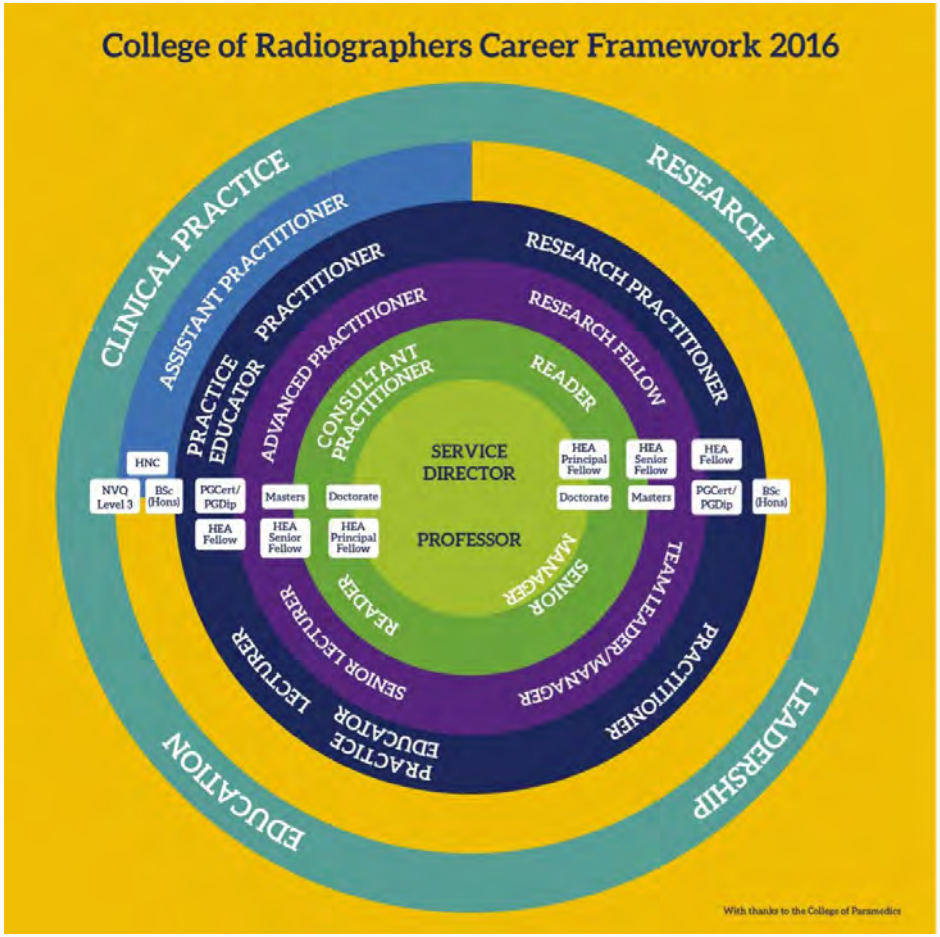
Table 3.1 Prior to this research study, how aware were you of the College of Radiographers ECF? 316

Table 3.2 Number of statements derived from thematic analysis of round 1 questionnaire 319

1 Introduction

The Society and College of Radiographers Education and Career Framework (ECF) has a primary emphasis on supporting radiographers to plan a career pathway and reflect on the knowledge, skills and attributes (KSAs) required at subsequent levels of practice. In particular, the framework supports newly qualified radiographers to "enter the workplace as novice professionals, able to develop themselves and acquire the level of professional maturity needed to be leaders of the interprofessional workforce".[1] Of equal importance is for the framework to provide education providers and service managers with a comprehensive outline of the required knowledge, skills and attributes required by radiographers working at different levels and within different radiography disciplines. This framework therefore supports education providers to design effective programmes for radiographers and radiography students, assists radiographers to benchmark their current roles and plan their career development, and supports radiography managers to review continuing professional development strategies within their departments.

The third edition of the framework was last updated in January 2013.[1] The 2013 framework architecture reflects the four levels of clinical practice: assistant, practitioner, advanced and consultant, and includes three other dimensions of radiography professional practice: education, management and research.[1] Adapting a model previously designed by the College of Paramedics, this framework was subsequently captured in diagrammatic form to articulate the career structure for the cancer workforce.[2]



Since the 2013 framework was conceived, numerous changes both within and external to the profession are influencing the role of the radiographer; for example, the advent of artificial intelligence (AI) in radiology, the implementation of degree apprenticeships as new routes to practice and the impact of the COVID-19 pandemic on imaging and radiotherapy services. It is therefore vital that the radiography profession takes a moment to pause, reflect and scan the horizon to build a picture of the radiographer of the future, enabling us to direct education and career planning for the next decade.

Figure 1.1 Visual depiction of the College of Radiographers Career Framework 2016.

Significant and rapid technological advances across radiographic disciplines, coupled with the need to deliver a more patient-centred service, are influencing and changing the involvement of the radiography profession in the management and care of our patients. The Topol Review (2019)[3] reports that "technological and other developments (including artificial intelligence) are likely to change the roles and functions of clinical staff in all professions over the next two decades". One example of this is the ongoing introduction of magnetic resonance (MR)-guided radiotherapy into the radiotherapy patient pathway. This development challenges existing workforce competencies that ensure improved outcomes for patients[4] and these need to be reflected in the profession's ECF.

Specialist roles across the radiographic profession are emerging with increasing and more varied opportunities for practitioners to use specialist knowledge and skills at an advanced and practitioner level. In 2015 a service mapping project[5] commissioned by Prostate Cancer UK examined the provision of specialist therapeutic radiographers in the treatment and care of men with prostate cancer. The report identified that such roles were expanding rapidly. However, the role was not sustainably developed, with a lack of consistency regarding role description across different domains of practice and no robust sense of identity or professional ownership. Within imaging contexts, education and workforce research in some specialist areas has highlighted limitations and contradictions in existing frameworks. For example, in magnetic resonance imaging (MRI) a survey of qualification/certification frameworks by Castillo et al.[6] in 2017 and a review by Westbrook[7] in the same year highlighted inconsistencies in MRI education and competency profiles compared to some other imaging specialisms. They suggested that knowledge and skills should be structured in a novice-to-expert continuum format and should reference national frameworks. Sonography, with a predominately postgraduate-educated workforce, now has undergraduate routes to practice on the horizon. Revision of education frameworks and career pathways is urgently required to address workforce shortages for this specialism.[8,9,10,11] Mitchell, Nightingale and Reeves (2019)[11] recommended less focus on competency statements and a greater consideration of capabilities (knowledge, skills and behaviours) that reflect different levels of sonography practice. With regards to emerging roles in all aspects of radiographic practice, it is clear that flexible education and training opportunities within a revised education framework and career pathway are needed.

In early 2020, the COVID-19 pandemic caused widespread disruption to our imaging and radiotherapy clinical services.[12–16] One year on, these services are highlighted in key national reports as being pivotal to the recovery of the NHS.[17–19] Enormous efforts are being made by individual clinical services to reduce waiting lists and improve patient experience and outcomes. These efforts are being framed within extensive transformational changes to organisational infrastructure, including the advent of imaging networks[20] at regional level, and a culture that is more ambitious regarding implementation of a skills mix at all levels.[17–19] It is clear that our services, and the majority of the professional roles within them, will have changed from this point forwards.

In the same way, the COVID-19 experience has forced, or at least hastened, unprecedented change to the delivery and content of radiography education curricula.[21–24] Radiography education has witnessed wide-scale changes, including integration of technology-enhanced learning such as the virtual environment for radiotherapy training (VERT) and other simulation platforms,[25–27] a greater emphasis on research training and clinical-academic opportunities,[28] and the introduction of new routes to practice, including degree apprenticeships and pre-registration master's degrees.[29,30] Education providers need to ensure that radiography curricula respond appropriately to these rapidly changing technological, organisational and social contexts. Responding to these challenges needs to begin by understanding and addressing professional identity within career frameworks.[31]

In the same way as some clinical specialisms have encountered workforce shortages, the higher education sector is also an area of particular vulnerability, with a prediction that 30% of highly qualified radiography academics will retire within the next ten years.[32] Radiography academics play an important role in supporting the research capacity of the profession. Knapp (2016)[33] identifies that research capacity needs to be significantly increased and that the career pathway often remains uncertain. A strategic plan to develop academic radiographers and researchers, underpinned by an investment in knowledge and skills development, needs to be situated within a refreshed, clearer ECF that reflects a rapidly changing academic and research environment. Similarly, education and research roles within clinical practice environments (e.g. practice educator and clinical-academic researcher) are becoming more widely integrated into clinical services and their underpinning KSAs are more clearly articulated. However, these roles have had little attention in historical radiographer career frameworks.

Previous research proposed that core curriculum statements[34–36] and existing multiprofessional frameworks[37] provide insight into the standards required at particular levels of practice (e.g. advanced practice level) and in certain contexts (e.g. in specific geographical areas). This existing work can assist in establishing a common understanding of the KSAs associated with radiographer practice. However, gaps exist and further work is required to fully define the ECF for the radiography profession in such a way that it supports individuals, employers, commissioners, planners and educators in the transformation of services to ultimately improve patient experience and outcomes. A refreshed ECF needs to set out a new vision in developing a diverse and critical radiographic workforce in a consistent way to ensure safety, quality and effectiveness. This research commences this process by exploring the KSAs required within different levels and domains of practice in the radiography profession.

2 Design and methods

2.1 Aims

To identify through expert consensus the associated knowledge, skills and attributes (KSAs) for the radiography profession that will meet the current and future needs of the imaging and radiotherapy workforce.

2.2 Research questions

- What aspects of the current education and career framework (ECF) require updating?
- What KSAs are required for radiographer practice within:
  - Assistant practitioner level
  - Practitioner level
  - Advanced practitioner level
  - Consultant practitioner level
  - Academic/education roles
  - Management and leadership roles
  - Research roles
  - Practice educator roles?

2.3 Project outcomes

The primary outcome will be the definition of the KSAs that are required across the profession's career progression framework and in associated areas of academia, research and leadership. These KSAs will inform the new ECF that is being developed by a College of Radiographers (CoR) steering group drawn from expert practitioners from across the radiography profession. The new framework will direct curricula and career pathways to ensure that the provision of imaging and radiotherapy services is fit for both the current and foreseeable future.

2.4 Study design

To elicit the collective opinion of expert professionals drawn from across the radiography profession, a Delphi consensus method was employed, using an online questionnaire-based approach.

The Delphi process has been used successfully to develop consensus in a range of health and medical settings[38–40] and to inform previous radiography frameworks such as CoR's research priorities.[41] In a review of consensus methods in medical contexts, Humphrey-Murto et al. (2017)[42] noted that Delphi and other consensus group methods were most commonly used in curriculum development or reform, assessment tool development and defining competencies, suggesting this is an appropriate methodology for this proposed research.

The rationale for choosing an online Delphi method is highlighted in Table 2.1 on the next page.

Characteristic	Comment
Research question or problem	The problem lends itself to subjective judgements made on a collective basis
Participant selection	It reflects input from a range of 'expert' professionals and will represent a diverse range of perspectives
Maintaining data flow and sharing	It facilitates iteration with controlled feedback of group opinion
Participant availability	The panel members have important roles and finding the time for frequent group meetings would be difficult if not impossible to organise
Researcher availability	The use of a group communication process will be more efficient than individual face-to-face meetings
Confidentiality and anonymity	The individual and anonymised responses will enable participants to voice their opinions freely without being influenced or coerced by other participants
Efficiency	An online Delphi method minimises the time demand of respondents and minimises administration and management costs for the project team
Reducing bias	Statistical aggregation of group response goes some way to ensuring priorities arising from the project possess a degree of reliability and validity

Table 2.1 Characteristics of Delphi studies of relevance to this project.

Foth et al. (2016)[43] reviewed 101 studies that used the Delphi and other nominal group techniques in nursing research and stressed the importance of rigorous design. They identified a number of weaknesses in published reports, including: preparation of the initial questionnaire; the selection and description of participants; number of rounds and number of participants remaining after each round; formal feedback of group ratings; definitions of consensus and a priori definition of numbers of rounds; and modifications to the methodology. These issues have been considered in the implementation of this research.

Delphi methodology traditionally commences with the selection of an expert panel who are then asked to complete a series of questionnaires, often commencing with open-ended questions, migrating towards closed Likert-scale questions. This study used an online Delphi methodology that was divided into three phases:

1. Delphi panel preparatory questionnaire – expert panel recruitment and analysis of representativeness
2. Delphi panel round 1 questionnaire – presenting the expert panel with a series of open-ended questions
3. Delphi panel round 2 questionnaire – presenting the expert panel with a series of closed statements for review

It was possible that following analysis of round 2 a third round might be required to achieve greater consensus, but this was considered in terms of time and resources and the potential for 'drop-off' of panel members that often happens in longitudinal studies. A third round was not required in this study.

2.5 Ethical considerations

The project was approved by Sheffield Hallam University Research Ethics Committee on 12 August 2020 [Converis ID ER26260027]. Participant information leaflets were developed and consent statements were embedded within the initial questionnaire. All participants were assured of anonymity, confidentiality and the right to withdraw.

The study did not require NHS research ethics committee approval as it is categorised as service development and, according to the guidance provided by the NHS Research and Development Forum, consensus methods do not require ethical approval. The NHS was not used for recruitment as this was carried out via the Society and College of Radiographers (SCoR) expert, special interest and advisory groups. Service users were recruited through the CoR Patient Advisory Group.

Maintenance of anonymity and confidentiality was a primary concern in the design of the study. No individuals or departments can be identifiable in project reports or subsequent articles or presentations. Electronic data was stored on a secure network drive and this complies with university regulations on storing sensitive data; back-up files were stored on a different network drive and are password protected. The project lead maintained a site file of all documentation relevant to the study.

2.6 Sampling and recruitment strategy

The project team worked closely with the CoR's ECF Steering Group to identify and contact potential participants for this study. A purposive, maximum-variation approach to sampling was adopted to ensure that the Delphi expert panel adequately represented, where possible, all specialisms of the radiography profession (Table 2.2), and that participants met a range of criteria (as seen in Table 2.3). Patient and public involvement representatives were also invited to participate and will be consulted on subsequent project outcomes. Accrediting bodies and representatives from related professional groups allied to radiography will also be consulted on the subsequent outcomes of the Delphi study.

Panel members were recruited in the first instance from special interest groups and advisory groups associated with CoR (Table 2.4). Invitations to participate in the survey were sent initially via the chairs of these groups. As part of the recruitment process, potential participants were invited to complete the Delphi panel preparatory questionnaire to establish their suitability for inclusion on the panel. The results from this initial survey were reviewed and validated by members of the ECF Steering Group. To ensure equality of access the steering group reviewed the radiography specialties represented, as well as the range of ages, genders and ethnicities represented. Further calls were made to increase representation from certain areas following this initial review, with personal invitations also sent to: representatives in the devolved nations to ensure representation from across the UK; and individuals from under-represented groups.

Specialism	Subspecialism
Diagnostic radiography	General radiography (projection radiography) Fluoroscopic and interventional radiography Computerised tomography (CT) Magnetic resonance imaging (MRI) Sonography Mammography Nuclear medicine
Therapeutic radiography	Treatment delivery (external beam and brachytherapy) Treatment planning and dosimetry Information and support
Academic roles	University academic/educator Placement educator Researcher (academic, clinical, clinical-academic)
Management and leadership roles	Service manager Other leadership roles
Service users	Patient and public involvement representatives

Table 2.2 Eligibility criteria for participant specialisms. Participants should be aligned to one or more of the specialist and sub-specialist groupings.

Role	Criteria
Service management	Has managed imaging or radiotherapy services
Academic/researcher	Has published papers about imaging or radiotherapy services
Researcher/service improvement	Has conducted research or practice development initiatives relating to imaging or radiotherapy services
Expert practitioner	Is, or has been, a senior practitioner specialising in a specific area of imaging or radiotherapy services at advanced practitioner level or above
Novice practitioner	Is an early-career radiographer (recently qualified)
Service user	Is or has been a user of imaging or radiotherapy services
Expert practitioner postgraduate	Possesses (or is studying for) a postgraduate qualification related to radiography services
Leader	Has, or has had, significant responsibilities for research, leadership or education
Academic/assessor	Has, or has had, responsibilities for accreditation of education provision in imaging or radiotherapy services

Table 2.3 Eligibility criteria for participant roles. Participants should hold one or more of the roles listed.

Advisory groups
Radiotherapy Advisory Group
Diagnostic Imaging Advisory Group (DIAG)
Ultrasound Advisory Group
MR Advisory Group (MRAG)
Nuclear Medicine and Molecular Imaging Advisory Group
Consultant Radiographers Advisory Group
Patient Advisory Group (PAG)

Other groups
CoR accredited practitioners: • Assistant practitioners • Practice educators • Advanced practitioners • Consultant practitioners
Radiology managers
Heads of Radiography Education Group

Special interest groups (SIGs)	
Specialist Paediatric Radiotherapy Interest Group	National CT Head reporting radiographers SIG
Breast Radiotherapy Interest Group	Interventional Radiography SIG
Brachytherapy radiographers forum	Gastro-Intestinal Radiographers SIG
Imaged Guided Radiotherapy SIG	Association for Radiography Educators
Superficial Radiotherapy SIG	British Association of Magnetic Resonance Radiographers
Radiotherapy Information, Support and Review Radiographer Forum	Health Improvement/Public Health in Radiography SIG
Simulation SIG	Supply, Administration and Prescribing Radiographers forum
Paperless Radiotherapy Interest Group	Research and Clinical Trials Radiographers SIG
North West Chest X-ray Reporting Radiographers SIG	Diagnostic Research Radiographers SIG
Positron Emission Tomography – Computed Tomography SIG	Qualitative Research SIG
CT Leads SIG	Reporting Radiographers Interest Group Scotland
CT Scottish SIG	

Table 2.4 Society and College of Radiographers advisory groups and special interest groups invited to participate in the study.

The provisional aim was to achieve an initial sample size of 90 participants, based on similar Delphi studies carried out in the area of allied health.[41] Some participant attrition between each phase of the study was envisaged but, by publishing the expected dates that the questionnaire was circulated as well as giving sufficient time for completion, attrition could be minimised. Participants were given a minimum of one week to consider participation.

2.7 Delphi panel preparatory questionnaire

Expert panel recruitment commenced with an invitation to participate in the Delphi study. This invitation was sent, accompanied by the participant information sheet, to the chairs of all SCoR advisory and special interest groups (Table 2.4). They were asked to extend the information to the members of their committees; participants were invited to complete an online questionnaire if they wished to participate.

The Delphi panel preparatory questionnaire was created using an online survey platform (Qualtrics survey software www.qualtrics.com), and this platform was used for each round of the study.

The preparatory questionnaire served two purposes; firstly to gain the participants' consent to take part in the study, and secondly to identify demographic data to ensure that the sample was diverse and representative of the radiography specialisms and roles within the profession. This data was anonymised and then shared with the CoR ECF Steering Group to identify any gaps; subsequently, further participants were invited to take part. Following this iterative process an expert panel was approved and all participants were invited to participate in the next round of the study.

2.8 Delphi panel round 1 questionnaire

A round 1 questionnaire was designed with the input of the ECF Steering Group, and comprised mainly open-ended questions that aimed to elicit from the expert panel what, in their experience and in relation to their own particular area of practice, are the specific KSAs associated with radiographer practice across different levels and disciplines. Responses were sought relating to both current and future practice to reflect practice development.

Prior to round 1, the online questionnaire was piloted within the host institution and steering group to ensure it was clear and did not contain ambiguous statements.

For information and reflection, participants were signposted to the current 2013 version of the ECF1 in this questionnaire.

The KSAs were defined in the survey as follows, with examples (in italics) provided:

Knowledge: relates to understanding of a relevant concept or concepts. It is theoretical, rather than practical. For example: "*A radiography practitioner must demonstrate understanding of the ionising radiation regulations (2017)*."

Skills: relate to learned behaviours that are underpinned by abilities and knowledge. They are practical rather than theoretical. They can be developed and improved over time. For example: "*A manager must demonstrate excellent organisational skills in order to accomplish organisation goals*."

Attributes: relate to a quality or feature regarded as a characteristic or inherent part of someone or something. For example: "*A radiography lecturer must be able to engage students in the learning process*."

The round 1 questionnaire included primarily open-ended questions regarding changes to the KSAs required within the radiographer role in a particular discipline or level over time. Panel members were required to contribute KSA recommendations for their own stated areas of expertise, but were invited to contribute to other sections where relevant.

Data from round 1 was thematically analysed to ensure avoidance of overlap or repetition and to group KSAs into themes (e.g. communication) for each level of the four-tier structure and in associated roles. The project team and steering group reviewed the round 1 data and compared it with the current ECF.

2.9 Delphi panel round 2 questionnaire

Round 2 comprised a series of Likert scale items pertaining to KSAs related to themes derived from the round 1 analysis. Once again, in relation to their own area of practice, participants were invited to rate each item on the basis of importance using a five-point Likert scale ('very unimportant' to 'very important'). Participants were invited to identify additional KSAs that were not included in the statement list derived from analysis of the round 1 survey. Where additional (similarly worded) statements were added by four or more respondents these would be included in the final list of KSAs.

Descriptive data analysis of the importance scores from round 2 were the primary starting point for the round 2 analysis. The principles of analysis in Delphi method studies as described by Linstone and Turoff (2002)[44] and St John-Matthews, Robinson and Wallace (2017)[38] were adopted, and potential areas of consideration highlighted by Foth et al. (2016)[43] were noted in relation to enhancing credibility of analysis.

The statements were grouped and the most important KSAs in different areas of practice and at different levels of the four-tier structure were identified. Convergence over the iterative process can be assessed by examining the spread of scores for different statements. For each statement, a level of consensus was established if the scores met all three of the following criteria:

- 'Mean' score of >4 (important or very important)
- Coefficient of variation of <0.3 (defined as standard deviation/mean)
- >75% agreement (% of panel scoring 4 or 5)

A further round was proposed if consensus was not achieved across the majority of statements. However, this was unnecessary.

3 Results

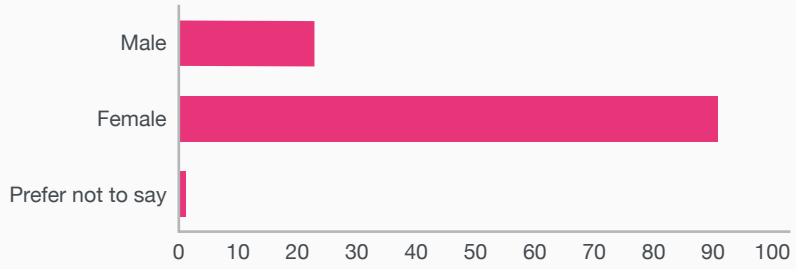
3.1 Results from Delphi panel preparatory questionnaire survey

This initial survey served two purposes: to request and record consent from participants, and to enable participant demographics and radiography expertise to be captured to ensure that the expert panel is representative of the profession. The characteristics of the expert panel are explored with additional commentary where appropriate.

A total of 123 participants consented to take part in the Delphi study, with 115 participants completing the preparatory questionnaire. This exceeded the initial target of 90 participants at the commencement of the study.

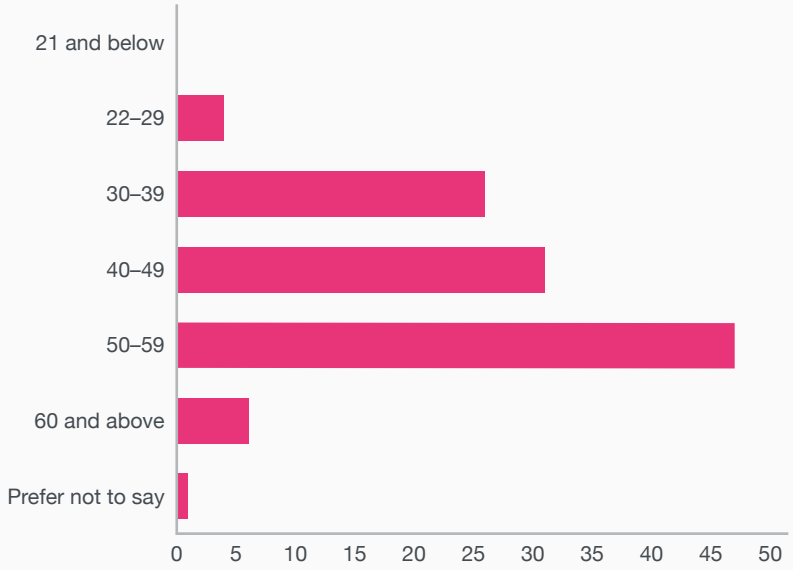
3.1.1 Personal demographics

20% of the respondents (n=23/115) in Figure 3.1 identified as male, which is reasonably representative of the registered radiographer population (Health and Care Professions Council statistics October 2020 = 25.8% male).[45] The majority of respondents were drawn from the 30–59 age groups (Figure 3.2), with very few below 30 years of age. However, this is not surprising given that the survey was inviting those from 'expert' groups who are more likely to be represented by mid or late-career radiographers.



Answer	%	Count
Male	20.00%	23
Female	79.13%	91
Prefer not to say	0.87%	1
Total	100%	115

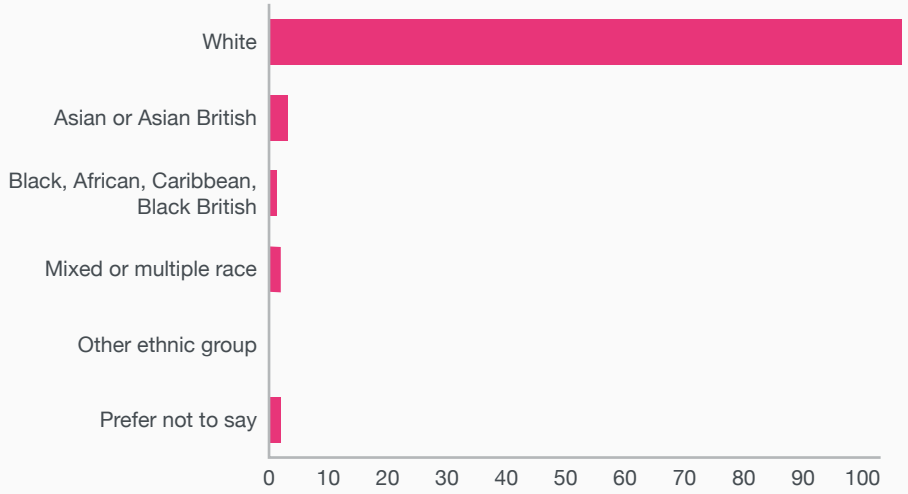
Figure 3.1 Respondent gender.



Answer	%	Count
21 and below	0.00%	0
22–29	3.48%	4
30–39	22.61%	26
40–49	26.96%	31
50–59	40.87%	47
60 and above	5.22%	6
Prefer not to say	0.87%	1
Total	100%	115

Figure 3.2 Age of respondents.

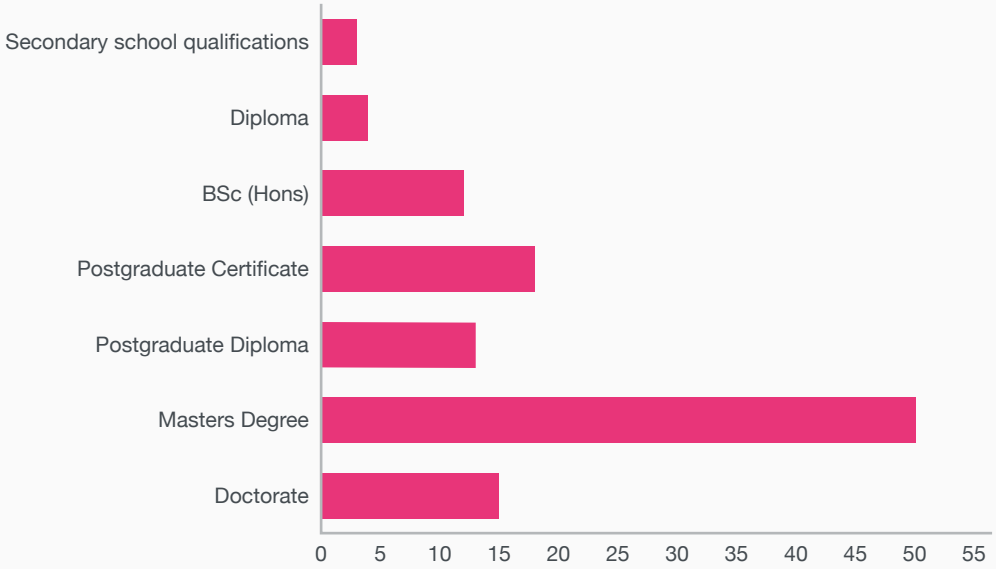
Respondents were requested to state their ethnicity (Figure 3.3). 93.04% of participants selected the 'white' category. While ethnicity statistics for the whole profession are difficult to identify, a Health and Care Professions Council (HCPC) registrant survey published in 2020[46] stated that 84% of radiographer respondents identified as 'white'.



Answer	%	Count
White	93.04%	107
Asian or Asian British	2.61%	3
Black, African, Caribbean, Black British	0.87%	1
Mixed or multiple race	1.74%	2
Other ethnic group	0.00%	0
Prefer not to say	1.74%	2
Total	100%	115

Figure 3.3 Respondents' ethnic group.

The majority of respondents had completed postgraduate study (Figure 3.4), which would be an expected finding within a group of expert radiographers. 43.48% (n=50) had completed a full master's award, with a further 13.04% (n=15) having completed a doctorate award. While this may appear to be high, it does reflect expert practice in both clinical and academic domains.

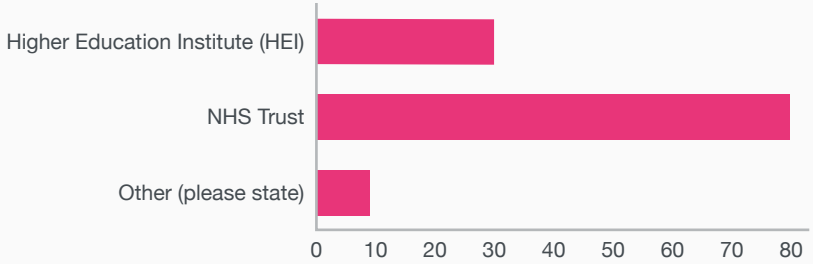


Answer	%	Count
Secondary school qualifications	2.61%	3
Diploma	3.48%	4
BSc (Hons)	10.43%	12
Postgraduate Certificate	15.65%	18
Postgraduate Diploma	11.30%	13
Masters Degree	43.48%	50
Doctorate	13.04%	15
Total	100%	115

Figure 3.4 Highest qualification of the respondents.

3.1.2 Employment characteristics

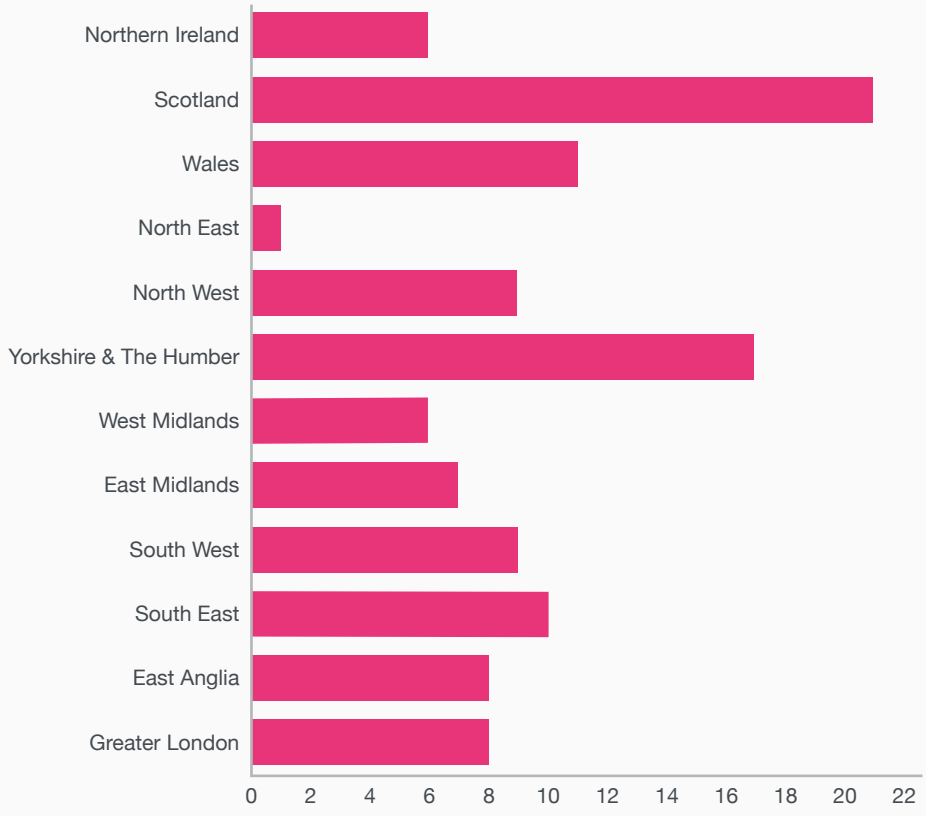
Approximately two-thirds of respondents were employed within an NHS trust or health board, with one quarter employed by a university (Figure 3.5). Respondents indicating 'other' worked for professional bodies and independent sector organisations, or were not currently employed (e.g. service users or student radiographer respondents).



Answer	%	Count
Higher Education Institute (HEI)	25.21%	30
NHS Trust	67.23%	80
Other (please state)	7.56%	9
Total	100%	119

Figure 3.5 Employing organisation.

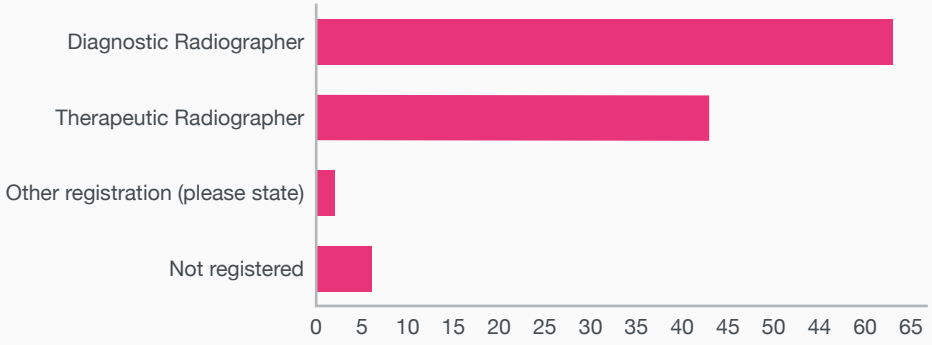
Respondents were employed across a wide geographical location (Figure 3.6). Northern Ireland, Scotland and Wales were all over-represented in comparison with November 2020 HCPC radiographer registrations (0.2%, 7.7%, 5% respectively).[45] All regions of England were represented; however, there was only one respondent representing the North East.



Answer	%	Count
Northern Ireland	5.31%	6
Scotland	18.58%	1
Wales	9.73%	1
North East	0.88%	1
North West	7.69%	1
Yorkshire & The Humber	0.87%	1
West Midlands	0.87%	1
East Midlands	0.87%	1
South West	0.87%	1
South East	0.87%	1
East Anglia	0.87%	1
Greater London	0.87%	1
Total	100%	115

Figure 3.6 Employer region or home location if not currently employed.

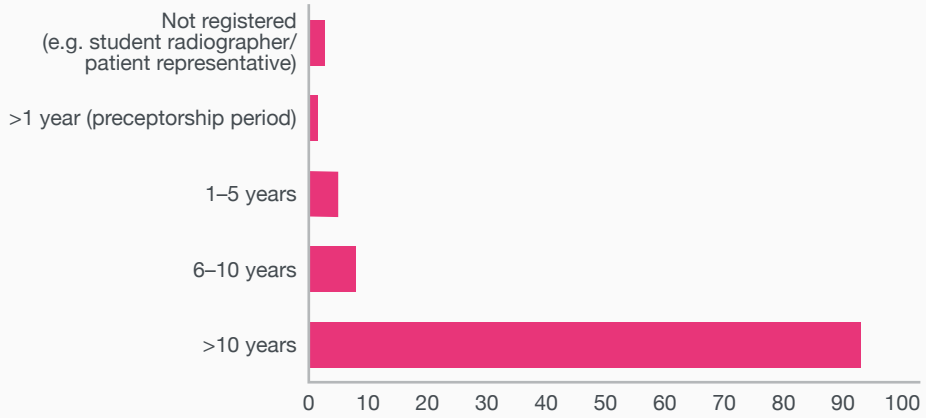
More than half of the expert panel (55.26%) were registered as diagnostic radiographers, with 37.72% registered as therapeutic radiographers (Figure 3.7). The latter group are over-represented in the survey compared to HCPC registration statistics for May 2018, which confirm that 14% of the radiographers registered are therapeutic radiographers.[47] Two respondents stated that they were not registered as a radiographer; these were an assistant practitioner and a sonographer.



Answer	%	Count
Diagnostic Radiographer	55.26%	63
Therapeutic Radiographer	37.72%	43
Other registration (please state)	1.75%	2
Not registered	5.26%	6
Total	100%	114

Figure 3.7 Respondent registration.

Respondents were asked to indicate how many years in practice they had accrued (Figure 3.8). 83.78% had more than 10 years of post-registration experience, which was to be expected when inviting an expert group of practitioners.



Answer	%	Count
Not registered (e.g. student radiographer/ patient representative)	2.70%	3
>1 year (preceptorship period)	1.80%	2
1–5 years	4.50%	5
6–10 years	7.21%	8
>10 years	83.78%	93
Total	100%	111

Figure 3.8 Respondent post-registration experience.

3.1.3 Professional role

Respondents were asked to indicate their primary role (Figure 3.9). The most common selections were 'Advanced Practitioner' and 'Academic Radiography Educator' (n=26 in each category). Practitioners and Consultant Practitioners were also well represented.

While some categories, such as student radiographers and patient/public representatives, were not well represented, they will be further involved at a later stage to consult on the proposed framework.

When invited to indicate any other significant roles (Figure 3.10), it became apparent that some categories that were poorly represented in Figure 3.9 did have good representation. These included Practice Educators and the various categories of researcher.

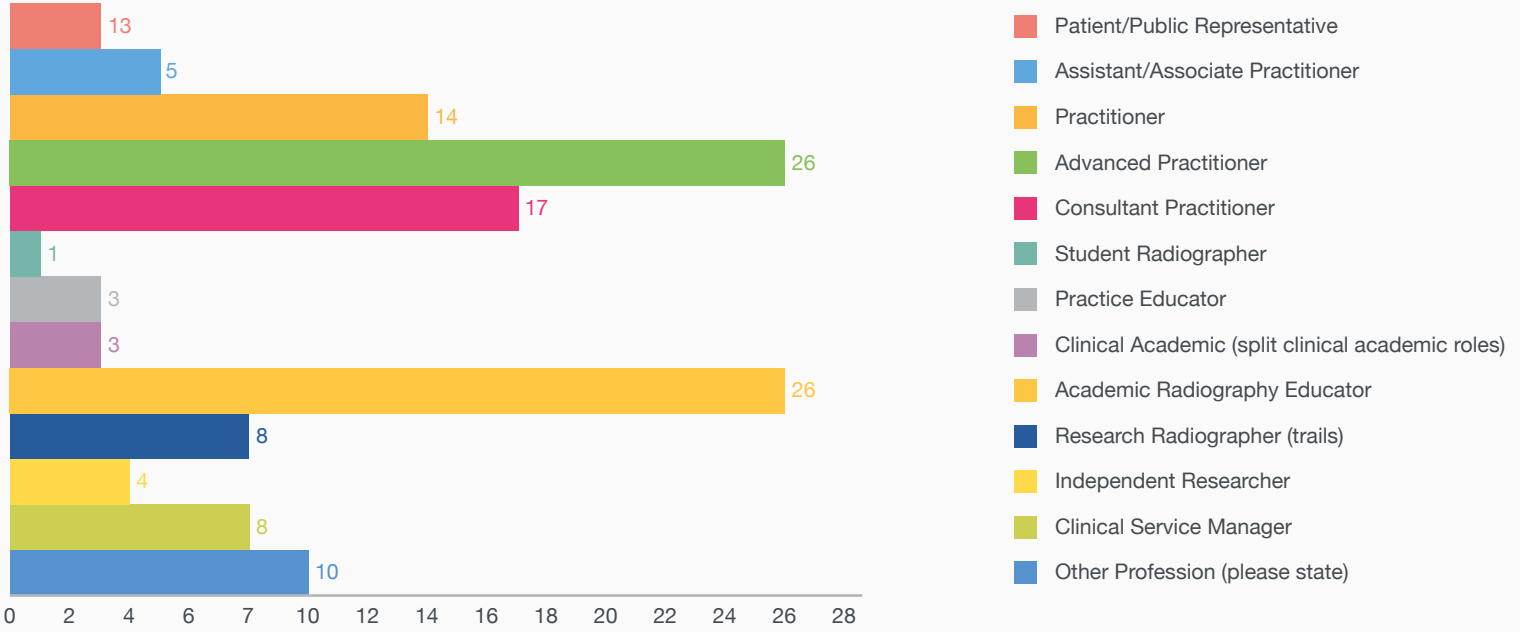


Figure 3.9 The primary role of the respondents.

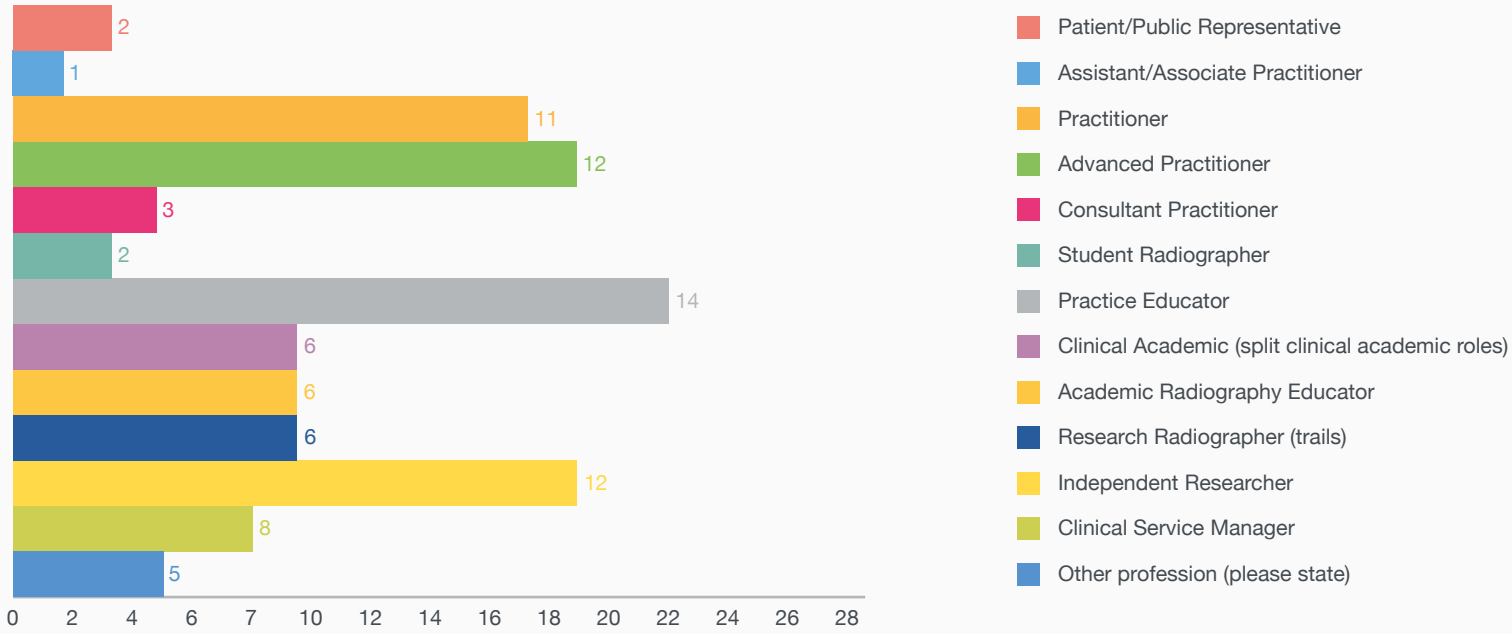


Figure 3.10 Other significant roles held by the respondents.

3.1.4 Diagnostic radiography disciplines

Diagnostic radiographers were invited to indicate their discipline(s) or area of specialism (Figure 3.11). General radiography (projection radiography) was the most common selection (n=34, 17.26%), alongside education (n=30, 15.23%). Computed tomography (CT), radiographer reporting and research were also well represented.

Several diagnostic imaging participants indicated 'other' disciplines, and these included: dual-energy X-ray absorptiometry (DEXA), forensic radiography, post-mortem imaging autopsy, small animal veterinary radiography, simulation and advisory roles to government bodies.

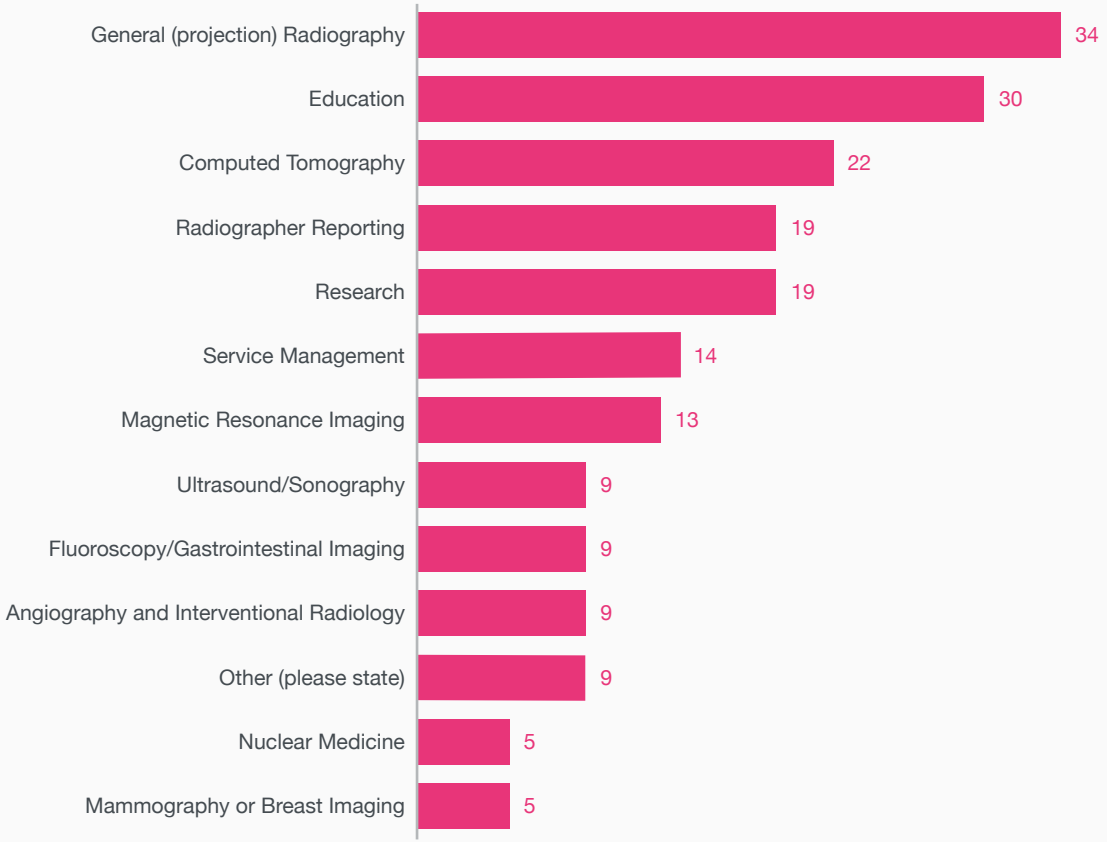


Figure 3.11 Diagnostic radiographer disciplines or specialisms. Some respondents indicated more than one specialism (e.g. education and research).

Diagnostic imaging respondents provided further detail about their roles, offering a range of examples of specialist or innovative practice across three main themes: subspecialisms, reporting and innovative roles (Figure 3.12).

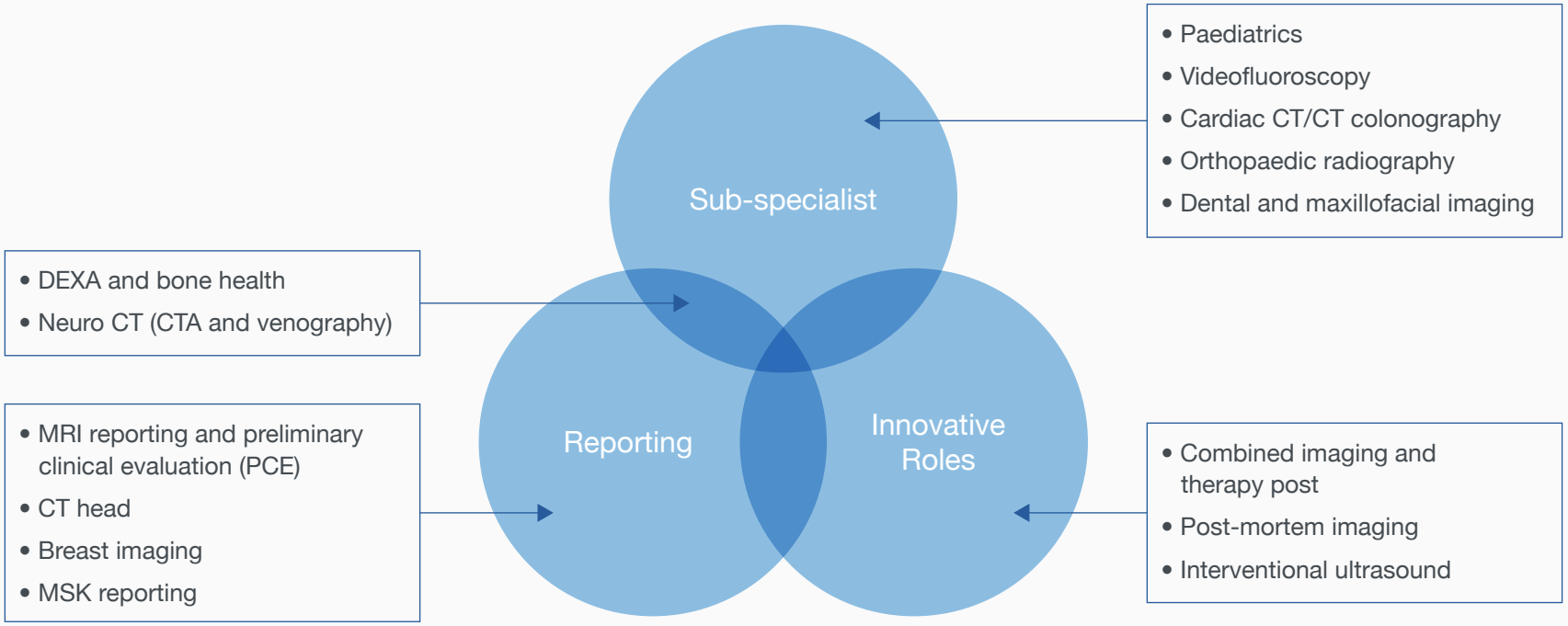


Figure 3.12 Diagnostic radiographer examples of areas of specialist or innovative practice.

3.1.5 Therapeutic radiography disciplines

Therapeutic radiographers were invited to indicate their discipline(s) or area of specialism (Figure 3.13). Selections were evenly spread between treatment delivery, education, service management and research (approximately 20 responses in each category).

Several respondents indicated 'other' disciplines, and these included: pre-treatment imaging, non-medical prescribing, consultant practice, on-treatment review and pre- and post-treatment rehabilitation. Therapeutic respondents provided further detail about their roles, offering a range of examples of specialist or innovative practice across three main themes: subspecialisms, pre-treatment innovations and other innovative roles (Figure 3.14).

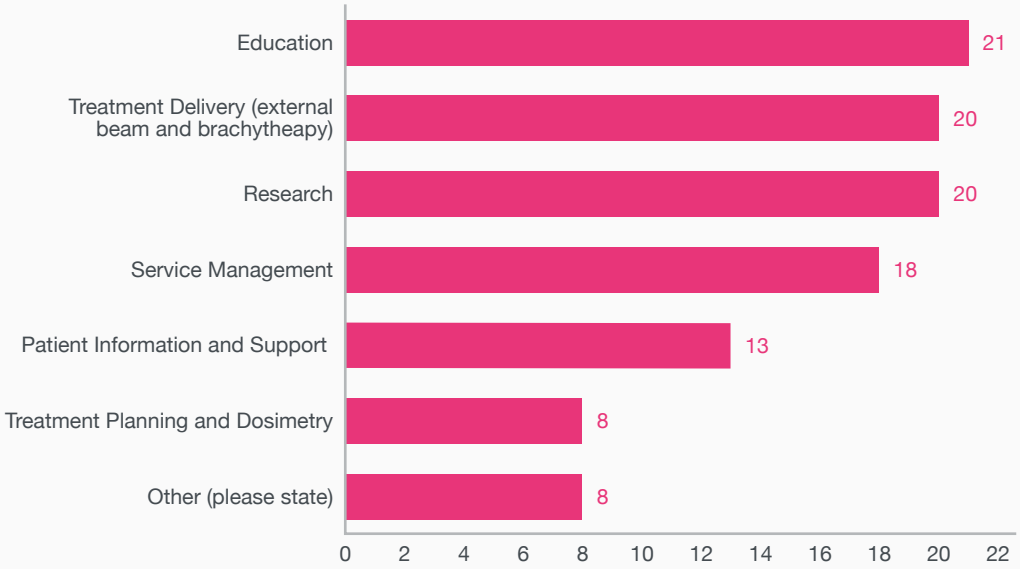


Figure 3.13 Therapeutic radiographer disciplines or specialisms. Some respondents indicated more than one specialism (e.g. education and research).

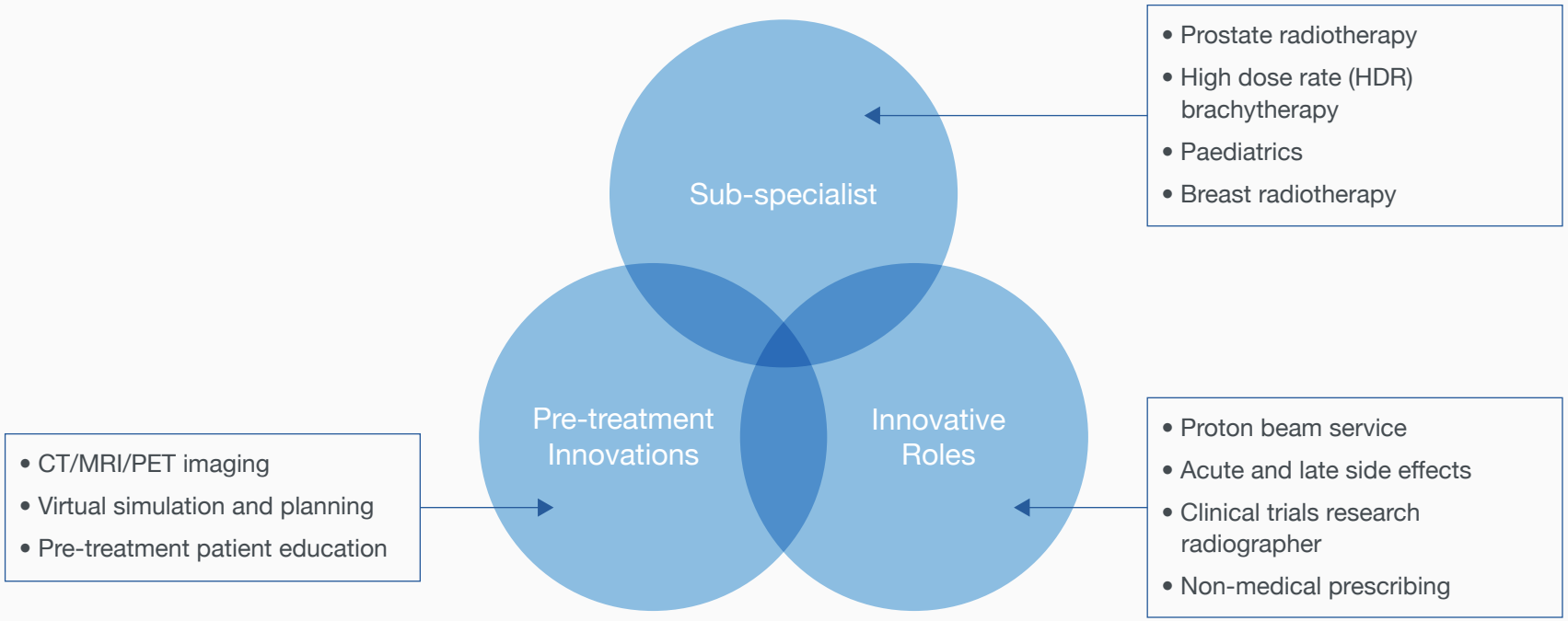


Figure 3.14 Therapeutic radiographer examples of areas of specialist or innovative practice.

3.1.6 Other specific areas of interest or expertise

Respondents were asked to state any specific areas of interest or expertise not directly related to any clinical modality or specialism that they thought it would be helpful to capture. These indicate where respondents have reached a very high level of expertise in an area of practice (subspecialist) or have 'branched out' from traditional professional roles (Figure 3.15). A number of the responses related to workforce education and planning and development of new roles, not only within the respondent's own organisation but also on a regional or national scale. The responses included lay representatives and radiographers now working outside the traditional scope of radiographer practice, including in public health roles and in veterinary radiography.



Figure 3.15 Other areas of expertise beyond specialist or innovative practice.

3.2 Results from Delphi panel round 1 questionnaire

Seventy-five (75) respondents completed the round 1 survey.

Table 3.1 summarises respondents' familiarity with the current ECF. Thirty-seven respondents (49%) had used the current framework in some way. Thirty-eight respondents (51%) had not previously used it but had referred to it to inform their responses to this study. Figures 3.16 and 3.17 summarise the emerging themes relating to reasons for using or not using the current framework.

Very familiar with current ECF and content	Aware of current ECF but not content	Not heard of the ECF
29	33	13

Table 3.1 Prior to this research study, how aware were you of the College of Radiographers ECF?

Developing guidance and frameworks
- At local level
- In discussion with organisational and governmental bodies

Accreditation and approval events
- Validation/re-validation
- Course mapping

Developing and clarifying roles/job descriptions
- Education/training/competency packages
- Especially in relation to Advanced and Consultant practitioner levels

Supporting role development
- Business cases
- Especially in relation to Advanced and Consultant practitioner levels

Own career planning and professional development
- Portfolio development

As part of academic study and research

Figure 3.16 Reasons for using current ECF.

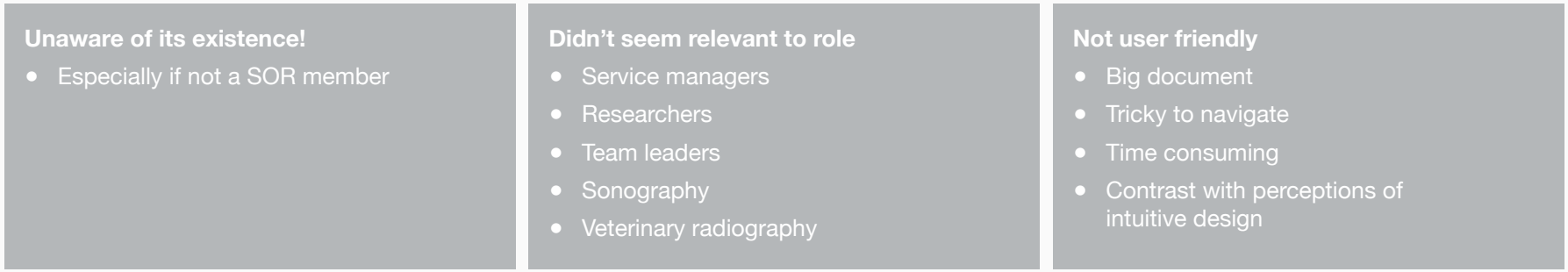


Figure 3.17 Reasons for not using current ECF.

Respondents were asked which aspects of the current ECF were useful and should be retained. The key themes emerging can be summarised as:

- The use of illustrative case studies. A number of respondents indicated that these would benefit from adopting a standardised format.
- The focus on different levels of practice (assistant practitioner to consultant) along with clear definitions of what these roles constituted.
- A focus that facilitated career and education planning.
- A web-based system that was easy to navigate, although some respondents did note that they found the current system unwieldy and not user-friendly (see Figure 3.17).
- The content remains largely relevant but requires some updating, thus justifying the need for the planned refresh.

Specific comments supporting these included:

"All current aspects are useful and should be retained, the document is easily navigated and makes for an interesting read with case study examples, however more detailed information on the less well known areas of the radiography profession would be helpful."

"In my opinion the core structure is still appropriate but the content needs updating."

"All of the tiers and expectations should be retained however there should be modernisation of the expectations for these."

"I like the fact it enables those interested in progressing to see and plan their development. The section on mapping your current role to your desired role is good."

Figure 3.18 summarises responses to the question "In your opinion, what aspects of the current ECF need to change and why?" Predominant among these were the need to better reflect technological and role developments as well as helping to clarify educational expectations at different levels of practice and in different associated roles.

Updates to reflect
- Legislation
- Technological developments
- Practice
- Client and social care requirements

Case studies
- 1 page infographics
- Videos

Better reflect role developments
- Diversity (e.g. Therapeutic Radiographers moving away from planning and delivery in to roles similar to CNS)
- 'Portfolio' careers

Over generic sections
- Education
- Research
- Link to research strategy
- Don't fully cover diversity of role

Education expectations
- Require clarification

Reflect differences across Diagnostic and Therapeutic disciplines

Figure 3.18 What aspects of the current ECF need to change and why?

Based on respondents' identification of KSAs for each of the four levels of practice and additional associated roles in education, research and management/leadership, a list of statements was constructed and shared with the project steering group. These were then developed into the list of KSAs presented to participants within the round 2 questionnaire (see Section 3.3). In total 297 statements were included in the round 2 survey.

Table 3.2 summarises the number of KSA statements for each of the four levels of practice and each of the associated roles. Where respondents identified KSAs that were clearly identified as existing requirements for qualification/practice and therefore required no consensus, these were not included in the list of statements in the round 2 questionnaire.

Levels and roles	Knowledge	Skills	Attributes
Assistant practitioner	10	9	8
Practitioner	12	12	10
Advanced practitioner	11	11	7
Consultant practitioner	11	10	4
Academic/education roles	11	12	17
Management/leadership roles	15	15	22
Research roles	16	14	18
Practice educator roles	10	14	18
Total	**96**	**97**	**104**

Table 3.2 Number of statements derived from thematic analysis of round 1 questionnaire.

3.3 Results from Delphi panel round 2 questionnaire

The following tables present the results of the round 2 questionnaire. The tables refer to KSAs at each of the different levels of practice and associated roles in the radiography profession, and the relative scores and levels of consensus achieved.

For consensus to be achieved, each statement had to meet all three of the following criteria:

- 'Mean' score of >4 (important or very important)
- Coefficient of variation (CV) of <30% (defined as SD/mean)
- >75% agreement (% of panel scoring 4 or 5)

Statements highlighted in green met the three criteria. Those highlighted in red failed to meet one or more of the criteria. Statements in each table are listed in order of the overall level of consensus. This assumed equal weighting for each criterion. A normalised overall consensus score (expressed as a percentage) was calculated as follows and is presented in column 6 of each table:

- Overall normalised consensus score = ((‘mean’ x 20)+(100-CV)+ (% scoring 4 or 5))/3

Across all 297 statements, only six did not achieve consensus.

Additional comments by respondents related to any of the knowledge, skills and attributes are included below the relevant tables. Final overall comments were invited, and included: "This is very good and captures content expectations really well."

3.3.1 Assistant Practitioner level: knowledge

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Principles of good communication and teamwork	49	4.84	7.6	100.0	96.4
Infection prevention and control principles	49	4.78	9.6	97.9	94.6
Principles of basic life support	49	4.71	10.4	97.9	93.9
Principles of acquiring informed consent	49	4.57	14.0	95.9	91.1
Standard radiographic/radiotherapy techniques	49	4.59	13.9	91.8	89.9
Underpinning legal, ethical and professional frameworks	49	4.41	18.4	93.9	87.9
Technical advances within own scope of practice	49	4.24	17.0	87.8	85.2
Pathways of care	49	4.18	17.9	87.8	84.5
Principles of dose optimisation	49	3.98	28.9	71.4	74.0
Pharmacology and administration of medicines appropriate to own scope of practice	48	3.69	27.1	58.3	68.3

Additional comments:

It is important to reflect underlying standards of proficiency as some Assistant Practitioners will not be involved in e.g. medicines management.

Knowledge of dementia and adaptation of communication methods for patients with additional needs such as autism etc.

Being an advocate for the patient.

Principles of clinical governance – confidentiality/record keeping etc.

Clinical governance i.e. record-keeping/patient information confidentiality.

Essential knowledge of underpinning legal, ethical and professional frameworks.

Dealing with harassment, bullying and unprofessional behaviour both in the workplace and in service user care.

3.3.2 Assistant Practitioner level: skills

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Work safely within own scope of practice	48	4.88	6.76	100	96.9
Communicate effectively with patients and staff	48	4.85	7.22	100	96.6
Work effectively within a team	48	4.73	9.3	100	95.1
Accurately position patients according to protocol	48	4.79	9.39	97.9	94.8
Safely apply moving and handling theory	48	4.73	11.21	93.75	92.4
Use IT and information management systems effectively and efficiently	48	4.54	12.78	95.8	91.3
Accurately appraise images within own scope of practice	48	4.38	17.81	85.4	85.1
Demonstrate problem solving skills	48	4.08	14.95	85.4	84.0
Demonstrate basic leadership skills	48	3.65	26.03	60.4	69.1

Additional comments:

Be involved in audit/governance.

Empathetic skills.

Listening skills.

3.3.3 Assistant Practitioner level: attributes

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Compassionate/caring	49	4.84	7.64	100	96.4
Aware of limitations within own scope of practice	48	4.83	7.66	100	96.3
Flexible/adaptable	49	4.51	11.09	100	93.0
Effective time management	49	4.57	11.6	97.9	92.6
Organised	49	4.55	11.87	97.9	92.3
Resilience	49	4.49	12.03	97.9	91.9
Confidence	49	4.24	16.98	91.8	86.5

Additional comments:

Confidence is risky, especially if someone is confident but also unaware or incompetent. Confidence needs to be clarified — appearing confident to the patient or confident in areas of competence.

Reliability.

Dedication.

3.3.4 Practitioner level: knowledge

(those at lower levels PLUS the following)

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Principles underpinning approaches to achieving high image quality alongside dose optimisation/delivery of safe and effective radiotherapy	47	4.81	9.15	97.9	95.0
Principles of safeguarding	47	4.7	12.34	97.9	93.2
Principles underpinning clinical decision-making	47	4.57	11.82	97.9	92.5
Normal appearances and variants, and pathology/disease processes within own scope of practice	47	4.57	12.47	95.7	91.5
Principles of audit and service evaluation	47	4.3	11.63	97.9	90.8
Principles of technological advances within and peripheral to own scope of practice	47	4.4	15.23	93.6	88.8
Theories for supporting learners in practice	47	4.19	13.6	95.7	88.6
Principles of research and research ethics	47	4.06	15.52	87.2	84.3
Legal mechanisms for medicines supply and administration in imaging and therapy	47	4.06	20.69	80.8	80.4
Pharmacokinetics of drugs within own scope of practice	47	3.98	21.61	80.8	79.6
Artificial intelligence in image acquisition	47	3.72	20.43	61.7	71.9
Artificial intelligence in image interpretation	47	3.74	20.86	61.7	71.9

3.3.5 Practitioner level: skills

(those at lower levels PLUS the following)

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Work safely within multidisciplinary environments	48	4.73	9.3	100	95.1
Accurately appraise and interpret images within own scope of practice	48	4.79	9.39	97.9	94.8
Demonstrate clinical decision-making within own scope of practice	48	4.69	10.87	97.9	93.6
Digital literacy skills relevant to own scope of practice	48	4.6	11.52	97.9	92.8
Apply knowledge such that able to adapt to unfamiliar situations within own scope of practice	48	4.54	11.89	97.9	92.3
Demonstrate effective supervision skills	48	4.48	12.95	95.8	90.8
Safely implement advances in technology, techniques, radiation safety and infection control within own scope of practice	48	4.69	13.22	91.7	90.8
Demonstrate compassionate leadership skills within own scope of practice	47	4.47	13.65	93.6	89.8
Make judgements about new technologies and techniques	48	4.19	12.65	93.8	88.3
Adaptable to working with new/unfamiliar technology at edge of own scope of practice	48	4.31	14.39	91.7	87.8
Undertake and disseminate audit, service evaluation or research	48	4.13	16.95	85.4	83.7
Develop and implement SMART action plans (that will develop scope of practice beyond registration expectations)	48	4.08	16.42	81.3	82.2

3.3.5 Practitioner level: skills

Additional comments:

Empathetic skills.

Patient care skills such as dressing reactions/ulceration, assessing patients' condition for using mobility devices.

Apply knowledge **and critical thinking and clinical reasoning** such that able to adapt to unfamiliar situations within own scope of practice.

3.3.6 Practitioner level: attributes

(those at lower levels PLUS the following)

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Patient-centred and holistic	46	4.87	6.98	100	96.8
Accountable	46	4.83	7.87	100	96.2
Responsible	46	4.8	8.33	100	95.9
Upholds ethical values	46	4.8	8.33	100	95.9
Critical thinking	46	4.61	10.63	100	93.9
Commitment to, and evidence of, CPD	46	4.57	10.94	100	93.5
Proactive	46	4.52	11.06	100	93.1
Emotionally intelligent	46	4.54	11.89	97.8	92.2
Ability to work autonomously	46	4.63	13.82	95.6	91.5
Engages with different working, learning and professional development practices	46	4.5	12.89	95.6	90.9

Additional comments:

Emotionally intelligent depends on the type. Being both able to read a situation and person and to understand how they react and behave are two different, but important aspects.

Integrity.

Team work.

Resilience!

3.3.7 Advanced Practitioner level: knowledge

(those at lower levels PLUS the following)

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Principles underpinning specialist interventions/activities within own scope of practice	48	4.85	7.22	100	96.6
Detailed knowledge and understanding of disease processes in own scope of practice	48	4.79	8.56	100	95.7
Detailed knowledge of current and emerging technology within own scope of practice	48	4.67	10.06	100	94.4
Wider knowledge of service development and evaluation within own scope of practice	47	4.62	10.61	100	93.9
Wider knowledge of research techniques within own scope of practice	48	4.58	10.7	100	93.6
Principles underpinning effective leadership	48	4.69	10.87	97.9	93.6
Wider knowledge of NHS issues impacting upon own scope of practice	48	4.48	11.16	100	92.8
Mentoring theories underpinning development of those working within own team	48	4.5	13.56	93.8	90.1
Education theories underpinning development of those working within own team	48	4.46	15.25	89.6	87.9
Principles underpinning effective project management	47	4.23	15.6	87.2	85.4
In-depth knowledge of pharmacology within own scope of practice	48	4.35	19.08	87.5	85.1

3.3.7 Advanced Practitioner level: knowledge

Additional comments:

The pharmacology question depends very much on the advanced practitioners' area of expert practice. For some this will be essential, for others not really applicable.

An understanding of budgets and resources.

3.3.8 Advanced Practitioner level: skills

(those at lower levels PLUS the following)

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Demonstrate autonomy in clinical decision-making within own scope of practice	48	4.81	8.11	100	96.0
Demonstrate effective leadership in relation to own scope of practice and team they lead	48	4.77	8.81	100	95.5
Demonstrate ability to improve and enhance quality of care within own scope of practice	48	4.75	9.05	100	95.3
Operate critically in accordance with latest guidance and current evidence base	48	4.73	9.3	100	95.1
Efficiently organise/manage workloads within own scope of practice	48	4.81	9.15	97.9	95.0
Demonstrate effective time management skills	48	4.77	9.85	97.9	94.5
Effectively manage projects within own scope of practice	48	4.67	10.06	100	94.4
Advanced communication skills relevant to own scope of practice	48	4.75	10.11	97.9	94.3
Engage in audit and evaluation projects within own scope of practice	48	4.69	10.87	97.9	93.6
Contribute to research projects within own scope of practice	48	4.58	11.57	97.9	92.6
Report on images within own scope of practice	48	4.54	18.06	89.6	87.4

3.3.8 Advanced Practitioner level: skills

Additional comments:

At advanced practitioner level should also be demonstrating the attributes and skills of a leadership role.

Reporting should not be an essential for advanced practice. As we broaden out into other areas of advanced practice this may become less important and carrying our own caseload in areas such as FLS [fracture liaison service], rheumatology etc. We should be careful not to box ourselves in as a profession.

'Report on images within own scope of practice' — This I cannot fully understand as not all **advanced practitioners** are reporting radiographers. Yes many are but some have other levels of enhanced practice such as leadership, research, clinical practice and education roles from the other four pillars of advanced practice. If you just describe ability to report then this is just **enhanced practice** not advanced practice. This should be altered to reflect **ensure that they are able to show advanced practice within the four pillars of practice with one pillar more dominant according to area of expertise!** Another very important area: Undertake education and teaching in specialist area for colleagues, service users and students.

3.3.9 Advanced Practitioner level: attributes

(those at lower levels PLUS the following)

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
High levels of professionalism	48	4.85	7.22	100	96.6
Ability to work autonomously	48	4.85	7.22	100	96.6
Commitment to, and evidence of, operating at highest standards	48	4.85	7.22	100	96.6
Role model	48	4.77	8.81	100	95.5
Collaborative	48	4.77	8.81	100	95.5
Ability to work well under pressure	48	4.81	11.02	97.9	94.4
Dynamic	48	4.65	12.69	93.8	91.4

Additional comments:

At advanced practitioner level should also be demonstrating the attributes and skills of a leadership role.

Professional integrity.

Critical thinking; Continuous CPD and educational training for others?

Patient-centred practice.

3.3.10 Consultant Practitioner level: knowledge

(those at lower levels PLUS the following)

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Expert knowledge of disease processes within own scope of practice	46	4.91	5.7	100	97.5
Detailed knowledge of the legal, ethical and professional frameworks governing own scope of practice	46	4.89	6.34	100	97.2
Expert knowledge of technology within own scope of practice	46	4.89	6.34	100	97.2
Expert knowledge of interventions within own scope of practice	46	4.85	7.42	100	96.5
Expert knowledge of theories relating to service development, evaluation and research within own scope of practice	46	4.78	8.58	100	95.7
Detailed knowledge of mentoring theories that support provision of service within own scope of practice	46	4.78	8.58	100	95.7
Expert knowledge of impact of relevant service development, evaluation and research on own scope of practice	46	4.78	8.58	100	95.7
Expert knowledge of NHS issues within and beyond own scope of practice	46	4.74	10.34	97.8	94.1
Detailed knowledge of education theories that support provision of service within own scope of practice	46	4.65	12.04	95.6	92.2
Expert knowledge of pharmacology within own scope of practice	46	4.63	15.12	97.8	91.8
Detailed knowledge of leadership and management theory	46	4.65	13.55	91.3	90.3

3.3.10 Consultant Practitioner level: knowledge

Additional comments:

An understanding of budgets and resources and its limits/implications.

Understand the role of the patient and other team members in service delivery, evaluation and development.

Knowledge of GCP [Good Clinical Practice] to enable research.

Knowledge and ability to deliver educational and CPD training to support service and knowledge provision. Knowledge and ability to undertake and deliver high-quality research projects related to clinical provision and/or disease process.

3.3.11 Consultant Practitioner level: skills

(those at lower levels PLUS the following)

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Demonstrate expert clinical skills within own scope of practice	46	4.93	5.07	100	97.8
Lead on development of service within own scope of practice	46	4.87	6.98	100	96.8
Expert communication skills relevant to own scope of practice and wider service arena	46	4.87	8.21	97.8	95.7
Lead on research and contribute to evidence base within own scope of practice	46	4.76	9.87	97.8	94.4
Disseminate outcomes of research	46	4.72	10.59	97.8	93.9
Lead development of others within their team	45	4.76	11.76	97.8	93.7
Advise at local, regional, national international levels within own scope of practice	46	4.74	12.03	97.8	93.5
Patient advocacy	46	4.74	12.87	95.7	92.5
Where relevant, prescribe drugs within own scope of practice	46	4.59	14.81	93.5	90.2
Collaborate on grant application submissions and draw on relevant expertise to maximise grant success	46	4.39	16.17	91.3	87.6

3.3.11 Consultant Practitioner level: skills

Additional comments:

At consultant practitioner level should also be demonstrating the attributes and skills of a management/leadership role.

Some of the content within researcher should be included in the consultant role especially if the role develops towards the clinical academic.

Ability to integrate research into education and clinical practice.

Not only dissemination of research outcomes — one of the four pillars is **education** — so need to deliver and disseminate both educational training and CPD as **very important**.

3.3.12 Consultant Practitioner level: attributes

(those at lower levels PLUS the following)

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Leadership qualities	45	4.8	9.38	97.8	94.8
Ability to focus on 'bigger picture' rather than solely on clinical, research, management or education aspects	45	4.76	11.76	97.8	93.7
Driven	45	4.67	11.13	97.8	93.4
Willingness to contribute to professional body, government bodies and HEIs to which they are associated	45	4.67	11.99	95.6	92.3

Additional comments:

At consultant practitioner level should also be demonstrating the attributes and skills of a management/leadership role.

Understand and apply methods to include patients and carers in service delivery, evaluation and development.

Critical thinking. Role model. Aspirational. Authoritative. Influential. Collaborative. High levels of professionalism.

3.3.13 Academic/education roles: knowledge

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Learning and teaching strategies	46	4.85	7.42	100	96.5
Detailed specialist knowledge relating to own scope of practice including current and future developments	45	4.82	7.88	100	96.2
Assessment strategies	46	4.76	9.03	100	95.4
Approaches to supervision	46	4.76	9.03	100	95.4
Approaches to mentoring	46	4.76	9.03	100	95.4
Curriculum development approaches	46	4.72	9.53	100	95.0
Educational theory	46	4.7	9.79	100	94.7
Local and national policies and procedures related to education	46	4.61	10.63	100	93.9
Knowledge and awareness of educational technologies	46	4.65	11.18	97.8	93.2
Research methodologies	46	4.67	11.78	95.7	92.4
Educational psychology	46	4.52	13.72	93.5	90.1

Additional comments:

Professional standards; Learning support; Evidence-based practice; Benefits, limitations and challenges of simulation in education; Educational technologies and learning approaches; Effective feedback mechanisms.

Well-grounded in current practice/techniques.

Not sure this is completely accurate: 'Detailed specialist knowledge relating to own scope of practice including current and future developments'. As a programme director of a radiography programme I would far rather have team members able to teach well and enthusiastically in **radiography** as a whole and have the additional **bonus** of detailed specialist knowledge in an area.

3.3.14 Academic/education roles: skills

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Demonstrate ability to motivate and engage students	46	4.91	5.7	100	97.5
Demonstrate excellent communication skills	46	4.91	5.7	100	97.5
Demonstrate critical thinking and reasoning	46	4.74	9.28	100	95.2
Evaluate own and others' practice to enhance education delivery	46	4.72	9.53	100	95.0
Facilitate reflection	46	4.7	9.79	100	94.7
Deliver learning materials in face-to-face and distance learning environments	46	4.78	9.62	97.8	94.6
Digital literacy	46	4.61	10.63	100	93.9
Demonstrate excellent organisational skills	46	4.7	10.85	97.8	93.7
Utilise a wide range of educational technologies effectively	46	4.52	12.83	95.7	91.1
Implement a research-informed teaching approach	46	4.57	13.35	93.5	90.5
Undertake and disseminate evaluation and research	46	4.46	14.57	91.3	88.6
Utilise simulation-based education strategies effectively	46	4.43	14.67	91.3	88.4

Additional comments:

Liaise with clinical colleagues to aid delivery of effective education on clinical placement.

Leadership skills.

Provide clear explanations; Mentoring and coaching skills.

Enthusiasm for radiography as a career and the future trajectory of radiography as a career.

3.3.15 Academic/education roles: attributes

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Supportive	46	4.83	7.87	100	96.2
Role model	46	4.8	8.33	100	95.9
Reliable	45	4.8	8.33	100	95.9
Enthusiastic and motivated	46	4.78	8.58	100	95.7
Work collaboratively	46	4.76	9.03	100	95.4
Engage with learners from diverse backgrounds	46	4.85	8.66	97.8	95.4
Resilience	46	4.74	10.34	97.8	94.1
Confident	46	4.72	10.59	97.8	93.9
Nurturing	46	4.67	10.92	97.8	93.4
Innovative	46	4.59	11.55	97.8	92.7
Promote dissemination of research	46	4.57	11.82	97.8	92.5
Adaptable/flexible	46	4.63	12.31	95.7	92.0
Autonomous	46	4.61	13.88	95.6	91.3
Creative	46	4.54	12.78	95.7	91.2
Commitment to, and evidence of, CPD	46	4.65	12.9	93.5	91.2
Compassionate and caring	46	4.65	12.9	93.5	91.2
Reflexive	46	4.5	15.11	93.5	89.5

3.3.15 Academic/education roles: attributes

Additional comments:

How to deal with students who are not meeting their objectives and supporting professional development facilitators in the radiotherapy department to address these issues.

Self-motivated.

3.3.16 Management/leadership roles: knowledge

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Detailed knowledge of leadership strategies	49	4.82	8.09	100	96.1
Detailed knowledge of the legal, ethical and professional frameworks governing own scope of practice	49	4.8	8.33	100	95.9
Detailed knowledge of NHS issues within and beyond own scope of practice	49	4.78	8.79	100	95.6
Workforce planning	49	4.73	9.3	100	95.1
Departmental, trust/health board and national frameworks, policies, procedures and requirements	49	4.73	9.3	100	95.1
Principles underpinning recruitment and retention	49	4.69	9.81	100	94.7
Principles underpinning service development and evaluation	49	4.69	9.81	100	94.7
Principles underpinning financial/resource management	49	4.69	10.66	97.9	93.7
HR guidelines and policies	49	4.63	11.23	97.9	93.1
Supervision	49	4.53	12.8	95.9	91.2
Expert knowledge of radiation safety and associated regulations	49	4.55	13.41	93.9	90.5
Change management	49	4.59	13.94	91.8	89.9
Mentoring	49	4.51	14.86	93.9	89.7
Business management models	49	4.49	14.92	93.9	89.6
Detailed knowledge of management theories	49	4.39	17.08	91.8	87.5

3.3.16 Management/leadership roles: knowledge

Additional comments:

Knowing where to go for radiation regulations/HR [human resources] guidance and how to liaise with leads in these areas is more important than knowing it all themselves.

Managing difficult behaviour.

3.3.17 Management/leadership roles: skills

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Demonstrate ability to motivate and engage staff	49	4.94	4.86	100	98.0
Excellent communication skills	49	4.9	6.12	100	97.3
Compassionate and effective leadership	49	4.9	6.12	100	97.3
Problem solving	48	4.85	7.22	100	96.6
Efficiently organise/manage/delegate workloads	49	4.84	7.64	100	96.4
Demonstrate excellent organisational skills	49	4.82	8.09	100	96.1
Demonstrate ability to improve and enhance quality of care	49	4.8	8.33	100	95.9
Effectively manage projects	49	4.78	8.79	100	95.6
Demonstrate critical thinking and reasoning	49	4.78	8.79	100	95.6
Facilitate audit, service development, service evaluation and research	49	4.67	10.06	100	94.4
Business case development	49	4.61	10.63	100	93.9
Demonstrate autonomy in decision-making	49	4.76	10.92	95.9	93.4
Develop and implement SMART action plans	49	4.61	11.5	97.9	92.9
Digital literacy	49	4.55	11.87	97.9	92.3
Demonstrate effective mentoring and supervision skills	49	4.61	13.67	95.9	91.5

3.3.17 Management/leadership roles: skills

Additional comments:

As mentioned consultants, advanced practitioners, research leads and practice-based educators also need require the ‘very important’ attributes and skills relevant to leadership roles.

Manager must be approachable.

3.3.18 Management/leadership roles: attributes

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Responsible and accountable	49	4.92	5.49	100	97.6
Work collaboratively	48	4.9	6.33	100	97.2
Reliable	49	4.88	6.76	100	96.9
Enthusiastic and motivated	49	4.86	7.2	100	96.7
Professional	49	4.84	7.64	100	96.4
Supportive	49	4.84	7.64	100	96.4
Diplomatic	49	4.8	8.33	100	95.9
Confident	49	4.76	9.03	100	95.4
Adaptable/flexible	49	4.84	8.68	97.9	95.3
Autonomous	49	4.82	9.13	97.9	95.1
Resilience	49	4.82	9.13	97.9	95.1
Ability to focus on 'bigger picture' rather than solely on clinical, research, management or education aspects	49	4.8	9.38	97.9	94.8
Able to work effectively under pressure	49	4.84	10.54	97.9	94.7
Mediator	49	4.67	10.06	100	94.4
Innovative	49	4.67	10.06	100	94.4
Role model/inspirational	49	4.76	10.08	97.9	94.3
Emotionally intelligent	49	4.76	10.08	97.9	94.3

3.3.18 Management/leadership roles: attributes (continued)

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Compassionate and caring	49	4.71	11.25	95.9	93.0
Commitment to, and evidence of, CPD	49	4.65	12.04	95.9	92.3
Nurturing	49	4.63	12.96	93.9	91.2
Reflexive	48	4.52	13.5	93.8	90.2
Creative	49	4.51	14.19	91.8	89.3

3.3.19 Research roles: knowledge

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Methods for involving patients, public, service users in research	46	4.72	9.53	100	95.0
Detailed knowledge of local, national and (where relevant) international research ethics and governance procedures and frameworks	46	4.7	9.79	100	94.7
Research priorities within own practice scope	46	4.76	9.87	97.8	94.4
Literature searching methods	46	4.74	10.34	97.8	94.1
Detailed knowledge of the Good Clinical Practice (GCP) standards and frameworks	46	4.72	10.59	97.8	93.9
Current and emerging research/trials within own scope of practice	46	4.72	10.59	97.8	93.9
Regulatory frameworks (e.g. MHRA, HRA) clinical and research governance frameworks	46	4.7	10.85	97.8	93.7
Evaluation/research methodologies	46	4.74	12.03	97.8	93.5
Robust knowledge of qualitative or quantitative research methods	46	4.72	12.29	97.8	93.3
Knowledge of approaches to quantitative or qualitative data analysis	46	4.7	12.34	97.8	93.2
Methods to minimise researcher bias	46	4.7	11.7	95.7	92.7
Knowledge of intellectual property, copyright or trademarking as part of the research and innovation pathway	46	4.54	11.89	97.8	92.2
Approach to evaluation/synthesis of literature	46	4.63	12.31	95.7	92.0

3.3.19 Research roles: knowledge (continued)

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
The clinical trials process	46	4.57	13.35	93.5	90.5
Knowledge of the innovation pathway	46	4.48	14.51	95.6	90.2
Knowledge mobilisation or knowledge exchange methods and processes	46	4.5	14.44	91.3	89.0

Additional comments:

Most of these can be gained from other sources and experts in the field of each so the questions are difficult to rate. The researcher need not be an expert in any particular field or method, analysis or even ethical approval but needs background in these. The most important **knowledge** and **skill** in research is how to shape an idea into a **robust** research project using an appropriate method using critical thinking, clinical reasoning and emotional intelligence!

3.3.20 Research roles: skills

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Disseminate research	45	4.87	6.98	100	96.8
Demonstrate rigour in data collection and data analysis	46	4.83	7.87	100	96.2
Demonstrate critical thinking and reasoning	45	4.82	7.88	100	96.2
Demonstrate excellent communication skills (sometimes across agencies)	45	4.8	8.33	100	95.9
Report on outcomes of research in appropriate formats and according to requirements	46	4.78	8.58	100	95.7
Translate research knowledge	45	4.78	8.79	100	95.6
Develop research protocols/proposals	46	4.76	9.03	100	95.4
Demonstrate ability to manage projects effectively and efficiently	45	4.76	9.03	100	95.4
Demonstrate excellent organisational skills	45	4.76	10.08	97.8	94.3
Lead on research and contribute to evidence base within own scope of practice	46	4.72	12.29	97.8	93.3
Utilise software effectively in research and evaluation	45	4.62	12.34	95.6	91.9
Able to coordinate grant application submissions and draw on relevant expertise to maximise grant success	46	4.59	12.42	95.7	91.7
Demonstrate effective mentoring skills	45	4.49	12.92	95.6	90.8
Demonstrate effective supervision skills	45	4.47	14.54	95.6	90.2

3.3.21 Research roles: attributes

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Passionate about research	45	4.87	6.98	100	96.8
Ethical	45	4.82	7.88	100	96.2
Rigorous/meticulous	45	4.82	7.88	100	96.2
Critical thinker	45	4.8	8.33	100	95.9
Show initiative	45	4.76	9.03	100	95.4
Autonomous	45	4.84	8.68	97.8	95.3
Open-minded	45	4.73	9.3	100	95.1
Enthusiastic and motivated	45	4.8	9.38	97.8	94.8
Resilient	45	4.67	10.06	100	94.4
Flexible/adaptable	45	4.69	10.87	97.8	93.6
Curious	44	4.68	10.9	97.7	93.5
Innovative	45	4.69	12.58	97.8	93.0
Emotionally intelligent	45	4.6	11.52	97.8	92.8
Reflexive	45	4.6	12.39	95.6	91.7
Patient-focused	45	4.64	12.93	93.3	91.1
Compassionate	45	4.53	13.69	93.3	90.1
Team worker	45	4.56	14.91	93.3	89.9
Able to lead	45	4.44	16.89	88.9	86.9

3.3.22 Practice Educator roles: knowledge

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Understanding the role of placements within the whole curriculum	45	4.69	9.81	100	94.7
Wide radiography knowledge including current and future developments	45	4.73	10.36	97.8	94.0
Understanding of supervision and mentoring	45	4.71	10.62	97.8	93.8
Assessment strategies	45	4.6	10.65	100	93.8
Learning and teaching strategies	45	4.49	12.03	97.8	91.9
Local and national policies and procedures related to education and own scope of practice	45	4.58	12.66	95.6	91.5
Educational psychology	45	4.4	12.95	95.6	90.2
Educational theory	45	4.4	13.86	93.3	89.1
Knowledge and awareness of educational technologies and simulation	45	4.42	14.71	91.1	88.3
Research methodologies	45	4.09	18.34	84.4	82.6

Additional comments:

Seems to have an undergraduate or pre-registration focus in the lower part of the list — how does this role meet demands of the wider team?

Effective feedback mechanisms.

3.3.23 Practice Educator roles: skills

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Ability to motivate and engage students in practice	45	4.91	5.7	100	97.5
Demonstrate excellent communication skills	45	4.91	5.7	100	97.5
Facilitate reflection in and on practice	45	4.84	7.44	100	96.5
Identify and create new learning opportunities in the practice setting	45	4.78	8.79	100	95.6
Support assessment in practice by supporting both learners and assessors	45	4.73	9.3	100	95.1
Deliver practice-based teaching sessions to staff and students	45	4.69	9.81	100	94.7
Maintain regular and proactive communication with academic partners	45	4.67	10.06	100	94.4
Demonstrate critical thinking and reasoning	45	4.67	10.06	100	94.4
Demonstrate excellent organisational skills	45	4.76	10.08	97.8	94.3
Utilise a wide range of educational technologies effectively	45	4.51	12.86	95.6	91.0
Digital literacy	45	4.47	12.98	95.6	90.7
Offer expert professional development advice to staff	45	4.58	13.32	93.3	90.5
Implement a research-informed teaching approach	45	4.38	13.93	93.3	89.0
Utilise simulation-based education strategies effectively	45	4.31	14.62	91.1	87.6

3.3.23 Practice Educator roles: skills

Additional comments:

Apart from last comment feels very much pre-registration so perhaps a few more components like the last one for wider staff base need to be considered.

Provide constructive feedback at appropriate times. Ability to set and work within boundaries.

Approachable.

3.3.24 Practice Educator roles: attributes

Statement	n	'Mean' score	Coefficient of variation (CV) %	% respondents scoring 'Important' or 'Very important'	Overall consensus %
Supportive	45	4.91	5.7	100	97.5
Enthusiastic and motivated	45	4.91	5.7	100	97.5
Role model	45	4.89	6.34	100	97.2
Work collaboratively	45	4.87	6.98	100	96.8
Reliable	45	4.84	7.44	100	96.5
Engage with learners from diverse backgrounds	45	4.82	7.88	100	96.2
Resilience	45	4.8	8.33	100	95.9
Compassionate and caring	45	4.8	8.33	100	95.9
Providing pastoral support and guidance	45	4.78	8.79	100	95.6
Nurturing	45	4.78	8.79	100	95.6
Innovative	45	4.73	9.3	100	95.1
Collaborative across the organisation	45	4.69	9.81	100	94.7
Adaptable/flexible	45	4.78	9.83	97.8	94.5
Creative	45	4.64	10.34	100	94.2
Confident	45	4.71	10.62	97.8	93.8
Commitment to, and evidence of, CPD	45	4.67	11.13	97.8	93.4
Autonomous	45	4.62	11.47	97.8	92.9
Reflexive	45	4.62	11.47	97.8	92.9

3.3.24 Practice Educator roles: attributes

Additional comments:

Is role model about practice generally as needs to be clear so that confusion around abilities outside a scope is not introduced.

Confidential; approachable, ability to support students/staff at their most vulnerable.

4 Discussion

This Delphi consensus study set out to inform the updating of the College of Radiographers ECF. The study established aspects of the framework that required updating and identified the necessary KSAs required for radiographers across the four levels of practice and associated roles (academia, research and management/leadership). The Delphi study commenced with a preparatory questionnaire (n=115), which provided the steering group with data regarding a range of participant demographics and their areas of expertise (Section 3.1). This data, when compared to HCPC statistics,[45–47] confirmed that the expert panel was adequately representative in terms of gender, age, ethnicity and both diagnostic and therapeutic radiography. Representation of specialisms and levels of practice within the profession were also reviewed; any gaps were filled with further participant invitations.

Delphi consensus studies, however, have the potential for respondent attrition as the rounds progress and this was identified in this study. While 115 people completed the Delphi preparatory questionnaire, 75 continued to complete the round 1 questionnaire and then 49 completed the round 2 questionnaire. Although the sample of 75 was less than the envisaged panel size of 90, it still represents a 'large' expert panel in a consensus study and it adequately represented expertise across the breadth of the radiographic profession as well as those in patient/public groups and professions allied to radiography.

A 35% attrition rate between rounds 1 and 2 of the study is slightly higher than the typical attrition rates of 20–30% that may be expected between Delphi study rounds as suggested by Chalmers and Armour.[48] However, the sample completing the final round of this survey still adequately represented the breadth of radiographic practice; the very high levels of consensus seen provide confidence that the sample size in the final round was acceptable.

Approximately half of the expert panel had not previously used the ECF with 13 respondents indicating that they were unaware of its existence. This may be attributable to a proportion of the panel coming from patient/public representative groups (n=3) and other professions (n=10). Furthermore, radiographers who were not members of the Society of Radiographers were less likely to be aware of it and how it may be used. This relatively high lack of awareness of the content of the current ECF was not detrimental to the study however, as it stood to reduce experiential bias and, in any case, all panel members were directed to the current ECF to inform their responses.

Aside from being unaware of its existence, the panel identified two key reasons for not using the ECF. These were: 1) perceived lack of relevance to specific roles; 2) perceptions that the current ECF was not user-friendly. The identification of KSAs for associated roles across the wider radiographic profession in this Delphi study should move

some way to addressing the first of these concerns. However, some roles may still not align comfortably and the refreshed ECF will need to be cognisant of roles with diverse education and training pathways that may begin to emerge over the next decade. These may include specialist roles and innovative practice areas, identified in Figures 3.12, 3.14 and 3.15 earlier in this report. It is not possible for the ECF to address every specific current and emerging role within the broad scope of radiographic practice, but it will need to better reflect the diversity of roles as well as emerging 'portfolio careers' such as clinical academics where an individual's role may cross two or more areas of practice.

Within the revised ECF framework it will also be important to acknowledge emerging distinctions between advanced practice roles and enhanced practice roles where radiographers may be working in highly specialised areas but are not necessarily operating at advanced practitioner level. This distinction was recognised by at least one panel member when commenting on the skills required at advanced practitioner level (Section 3.3.8). The refreshed ECF should be used in conjunction with other competency frameworks as they arise, including the work of Harris[49] in relation to CT, the continuing work to review and update sonography workforce models,[9,50] and the SCoR and Health Education England (HEE) project to review the role of radiography support workers and assistant practitioners. The outcomes of the 2020 HCPC consultation on changes to the standards of proficiency also need to align to a refreshed ECF.[51]

The web-based system employed for the current ECF was felt by some participants to be easy to navigate but many commented on it being 'unwieldy' or 'not intuitive'. Advice on the online design of the refreshed ECF is beyond the scope of this report but ensuring a user-friendly web-based experience is clearly an issue of importance. The use of infographics, exemplars and video case studies to illustrate how radiographers use the ECF to inform the development of their education and career pathways was advised by a number of panel members. Panel members also commented on the need to better clarify educational expectations at different levels of practice (e.g. advanced practitioner and consultant practitioner) and in different roles (e.g.. academic roles). Identifying and prescribing such expectations is beyond the scope of this report but the refreshed ECF should make clear professional body expectations with regards to educational attainments for various levels and roles as well as directing users to possible pathways for achieving these. This will aid career planning and inform curriculum development.

Analysis of the round 1 questionnaire was peer-reviewed by the project steering group and led to the development of 297 statements of knowledge (96), skills (97) and attributes (104) across the four levels of practice and associated areas (Table 3.2); 291 of these statements achieved consensus in the round 2 questionnaire. The criteria for achieving consensus in this study were stringent and consistent with those used in the Delphi study identifying the SCoR radiographic profession research priorities.[41] Where agreement was met for statements, the levels of consensus were consistently high, with 'mean' responses

between 4.0 and 4.9, coefficient of variation between 4.9% and 20.7% and the proportion of the panel identifying statements as 'important' or 'very important' ranging from 100% to 80.8%. The overall level of consensus for statements meeting the criteria ranged from 80.4% to 98%. This indication of very high levels of agreement across the KSA statements, coupled with consistent additional qualitative comments that provided no clear indication of missing statements, supported the closure of the study; there was no requirement for a third round. The list of statements achieving consensus do not represent an exhaustive list of final statements for the refreshed ECF, as reference will need to be made to the KSAs that are already clearly specified as requirements for practice. These were intentionally omitted from the list of statements in this study. Furthermore, the additional comments and suggestions made by some panel members (and included in Section 3.3) should inform additional statements. Nevertheless, the consensus seen in this study provides high levels of confidence that the statements identified and agreed by the expert panel are valid.

Trustworthiness and rigour was maintained in this study through various means. Panel members were selected from a credible list of experts drawn from SCoR advisory and special interest groups, with final selections reviewed by the project steering group, ensuring representativeness of a range of specialisms and levels of practice. Using a broad range of health professionals from the field of radiography ensured diversity of responses and enhanced authenticity, and including service users recruited from CoR's patient advisory group ensured patient and public involvement in the research and further enhanced credibility of the findings. However a potential limitation of this study relates to the data collection method employed for the first round of the Delphi process. While the use of an online survey facilitated access to a larger sample of participants and enabled collection of a large amount of data, arguably it did not generate the rich qualitative data to inform the generation of statements that could be prioritised in a round 2 survey. The use of focus groups with experts representing the diverse elements of the radiographic profession may, through peer discussion, have provided more detailed insight into priorities for required KSAs at different levels of practice and in different roles.

5 Conclusion

This Delphi study has provided a robust process for identifying the important KSAs that need to be incorporated into the refreshed ECF. Experts representing the breadth of the profession, including service users, have identified these priorities.

A total of 297 statements of knowledge (96), skills (97) and attributes (104) across the four levels of practice and associated areas were derived, with 291 of these achieving consensus. In these 291 statements a very high level of consensus, using stringent criteria, was evident, indicating clear agreement that they should be incorporated within the refreshed framework.

The identification of KSAs for the four levels of practice and associated areas of academia, education, research, management, leadership and practice educator roles goes some way to ensuring that a refreshed framework represents the diversity of the profession and facilitates radiographers working across the spectrum of practice to more effectively use the framework for planning career and education pathways. However, the refreshed framework will need to link to, and be used in conjunction with, related competency frameworks, published standards of proficiency and guidelines on expected educational attainments. To enhance usability and relevance, the use of infographics and illustrative video case studies throughout the framework is advised.

This opportunity to refresh the ECF recognises the breadth of the radiographic profession, the diversity of roles that have become more significant and continue to emerge, the need to clearly signpost career planning, and the development of curricula and training programmes that are fit for purpose. It will inform a more inclusive framework that can develop a diverse and critical radiographic workforce in a consistent and patient-focused way.

The College of Radiographers ECF Steering Group has already made significant progress towards preparing a revised architecture for the updated ECF, and this study has presented data to inform the content of such a framework. Recommendations arising from this study include exploration and clarification within the revised framework related to some role definitions and expectations of practice. This included expert panel comments relating to the perceived requirement for radiographer reporting within the advanced practitioner scope of practice, and the perceived need for greater articulation of leadership KSAs at all levels of practice. Clarification and reiteration of educational requirements at all levels of practice is necessary, including for emerging roles at enhanced practice levels and for the support workforce following the SCoR and HEE review. Additional suggestions are to better articulate within the framework how the reach of practice educators goes beyond undergraduate learners, particularly with the advent of degree apprenticeships and apprenticeship programmes for assistant practitioners and support workers. Similarly, as the emerging clinical academic researcher role becomes more widely implemented this may need greater emphasis in a revised ECF.

It is advised that the new framework based on this report is shared for consultation with the Society of Radiographers membership, with representatives of professional bodies working closely with radiographers, and with service user and public involvement representatives.

6 References

1 Society and College of Radiographers (2013). Education and Career Framework for the Radiography Workforce, Available at: https://www.sor.org/getmedia/71f58a15-2b19-4c13-bed4-f014efc98321/final_society_of_radiographers_career_framework.pdf

2 Society and College of Radiographers (2016). Achieving World-Class Cancer Outcomes: The Vision for Therapeutic Radiography, Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/achieving-world-class-cancer-outcomes-the-vision-f

3 Health Education England (2019). The Topol Review, Preparing the healthcare workforce to deliver the digital future. An independent report on behalf of the Secretary of State for Health and Social Care, Available at: https://topol.hee.nhs.uk/wp-content/uploads/HEE-Topol-Review-2019.pdf

4 Society and College of Radiographers (2020). MRI Guided Radiotherapy, Available at: https://www.sor.org/Learning-advice/Professional-body-guidance-and-publications/Documents-and-publications/Policy-Guidance-Document-Library/MRI-Guided-Radiotherapy

5 Society and College of Radiographers (2015). The Prostate/Urology Specialist Cancer Workforce: Provision of Specialist Therapeutic Radiographers in the Treatment and Care of Men with Prostate Cancer, Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/the-prostate-urology-specialist-cancer-workforce-p

6 Castillo J, Caruana CJ, Morgan PS, Westbrook C and Mizzi A (2017). An international survey of MRI qualification and certification frameworks with an emphasis on identifying elements of good practice, *Radiography* 23(1):8–13

7 Westbrook C (2017). Opening the debate on MRI practitioner education – Is there a need for change? *Radiography* 23(S1):70–74

8 Parker PC and Harrison G (2015). Educating the future sonographic workforce: membership survey report from the British Medical Ultrasound Society, *Ultrasound* 23(4):231–241

9 Harrison G (2018). Sonographer Workforce Developments. *Synergy News*, August; 12–13

10 Sevens TJ and Reeves PJ (2019). Professional protectionism; a barrier to employing a sonographer graduate? *Radiography* 25(1):77–82

11 Mitchell P, Nightingale J and Reeves P (2019). Competence to capability: An integrated career framework for sonographers, *Radiography* 25(4):378–384

12 Sim WY, Chen RC, Aw LP, Abu Bakar R, Tan CC, Heng AL and Ooi CC (2020). How to safely and sustainably reorganise a large general radiography service facing the COVID-19 pandemic, *Radiography* 26(4):e303–e311

13 Yasin B, Barlow N and Milner R (2021). The impact of the Covid-19 pandemic on the mental health and work morale of radiographers within a conventional X-ray department, *Radiography* 27(4):1064–1072

14 Amaoui B, Semghouli S and Benjaafar N (2020). Organization of a radiotherapy service during the COVID-19 epidemic: Experience of Regional Center of Oncology of Agadir, Morocco, *Radiography* 26(4):e312–e314

15 Zanardo M, Martini C, Monti CB, Cattaneo F, Ciaralli C, Cornacchione P and Durante S (2020). Management of patients with suspected or confirmed COVID-19, in the radiology department, *Radiography* 26(3):264–268

16 Stogiannos N, Fotopoulos D, Woznitza N and Malamateniou C (2020). COVID-19 in the radiology department: What radiographers need to know, *Radiography* 26(3):254–263

17 Richards M (2020). Diagnostics: Recovery And Renewal. Independent Review of Diagnostic Services for NHS England, Available at: https://www.england.nhs.uk/wp-content/uploads/2020/11/diagnostics-recovery-and-renewal-independent-review-of-diagnostic-services-for-nhs-england-2.pdf

18 Halliday K, Maskell G, Beeley L and Quick E (2020). Radiology GIRFT Programme National Specialty Report, Available at: https://www.gettingitrightfirsttime.co.uk/wp-content/uploads/2020/11/GIRFT-radiology-report.pdf

19 The Royal College of Radiologists (2021). Clinical radiology UK workforce census 2020 report, Available at: https://www.rcr.ac.uk/publication/clinical-radiology-uk-workforce-census-2020-report

20 NHS England and NHS Improvement (2019). Transforming imaging services in England: a national strategy for imaging networks, Available at: https://webarchive.nationalarchives.gov.uk/ukgwa/20210401201200/https:/improvement.nhs.uk/documents/6119/Transforming_imaging_services.pdf

21 Cushen-Brewster N, Strudwick RM, Doolan C and Driscoll–Evans P (2021). An evaluation of the experiences of radiography students working on the temporary HCPC register during the COVID-19 pandemic, *Radiography* 27(4):1000–1005

22 Rainford LA, Zanardo M, Buissink C, Decoster R, Hennessy W, Knapp K, et al (2021). The impact of COVID-19 upon student radiographers and clinical training, *Radiography* 27(2):464–474

23 Courtier N, Brown P, Mundy L, Pope E, Chivers E and Williamson K (2021). Expectations of therapeutic radiography students in Wales about transitioning to practice during the Covid-19 pandemic as registrants on the HCPC temporary register, *Radiography* 27(2):316–321

24 Higgins R, Murphy F and Hogg P (2021). The impact of teaching experimental research on-line: Research-informed teaching and COVID-19, *Radiography* 27(2):539–545

25 Bridge P, Crowe SB, Gibson G, Ellemor NJ, Hargrave C and Carmichael M (2016). A virtual radiation therapy workflow training simulation, *Radiography* 22(1):e59–e63

26 James S and Dumbleton C (2013). An evaluation of the utilisation of the virtual environment for radiotherapy training (VERT) in clinical radiotherapy centres across the UK, *Radiography* 19(2):142–150

27 Almestehi M, Alomaim W, Rainford L, Stokes D, Stanton M and Moran M (2019). Role of the virtual reality simulator (ScanTrainer) as a multidisciplinary training tool in transvaginal ultrasound: A systematic review and narrative synthesis, *Radiography* 25(3):260–268

28 Snaith B, Harris MA and Harris R (2016). Radiographers as doctors: A profile of UK doctoral achievement, *Radiography* 22(4):282–286

29 Sevens T and Nightingale J (2020). Trailblazers: Stakeholder motivations for developing degree apprenticeships for the radiography profession, *Radiography* 26(1):15–21

30 White H (2017). Apprenticeships are here, *Radiography* 23(S1):S5–S6

31 Sloane C and Millar PK (2017). Informing radiography curriculum development: The views of UK radiology service managers concerning the 'fitness for purpose' of recent diagnostic radiography graduates, *Radiography* 23(S1):S16–22

32 Knapp KM, Wright C, Clarke H, McAnulla SJ and Nightingale JM (2017). The academic radiography workforce: Age profile, succession planning and academic development, *Radiography* 23(S1):S48–S52

33 Knapp K (2016). Research Careers in Radiography, *Imaging and Therapy Practice* (February):4–8

34 Stewart-Lord A, Ballinger C and McLaren SM (2014). Assistant Practitioners (APs) in radiography: An exploration of perceptions and experiences related to role development, *Radiography* 20(2):137–142

35 Stewart-Lord A (2018). Allied Health Professional (AHP) Transformation Project – Radiography results from a regional UK survey, *Journal of Medical Imaging and Radiation Sciences* 49(3):S15

36 Coffey M, Mullaney L, Bojen A, Vaandering D and Vandevelde G (2013). Recommended ESTRO core curriculum for radiation therapists 3rd Edition, Available at: https://win.aitro.it/wp-content/uploads/2019/08/RecommendedCC_RTT_ESTRO.pdf

37 Health Education England (2017). Multi-professional framework for advanced clinical practice in England, Available at: https://www.hee.nhs.uk/sites/default/files/documents/multi-professionalframeworkforadvancedclinicalpracticeinengland.pdf

38 St John-Mathews J, Wallace M and Robinson L (2017). The Delphi technique in radiography education research, *Radiography* 23(S1):S53–S57

39 Propst EJ, Wolter NE, Ishman SL, Balakrishnan K, Deonarain AR, Mehta D et al (2020). Competency-Based Assessment Tool for Pediatric Tracheotomy: International Modified Delphi Consensus, *The Laryngoscope* 130(11):2700–2707

40 Huth K, Newman L and Glader L (2020. Core Curricular Priorities in the Care of Children With Medical Complexity: A North American Modified Delphi Study, *Academic Pediatrics* 20(4):558–564

41 Society and College of Radiographers (2017). *The College of Radiographers Research Priorities for the Radiographic Profession: A Delphi consensus study*, Available at: https://www.sor.org/Learning-advice/Professional-body-guidance-and-publications/Documents-and-publications/Policy-Guidance-Document-Library/The-College-of-Radiographers-Research-Priorities-f

42 Humphrey-Murto S, Varpio L, Wood TJ, Gonsalves C, Ufholz LA, Mascioli K et al (2017). The Use of the Delphi and Other Consensus Group Methods in Medical Education Research: A Review, *Academic Medicine* 92(10):1491–1498

43 Foth T, Efstathiou N, Vanderspank-Wright B, Ufholz LA, Dütthorn N, Zimansky M and Humphrey-Murto S (2016). The use of Delphi and Nominal Group Technique in nursing education: A review, *International Journal of Nursing Studies* 60:112–120

44 Linstone H and Turoff M (2002). *The Delphi Method: Techniques and Applications*, Available at: https://web.njit.edu/~turoff/pubs/delphibook/index.html

45 Health and Care Professions Council (2020). Registrant snapshot – 1 October 2020 and Registrant snapshot – 3 November 2020, Available at: https://www.hcpc-uk.org/about-us/insights-and-data/the-register/registrant-snapshot-2020/

46 Moore I, Bitchell L and Lord R (2020). The Health and Care Professions Council equality, diversity and inclusion data 2020 report, Available at: https://www.hcpc-uk.org/globalassets/about-us/edi/hcpc-equality-diversity-and-inclusion-data-2020-report.pdf?v=637395820190000000

47 Health and Care Professions Council (2018). Number of therapeutic radiographers on the HCPC Register – May 2018, Available at: https://www.hcpc-uk.org/resources/freedom-of-information-requests/2018/number-of-therapeutic-radiographers-on-the-hcpc-register---may-2018/

48 Chalmers J and Armour M. The Delphi Technique. In: Liamputtong P (ed) *Handbook of Research Methods in Health Social Sciences*, Springer, Singapore, 2019

49 Harris M (2021). *Competency and professional advancement in CT through the development of a competency framework for radiographers*, PhD thesis

50 Health Education England (2018). Sonography workforce development Briefing Note, Available at: https://www.hee.nhs.uk/our-work/sonography

51 Health and Care Professions Council (2020). Consultation on changes to the standards of proficiency, Available at: https://www.hcpc-uk.org/globalassets/consultations/2020/standards-of-proficiency/consultation-documents/consultation-document-for-the-sops-review-2020.pdf



Supporting guidance: radiation protection

1 Introduction

Radiographers, nuclear medicine technologists, assistant practitioners (APs), radiography educators and researchers play a pivotal role in the radiation protection of themselves, patients and the public. They must work with employers, medical physicists, radiologists and other healthcare professionals to create and maintain safe working environments and safe and effective diagnostic imaging and radiotherapy services.

Radiation protection should sit within an overarching governance framework that enables all duty holders to meet the requirements of the Ionising Radiations Regulations 2017[1] (hereafter referred to as IRR) and the Ionising Radiation (Medical Exposure) Regulations 2017[2], Ionising Radiation (Medical Exposure) Regulations (Northern Ireland) 2018[3] and Ionising Radiation (Medical Exposure) (Amendment) Regulations 2018[4] (hereafter collectively referred to as IR(ME)R).

It is important that anyone acting as an operator or practitioner under IR(ME)R is adequately trained and entitled by the employer to do so.

Assistant Practitioners and Radiographers must understand their responsibilities under both IR(ME)R and IRR, and they must have the appropriate theoretical knowledge and practical experience relevant to the role they are undertaking. While professional bodies provide guidance and direction on radiation protection, education and training, standards of practice should be employer-led and should sit within the organisational governance framework.

1.1 The Ionising Radiation (Medical Exposure) Regulations (IR(ME)R)

The joint professional body guidance publications should be considered the primary sources for learning regarding roles, responsibilities and assuring compliance with IR(ME)R:

- IR(ME)R: Implications for clinical practice in diagnostic imaging, interventional radiology and diagnostic nuclear medicine[5]
- Ionising Radiation (Medical Exposure) Regulations: implications for clinical practice in radiotherapy: guidance from the Radiotherapy Board[6]

IR(ME)R is concerned with both medical exposures and non-medical exposures where the primary intention is to benefit the individual. This commonly means patients, comforters and carers but also includes asymptomatic individuals, those undergoing health screening programmes and volunteers participating in research.

It is important that anyone acting as an operator or practitioner under IR(ME)R is adequately trained and entitled by the employer to do so.

IR(ME)R must be reviewed every five years. The first review and report are due to be published before 6 June 2023. Reviews will continue every five years thereafter. It is incumbent on professional bodies, educational institutions, employers and duty holders to ensure they are aware of and promote any changes. It is particularly important to know about changes to the training and education requirements for duty holders and the responsibilities of each duty holder.

In the context of this education and career framework, the term practitioner refers to the entry level into the profession of radiography. This is not to be confused with the term practitioner referred to as a duty holder in (IR(ME)R).

1.2 The Ionising Radiations Regulations 2017 (IRR)

IRR is concerned with occupational radiation exposures, for example, staff working in medical imaging, nuclear medicine, radiotherapy and educational X-ray suites, and with the restriction of exposures to the public.

2 Assistant Practitioners

2.1 IRR

Assistant Practitioners (APs) must understand their duties under IRR regulation 35 and act in accordance with the local rules relevant to the controlled or supervised area(s) in which they work.[1] Regulation 18(4) requires local rules to be available to employees likely to be affected at or near the controlled or supervised area. APs need to know the parts of the local rules relevant to the areas in which they work. They must act within their scope of practice and know how to report or escalate incidents involving ionising radiations.

APs may be involved in the quality control of radiological equipment and must adhere to the relevant aspects of IRR. This includes compliance with the local rules and arrangements for personal monitoring.[7]

APs must be aware of how to protect themselves and other workers, who are or may be pregnant or breast/chest feeding, from the hazards of ionising radiations.[8]

They may support others to instruct trainee assistant practitioners and early years student radiographers in radiation safety matters in the workplace.

APs are not usually designated classified persons under regulation 21 of IRR.[1]

2.2 IR(ME)R

APs who have met the requirements of IR(ME)R Schedule 3 relevant to the role they have been trained to undertake are usually entitled to act as operators within a defined scope of practice (or scope of entitlement).[2,3] This does not usually apply to trainee APs. Guidance is available for student radiographers and trainee assistant practitioners working as operators under IR(ME)R.[9]

Schedule 3 lists the **minimum** requirements for adequate training. Employers may wish to extend this according to the role of the AP. APs should work within a clearly defined scope of practice for which they are trained and assessed as competent.[5,6,10] APs may be entitled to act as IR(ME)R operators without the need for supervision but may still require supervision for other aspects of the patient care pathway. APs should know when they require supervision and when they are able to act autonomously.

APs are legally accountable for the tasks they undertake within their IR(ME)R operator role even though the radiographer may be responsible for the overarching episode of patient care. For example, it may be the role of the AP to confirm patient identity[11] and make enquiries to establish whether an individual is pregnant or breast/chest feeding.[12–14] They must always work within the employer's written procedures. There are likely to be limits relating to scope of practice for some elements of the employer's procedures, for example, when providing adequate information relating to the benefits and risks of an exposure.[15]

APs should understand the principles of radiation safety, justification, optimisation (including the principles of 'as low as reasonably practicable' (ALARP)) and dose limitation.

As IR(ME)R operators, APs are required under regulation 6(3)(b) to undertake "continuing education and training after qualification including, in the case of clinical use of new techniques, training related to those techniques and the relevant radiation protection requirements".[2,3]

APs may not be entitled to act as IR(ME)R practitioners or referrers as they are not registered healthcare professionals.

3 Practitioners

3.1 IRR

Practitioners must understand their duties under IRR regulation 35. Regulation 18(4) requires local rules to be available to employees likely to be affected at or near the controlled or supervised area. Practitioners need to know the parts of the local rules relevant to the areas in which they work. They must act within their scope of practice and know how to report or escalate incidents involving ionising radiations. They will instruct student radiographers, Assistant Practitioners and other healthcare professionals such as doctors and nurses in radiation safety matters in the workplace. They may train and work as a radiation protection supervisor (RPS) or radiation protection officer (RPO) in higher education, research and teaching establishments and have additional responsibility for ensuring compliance with the local rules (regulation 18(5)).

Even at entry level, Practitioners are the most appropriate person to manage radiation safety in certain situations in the workplace, for example, in controlled areas when on the ward or in the operating theatre. They must have the attributes and leadership skills to do so.

Practitioners may be designated classified persons under IRR regulation 21.[1]

3.2 IR(ME)R

Practitioner is the entry level to radiography. Individuals working at this level must, **as a minimum**, meet the requirements of IR(ME)R schedule 3 relevant to their area of practice and the Health and Care Professions Council (HCPC) Standards of Proficiency for Radiographers.[5,6,16] Special consideration should be given to the different radiation protection knowledge requirements for diagnostic and therapeutic radiographers.[2,3] The requirements of schedule 3 will form a **base level** of knowledge upon which to develop further education and skills.

Those working at practitioner level are legally accountable for their actions under IR(ME)R and for the overarching episode of patient care.

They are expected to develop their knowledge and skills over and above the threshold requirements.[16] This is achieved through continuing professional development (CPD) as a minimum and sometimes through postgraduate education.

Individuals must understand the principles of radiation safety, justification, optimisation (including the principles of ‘as low as reasonably practicable’ (ALARP)) and dose limitation and may be trained and entitled to act as IR(ME)R practitioners.[17]

As registered healthcare professionals, individuals at practitioner level may be entitled to act as an IR(ME)R referrer for certain imaging examinations.[5,14,18]

There are no limits to scope of practice extension at practitioner level. However, adequate training, which must include theoretical knowledge and practical experience, must precede extensions to scope of practice under IR(ME)R. The employer and employee must complete, agree and document assessments of competence.

Whether acting as IR(ME)R operator or Practitioner, those working at practitioner level are required, under regulation 6(3)(b), to undertake "continuing education and training after qualification including, in the case of clinical use of new techniques, training related to those techniques and the relevant radiation protection requirements".[2,3]

Those working at practitioner level will work closely with medical physics experts (MPEs) on matters such as training, quality assurance (QA), quality control (QC) and dose optimisation. They will be aware of the application of local (LDRL) and national (NDRL) dose reference levels for radiotherapy planning scans[19] and should participate in national dose data collections as and when required. They should encourage others to do the same.

Practitioners should understand their duty to report accidental and unintended exposures. They may be involved in local incident investigations[20–22] using digital data collection and reporting systems such as Datix. They will understand when incidents are notifiable to the enforcing authority. They will know the difference between a significant accidental or unintended exposure (SAUE)[23] and a clinically significant accidental or unintended exposure (CSAUE) and their responsibilities under duty of candour.

4 Enhanced Practitioners

4.1 IRR

Enhanced Practitioners must understand their duties under IRR regulation 35.[1] Regulation 18(4) requires local rules to be available to employees likely to be affected at or near the controlled or supervised area. Enhanced Practitioners need to know the parts of the local rules relevant to the areas in which they work.

They must act within their scope of practice and know how to report or escalate incidents involving ionising radiations. They will instruct student radiographers, Assistant Practitioners, Practitioners and other healthcare professionals such as doctors and nurses in radiation safety matters in the workplace. They will be experts in the radiation protection requirements of their specialist area. They may train and work as radiation protection supervisors (RPS) for their specialist area and have additional responsibility for ensuring compliance with the local rules under IRR regulation 18(5).

Enhanced Practitioners may act as radiation protection officers (RPO) in higher education, research and teaching establishments.

Enhanced Practitioners are likely to be the most appropriate people to manage radiation safety in their area within the workplace. They must have the leadership skills to do so.

Where appropriate, Enhanced Practitioners may be designated classified persons under IRR regulation 21.[1]

4.2 IR(ME)R

Enhanced Practitioners are individuals working in a focused area of practice usually considered to require additional or more complex knowledge than at entry level. Individuals working at this level will exceed both the requirements of adequate training, theoretical knowledge and practical experience required under IR(ME)R Schedule 3[2,3] and the threshold HCPC Standards of Proficiency for Radiographers.[5,6,16] Special consideration should be given to the different radiation protection knowledge requirements for diagnostic and therapeutic radiographers.[2,3] The requirements of Schedule 3 will form a **base level** of knowledge on which to develop further education and skills.[16] They will have developed specific knowledge and skills relevant to their area of practice. They are likely to be undertaking or to have completed postgraduate level education and be familiar with the radiation protection challenges related to their specialism. Enhanced Practitioners are legally accountable for their actions under IR(ME)R and for the overarching episode of patient care.

Special attention should be given to the different radiation protection considerations for enhanced diagnostic and therapeutic radiographers at this level.[2,3] The requirements of Schedule 3 will form a **base level** of knowledge on which to develop further education and skills. At this level it is expected that an enhanced practitioner will have developed a higher or more focused level of understanding of radiation protection.

At enhanced level, individuals must understand the principles of radiation safety, justification, optimisation (including the principles of 'as low as reasonably practicable' (ALARP)) and dose limitation, and may be trained and entitled to act as IR(ME)R practitioners.[17] They should be familiar with the common patient pathways related to their specialist area and have undertaken CoR approved additional training to ensure optimisation and justification of these exposures.

As registered healthcare professionals, individuals at enhanced level may be entitled to act as IR(ME)R referrers for certain imaging examinations.[5,14,18]

Appropriate training and assessment of competence must precede extensions to scope of practice. Provided the employer and employee agree and document training and assessment, there are no limits to scope of practice extension at this level under IR(ME)R.

Enhanced Practitioners are required under regulation 6(3)(b) to undertake continuing education and training after qualification, including, in the case of clinical use of new techniques, training related to those techniques and the relevant radiation protection requirements.[2,3] Their CPD requirements should reflect the specialised radiation protection requirements of their role.

Enhanced Practitioners will work closely with MPEs on matters such as training, QA and optimisation. The will be aware of the application of LDRLs and NDRLs[19] and should participate in national dose data collection as and when required. They should encourage others to do the same.

They will undertake QA and QC for existing and new equipment and procedures. They may set up and manage QA and QC frameworks or act as IR(ME)R leads for their specialist area.

Enhanced Practitioners must understand their duty to report accidental and unintended exposures. They may be involved in local incident investigations[20–22] using digital data collection and reporting systems such as Datix. They will understand when incidents are notifiable to the enforcing authority. They will know the difference between an SAUE[23] and a CSAUE and their responsibilities under duty of candour. They will play a key role in dissemination of learning from near misses and errors involving ionising radiations relevant to their specialist area.

5 Advanced Practitioners

5.1 IRR

Advanced Practitioners must understand their duties under IRR regulation 35.[1] Regulation 18(4) requires local rules to be available to employees likely to be affected at or near the controlled or supervised area. Advanced Practitioners need to know the parts of the local rules relevant to the areas in which they work.

They must act within their scope of practice and know how to report or escalate incidents involving ionising radiations. They will instruct student radiographers, Assistant Practitioners, Practitioners, Advanced Practitioners and other healthcare professionals, such as doctors and nurses, in radiation safety matters in the workplace. They may undertake additional training to work as radiation protection supervisors (RPS) under regulation 18(5) or radiation protection officers (RPO) in higher education, research and teaching establishments. They help to ensure adherence to the employer's instructions (the local rules).

An Advanced Practitioner is the most appropriate person to manage radiation safety across a range of situations in the workplace. They must have the leadership skills to do so.

Advanced Practitioners may be appointed radiation protection leads following additional education at master's level. They will demonstrate leadership skills and will have sufficient knowledge, skills and authority to develop and manage procedures to ensure radiation protection practices are safe and effective. They will be able to critically evaluate radiation protection information and professional body guidance and will ensure local practice is in line with regulations and relevant guidance.

Advanced Practitioners will work closely with the employer, the MPE and the radiation protection advisor (RPA). They may be involved with equipment procurement, specification, commissioning, optimisation and dosimetry.

Where appropriate, advanced practitioners may be designated classified persons under IRR regulation 21.[1]

5.2 IR(ME)R

Advanced Practitioners are individuals working in a focused area of practice usually considered to require additional or more complex knowledge than at entry or enhanced practice level. Individuals working at this level will **exceed** both the requirements of adequate training, theoretical knowledge and practical experience required under IR(ME)R Schedule 3[2,3] and the threshold HCPC Standards of Proficiency for Radiographers.[5,6,16] They will have developed specific knowledge and skills relevant to their area of practice and are likely to be undertaking radiation protection research and development. They will be working at master's level and will be expert in the radiation protection challenges related to their area of advanced practice. Advanced Practitioners are legally accountable for their actions under IR(ME)R and for the overarching episode of patient care.

Special attention should be given to the different radiation protection considerations for advanced diagnostic and therapeutic radiographers at this level.[2,3] The requirements of Schedule 3 will form a base level of knowledge on which to develop further education and skills. At this level it is expected that an advanced practitioner will have developed an expert and more focused level of understanding of radiation protection.

Appropriate training and assessment of competence must precede extensions to scope of practice. Provided the employer and employee agree and document training and assessment, there are no limits to scope of practice extension at this level under IR(ME)R.

At advanced practitioner level, individuals must understand the principles of radiation safety, justification, optimisation (including the principles of 'as low as reasonably practicable' (ALARP)) and dose limitation and may be trained and entitled to act as IR(ME)R practitioners.[17]

They will be familiar with common and uncommon patient pathways related to their area of advanced practice and will have undertaken CoR approved postgraduate training to ensure optimisation and justification of these exposures in relation to image quality.

As registered healthcare professionals, individuals at advanced practitioner level may be entitled to act as IR(ME)R referrers for certain imaging examinations.[5,14,18]

Advanced Practitioners are required under regulation 6(3)(b) to undertake continuing education and training after qualification, including, in the case of clinical use of new techniques, training related to those techniques and the relevant radiation protection requirements.[2,3] Their CPD requirements should reflect the specialised radiation protection requirements of their role.

Advanced Practitioners will work closely with MPEs on matters such as training, QA and optimisation. They will manage the programme of review for LDRLs and NDRLs[19] and should lead on national dose data collection as and when required.

They will develop and manage the programme of QA and QC for existing and new equipment and procedures. They may act as IR(ME)R leads for their area of advanced practice.

Advanced Practitioners must understand their duty to report accidental and unintended exposures. They may be involved in local incident investigations[20–22] using digital data collection and reporting systems such as Datix. They will understand when incidents are notifiable to the enforcing authority. They will know the difference between an SAUE[23] and a CSAUE and their responsibilities under duty of candour. Advanced Practitioners may be involved, when appropriate, with notification to the relevant authority of accidental or unintended exposures. They will play a key role in dissemination of learning from near misses and errors involving ionising radiations.

They may sit on special interest groups (SIGs) or national advisory boards and represent the profession for matters relating to radiation protection in education and health service design and delivery. They may work closely with stakeholder organisations to develop professional body guidance. They may develop and improve patient-facing resources to assist in the radiation protection education of the public.

6 Consultant Practitioners

6.1 IRR

Consultant Practitioners must understand their duties under IRR regulation 35.[1] Regulation 18(4) requires local rules to be available to employees likely to be affected at or near the controlled or supervised area. Consultant Practitioners need to know the parts of the local rules relevant to the areas in which they work.

They must act within their scope of practice and know how to report or escalate incidents involving ionising radiations. They will instruct student radiographers, Assistant Practitioners, Practitioners, Advanced Practitioners, Consultant Practitioners and other healthcare professionals, such as doctors and nurses, in radiation safety matters in the workplace. They may undertake additional training to work as radiation protection supervisors (RPS) under regulation 18(5) or radiation protection officers (RPOs) in higher education, research and teaching establishments. They help to ensure adherence to the employer's instructions (the local rules).

Consultant Practitioners may be appointed radiation protection leads following additional education at doctoral level. They will demonstrate leadership skills and will have sufficient knowledge, skills and authority to develop and manage procedures to ensure radiation protection practices are safe and effective. They will be able to critically evaluate radiation protection information and professional body guidance and will ensure local practice is in line with regulations and relevant guidance. They will be instrumental in identifying research needs involving ionising and non-ionising radiations. In collaboration with the radiation protection advisor (RPA), they will advise organisational leads such as clinical leads and the chief executive officer on matters of radiation protection.

Consultant Practitioners will work closely with the employer, MPEs and the RPA. They will be involved with recommendations for service improvement, equipment procurement, specification, commissioning, optimisation and dosimetry.

Where appropriate, Consultant Practitioners may be designated classified persons under IRR regulation 21.

6.2 IR(ME)R

Consultant Practitioners are individuals working to promote and expand the knowledge base in a focused area of practice through education and research. They might also have oversight of larger workforce projects where radiation protection expertise is required. At this level consultant practitioners will **exceed** both the requirements of adequate training, theoretical knowledge and practical experience required under IR(ME)R Schedule 3 and the threshold HCPC Standards of Proficiency for Radiographers. They will have developed specific, deeper knowledge and skills relevant to their area of practice and are likely to be undertaking radiation protection research and development. They will be working towards or have achieved doctoral-level education and will be expert in the radiation protection challenges related to their area of consultant practice. Consultant Practitioners are legally accountable for their actions under IR(ME)R and for the overarching episode of patient care.

Special attention should be given to the different radiation protection considerations for consultant diagnostic and therapeutic radiographers at this level.[2,3] The requirements of Schedule 3 will form a base level of knowledge on which to develop further education and skills. At this level it is expected that a consultant practitioner will have an **expert** knowledge and understanding of radiation protection. They may participate in international radiation protection activities and contribute to worldwide research.

Appropriate training and assessment of competence must precede extensions to scope of practice. Provided the employer and employee agree and document training and assessment, there are no limits to scope of practice extension at this level under IR(ME)R.

At consultant practitioner level, individuals must understand the principles of radiation safety, justification, optimisation (including the principles of 'as low as reasonably practicable' (ALARP)) and dose limitation and will usually be trained and entitled to act as IR(ME)R practitioners.[17] They will be familiar with common and uncommon patient pathways related to their area of practice and will have published novel research in this area. At this level of practice, both diagnostic and therapeutic radiographers may be entitled to act as IR(ME)R referrers.[24,25] They will have undertaken CoR approved postgraduate training to ensure optimisation and justification of these exposures in relation to image quality.

Consultant Practitioners are required under regulation 6(3)(b) to undertake continuing education and training after qualification including, in the case of clinical use of new techniques, training related to those techniques and the relevant radiation protection requirements.[2,3] Their CPD requirements should reflect the specialised radiation protection requirements of their role.

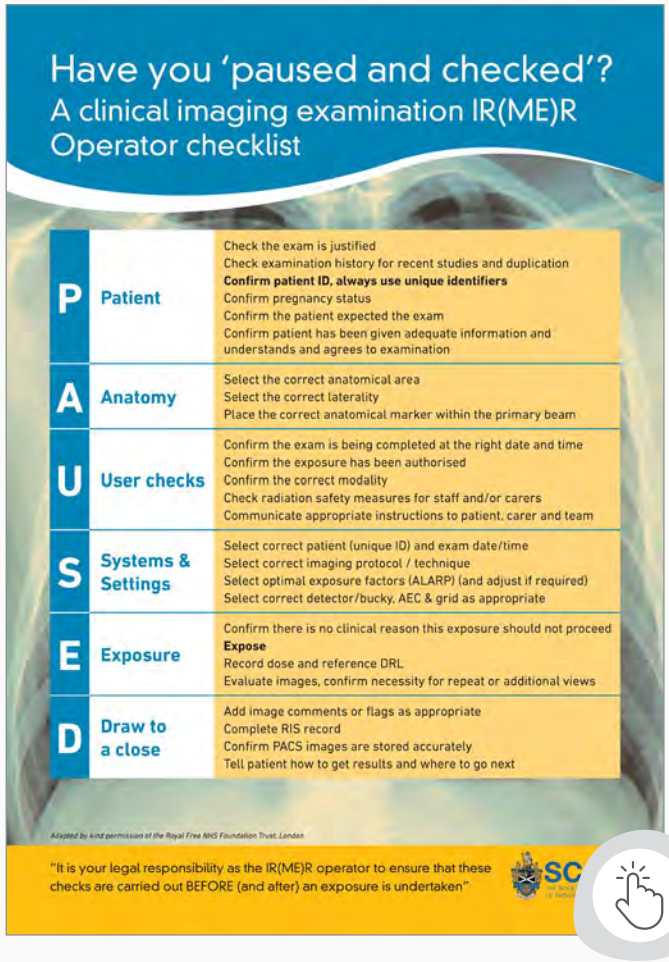
Consultant Practitioners will work closely with MPEs on matters such as training, QA and optimisation. They will manage the programme of review for LDRLs and NDRLs[19] and should lead on national dose data collections as and when required. They may be involved with international strategies for improving optimisation and the application of DRLs. They will ensure compliance with radiation protection legislation.

They may sit on national and international advisory boards and represent the profession for matters relating to radiation protection in education and health service design and delivery. They may work closely with stakeholder organisations to develop professional body guidance. They may develop and improve patient-facing resources to assist in the radiation protection education of the public.

They will develop and manage the programme of QA and QC for existing and new procedures and equipment. They may act as IR(ME)R leads for their area of consultant practice.

Consultant Practitioners will understand their duty to report accidental and unintended exposures. They may lead local incident investigations[20–22] using digital data collection and reporting systems such as Datix. They will understand when incidents are notifiable to the enforcing authority. They will know the difference between an SAUE[23] and a CSAUE, their responsibilities and the responsibilities of others under duty of candour. Consultant Practitioners may be involved, when appropriate, with notification to the relevant authority of accidental or unintended exposures. They will play a key role in dissemination of learning from near misses and errors involving ionising radiations. They may contribute to national error reporting steering groups and publication of professional body reports and guidance.

Consultant Practitioners are innovators and topic experts. They will present their work, expertise and recommendations to local, national and international audiences. They will continue to perform at this level and publish work that influences the future direction of the profession of radiography.





Are you IR(ME) R 2017 compliant

This radiation protection webinar covers essential changes and updates to the guidance.

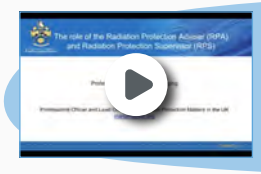
54 min



The use of local rules

Part of the radiation protection series of webinars, this session focuses on the use of local rules.

19 min



The role of the Radiation Protection Adviser (RPA) and Radiation Protection Supervisor (RPS)

This radiation protection webinar focuses on the Radiation Protection Adviser (RPA) and Supervisor (RPS) roles.

20 min



Personal dosimeters/Area monitoring

Part of the Radiation Protection series, this webinar covers the Ionising Radiations Regulations (IRR) 2017.

41 min



The implications for carers and comforters

This radiation protection webinar focuses on the implications for carers and comforters.

29 min

7 References

1 The Ionising Radiations Regulations 2017, Available at: https://www.legislation.gov.uk/uksi/2017/1075/contents/made [Accessed May 10, 2022]

2 The Ionising Radiation (Medical Exposure) Regulations 2017, Available at: https://www.legislation.gov.uk/uksi/2017/1322/contents/made [Accessed May 10, 2022]

3 The Ionising Radiation (Medical Exposure) Regulations (Northern Ireland) 2018, Available at: https://www.legislation.gov.uk/nisr/2018/17/contents/made [Accessed May 10, 2022]

4 The Ionising Radiation (Medical Exposure) (Amendment) Regulations 2018, Available at: https://www.legislation.gov.uk/uksi/2018/121/made [Accessed May 10, 2022]

5 Royal College of Radiologists (2020). IR(ME)R: Implications for clinical practice in diagnostic imaging, interventional radiology and diagnostic nuclear medicine, Available at: https://www.rcr.ac.uk/publication/irmer-implications-diagnostic-imaging-interventional-radiology-diagnostic-nuclear-medicine [Accessed June, 2020]

6 Royal College of Radiologists Radiotherapy Board (2020). Ionising Radiation (Medical Exposure) Regulations: Implications for clinical practice in radiotherapy, Available at: https://www.rcr.ac.uk/sites/default/files/guidance-on-irmer-implications-for-clinical-practice-in-radiotherapy.pdf [Accessed June, 2020]

7 Society of Radiographers (2016). The Radiographic Assistant Practitioner's role in Quality Control of Radiological Equipment, Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/the-radiographic-assistant-practitioner%E2%80%99s-role-(1) [Accessed December, 2019]

8 Society of Radiographers (2022). Health & Safety and Pregnancy in Clinical Imaging and Radiotherapy Departments: A guide for pregnant women, breast/chest feeding women, Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/health-and-safety-and-pregnancy-in-clinical-imagin [Accessed July 18, 2022]

9 Society of Radiographers (2019). Student radiographers & trainee assistant practitioners as "Operators" under IR(ME)R 2017 (2018 in Northern Ireland), Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/student-radiographers-trainee-assistant-practition [Accessed May 10, 2022]

10 Health Education England (2021). Allied Health Professions' Support Worker Competency, Education, and Career Development Framework, Available at: https://www.hee.nhs.uk/our-work/allied-health-professions/enable-workforce/developing-role-ahp-support-workers/ahp-support-worker-competency-education-career-development [Accessed May 10, 2022]

11 Clinical Imaging Board (2019). Patient Identification: guidance and advice, Available at: https://www.rcr.ac.uk/sites/default/files/cib-patient-identification-guidance-and-advice.pdf [Accessed May 10, 2022]

12 Society of Radiographers. Have you paused and checked? IR(ME) R, Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/have-you-paused-and-checked-ir(me)r [Accessed May 10, 2022]

13 Society of Radiographers (2021). Inclusive pregnancy status guidelines for ionising radiation: Diagnostic and therapeutic exposures, Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/inclusive-pregnancy-status-guidelines-for-ionising [Accessed May 10, 2022]

14 Society of Radiographers. Have you paused and checked? Radiotherapy treatment, Available at: https://www.sor.org/getmedia/21924c03-1abe-4ac6-a803-ab88e1a0771b/paused_treatment_poster.pdf_2 [Accessed May 10, 2022]

15 Society of Radiographers (2019). Communicating Radiation Benefit and Risk Information to Individuals Under the Ionising Radiation (Medical Exposure) Regulations (IR(ME)R), Available at: https://www.sor.org/Learning-advice/Professional-body-guidance-and-publications/Documents-and-publications/Archive-Documents/Communicating-Radiation-Benefit-and-Risk-Infor-(1) [Accessed May 10, 2022]

16 Health and Care Professions Council (2013). The Standards of Proficiency for Radiographers, Available at: https://www.hcpc-uk.org/resources/standards/standards-of-proficiency-radiographers/ [Accessed May 10, 2022]

17 Society of Radiographers. The Diagnostic Radiographer as the entitled IR(ME)R Practitioner, Available at: https://www.sor.org/Learning-advice/Professional-body-guidance-and-publications/Documents-and-publications/Policy-Guidance-Document-Library/The-Diagnostic-Radiographer-as-the-entitled-IR(ME) [Accessed May 10, 2022]

18 Royal College of Nursing (2021). Clinical Imaging Requests from Non-Medically Qualified Professionals (3rd Edition), Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/clinical-imaging-requests-3rd-edition [Accessed May 10, 2022]

19 Public Health England (2019). National Diagnostic Reference Levels (NDRLs) from 19 August 2019, Available at: https://www.gov.uk/government/publications/diagnostic-radiology-national-diagnostic-reference-levels-ndrls/ndrl [Accessed May 10, 2022]

20 Clinical Imaging Board (2019). Learning from ionising radiation dose errors, adverse events and near misses in UK clinical imaging departments: working party user guidance, Available at: https://www.rcr.ac.uk/sites/default/files/cib-learning-from-adverse-events-user-guidance.pdf [Accessed May 10, 2022]

21 Public Health England (2016). Development of learning from radiotherapy errors. Supplementary guidance series, Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/579541/DL_guidance_finalNB211216.pdf [Accessed May 10, 2022]

22 Public Health England (2021). Safer radiotherapy. Radiotherapy error and near miss reporting: the unseen pathway, Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/977484/Safer_RT_Unseen_pathway.pdf [Accessed May 10, 2022]

23 Care Quality Commission, Regulation and Quality Improvement Authority, Healthcare Improvement Scotland and Healthcare Inspectorate Wales (2020). Significant accidental and unintended exposures under IR(ME)R: Guidance for employers and duty holders, Available at: https://www.cqc.org.uk/sites/default/files/20200826_saue_guidance_updated_aug20.pdf [Accessed May 10, 2022]

24 Society of Radiographers. Have you paused and checked? IR(ME)R Referrers, Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/have-you-paused-and-checked-ir(me)r-referrers [Accessed May 10, 2022]

25 Society of Radiographers. Have you paused and checked? A radiotherapy IR(ME)R checklist for referrers about to refer a patient, Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/have-you-paused-and-checked-radiotherapy-referrals [Accessed May 10, 2022]



Education and Career Framework glossary

Academic In the context of this ECF, members of the imaging or radiotherapy workforce who work within higher education institutions, and or wider professional environments. They are involved in aspects of learning, teaching and assessment, curriculum development, student support, utilising and/or developing the research evidence base, and monitoring standards of education and training of the radiography workforce across all levels and specialisms of radiography practice.

Academic Award A qualification, or academic credit, conferred in formal recognition that a learner has achieved the intended learning outcomes and passed the assessments required to meet the academic standards set for a programme or unit of study.

Accountable Taking responsibility for decisions made and being able to justify them.

Accreditation The College of Radiographers can accredit individuals at various levels of practice. Accreditation means that someone has attained and can evidence the practice level standard required by the College of Radiographers in relation to their role.

Advanced Practitioner In the context of the ECF, a member of the imaging or radiotherapy workforce that has developed expert clinical competence in their specialist area, or across a broad range of practice, employing a high degree of autonomy and complex decision making. Their practice is underpinned by master's level education that encompasses the four pillars of advanced practice; clinical practice, leadership and management, education, research and development.

Andragogical Adjective form of andragogy, the method and practice of teaching adult learners; adult education.

Area of Expertise Areas of your practice where you hold considerable knowledge and skill.

Assistant Practitioner Member of the radiography support workforce, educated and trained to FHEQ level 4/5; SCQF Level 7/8 to undertake protocol limited clinical imaging examinations or treatment procedures in conjunction with, and under the supervision of, registered radiographers.

Autonomous/Autonomy The ability to make decisions based on personal judgement and professional knowledge.

Capabilities The extent to which an individual integrates their knowledge and skills flexibly, having the ability to successfully perform a role or task, adapting to change, generating new knowledge, and improving their performance.

Competency An individual's ability to demonstrate and apply the knowledge, skills, and attributes necessary to successfully undertake activities and responsibilities as expected within their role.

Consortium for the Accreditation of Sonographic Education (CASE) The consortium responsible for accrediting ultrasound programmes and focused courses that lead to clinical competency in ultrasound practice. The CoR is one of the member organisations of CASE.

CoR Approved Programme The College of Radiographers can approve UK and international education programmes which lead to undergraduate or post graduate qualifications and/or credits. CoR approval confers that a minimum standard of quality has been met and awarded programmes continue to strive to provide the highest standards of clinical imaging and oncology education and training.

CoR Approved Qualification A qualification gained from successful completion of a CoR approved programme of study.

CoR Endorsed CPD events or learning resources CoR endorsement for continuing professional development activities such as study days, tutorials, education events and e-learning materials. Activities must meet the CoR minimum requirements for endorsement.

CoR Non-Approved Programme An education programme that does not hold CoR programme approval, but which may lead to undergraduate or post graduate qualifications and/or credits.

CoR Non-Approved Qualification The qualification gained when an individual completes a programme of study that is not approved by the CoR.

Consultant Practitioner May also be referred to as Consultant Radiographer. An individual radiographer/practitioner who leads teams to innovate, motivate and influence local and national agendas. Expert clinical capabilities are supported and enabled through critical thinking and strategic decision making at expert level across all four pillars of consultant level practice (clinical practice, leadership and management, education, research and development), and consultancy. Underpinning master's level education and research is progressed to doctoral or post-doctoral level.

Continuing Professional Development (CPD) An ongoing professional activity in which the practitioner identifies, undertakes, and evaluates learning appropriate to the maintenance and development of the highest standards of practice within an evolving scope of practice. All who are registered on statutory (e.g. HCPC) or voluntary registers (e.g. RCT) have a requirement to engage in regular CPD.

Diploma of the College of Radiographers (DCR) The degree-equivalent radiography qualification awarded by the CoR. This was awarded following a period of study and successful completion of a national examination, either in Radiodiagnosis (the DCR (R)) or in Therapy Radiography (the DCR (T)). The DCR was phased out following the introduction of the first validated Bachelor of Science (BSc) in Radiography in 1989.

Education and Career Framework (2013) Published by the College of Radiographers, the third edition and forerunner to the current ECF.

Enhanced Practitioner Level of practice for the imaging and radiotherapy workforce where an individual has developed their clinical competence and/or expanded their knowledge base in a specialist area beyond those of the practitioner level, either through workplace-based skills development and/or further postgraduate study at FHEQ Level 7/ SCQF Level 11 such as PgCert or PgDip.

Enhanced practitioners contribute to all four pillars of practice, but particular emphasis is placed upon their senior expertise in a specific pillar, commonly but not exclusively in radiography the expert clinical pillar of practice.

Variation in terminology of role title may exist across the diagnostic and therapeutic workforce within the UK (e.g. Senior Practitioner (Scotland), Specialist Practitioner (Wales, and Northern Ireland), and in relation to the individual's area of practice (e.g. Senior Sonographer).

Evidence-based Practice Imaging or radiotherapy practice, which is underpinned by a body of research, therefore seeking to ensure safe, effective, and fit for purpose service delivery and development.

First Post Competence Refers to the expected competencies as defined within the relevant Standards of Proficiency e.g. HCPC Standards of Proficiency for newly qualified and registered radiographers entering the profession or CASE Standards of Proficiency for a Sonographer.

FHEQ UK Framework for Higher Education Qualifications (England, Wales, Northern Ireland).

Four Pillars of Practice The four key aspects of practice which all levels of the radiography workforce should be practicing within. They include Clinical Practice, Education, Leadership and Management, Research and Development. Examples of, and the complexity of activities within each pillar will vary depending on the individual's level of practice and role.

Health and Care Professions Council (HCPC) Regulatory body of fifteen health and care professions in the UK, including the radiography workforce.

HEI Higher Education Institution.

Knowledge, Skills, and Attributes (KSAs) Knowledge (K) relates to understanding of a relevant concept or concepts. It is theoretical, rather than practical; Skills (S) relate to learned behaviours that are underpinned by abilities and knowledge. They are practical rather than theoretical; Attributes (A) relate to a quality or feature regarded as a characteristic or inherent part of someone or something. Together the KSAs are the baseline knowledge, skills and attributes expected of individuals at each level of practice, where fulfilment seeks to ensure safe, effective, and level appropriate practice.

Learner(s) Includes those who are undergoing education and training at any level of practice, including but not limited to, pre-registration undergraduate students and apprentices, and qualified staff undertaking further education and development in relation to their role.

Level of Practice Refers to the various levels of practice associated with the radiography profession, sonography and support workforce as defined within the Education & Career Framework. Levels of practice vary in terms of their expected academic level of education and training, and the knowledge, skills and attributes associated with undertaking and fulfilling the various roles within. Includes, Support Workforce (including Assistant Practitioner), Practitioner, Enhanced Practitioner, Advanced Practitioner, Consultant Practitioner.

Patients and Service users In the context of this ECF refers to recipients of healthcare involving diagnostic imaging and/or therapeutic treatments and services.

Mammography Associate Is a member of the breast imaging support workforce, undertaking two-view mammography examinations in a range of settings. They hold a FHEQ level 4 qualification for mammography associates such as the Mammography Associate Apprenticeship.

Patient, Public and Practitioner Partnership The active involvement and participation of patients, service users and the public in all aspects of clinical imaging and therapeutic service design and delivery, including research, where the patient voice is listened to and acted upon in the maintenance, enhancement and improvement of patient centric services and care. See Patient Public and Practitioner Partnerships within Imaging and Radiotherapy: Guiding Principles | SoR.

Pedagogical Relating to teaching; teaching methods.

Practitioner Member of the imaging or radiotherapy workforce who delivers high quality medical imaging or radiotherapy services which meet the regulatory, ethical, and legal requirements of their profession across a broad scope of practice. They are autonomous and accountable for their decisions and actions.

In the context of the education framework the term Practitioner refers to the entry level into the profession of radiography. This is not to be confused with the term Practitioner referred to as a duty holder in the Ionising Radiation (Medical Exposure) Regulations (IR(ME)R) 2017 (IR(ME)R (NI) 2018).

Professional Qualifications Refers to qualifications that hold academic credits relative to a given level of study, which confer attainment of a standard in relation to a given role/profession e.g. BSc (Hons) Diagnostic/Therapeutic Radiography/Medical Ultrasound.

Qualification Level One of a series of defined points in a qualification framework such as the Framework for Higher Education Qualifications (England, Wales, and Northern Ireland) or the Scottish Credit and Qualifications Framework (Scotland) that are numbered in ascending order. Qualifications within the same level share characteristics and require similar achievement. Qualification levels in different frameworks can be compared (QAA qaa-glossary.pdf).

Qualification level descriptors A statement of the generic characteristics of outcomes of learning at a specific level of a qualifications framework, used as a reference point. See The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (qaa.ac.uk).

Research informed teaching Involves the embedding of research, and its findings within the curriculum to enhance the knowledge of learners, develop their research skills, and to promote and develop a research culture within the profession.

Scholarly practice Refers to practice, which is grounded in theory and research, where an individual continually reflects on and assesses the impact of their work, adopts a problem-solving approach, and shares good practice/disseminates outcomes. It is driven by personal values, ethics and a commitment and desire to enhance one's own practice and that of others.

Scope of Practice The area or areas of practice for which a practitioner has the knowledge, skills, and experience to practise lawfully, safely, and effectively and for which they have been appropriately educated and trained.

SCQF Scottish Credit and Qualifications Framework.

Service Manager/Lead An individual who oversees and ensures the safe and effective provision of an imaging or radiotherapy service, providing professional leadership to cover all aspects of management, clinical and professional practice, leadership, staff development, and patient and service user experience.

Standards of Conduct, Performance and Ethics (HCPC 2016) The ethical framework within which all registrants of the HCPC must work. See Standards of conduct, performance and ethics | (hcpc-uk.org).

Standards of Education and Training (SETs) (HCPC 2017) The standards against which the HCPC assesses education and training programmes. See Standards of education and training | (hcpc-uk.org).

Standards of Proficiency for Radiographers (SoPs) (HCPC 2013, revised 2022) The threshold standards which all radiography graduates must meet and which all radiography practitioners must maintain to practice lawfully, safely, and effectively in order to be eligible for registration with the HCPC. See Radiographers | (hcpc-uk.org).

Support worker Supported by the care certificate and an appropriate qualification, they use general skills and work to perform routine procedures or systems of work within imaging and radiotherapy services under close guidance and supervision. They carry out straightforward clinical, technical, scientific, and administrative tasks. Senior Support workers carry out a range of delegated duties including clinical tasks within imaging and therapy services under supervision and with guidance when needed. Senior support workers will hold a profession appropriate qualification at FHEQ level 3 to support this work.

Support Workforce For the radiography profession includes support workers, senior support workers, mammography associates and assistant practitioners.

UK Professional Standards Framework (UKPSF) A globally recognised framework from Advance HE for benchmarking success within higher education teaching and learning support. Awards offered include Associate Fellowship, Fellowship, Senior Fellowship, Principal Fellowship. See UK Professional Standards Framework (PSF) | Advance HE (advance-he.ac.uk).

Values-based Practice (VBP) When implemented in tandem with evidence-based practice, VBP describes the application of learnable clinical skills which help support health care professionals to practice shared evidence-based decision making with their patients, using dialogue about values.



References for the introduction

1 Sloane, C. and Miller, P.K. (2017). Informing radiography curriculum development: The views of UK radiology service managers concerning the 'fitness for purpose' of recent diagnostic radiography graduates. Radiography 23(Suppl 1): S16–22, Available at: https://doi.org/10.1016/j.radi.2017.05.013 [Accessed May 3, 2022]

2 Richards, M. (2020). Diagnostics: Recovery and Renewal – Report of the Independent Review of Diagnostic Services for NHS England, Available at: https://www.england.nhs.uk/publication/diagnostics-recovery-and-renewal-report-of-the-independent-review-of-diagnostic-services-for-nhs-england/ [Accessed May 3, 2022]

3 Appleyard, R., Nightingale, J. and Labinjo, T. (2021). Informing the development of the Education and Career Framework for the radiography profession using a modified Delphi consensus study: Final report to The College of Radiographers

4 NHS Education for Scotland (2020). Nursing, midwifery and allied health professionals (NMAHP) development framework, Available at: https://www.nmahpdevelopmentframework.nes.scot.nhs.uk/ [Accessed May 3, 2022]

5 Welsh Government and NHS Wales (2020). Modernising allied health professions' careers in Wales: A post-registration framework, Available at: https://gov.wales/sites/default/files/publications/2020-02/modernising-allied-health-professions-careers-in-wales.pdf [Accessed August 5, 2022]

6 Department of Health Northern Ireland (2019). Advanced AHP practice framework: Guidance for supporting advanced allied health professions practice in health and social care, Available at: https://www.health-ni.gov.uk/sites/default/files/publications/health/AHP-Framework.pdf [Accessed May 3, 2022]

7 Health Education England (2021). Enhanced Clinical Practitioner apprenticeship FAQs, Available at: https://haso.skillsforhealth.org.uk/wp-content/uploads/2021/08/Enhanced-Clinical-Practitioner-Apprenticeship-FAQs-v1-Aug-21-.pdf [Accessed May 3, 2022]

8 Itri. J.N., Ballard, D.H., Kantartzis, S. et al. (2015). Entrepreneurship in the academic radiology environment. Academic Radiology 22(1): 14–24, Available at: https://doi.org/10.1016/j.acra.2014.08.010 [Accessed May 3, 2022]

9 Health Education (2020). System Planning — Phases 2–4 — 10 High Impact Workforce Requirements Plus Availability and Education Capacity Questions, Available at: https://www.hee.nhs.uk/our-work/workforce-planning-intelligence [Accessed November 10, 2020]

10 Society and College of Radiographers (2009). The role of the community liaison expert radiographer practitioner: Guidance for radiotherapy and imaging service managers and commissioners, Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/the-role-of-the-community-liaison-expert-radiograp [Accessed December 12, 2020]

11 White, N. and White, H. (2019). Advanced Practice in the Radiography Professions [in] Advanced Practice in Healthcare: Dynamic Developments in Nursing and Allied Health Professions, 101–11

12 NHS England and NHS Improvement (2019). Diagnostic Imaging Dataset Annual Statistical Release 2018/19, Available at: https://www.england.nhs.uk/statistics/wp-content/uploads/sites/2/2019/12/Annual-Statistical-Release-2018-19-PDF-1.9MB.pdf [Accessed August 5, 2022]

13 Bleiker, J., Knapp, K. M., Morgan-Trimmer, S. and Hopkins, S. J. (2018). "It's what's behind the mask": Psychological diversity in compassionate patient care. Radiography 24(Supp1): S28-S32, Available at: https://doi.org/10.1016/j.radi.2018.06.004 [Accessed August 5, 2022]

14 Hyde, E. and Hardy, M. (2021). Patient centred care in diagnostic radiography (Part 2): A qualitative study of the perceptions of service users and service deliverers. Radiography 27(2): 322-331, Available at: https://doi.org/10.1016/j.radi.2020.09.008 [Accessed August 5, 2022]

15 Miller, L., Williams, J., Marvell, R. and Tassinari, A. (2015). Assistant Practitioners in the NHS in England, British Journal of Healthcare Assistants 9(4): 194–195, Available at: https://doi.org/10.12968/bjha.2015.9.4.194 [Accessed August 5, 2022]

16 Baker, D. (2019). Potential implications of degree apprenticeships for healthcare education. Higher Education, Skills and Work-Based Learning 9(1): 2–17, Available at: https://doi.org/10.1108/HESWBL-01-2018-0006 [Accessed August 5, 2022]

17 Sevens, T. and Nightingale, J. (2020). Trailblazers: Stakeholder motivations for developing degree apprenticeships for the radiography profession. Radiography 26(1): 15–21, Available at: https://doi.org/10.1016/j.radi.2019.10.006 [Accessed August 5, 2022]

18 See references 4–7

19 Health Education England (2017). Multi-professional framework for advanced clinical practice, Available at: https://advanced-practice.hee.nhs.uk/multi-professional-framework-for-advanced-clinical-practice-in-england [Accessed August 5, 2022]

20 Health Education England (2020). Multi-professional consultant-level practice capability and impact framework, Available at: https://www.hee.nhs.uk/sites/default/files/documents/Sept%202020%20HEE%20Consultant%20Practice%20Capability%20and%20Impact%20Framework.pdf [Accessed August 5, 2022]



References for sections 1–9

1 Quality Assurance Agency (2014). UK Quality Code for Higher Education Part A: Setting and maintaining academic standards: The frameworks for higher education qualifications of UK degree-awarding bodies, Available at: https://www.qaa.ac.uk/quality-code/qualifications-frameworks [Accessed June 20, 2022]

2 Institute for Apprenticeships and Technical Education. Mammography associate, Available at: https://www.instituteforapprenticeships.org/apprenticeship-standards/mammography-associate/ [Accessed June 20, 2022]

3 Health Education England (2022). Developing career pathways for diagnostic imaging support worker roles: guidance on roles and responsibilities, Available at: https://healtheducationengland.sharepoint.com/Comms/Digital/Shared Documents/Forms/AllItems.aspx?id=%2FComms%2FDigital%2FShared Documents%2Fhee%2Enhs%2Euk documents%2FWebsite files%2FAllied health professions%2FDeveloping career pathways for diagnostic imaging support worker roles guidance on roles and responsibilities%2Epdf&parent=%2FComms %2FDigital%2FShared Documents%2Fhee%2Enhs%2Euk documents%2FWebsite files%2FAllied health professions&p=true&ga=1 [Accessed June 20, 2022]

4 Society of Radiographers (2022). SoR and HEE issue joint guidance on diagnostic imaging support workers, Available at: https://www.sor.org/News/Assistant-practitioners/SoR-and-HEE-issue-joint-guidance [Accessed June 21, 2022]

5 Health Education England. Care certificate, Available at: https://www.hee.nhs.uk/our-work/care-certificate [Accessed June 21, 2022]

6 The Society of Radiographers (2021). Clinical academic radiographer: guidance for the support of new and established roles, Available at: https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/clinical-academic-radiographer-guidance-for-the-su [Accessed May 3, 2022]

7 NHS Education for Scotland (2020). Nursing, Midwifery and Allied Health Professions Development Framework, Available at: https://www.nmahpdevelopmentframework.nes.scot.nhs.uk/ [Accessed May 3, 2022]

8 Welsh Government and NHS Wales (2020). Modernising allied health professions' careers in Wales: A post-registration framework, Available at: https://gov.wales/sites/default/files/publications/2020-02/modernising-allied-health-professions-careers-in-wales.pdf [Accessed August 5, 2022]

9 Department of Health Northern Ireland (2019) Advanced practice framework: Guidance for supporting advanced allied health professions practice in health and social care, Available at: AHP-Framework NI.pdf [Accessed May 3, 2022]

10 Health Education England (2021). Enhanced clinical practitioner apprenticeship FAQs, Available at: https://haso.skillsforhealth.org.uk/wp-content/uploads/2021/08/Enhanced-Clinical-Practitioner-Apprenticeship-FAQs-v1-Aug-21-.pdf [Accessed May 3, 2022]

11 Snaith, B. and Beardmore, C. (2021). Enhanced practice: A strategy to resolve the inconsistencies in advanced practice implementation. *Radiography* 27: S3–4, Available at: https://doi.org/10.1016/j.radi.2021.08.003 [Accessed May 3, 2022]

12 Snaith, B. and Beardmore, C. (2021). Enhanced practice: A strategy to resolve the inconsistencies in advanced practice implementation. *Radiography*, 27:S3–4, Available at: https://doi.org/10.1016/j.radi.2021.08.003 [Accessed May 4, 2022]

13 NHS England (2017). Allied Health Professions into Action: Using allied health professionals to transform health, care and wellbeing. 2016/17–2020/21, Available at: https://www.england.nhs.uk/wp-content/uploads/2017/01/ahp-action-transform-hlth.pdf [Accessed May 4, 2022]

14 NHS Improvement (2018). Leadership of allied health professions in trusts: what exists and what matters. An evaluation summary and self-assessment for trust boards, Available at: leadership-of-ahps-in-trusts.pdf (england.nhs.uk) [Accessed May 4, 2022]

15 NHS England and NHS Improvement (2019). Developing allied health professional leaders: a guide for trust boards and clinicians, Available at: https://www.england.nhs.uk/wp-content/uploads/2021/04/nhsi-developing-ahp-leaders-print.pdf Accessed May 4, 2022]

16 Health Education England (2017). Multi-professional framework for advanced clinical practice in England, Available at: https://www.hee.nhs.uk/sites/default/files/documents/multi-professionalframeworkforadvancedclinicalpracticeinengland.pdf [Accessed May 4, 2022]

17 NHS Health Research Authority (2020). Joint statement on the application of Good Clinical Practice to training for researchers (HRA, MHRA, devolved administrations for Northern Ireland, Scotland and Wales), Available at: https://www.hra.nhs.uk/planning-and-improving-research/policies-standards-legislation/good-clinical-practice/joint-statement-application-good-clinical-practice-training-researchers-hra-mhra-devolved-administrations-northern-ireland-scotland-and-wales/ [Accessed May 4, 2022]

18 Advance HE (2019). UK Professional Standards Framework (UKPSF), Available at: https://www.advance-he.ac.uk/knowledge-hub/uk-professional-standards-framework-ukpsf [Accessed May 4, 2022]

19 Health and Care Professions (H&CP) Education Leads Group (2016). Health and care professions (H&CP) practice education guidance, Available at: https://www.sor.org/Learning-advice/Professional-body-guidance-and-publications/Documents-and-publications/Policy-Guidance-Document-Library/Health-and-Care-Professions-(H-CP)-Practice-Educat [Accessed March 11, 2022]

20 Health and Care Professions Council (2016). Guidance on conduct and ethics for students, Available at: https://www.hcpc-uk.org/students/guidance-on-conduct-and-ethics/ [Accessed March 11, 2022]

21 Health Education England (2017). Multi-professional framework for advanced clinical practice in England (p10), Available at: https://www.hee.nhs.uk/sites/default/files/documents/multi-professionalframeworkforadvancedclinicalpracticeinengland.pdf [Accessed May 9, 2022]

22 Advance HE (2019) UK Professional Standards Framework for teaching and supporting learning in higher education, Available at: https://www.advance-he.ac.uk/knowledge-hub/uk-professional-standards-framework-ukpsf [Accessed May 9, 2022]

23 Tepielow A and Harris M (2020) A focus on radiation assurance setting and delivering clinical research, *Imaging and Therapy Practice*, October: 11–15

24 See Reference 23

CoR
THE COLLEGE OF RADIOGRAPHERS

207 Providence Square
Mill Street
London
SE1 2EW

collegeofradiographers.ac.uk
020 7740 7200

CoR Registered Charity no.: 272505



Image credits: Eva Slusarek, Dave Guttridge and Getty Images.

©2022 The Society and College of Radiographers