



THE COLLEGE OF
RADIOGRAPHERS



CLINICAL IMAGING AND ONCOLOGY
Learning and Development
Framework for Clinical
Imaging and Oncology

THE SOCIETY OF
RADIOGRAPHERS





CLINICAL IMAGING AND ONCOLOGY

Learning and Development Framework for Clinical Imaging and Oncology

Responsible Officer:
Christina Freeman

September 2007

First edition (supercedes the College of Radiographers' Curriculum Framework published in May 2003)

The Society of Radiographers
207 Providence Square
Mill Street
London SE1 2EW

Telephone 020 7740 7200

Facsimile 020 7740 7233

E-mail info@sor.org

Website www.sor.org

Foreword

The Society and College of Radiographers is pleased to launch this Learning and Development Framework for Clinical Imaging and Oncology, which replaces the Curriculum Framework published in May 2003.

This revised framework provides for the needs of service in a rapidly changing healthcare environment and supports education, professional development, and research.

The framework embraces those at all levels of practice involved in the learning and development processes across the broad fields of clinical imaging and oncology. It has relevance for the whole radiography workforce.

Copyright ©2007 The College of Radiographers

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the written permission of the publisher.

Conditions of use are as follows:

1. Use of the publication must relate to the provision of healthcare and/or healthcare education.
2. Use must be on a not-for-profit basis.
3. The publishers must be rightfully acknowledged as the source of the material.
4. The materials must not be reproduced by a third party.
5. As the documents may be updated from time to time, it should be the user's responsibility to ensure that their material is updated and older material withdrawn.

LIST OF CONTRIBUTORS

Responsible Officers:

Project Lead **Mary Embleton** MA TDCR DRI,
Education and Student Officer,

Supported by:

Charlotte Beardmore FCR DCR(R)(T) BSc (Hons) DMS
Professional Officer,

Christina Freeman, MA TDCR
Professional Officer,

Project Working Group Chair:

Ian Henderson FCR DCR(R) MSc PgC
Principal Lecturer, London South Bank University
Chair, Approval and Accreditation Board of
The College of Radiographers

Project Sponsor:

Prof Audrey Paterson FCR MSc TDCR DMU
Director of Professional Policy

Membership of the Project Working Group:

Mr Robert Appleyard DCR(T) MSc	Senior Lecturer	Sheffield Hallam University (T)
Mrs Fiona M Beattie DCR(R) DMU MD	Radiology Services Manager	Sperrin Lakeland Trust
Dr Lisa Booth BSc (Hons)	Senior Lecturer	St Martin's College
Mrs Kathy Burgess M.Med Sci	Head of Division (T)	University of Liverpool
Mrs Nicola Cornelius DCR(T)	Consultant Radiographer (T)	Lincoln County Hospital
Mrs Gillian Dolbear MSc PgCL&T(HE) DCRR DMU MSc	Programme Director	Christchurch University
Prof Angela Duxbury FCR MSc TDCR	Discipline Lead (T)	Sheffield Hallam University
Miss Helen Edwards DMU DCR(R) MSc	Supt Radiographer	Princess Alexandra Hospital
Dr Karen Knapp BSc (Hons), PgC	Senior Lecturer	University of Exeter

Membership of the Project Working Group:		
Mrs Irene McIntyre TDCR MSc	Academic Coordinator	University of Ulster
Mrs Frances M Milne HDCR	Head Radiographer (T)	Beatson Oncology Centre
Miss Maureen Noonan HDCR MBA	Superintendent Radiographer	Singleton Hospital
Mr Richard Price MSc FCR	Head of School	University Of Hertfordshire
Mr James Reid	Chief Clinical Technologist	Whittington Hospital
Mrs Christine Richards MDCR(T)	Radiotherapy Services Manager	Kent Oncology Centre
Mrs Donna Routsis DCR(T) BA BSc(Hons)	Research Radiographer	Addenbrookes Hospital
Mrs Beverly Snaith DCR(R) MSc	Consultant Radiographer	Mid Yorkshire Hospitals NHS Trust
Ms Rebecca Vosper MSc HDCR	Clinical Head of Service	Hinchingbrooke Hospital
Ms Patsy Whelehan DCR(R) MSc	Head of Breast Screening Training	Kings College Hospital
Mr A Stewart Whitley TDCR FCR	Radiology Advisor	UK Radiology Advisory Services Ltd

Acknowledgements

The Society and College of Radiographers wishes to express its thanks and appreciation to all members of the project working group, in particular Ian Henderson, Chair, for their kind support and insightful comments during the review of the curriculum framework and its development into the Learning and Development Framework.

Thanks also to all the individuals and special interest groups who took part in the external consultation processes.

Finally, the profession wishes to the following members of the professional support team who provided advice throughout, namely Kate Garas, Professional Officer, S E Kelly CPD Officer, Michele Landau, Administrator and Anne Shaw, Professional Officer.

Contents

Chapter One

Purpose.....	8
Background.....	9
Underpinning Learning and Development Framework principles	9
Main purposes for stakeholders	9
The Clinical Imaging and Oncology workforce.....	9
Learners	9
Clinical service managers.....	10
Education providers.....	10
Professional and statutory regulatory bodies.....	10
Advisers, assessors and external reviewers	10
Commissioners and funding authorities.....	10

Chapter Two

The healthcare environment.....	11
Implications of government policy	11
Primary sector commissioning	11
Independent sector provision.....	11
Tertiary provision.....	11
Hub and satellite provision	11
Interprofessional working	12

Chapter Three

Standards and frameworks	13
NHS Knowledge and Skills Framework	13
Competencies (National Occupational Standards).....	13
Health Professions Council (HPC) standards	13
Quality Assurance Agency (QAA) subject benchmarks	13

Chapter Four

Learning outcomes.....	14
Assistant practitioner	14
Practitioner.....	14
Advanced Practitioner.....	15
Consultant Practitioner	15

Chapter Five

Facilitating Learning, Teaching and Assessment.....	16
Learners' individual development	16
Learning settings.....	16
Learning providers	17
Learning and teaching strategies.....	17
Learning resources	17
Assessment strategies	18

Chapter Six

Application of the framework to individual roles, including	19
clinical practice, management, education and research.....	19
Career pathways in clinical imaging and oncology	19
Role development.....	19
Outcomes for managers	20
Outcomes for educators	20
Outcomes for researchers.....	20

Section A – Generic skills knowledge

and understanding relevant to the four levels of practice.....	22
Care for patients, clients, users and carers	22
Communication and interpersonal	22
Problem solving	23
Reflection	23
Psychomotor	24
Analytical and clinical judgement.....	24
Information management and technology (informatics).....	25
Research and development	25
Planning and organizational	26
Autonomy.....	26
Human resource management and teaching.....	27
Financial and equipment management.....	27
Patient/client assessment	28
Team-working and interprofessional practice	28

Section B – Discipline specific knowledge and understanding to be achieved at the four levels of practice – Clinical imaging

Biological sciences	29
Physical science and technology	30
Clinical sciences	32
Applications and techniques	33
Behavioural and communication sciences.....	35
Legislative, policy, ethical and research dimensions	37

Section C – Discipline specific knowledge and understanding to be achieved at the four levels of practice – Oncology

Biological sciences.....	39
Physical science and technology	40
Clinical sciences	43
Applications and techniques	45
Behavioural and communication sciences.....	46
Legislative, policy, ethical and research dimensions	48

CHAPTER ONE

Purpose

The intention of the Society and College of Radiographers (SCoR), as the professional body for the clinical imaging and oncology workforces, is that the framework:

- Maximises flexibility and facilitates innovation in curriculum design and delivery;
- Promotes continuous development of learners in the broad fields of oncology and clinical imaging, which include nuclear medicine, magnetic resonance and ultrasound, to meet changing services needs and service improvement as well as the personal learning and development needs of individuals.

It embraces the philosophy of the Department of Health, which is shared by the SCoR, that all clinical environments are learning environments.

All members of the clinical imaging and oncology workforce are learners. All individuals need to be involved in life-long learning to maintain the currency of their knowledge and skills.

This framework, therefore, embraces those **at all levels of practice, involved in the learning and development processes**, formally or informally, and within academic and/or clinical environments, across the broad fields of clinical imaging and oncology. Those outcomes at practitioner level are core for accreditation at practitioner level. At all other levels, individuals will need to identify those appropriate to their scope of practice.

This framework is produced as authoritative guidance to inform all those working in the provision of clinical imaging or oncology services at all levels of practice and/or supporting education, research and development and management, both in the public and private sectors. It is also intended as a major source of reference for all stakeholders concerned in the delivery of high quality healthcare services and supporting education and development across the United Kingdom.

All who wish to benefit from the gains in knowledge and skills that accrue from planned study will find the framework useful. Tangible benefits are to assist learners in achieving goals, such as targets in their career pathway, and in the development and enhancement of practice-based skills that will help them deliver an enhanced service to patients and clients. The framework also supports a continuing process of lifelong learning.

It sets out and clarifies the elements required to ensure appropriate education of the profession from assistant level to the highest levels of practice and has relevance for roles in:

- Clinical practice;
- Management;
- Education;
- Research.

The Learning and Development Framework provides guidance, with reference to other frameworks (linked below), to those responsible for ensuring the appropriate development of learners at the different levels of clinical imaging and oncology practice, to include:

- Employers, both in the public and private sectors *The NHS Knowledge and Skills Framework (NHS KSF) and the Development Review Process (October 2004)*; http://www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4090843&chk=dyrb/a
- Education providers, to include Higher Education Institutions (HEIs), Colleges of Further Education and Workbased provision;
- The statutory regulatory body, the Health Professions Council (HPC) <http://www.hpc-uk.org/publications/standards/>
- Education commissioners and funding authorities, working closely with employers taking responsibility for local workforce planning and the funding of education and training;
- Other stakeholders who wish to support education and other developments within the profession.

The framework draws together, builds on and complements relevant existing work in education and practice within clinical imaging and oncology and in the wider health care and education sectors. Therefore, this document should not be viewed in isolation, but should be used as an overarching framework which places in context other documents and developments that impact on clinical imaging and oncology and the broader aspects of education. Many of these other current documents are listed in the references and bibliography and are displayed in italics and in some cases may be web-accessed using hyperlinks.

Background

The College of Radiographers published the first edition of its Curriculum Framework in May 2003, in response to rapid developments in the fields of clinical imaging and oncology. Its purpose was to act as a key implementation guidance document to support of the Strategy for the Education and Professional Development of Radiographers, 2002, providing information and advice to stakeholders. Since this time, the pace of change has continued unabated. This revised framework provides for the needs of service in a rapidly changing healthcare environment and supports education, professional development and research to enhance the delivery of care to patients and their carers.

Underpinning Learning and Development Framework principles

In developing the framework, the professional body has identified and agreed a number of underpinning principles. These are that the framework:

- Sets out its broad purpose without being over-prescriptive;
- Provides guidance as to scope of practice;
- Is informed by developing practice;
- Promotes integration between theory and practice;
- Advises on learning outcomes for all levels of practice within clinical imaging and oncology;
- Promotes interprofessional working and education, which underpins this;
- Takes account of research, education and management needs;
- Supports access, transferability and flexibility in education;
- Takes account of current initiatives which impact on education and practice;
- Promotes learning that is evidence-based and research led;
- Identifies the essential nature of practice within relevant ethical and regulatory frameworks;
- Sets out the roles of stakeholders.

Whilst the Learning and Development Framework is subject to review on a regular basis, users will need to take account of unforeseen changes and developments in the health care and education sectors which occur prior to the next review.

Main purposes for stakeholders

It is expected that the various stakeholders, both within the profession and in the wider healthcare and education environments, will utilise this authoritative guidance. The various stakeholders are listed below, together with indications of main purposes that may be associated with the particular stakeholder.

The Clinical Imaging and Oncology workforce

The Learning and Development Framework is for all members of the clinical imaging and oncology workforce to enable them to:

- Identify the knowledge and skills they need for their current responsibilities;
- Identify their continuing professional development (CPD) needs;
- Participate fully in their development review process and production of personal development plans;
- Identify goals to enable practice at higher levels in line with the career progression framework.

Learners

Whilst the Society and College of Radiographers recognises that all individuals should be involved in continuing learning to maintain the currency of their knowledge and skills, it uses the term 'learners' specifically to encompass:

1. Learners at pre-registration level include:
 - Individuals training to be assistants;
 - Assistants learning to become practitioners;
 - Direct entrants to undergraduate and postgraduate programmes leading to accreditation at practitioner level and registration with a statutory regulatory body;
 - Returners updating their knowledge and skills;
 - Overseas radiographers developing their knowledge and skills for registration and practice in the UK [Code of practice for the international recruitment of healthcare professionals \(2004\)](http://www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4097730&chk=DI/b1A) http://www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4097730&chk=DI/b1A
 - [Health Professions Council website](http://www.hpc-uk.org/apply/international/) <http://www.hpc-uk.org/apply/international/>
2. Learners at post-registration level include:
 - Individuals developing their knowledge and skills to advanced and consultant level;
 - Those developing new knowledge and skills in specialist areas of practice, education, management, leadership and research.

Additionally, at both pre and post-registration levels, there are learners engaged in CPD, including that considered mandatory by employers or placements.

The main purposes of the learning and development framework for learners are to:

- Provide guidance on the expected depth and range of learning;
- Support self-monitoring of progress and define expectations;
- Support and inform career development plans and professional development portfolios.

Clinical service managers

The main purposes of the framework for managers are to:

- Promote understanding of the learning involved in preparing individuals for defined levels of practice;
- Facilitate development of an appropriate learning environment that supports life long learning;
- Inform expectations of staff at each level of practice;
- Inform the application of the NHS Knowledge and Skills Framework (KSF) as appropriate for each member of staff and facilitate the Developmental Review Process;
- Inform expectations of, and approaches to, practice based learning;
- Facilitate the development of fields of practice;
- Provide advice regarding the support and supervision required for all learners including those undertaking formal postgraduate and doctoral studies in the clinical setting;
- Use this framework to work with practice educators and learning representatives.

Education providers

The main purposes of the framework for education providers are to:

- Guide the design and development of relevant programmes and learning environments (both academic and practice based);
- Guide the development of awards appropriate to the associated levels of practice;
- Inform the preparation of documentation for validation, accreditation and monitoring purposes;
- Facilitate coherence between programmes;
- Clarify expectations regarding the maintenance of nationally recognised standards;
- Identify and develop opportunities for interprofessional learning.

Professional and statutory regulatory bodies

The main purposes of the framework for professional and statutory regulatory bodies are to:

- Guide evaluation of the appropriateness of programmes for approval;
- Inform standards related to initial and ongoing registration;

- Inform assessment of equivalence for registration purposes (eg an overseas application);
- Promote the development of interprofessional working.

Advisers, assessors and external reviewers

The main purposes of the framework for advisers and assessors acting on behalf of the College of Radiographers' Approval and Accreditation Board and others such as external reviewers, is to provide a reference document to support course development and evaluation, and the accreditation of individuals at the four levels of practice.

Commissioners and funding authorities

The main purposes of the Learning and Development Framework for commissioning/funding authorities are to:

- Inform contract specifications at all levels of practice;
- Support the ongoing evaluation of commissioned/funded programmes.

Other health care professionals and members of the public

The main purposes of the framework for other healthcare professionals and members of the public are to:

- Provide a statement on clinical imaging and oncology education and practice in the UK;
- Inform interprofessional working and education.

CHAPTER TWO

The healthcare environment

Service needs of the future within the rapidly changing healthcare environment will drive changes to the profile of the workforce. Maintaining the status quo is not an option. The Government agenda is to promote client led, evidence based healthcare, which promotes patient choice and interprofessional working. Increasingly, there are non-medical practitioner led services; the scope of practice of members of the workforce is evolving and expanding with increased opportunities for the development of **advanced and consultant practitioner roles**. It is recognised that, with changes in government, new priorities may result. Nothing should be developed in isolation: managers and education providers must collaborate in the development of education programmes to support service needs. The framework provides a mechanism, which is responsive to the changing health and social care environment.

This document, whilst highlighting some of the relevant initiatives at the time of publication, also seeks to build in flexibility to facilitate response to future initiatives.

Implications of government policy

The framework is a tool to guide the workforce in responding to the priorities highlighted in the health agendas laid out by the four countries of the United Kingdom:

In England, the White Paper, *Our health, our care, our say: a new direction for community services*, (October 2006) *Our health, our care, our say: a new direction for community services* : Department of Health – Publications and statistics aims to achieve four main goals for England:

- Better prevention services and earlier intervention;
- More choice and a louder voice;
- Do more on tackling inequalities and improving access to community services;
- Provide more support for people with long term needs.

In Northern Ireland, *A Healthier Future: A Twenty Year Vision for Health and Wellbeing in Northern Ireland 2005-2025* (December 2004) has as its aims: <http://www.dhsspsni.gov.uk/healthyfuture-main.pdf>

- Investing for health and wellbeing;
- Involving people;
- Teams which deliver;
- Responsive and integrated services;
- Improving quality.

In Scotland, *Delivering for Health* (November 2005) has as its aims: <http://www.scotland.gov.uk/Resource/Doc/76169/0018996.pdf>

- An NHS as local as possible;
- Systematic help for people with long-term conditions;
- Reducing the inequalities gap;
- Actively managing hospital admissions;
- An integrated NHS for the whole of Scotland.

In Wales, *Designed for Life: a new strategy for health and social care in Wales* (May 2005) is underpinned by three aims: <http://www.wales.nhs.uk/documents/created-for-life-e.pdf>

- Lifelong health;
- Fast, safe and effective services;
- World class care.

Primary sector commissioning

Primary sector commissioning provides a challenge to conventional ways of funding and provision of services. All members of the workforce need to be aware of the consequences of this change. This is likely to involve a realignment of the provision of general and specialist services. A greater range of services will be provided in primary care with opportunities for the provision of local imaging services. Information management and technology systems should enable better co-ordination of services by facilitating innovations, such as telereporting of images.

Independent sector provision

Recent years have seen a rapid expansion of the commissioning of imaging services from the independent sector, which is likely to increase further and widen the scope of provision of clinical imaging and oncology services. With this expansion there will be an essential need for the independent sector to fully engage in the education and professional development of the workforce.

Tertiary provision

Clinical imaging and oncology services which remain in the tertiary sector may become more specialised, with a need for increased numbers of Advanced Practitioners and the development of a wider range of Consultant Practitioner roles.

Hub and satellite provision

The realignment of general and specialist services' tertiary provision, for example PET –

CT, both within the NHS and independent sector, may be better organised by adopting a 'hub and satellite' approach with the hub providing the core services and support and expertise to satellite hospitals. Consultant practitioners will have an essential role to play in leading specialist provision within this framework.

A framework for the development of Positron Emission Tomography (PET) services in England (DH, October 2005) http://www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4121029&chk=Ss%2B4KW

PET/CT in the UK: A Strategy for development and integration of a leading edge technology within routine clinical practice (RCR, August 2005) http://www.rcr.ac.uk/docs/general/pdf/PETCT_final.pdf

Principles to underpin the delivery of NHS Radiotherapy or Chemotherapy Services in cancer units in the UK (RCR, RCP May 2006) <http://www.rcr.ac.uk/index.asp?PageID=149&PublicationID=241>

Guidance on the Development and Management of Devolved Radiotherapy Services (RCR, September 2004) <http://www.rcr.ac.uk/index.asp?PageID=149&PublicationID=202>

Cancer in Scotland: Radiotherapy Activity Planning 2011-15

ISBN (Web Only)

Official print publication date January 2006

Website publication date January 31, 2006

<http://www.scotland.gov.uk/Publications/2006/01/24131719/0>

Radiotherapy Equipment Needs and Workforce Implications 2006-2016, Cancer Services Co-ordinating group, (Wales)

http://new.wales.gov.uk/about/departments/dhss/publications/health_pub_index/reports/radiotherapyequipmentneeds?lang=en

Interprofessional working

Increasingly, interprofessional working is being promoted as a means of providing a seamless patient care pathway. Traditionally radiographers have roles often relating to only parts of the process. Further development and expansion of roles is essential to meet changing service needs, to take into account new ways of working and to ensure high quality cost-effective, patient-centred, care across the service.

Creating an Interprofessional Workforce

<http://www.cipw.org.uk>

Skills for Health

<http://www.skillsforhealth.org.uk>

Breaking the Mould: Roles, Responsibilities and Skills Mix in Departments of Clinical Oncology (RCR, SCoR, IPEM, November 2002) <http://www.rcr.ac.uk/index.asp?PageID=149&PublicationID=180> <http://www.rcr.ac.uk/index.asp?PageID=149&PublicationID=41>

Team Working within Clinical Imaging – A contemporary view of Skills Mix. (RCR and SCoR, January 2007)

<http://www.rcr.ac.uk/index.asp?PageID=310&PublicationID=245>

Radiotherapy: developing a world class service for England. Report to Ministers from National Radiotherapy Advisory Groups 26 February 2007. http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_074575

CHAPTER THREE

Standards and frameworks

This framework includes the principles of ongoing quality improvement, promotion of best practice and proactivity in advancing professional practice across all levels and dimensions. It provides a comprehensive structure, which takes into account other standards relevant to the practice of clinical imaging and oncology. Whilst it is anticipated that other standards and frameworks may be developed during the life of this document, it is expected that they will be encompassed within this framework.

NHS Knowledge and Skills Framework

The NHS Knowledge and Skills Framework (NHS KSF) defines and describes the knowledge and skills which NHS staff need to apply in their work in order to deliver quality services. It provides a single, consistent, comprehensive and explicit framework on which to base review and development for all staff.

Competencies (National Occupational Standards)

National Occupational Standards (NOS) ratified by the Qualifications and Curriculum Authority (QCA) and National Workforce Competencies at higher academic levels are statements of competence describing good practice and are written to measure performance outcomes. They are competencies which describe what needs to happen in the workplace and are applicable to the independent as well as the public sector. They are a source of information to help people make informed decisions about:

- The structure and content of education and training and related qualifications;
- The demands of employment;
- Good practice in employment;
- The coverage and focus of services.

Skills for Health

<http://www.skillsforhealth.org.uk/>

Health Professions Council (HPC) standards

Standards of Proficiency (SOPs), as set by HPC, are the threshold standards for entry to the register. These standards include those common to all professions regulated by the HPC and those specific to individual professions. The framework is an important source for these standards.

The Standards of Education and Training (SETs) are the standards against which

the HPC will assess whether a graduate from an educational programme will meet the Standards of Proficiency. Approval of that educational programme by the Health Professions Council ensures that those who undertake the programme will be eligible to apply for registration with the Council as a practitioner upon successful completion of that programme. This framework will form the curriculum guidance for the Standards of Education and Training.

Standards of Conduct, Performance and Ethics are the standards expected for the continuing attitudes and behaviour of someone who is on the register.

Standards for Continuing Professional Development (CPD) relate to the requirement that all registrants will be required to undertake CPD relevant to current or future practice as a condition of their registration.

The CPD requirements of the HPC are included in this document, however it should be noted that this Learning and Development Framework goes above and beyond the benchmark standards set by the HPC, as it is concerned with further development of the profession.

CPD Now

<http://sor.cpdnow.net/default.aspx>

Quality Assurance Agency (QAA) subject benchmarks

The QAA produce subject benchmark statements, which are threshold standards, incorporating academic and practitioner elements, against which higher education institutions are expected, as a minimum, to set their standards for the award. In compiling these statements, they draw upon the expertise of the professional body.

CHAPTER FOUR

Learning outcomes

The outcomes below describe professional competence in broad terms relative to the levels of professional practice. Whilst this relates to the four broad levels of practice, it is recognised that, within one level of practice, individuals will progress along a continuum of learning and development, for example, from novice through preceptorship to experienced practitioner. <http://www.sor.org/members/pdf/edprodev.pdf>

Education providers will be expected to demonstrate that these outcomes are achieved in relevant programmes. However, the content and organisation of any programme will be a matter for joint collaboration between service and education providers.

Assistant practitioner

The assistant practitioner is required to have a sound knowledge of the basic concepts of a defined area of practice. The ability to communicate accurately and to exercise personal responsibility must be demonstrated. The learning process should enable the assistant practitioner to perform effectively within their area of practice, using given protocols as necessary.

Assistant practitioners, **whilst not able to practice autonomously**, must work effectively and safely within their defined area of practice under supervision of a registered practitioner, within relevant legal and ethical frameworks and in accordance with agreed protocols. They will:

1. Demonstrate knowledge and physical skills required within their own area of practice;
2. Undertake patient care procedures within their sphere of competence;
3. Function as a member of the multi-disciplinary health care team;
4. Demonstrate effective interpersonal and communication skills;
5. Demonstrate accountability for their own actions;
6. Demonstrate an ability to gather relevant information and act appropriately;
7. Apply problem-solving skills to routine situations;
8. Demonstrate effective use of information technology, literacy and numeracy skills in relation to their defined area of practice;
9. Demonstrate an ability to reflect on their area of practice and engage with CPD.

Education programmes should be designed such that assistant practitioners can:

- Recognise the importance of the knowledge and understanding relative to their defined roles;

- Develop the skills necessary to perform their roles;
- Recognise the links between different programme elements and themes;
- Appreciate that their knowledge and understanding is acquired within an evidence-based framework;
- Recognise that learning can occur in both education and practice environments and exploit the relationship between them.

Practitioner

Practitioner level is fundamental as it defines the level of entry to professional practice. The practitioner will have developed an understanding of a complex body of knowledge. Analytical techniques and problem solving skills enable the practitioner to operate in a variety of settings including active involvement in research. The practitioner needs to be able to exercise personal responsibility and make decisions in complex and unpredictable circumstances. The learning process must enable the practitioner to be able to evaluate evidence, argument and assumptions, to reach sound judgements and adapt practice as required, and to communicate effectively.

In **addition to the outcomes defined for the assistant practitioner**, as practitioners progress from novice through preceptorship to more experienced practitioners, they will:

1. Work effectively and safely within their defined area of practice, contributing towards the development of existing and evolving legal and ethical frameworks;
2. Manage a clinical workload and meet deadlines;
3. Adapt to different work settings within their professional area;
4. Demonstrate accountability for actions of self and others;
5. Recognise and respond sensitively and appropriately to individual patients' needs;
6. Apply sound clinical reasoning skills as the basis for making appropriate professional decisions and acting autonomously;
7. Demonstrate a proactive, flexible and interprofessional approach to practice;
8. Access and apply an evidence-based approach to practice;
9. Promote the profession and participate in education and training including clinical supervision of others;
10. Demonstrate an ability to reflect on practice and promote CPD;
11. Read critically in order to inform practice;
12. Participate in research and audit activities.

Education programmes should be designed such that the practitioner can:

- Recognise the importance of knowledge and understanding to their current and future professional practice;

- Develop the skills necessary to perform their roles;
- Integrate their learning effectively;
- Develop their knowledge and understanding within an evidence-based framework;
- Recognise and use relationships between learning developed in university and practice-based environments;
- Transfer knowledge and understanding to situations encountered in practice;
- Meet the statutory requirements for registration;
- Develop their research and audit skills.

Advanced Practitioner

The advanced practitioner will have developed expertise to be able to function at the forefront of professional practice. Detailed application of knowledge and understanding of how research informs practice is required. Advanced practitioners must be able to deal with complex issues and tackle and solve problems. They are required to demonstrate sound judgement, personal responsibility and initiative in complex and sometimes contentious situations. Advanced practitioners may also take the initiative in research and may lead research projects.

Advanced practitioners as they develop from novice to more experienced advanced practitioners will be expected to:

1. Critically evaluate and apply a range of theoretical perspectives relevant to their own area of practice to underpin their professional decision making;
2. Demonstrate the critical application of knowledge, experience and advanced clinical skills to novel and challenging situations;
3. Adopt a critical and analytical approach to their own and others' performance;
4. Exercise clinical, teaching and team leadership skills in their chosen field;
5. Critically evaluate legal, ethical and professional issues relevant to their practice;
6. Develop and review approaches to their own area of practice;
7. Collaborate with other healthcare professionals to enhance the patient care pathway;
8. Engage in research and development in order to contribute to the evidence base within their field;
9. Participate in research and audit, present findings and make recommendations as appropriate.

In addition there are **outcomes from practitioner level that will remain important.**

Education programmes should be designed such that the advanced practitioner can:

- Critically evaluate and apply knowledge and understanding to their own areas of practice;
- Synthesise and critically appraise material from diverse and/or complex sources;
- Develop specialist knowledge and understanding through active engagement with the evidence base;
- Apply knowledge, understanding and skills to complex and challenging situations;
- Demonstrate leadership skills.

Consultant Practitioner

The consultant practitioner practices at the leading edge of the profession. The consultant is able to create and interpret knowledge that extends the forefront of the profession. The consultant provides leadership in relation to clinical practice and the delivery of clinical services. Consultant practitioners are able to make informed judgements on complex issues and demonstrate innovation in solving clinical problems often within multidisciplinary and/or multi-agency environments. Conceptualisation, design and implementation of projects for the generation of new knowledge and understanding may also be part of the role, as is knowledge transfer.

Consultant practitioners as they develop from novice to more experienced consultants will be expected, within their area of expertise, to:

1. Strengthen expert clinical practice, which extends the forefront of the profession;
2. Provide professional and clinical leadership and consultancy widely;
3. Lead education, training and development;
4. Lead practice and service development;
5. Lead research and integrate findings into practice;
6. Promote a culture which encourages research and leadership;
7. Contribute to development of the health and social care economy.

In addition there are **outcomes from the advanced practitioner level that will remain important.**

Education programmes should be designed such that the consultant practitioner can:

- Subject their professional knowledge to critical questioning, reflection and debate;
- Integrate the best of current knowledge and practice to their discipline;
- Provide original and innovative contributions to the knowledge base of their discipline and practice;
- Demonstrate best practice and promote it widely.

CHAPTER FIVE

Facilitating Learning, Teaching and Assessment

Introduction

Individuals have different approaches to learning, utilising different learning styles and methods. As individuals develop professionally they draw on a variety of learning methods and develop their learning skills to help them reach their particular outcomes and goals. In recognising individual differences this chapter sets out and explains the relationship between the learning process and this framework.

A strong relationship between the learner, the clinical department and the education provider should operate to facilitate professional development. The learning process is central to maintaining competence to practice; therefore it must be career-long. Learning should focus on outcomes to be achieved and the appropriate methods by which learners can access and acquire knowledge and skills, being cognisant of the NHS Knowledge and Skills Framework. In keeping with the purpose of the Learning and Development Framework the learning process must provide for a continuum of learning and development through knowledge and skills acquisition, reflection on practice and integration of theory and practice, throughout the entire scope of practice.

Interprofessional learning in the practice and academic settings is to be supported as a way of enabling the acquisition and sharing of knowledge to the benefit of the patient and to meet the needs of the service. It facilitates effective team working, informs communication and understanding between professions and promotes continuity of care. There are many initiatives for interprofessional learning in practice based and academic settings. Use of both formal and informal methods encourages an ethos of interprofessional learning that permeates throughout the professional and healthcare environment. The interprofessional approach should draw upon and enhance the development of skills and knowledge that are clinical imaging or oncology practitioner specific, recognising the complementary skills and knowledge of the different professions.

Learners' individual development

The framework enables learners to determine their learning needs to ensure development along their individual career pathways by identifying the area in which they need to develop and the outcomes for the appropriate level of practice.

For all learners, the development of learning skills is an important outcome in its own

right if the learning process is to be effective. The ability to learn independently becomes an asset and a key skill which learners need to develop. The ability to reflect on learning and practice, the ability to solve problems and the ability to evaluate the effectiveness of practice are essential characteristics at all levels of practice.

Continuing professional development is vital in order to maintain safety and effectiveness given the rapid rate of change within clinical practice. Ongoing professional competence is more than skills, knowledge, attributes and technical expertise. It is also about coherent integration of these and adherence to a moral and ethical code, recognising the emotional dimension of practice and embracing the idea that practice is dynamic and constantly changing. Reflection in, and on, practice allows for thinking about what has happened, combining with past knowledge and experience to reframe ideas and practice for the future.

Where the learning is in an academic setting, direction and guidance will be an integral part of a programme of study. However, much of the learning will be outside an academic setting and is likely to be in the workplace and to be self-directed. This should be supported by employers, through a development review process, providing individuals with a personal development plan and identifying support that should be provided. The clinical imaging and oncology workforces must identify and address their continuing professional development requirements using the Society of Radiographers' 'CPD Now' <http://sor.cpdnow.net/default.aspx> or equivalent standard recording medium.

Learning settings

Learning takes place in a variety of settings. Learning in practice and in informal settings are essential parts of the learning process. Learners need to recognise the reciprocal relationship between learning that occurs in academic and practice based environments.

Increasing emphasis is being placed on work-based learning with development of practice skills being underpinned by knowledge acquired through distance learning, e-learning, in-house provision of lectures, tutorials and discussions, reading professional publications and attending conferences and study days.

Learning in formal educational settings needs to prepare learners to become competent to meet the evolving requirements of service delivery. In order to succeed in integrating practice-based and academic learning, curricula need to be explicit but not prescriptive. Whilst experience in clinical imaging and oncology departments continue to be essential for inculcation into the culture and practice of radiography, the pressure on clinical

departments produces a need to combine this with teaching clinical skills in other settings such as skills laboratories.

Learning providers

Learning for the clinical imaging and oncology workforces is provided by a range of providers from the healthcare and education sectors, professional organisations and the independent sector. The framework should be used by each in identifying the skills, knowledge and understanding which their programmes aim to develop together with the learning outcomes that need to be achieved, at the level of practice applicable to the participant learners. Education providers need to ensure that those delivering education are competent to do so.

Learning and teaching strategies

An appropriate range of learning and teaching strategies, which appreciate the range of learning styles, should be used to fulfil the framework outcomes, including distance and e-learning. A variety of strategies are required so that learners acquire the necessary attitude, aptitude, skills and knowledge. The skills required for practice may be developed through use of role-play and simulations, using skills laboratories and computer programmes to prepare for and supplement practice placement.

Learning and teaching strategies need to:

- Be sensitive to the needs of individual learners and be learner centred;
- Include the acquisition of problem solving skills, independent learning and transferable skills;
- Encourage ownership of learning by the learners;
- Foster a culture of valuing learning and the ability to reflect;
- Generate initiative and original thinking;
- Facilitate learning through a range of activities and media;
- Facilitate the acquisition of research skills;
- Facilitate the acquisition of assessment skills.
- Provide appropriate opportunities for learners to engage in shared learning with learners from other professions.

They should:

- Be rooted in a partnership between education and service providers;
- Take into account statutory and mandatory requirements;

- Support accredited and non-accredited learning;
- Support learners who do not necessarily want to progress in terms of promotion, but who wish to engage with a programme of continuing professional development;
- Meet individual expectations in alignment with services needs.

Learning resources

In order for learners to maximise their learning potential, access to a range of learning resources is necessary. Inevitably, these will vary according to circumstances and the learning outcome being pursued. For example, learners registered on a course of education should have access to facilities and support from the host institution. At the other end of the scale a learner may require a copy of a recent journal article to remain abreast of developments in a particular technique.

All learners will require access to a range of resources to support their learning activity at various stages during their working life. Indeed, making effective use of resources is part of the learning process.

A learner registered on a formal course with a higher education institution can expect to have access to a learning resources centre. This should go beyond access to a traditional library and lending rights for books to include internet access to course material, discussion groups, search engines and electronic journals.

The internet does provide the opportunity for learners to access a whole range of resources from image libraries to information on disease and professional matters. However, learners will need to be careful to ensure material is from a reliable source, especially research results, if it is uncertain whether or not the information has been subjected to a proper peer review process.

All members have access to the Society and College of Radiographers' website <http://www.sor.org/members/> and the British Institute of Radiology Information Centre <http://www.bir.org.uk/library.html>

Learners should also expect support from employers. This could range, at one level, from the appointment of mentors, access to trust libraries and hence to journals and the Internet. On another level, funded access to courses, protected study time (SoR 2002) and participation in departmental CPD activities, including clinical meetings, could be expected.

It is not possible to specify every resource that can be accessed; however, the above provides an indication of the range of resources to be available to learners to support their professional development.

Assessment strategies

Assessment of learning must be an integral part of the learning process itself and must satisfy the educational criteria of validity and reliability. The assessment needs to be appropriate to the level of practice and be focused on outcomes. Assessment of learners in practice-based settings is an integral part of ensuring clinical competence.

The assessment strategy should achieve the following:

- Offer a variety of methods of assessing learning;
- Provide a robust means of assessing clinical competence;
- Focus on learners' development and demonstration of learning achieved using a combination of formative and summative assessments;
- Encourage learners to assess their own learning and identify their own development needs;
- Provide explicit and detailed guidance of expectations;
- Provide a balance between effective assessment and assessment overload;
- Take account of regulatory frameworks;
- Acknowledge benchmarks and proficiency standards, where appropriate;
- Acknowledge occupational standards, where appropriate.

The learning, teaching and assessment strategy identified within individual curricula should be consistent with the overall educational philosophy of the programme. Programmes as a whole should be coherent such that the learning process integrates with, and underpins, the achievement of educational aims and learning outcomes. Education providers are expected to make explicit this relationship within their curricula.

CHAPTER SIX

Application of the framework to individual roles, including clinical practice, management, education and research

The scope of practice of members of the clinical imaging and oncology workforce is diverse. In addition to the four defined levels of clinical practice, as individuals progress in their careers they are likely to either specialise or diversify, gaining appropriate skills in other professional areas such as management, education and research.

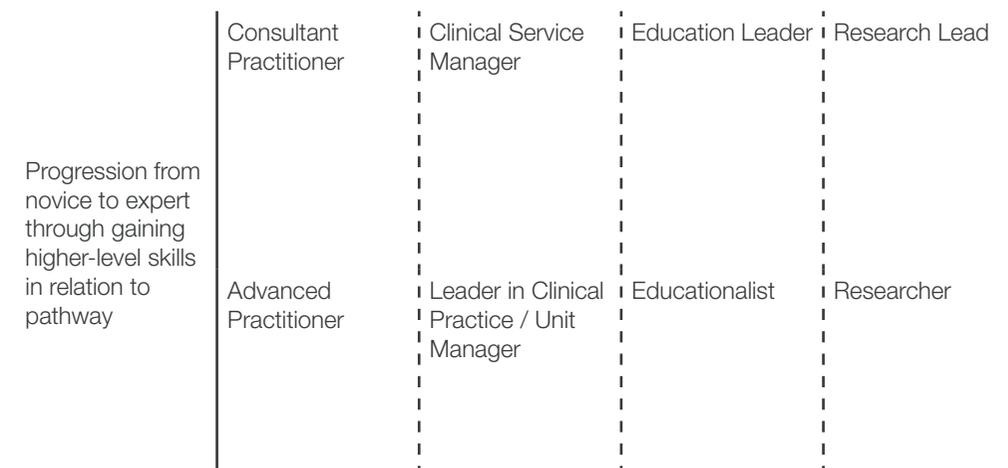
Though this framework includes general outcomes in all these areas, those whose job titles include manager, educator or researcher will be required to develop additional competencies specific to their area of practice.

As individuals progress along their chosen pathway, specific outcomes within the framework will become increasingly important, whilst other outcomes may no longer be relevant to their scope of practice.

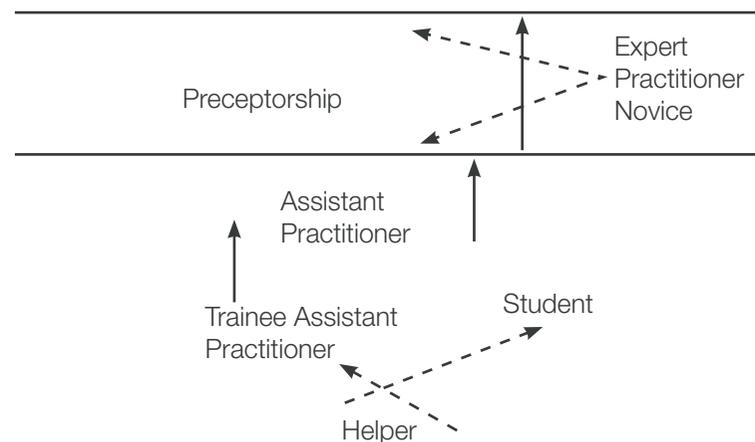
Some roles will be predominantly within clinical practice, management, education or research, whilst others will require a mixture of these skills.

There are a wide variety of job titles used within professional practice which involve different core responsibilities. It is these core responsibilities which are addressed within this framework. It is the core responsibilities that are significant, not the job title.

CAREER PATHWAYS IN CLINICAL IMAGING AND ONCOLOGY



ROLE DEVELOPMENT



Diagrams of exemplar career pathways for educators and researchers can be found on at the Supporting Learning and Research in Health and Social Care, StLaR (Strategic Learning and Research Advisory Group) <http://www.stlarh.org.uk/welcome>

Outcomes for managers

Managers will identify the appropriate clinical imaging and oncology outcomes for themselves from this framework to enable them to:

- Manage practice and service development, across the diversity of provision for which they have responsibility;
- Provide professional and clinical leadership across the range of service provision;
- Direct education, training and development across the service;
- Engage with external stakeholders in order to contribute to development of the health and social care economy.

Those with specific management roles would be expected to meet outcomes relating to the following:

- Leadership;
- Workforce development;
- Interprofessional and interagency working;
- Clinical governance;
- Patient access and choice;
- Corporate governance including staff governance;
- Performance management;
- Commissioning and development of services;
- Communication and knowledge management;
- Finance;
- Business acumen;
- Human resources.

Further detailed information can be found in *A Framework for Professional Leadership in Clinical Imaging and Radiotherapy Services* (COR, 2005)

http://www.sor.org/members/pdf/framework_pro_leader.pdf

Education and training in management is available through providers both within and outside the health and social care sector. Managers in clinical imaging and oncology would need to avail themselves of these development opportunities.

Information about the NHS Graduate Management Training Scheme can be found at: <http://www.bringingleadershiptolife.nhs.uk/>

The NHS Institute for Innovation and Improvement has a large section on leadership and training: <http://www.institute.nhs.uk/>

Outcomes for educators

In addition to the appropriate outcomes from this framework, those with specific educator roles within both academic and clinical settings would be expected to meet outcomes relating to the following:

- Attributes of an effective educator;
- Learning styles;
- Methods of teaching and learning for adult and professional learners;
- Planning, implementation and facilitation of learning;
- Methods of formative and summative assessment;
- Evaluation of the learning experience;
- Quality assurance of education;
- Curriculum planning and development;
- Interprofessional education;
- Support mechanisms for students;
- Application of results of own and others' relevant research findings to student education;
- ITC skills, including appropriate word processing and other ITC skills as relevant to education;

Practice educators would require certain of these outcomes, which are identified in *Practice Educator Accreditation Scheme* (COR, 2006)

<http://www.sor.org/public/practice-educator/pdf/practice-educator.pdf>

Education and training in education theory and practice is widely available through providers within the Higher Education sector, some programmes being specifically tailored for educators in the healthcare setting. Educators in clinical imaging and oncology would need to avail themselves of these development opportunities.

Outcomes for researchers

In addition to the appropriate outcomes from this framework, those with specific research roles would be expected to meet outcomes relating to the following:

- Research governance;
- Ethics;
- Theoretical issues, the nature of evidence and argument, and the relationships between practice, theory and criticism;
- Research methods and skills and practical techniques appropriate to specific types of project;

- Knowledge and understanding of the research context of projects and of trends in the discipline;
- Knowledge, understanding and skills in analysis and synthesis of research material;
- Knowledge and understanding of related disciplines where appropriate;
- Written communication skills appropriate for the academic context and beyond;
- Oral presentation skills, including giving research papers and discussing others' research findings;
- Designing and managing a project;
- Dissemination of research findings;
- ITC skills, including appropriate word processing and other ITC skills as relevant to the research topic;
- Bibliographical skills and contextualising practice-based research.

Education and training is available through providers within the Higher Education sector. Research Training is supported through the Research Councils UK Academic Fellowship Scheme. <http://www.rcuk.ac.uk> http://www.sor.org/members/pdf/strat_fiveyr.pdf

SECTION A

GENERIC SKILLS KNOWLEDGE AND UNDERSTANDING RELEVANT TO THE FOUR LEVELS OF PRACTICE

Skill	Illustrative content	Levels of knowledge and understanding
Care for patients, clients, users and carers	<ul style="list-style-type: none"> • Managing people; skills to liaise, collaborate and negotiate safely • Understanding and dealing sensitively with equality/diversity issues eg, gender, culture and beliefs • Patient confidentiality and consent • Legal, moral and ethical frameworks • Dealing with difficult patients • Care procedures to support patients undergoing imaging examinations and/or interventions or cancer treatments • Concepts of health and illness • Interpersonal relationships • Factors impacting on patients' perceptions • Professional relationships • Patient referral both intra- and inter-professional • Patient dignity and respect • Recognition of indications of abuse/domestic violence • Engagement of patients/clients/users in managing and evaluating care or in the provision of investigative services • Maintenance of health and wellbeing • Health promotion and advice on self care • Understand the information and psychosocial needs of patients their families and carers 	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner to implement the identified patient/disease management package, to include basic nursing care, under supervision.</p> <p>Practitioner to develop patient/disease management package in own scope of practice.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to develop specialised patient/disease management package for own area and/or across care pathway, professional and/or organisational boundaries.</p> <p>Consultant practitioner, within the area of individual practice/expertise, in addition to the above, to be accountable for the provision of patient/disease management package.</p>
Communication and interpersonal	<ul style="list-style-type: none"> • Methods for effective communication relevant to scope of practice (clear, concise and accurate both oral and written) • Managing people; skills to liaise, collaborate and negotiate safely, effectively and sensitively in a professional manner • Understanding and dealing sensitively with equality issues eg, cultural diversity • Non-oppressive and non-confrontational communication • Conflict resolution • Encourage and enable a partnership approach • Formal and informal situations; written, verbal and non-verbal presentation skills as appropriate • Group/team dynamics; eg, co-operative team-working • Interprofessional working • Information and knowledge management; how to present, manage (store and retrieve) and analyse information accurately, appropriately and efficiently • Patient confidentiality; to work in accordance with ethical and legal policies • Listening, empathic and counselling skills as appropriate • Personal integrity; open, honest, sensitive approach to the needs of others (probity issues) • Annotation and recording of interpersonal communications 	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner to provide and receive routine information orally, in writing and electronically to inform colleagues, patients and members of public.</p> <p>Practitioner to provide, receive and negotiate complex, sensitive and/or contentious information where persuasive, motivational, negotiating, training, empathic or reassurance skills are required.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to provide, receive and negotiate complex, sensitive and/or contentious information where there are significant barriers to communication. Present complex, sensitive or contentious information, share best practice to a large group of staff or to the general public.</p> <p>Consultant practitioner within the area of individual practice/expertise, to provide, receive and negotiate complex, sensitive or contentious information from employing authorities and external agencies. Present complex, sensitive or contentious information at employing authority level and to external agencies.</p>

Skill/attribute	Illustrative content	Levels of knowledge and understanding
Problem solving	<ul style="list-style-type: none"> • Problem solving processes • Understanding of the broad context of clinical imaging and oncology practice (technology, techniques and application) at the appropriate level • Planning, prioritisation, negotiation, implementation and evaluation strategies • Learning from experience • Learning to learn; recognising individual learning styles • Reasoning • Decision making • Principles of service improvement 	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner to be able to overcome routine problems within area of own practice, seeking help where necessary.</p> <p>Practitioner to be able to consistently and accurately synthesise and analyse information to overcome routine problems and achieve desired outcome within own scope of practice.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to be able to consistently and accurately synthesise and analyse complex information to achieve desirable innovative outcomes, which resolve complex problems and issues across professional and/or organisational boundaries.</p> <p>Consultant practitioner, within the area of individual practice/expertise, to be able to critically evaluate complex information in order to develop new policy and to resolve complex problems and issues contributing to national, regional, employing authority or organisational solutions to achieve desired outcomes during policy implementation.</p>

Skill/attribute	Illustrative content	Levels of knowledge and understanding
Reflection	<ul style="list-style-type: none"> • Reflection and reflective skills • Nature and models of reflection • Portfolio development • Understanding of the context of health and social care • Interaction of the broad context of clinical imaging and oncology practice (technology, techniques and application) at the appropriate level • Clinical decision-making • Self-evaluation <p>http://sor.cpdnow.net/default.aspx</p>	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner to reflect on and learn from experience within own scope of practice.</p> <p>Practitioner to reflect on and learn from research evidence and experience and apply to own and others' working practices.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to reflect on and learn from relevant research evidence, policies and legislation and apply across professional and organisational boundaries.</p> <p>Consultant practitioner, within the area of individual practice/expertise, to reflect on and learn from other practices, political, economic and social contexts and use to effect changes to service delivery.</p>

Skill/attribute	Illustrative content	Levels of knowledge and understanding
Psychomotor	<ul style="list-style-type: none"> • Clinical imaging or oncology examinations, techniques and interventions • Clinical examinations • Spatial awareness, visual precision and manual dexterity in the manipulation of equipment and accessories • Orientational awareness in patient positioning • Computer technology and keyboard skills • Complete relevant mandatory local and/or national training eg, cardio-pulmonary resuscitation, manual handling 	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner to apply, consistently and accurately, psychomotor skills developed through training and experience for identified equipment and techniques, using the necessary hand, eye and sensory co-ordination.</p> <p>Practitioner to apply highly developed psychomotor, including fine manipulation skills, with consistency and accuracy across a wide range of equipment and techniques, using the necessary hand, eye and sensory co-ordination.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to apply highly developed psychomotor, including fine manipulation skills, with consistency and accuracy, using the necessary hand, eye and sensory co-ordination.</p> <p>Consultant practitioner, within the area of individual practice/expertise, to apply highly developed psychomotor, including fine manipulation skills, with consistency and accuracy, using the necessary hand, eye and sensory co-ordination.</p>
Analytical and Clinical Judgement	<ul style="list-style-type: none"> • Evidence-based health care • Problem solving and reflection processes • Models of decision making • Planning, prioritisation, implementation and evaluation strategies • Professional self regulation • Legal and ethical frameworks • Models of clinical reasoning • Learning about learning • Learning from experience • Modelling • Critical analysis and review • Research skills • Clinical supervision, preceptorship and mentorship • Seeking appropriate advice • Making timely intra- and interprofessional referrals • Understanding self-limitations 	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner to make judgements, under supervision, involving facts or situations, some of which require limited analysis.</p> <p>Practitioner to make judgements involving a range of routine facts or situations which require analysis or comparison of a range of options.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to make judgements involving complex facts or situations which require the analysis, interpretation and comparison of a range of options and synthesis of information and with possible consequences across professional and/or organisational boundaries.</p> <p>Consultant practitioner, within the area of individual practice/expertise, to make judgements involving highly complex facts or situations which require the analysis, interpretation and comparison of a range of options and synthesis of information with consequences for the service at local regional or national level and/or organisation.</p>

Skill/attribute	Illustrative content	Levels of knowledge and understanding
Information Management and Technology (informatics)	<ul style="list-style-type: none"> • Computer technology and keyboard skills • Electronic patient records • Legal requirements relating to record keeping (data protection legislation) • Information management and retrieval systems • Data manipulation • Data interpretation • Security of data • Health informatics • Recognise, capture, evaluate and apply information • Presentation skills • Complete relevant mandatory local and/or national training eg, European Computer Driving Licence (ECDL) 	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner to record and retrieve data that has been personally generated in line with protocol and legal requirements.</p> <p>Practitioner to take responsibility for data processing and storage related to own scope of practice within an ethical and legal framework.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to generate information from stored data and to manipulate data in different formats for use across professional and/or organisational boundaries in line with relevant ethical and legal frameworks and contributing to the integration of health and social care systems.</p> <p>Consultant practitioner, within the area of individual practice/expertise, to be accountable for the design and development of information technology systems to meet service, ethical and legal specifications and to meet the needs of the integrated health and social care economy.</p>

Skill/attribute	Illustrative content	Levels of knowledge and understanding
Research and Development	<ul style="list-style-type: none"> • Sources of information and evidence • Data protection • Security of data • Patient confidentiality • Research process • Research methodologies • Understanding the reciprocal relationship between theory and practice • Clinical effectiveness • Information technology • Critical evaluation and review • Coping with uncertainty and lack of evidence • Theory arising from practice • Research methodologies and methods • Ethics • Data analysis and interpretation • Research dissemination (presentations and journals) • Report writing • Understanding and utilising research findings • Developing and implementing action plans • Understanding and accessing research funding 	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner to undertake surveys or audits relevant to own work. Occasional participation under supervision in research and development projects.</p> <p>Practitioner to be regularly involved in research and audit, publishing and presenting findings.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to be responsible for co-ordinating and implementing research and development programmes or activities as a requirement of the job, publishing and presenting at interprofessional fora.</p> <p>Consultant practitioner, within the area of individual practice/expertise, to be responsible for initiating, developing and overseeing cross-professional and/or cross-organisational research programmes and for wide dissemination of findings which may impact broadly.</p>

Skill/attribute	Illustrative content	Levels of knowledge and understanding
Planning and Organisational	<ul style="list-style-type: none"> • Synthesis of the broad context of radiography practice (technology, techniques and application) at the appropriate level • Adapting practice to different settings • Legal, moral and ethical frameworks • Protocols and guidelines • Time management • People management • Interprofessional working • self awareness and reflection • Personal, social and professional development • Developments in the structure, funding and organisation of health and social care • Change management • Health and social care policy • Policy implementation • Motivation theories • Clinical supervision • Leadership • Methods of communication • Risk management • Forecasting 	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner to organise self to undertake own day-to-day delegated work tasks or activities.</p> <p>Practitioner to plan and organise daily work and routine activities or programmes for an area of practice, some of which may be ongoing.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to plan and organise complex activities or programmes which may require the formulation and adjustment of plans or strategies for a unit, department or across a care pathway, and/or professional and/or organisational boundaries.</p> <p>Consultant practitioner, within the area of individual practice/expertise, to formulate long-term, strategic plans which involve uncertainty and which may impact broadly.</p>

Skill/attribute	Illustrative content	Levels of knowledge and understanding
Autonomy	<ul style="list-style-type: none"> • Autonomy and independence • Personal, social and professional development • The multi-professional/disciplinary team in health care • Issues of self-regulation and registration • Fitness to practice, including health, character, skills, knowledge and values • Professionalism and professional practice • Legal and ethical responsibilities • Professional standard of care including awareness of self-care • Competence • Recognition of limitations • Consultation and referral • Justification • Negligence • Clinical governance • Financial and staff governance 	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner, though not able to practise autonomously, to work to agreed protocol with a personal responsibility for reporting non-routine situations.</p> <p>Practitioner to take account of legal and ethical considerations in exercising professional self-regulation within own scope of practice, and to supervise others.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to exercise professional self-regulation taking account of limitations of self and the practice of other professional members of the multi-disciplinary team.</p> <p>Consultant practitioner, within the area of individual practice/expertise, to contribute to the development of, and ensuring adherence to, self-regulatory frameworks across the service/organisation.</p>

Skill/attribute	Illustrative content	Levels of knowledge and understanding
Human Resource Management and Teaching	<ul style="list-style-type: none"> • Challenges of pressures and constraints within health care • Managing people • Supervision skills • Coaching skills • Mentorship • Clinical supervision and preceptorship • Understanding and dealing sensitively with equality/diversity issues • Presentation skills • Using learning contracts • Continuing professional development/lifelong learning cycle • Role in the promotion of health and health education • Teaching, assessing and learning skills • Staff governance • Motivation 	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner to provide, under supervision, advice and demonstrate own activities or workplace routines to new or less experienced employees.</p> <p>Practitioner to be regularly responsible for providing training and supervision in own discipline and/or undertake workplace assessments on peers and more junior members of staff and students.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to be responsible for placement and supervision of staff and students for an area and/or within the multi-disciplinary team. Responsible for teaching and assessing on a range of subjects.</p> <p>Consultant practitioner, within the area of individual practice/expertise, to be responsible for teaching or devising training and development programmes as a major job role.</p>

Skill/attribute	Illustrative content	Levels of knowledge and understanding
Financial and Equipment Management	<ul style="list-style-type: none"> • Health and safety • Ionising Radiation Regulations 1999 • Quality control • Quality assurance • Risk management • Business planning • Cost analysis • Operations management • Principles of budget planning, control and manipulation • Current technological developments in equipment and accessories • Technology assessment • Financial governance • Planning for and procurement of new equipment 	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner to be responsible for the safe use of equipment used in own area of work.</p> <p>Practitioner to be responsible for supervising the safe use of a range of equipment.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to monitor and to contribute to the formulation of departmental equipment procurement plans and to be responsible for the purchase of some physical assets.</p> <p>Consultant practitioner, within the area of individual practice/expertise, to be responsible for physical assets for the service.</p>

Skill/attribute	Illustrative content	Levels of knowledge and understanding
Patient/client assessment	<ul style="list-style-type: none"> • Data collection strategies • Understanding of the broad context of radiography practice across the patient pathway • Communication strategies to include negotiation (patient, carers, interprofessional team members) • Patient confidentiality and consent • Legal and ethical framework of practice • Documentation of policies and procedures eg, electronic patient record systems • Clinical examination procedures • Clinical guidelines and standards 	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner to initiate the procedure to protocol after patient has been properly assessed.</p> <p>Practitioner to use a range of information to safely and effectively assess patients for the particular intervention contributing to the development of protocols and to refer, where appropriate.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to use a range of information to access care for patients with complex needs and to develop protocols for the integrated care pathway spanning professional and/or organisational boundaries.</p> <p>Consultant practitioner, where appropriate, to be accountable for development of patient assessment frameworks for the service.</p>
Team-working and inter-professional practice	<ul style="list-style-type: none"> • Organisation of health and social care • Individual and team working practices • Team dynamics and structure • Interprofessional communication and consultation • Task and role delegation • Role development including legal implications • Working effectively in collaboration with all members of the health and social care team • Workload analysis • Clinical supervision • Models of decision making • Referral • National service frameworks, care groups and collaboratives eg, for cancer and coronary care • Awareness of, and response to, change • Acknowledgement of new and developing roles 	<p>Should be sufficient to enable the:</p> <p>Assistant practitioner to understand and be part of team working practices.</p> <p>Practitioner to have a developed understanding of, and an ability to operate in, both individual and team working contexts.</p> <p>Advanced practitioner, within the area of individual practice/expertise, to be able to form and lead teams and/or regularly operate across professional and/or organisational boundaries.</p> <p>Consultant practitioner, within the area of individual practice/expertise, to be able to contribute to development and manage strategies for safe and effective interprofessional collaboration at local and national level.</p>

SECTION B

DISCIPLINE SPECIFIC KNOWLEDGE AND UNDERSTANDING TO BE ACHIEVED AT THE FOUR LEVELS OF PRACTICE CLINICAL IMAGING

Biological Sciences

Levels of knowledge and understanding	Outcomes to be achieved
<p>Assistant practitioners need to possess a knowledge and understanding of:</p> <ul style="list-style-type: none"> • The structure and function of the human body in health and disease, with particular emphasis on its demonstration on diagnostic images • Common mechanisms of injury and disease and the resultant imaging appearances in relation to their own defined area of practice • Basic radiobiological principles <p>Practitioners need to possess a thorough and detailed knowledge and understanding of:</p> <ul style="list-style-type: none"> • Human anatomy and physiology (including common variant anatomy) and its development from fetal life to old age with a particular emphasis on its demonstration on diagnostic images • Common mechanisms of injury and disease, resulting trauma and pathologies and their resultant imaging appearances • The biochemical science of radiation pathophysiology • Radiobiological principle 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Select and use appropriate terminology • Implement identified procedures under protocol • Understand the significance of the relationship between a set of medical images and the patient's medical history and presenting signs and symptoms • Ensure that they can work safely under the supervision of a registered practitioner and within relevant regulations relating to radiation protection <p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the assistant practitioner • Identify both normal and aberrant anatomy and pathophysiology on diagnostic images in routine clinical situations • Interpret the results of imaging examinations • Make informed clinical judgements regarding the adequacy of a set of medical images related to the patient's medical history and presenting signs and symptoms • Work within current legislation and regulations relating to radiation protection and apply the risk/benefit philosophy to radiation exposure to protect both individual patients and the population
<p>Levels of knowledge and understanding</p> <p>Advanced practitioners, where applicable to their particular area of practice, need to possess advanced knowledge and understanding of:</p> <ul style="list-style-type: none"> • Human anatomy and physiology (including variant anatomy) with a particular emphasis on the demonstration of anatomy and pathophysiology on diagnostic images and of strongest relevance to their specialist area of practice • Mechanisms of injury and disease, resulting trauma and pathologies and the resultant imaging appearances encountered within their specialist area of practice • The biochemical science of radiation pathophysiology • Radiobiological concepts and theories and the implications of radiation exposure within a broad range of contexts <p>Consultant practitioners will possess highly specialised and detailed knowledge and understanding within the specific area of individual practice/expertise and contribute to the generation of new theoretical and practical knowledge within their profession</p>	<p>Outcomes to be achieved</p> <p>Their level of knowledge should be sufficient to enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are outside the scope of practice of the practitioner • Report on imaging examinations in their specialist area of practice • Develop and review care packages and strategies appropriate to their specialist area of practice • Evaluate hazards and biological effects of radiations within a broad range of contexts and utilise this to underpin professional decision making and risk management in practice <p>Their particular depth and breadth of knowledge and expertise will enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the advanced practitioner • Exhibit expert clinical practice in managing complete episodes of care that lead to satisfactory patient outcomes and/or health gains • Deliver a whole-system, patient-focused, approach rooted in a multi-professional perspective • Engage in the development and advancement of innovative practice • Apply integrated knowledge and clinical governance principles to inform risk management across practice and care episodes

Physical science and technology

Levels of knowledge and understanding	Outcomes to be achieved
<p>Assistant practitioners need to possess a knowledge and understanding of:</p> <ul style="list-style-type: none"> • The fundamental principles of medical radiation generation, interaction, modification and protection (including essential coverage of the requirements defined in schedule 2 of IR(ME)R 2000). There should be a particular emphasis on those principles strongly related to their defined area of practice • The principles of radiation dose minimisation and dose limits of examinations carried out in their defined area of practice • The capability, applications and range of technological equipment used in clinical imaging, with a particular emphasis on that used in their defined area of practice • The basic principles of operation of equipment and technology used in clinical imaging in their defined area of practice 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Ensure the radiation safety of all individuals in their working environment • Comply with current European and UK legislation and regulations pertaining to the medical use of radiations • Adhere to the role of 'operator' in accordance with IR(ME)R 2000 • Carry out imaging examinations in their defined area of practice in such a way that procedures relevant to the defined area of practice are implemented safely and accurately according to protocol • Manipulate exposure and image recording parameters under protocol • Assess the technical quality of images produced within own area of practice • Use imaging technology safely and effectively under supervision and protocol • Utilise processing and related technology supporting conventional/digital based imaging • Effectively use the information technology based image acquisition, storage, retrieval and manipulation systems employed in their defined area of practice • Follow protocols effectively in the event of faults and malfunctions or deviations from normal operation and be aware of the manifestation of faults or deviations that arise in their defined area of practice
<p>Practitioners need to possess a thorough and detailed knowledge and understanding of:</p> <ul style="list-style-type: none"> • The physical principles of medical radiation generation, interaction, modification and protection (including essential coverage of the requirements defined in schedule 2 of IR(ME)R 2000) • Radiation dosimetry and radiation dose minimisation as applied to diagnostic imaging procedures and the radiation doses and dose limits of examinations carried out • The capability, applications and range of technological equipment used in clinical imaging • The principles of safe operation of equipment and technology used in clinical imaging • Current developments and trends in technology and their applications to clinical imaging 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • identify and respond to those situations that are beyond the scope of practice of the assistant practitioner • Articulate and integrate proficient radiation protection into all clinical imaging practice • Comply with current European and UK legislation and regulations pertaining to the medical use of radiations • Undertake equipment testing and quality monitoring in own area of practice • Distinguish between the prime roles described in IR(ME)R 2000 and competently perform the 'practitioner' and 'operator' and 'referrer' roles as appropriate, in accordance with IR(ME)(Amendment)R 2006 • Ensure that any dose of radiation is properly justified and will result in a positive health gain • Select imaging modalities and techniques appropriate to need • Manipulate exposure and image recording parameters to optimal effect • Assess the quality of images produced and where necessary, carry out additional projections or imaging • Evaluate technology used in clinical imaging and intervention • Use imaging technology safely and effectively to maximise diagnostic outcome and minimise radiation detriment • Utilise to best effect processing and related technology supporting conventional/digitally based imaging • Effectively use information technology-based image acquisition, storage, retrieval and manipulation systems currently available • Recognise faults and malfunctions or deviations from normal operation and the possible implications of such faults or deviations on imaging outcomes

<p>Levels of knowledge and understanding</p> <p>Advanced practitioners, where applicable to their particular area of practice, need to possess advanced knowledge and understanding of:</p> <ul style="list-style-type: none"> • The theoretical concepts and practical perspectives relating to medical radiation generation, interaction, modification and protection in their specialist area of practice (including MRI and Ultrasound where relevant) • Where relevant, radiation dosimetry and radiation dose minimisation as applied to their specialist area of practice and the radiation doses and dose limits of examinations carried out • The capability, applications and range of technological equipment used in their specialist area of practice • The principles of operation of equipment and technology used in their specialist area of practice • Current developments and trends in technology and its application to their specialist area of practice in particular and clinical imaging in general 	<p>Outcomes to be achieved</p> <p>Their level of knowledge should be sufficient to enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are outside the scope of practice of the practitioner • Take responsibility for the radiation safety of all individuals in their working environment • Develop and review imaging procedures and strategies appropriate to their specialist area of practice • Critically evaluate imaging procedures and strategies within their specialist area of practice such that they make informed professional decisions regarding patient management, care and risk management • Function as ‘operator’, ‘practitioner’ or ‘referrer’ as defined by IR(ME)R 2000 and in accordance with IR(ME)(Amendment)R 2006 • Critically evaluate technology and technological advances in their specialist area of practice (including information technology-based systems) in order to underpin professional decision making • Contribute to the planning, selection and purchase of new technology and associated facilities • Develop and apply clinical testing in the implementation of new technology and related practice development • Develop training packages and train and educate other staff in the use of technology in their specialist area of practice
<p>Levels of knowledge and understanding</p> <p>Consultant practitioners will possess highly specialised and detailed knowledge and understanding within the specific area of individual practice/expertise and contribute to the generation of new theoretical and practical knowledge, including development of new technology within their profession</p>	<p>Outcomes to be achieved</p> <p>Their particular depth and breadth of knowledge and expertise will enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the advanced practitioner • Function as ‘operator’, ‘practitioner’ or ‘referrer’ as defined by IR(ME)R 2000 and in accordance with IR(ME)(Amendment)R 2006 • Exhibit expert clinical practice in managing complete episodes of care that lead to satisfactory patient outcomes and/or health gains • Deliver a whole-system, patient-focused, approach rooted in a multi-professional perspective • Evaluate, identify gaps in and integrate the evidence base into practice such that they can exercise expert professional judgements routinely • Apply integrated knowledge and clinical governance principles to inform risk management across practice and care episodes • Manage clinical case loads effectively • Engage in the development and advancement of innovative practice, including evaluation of new technology • Play a key role in identifying the need for new equipment and associated services

Clinical sciences

Levels of knowledge and understanding	Outcomes to be achieved
<p>Assistant practitioners need to possess a knowledge and understanding of:</p> <ul style="list-style-type: none"> • The risk-benefit philosophy as applied to medical radiation exposure • The scientific basis for examinations and treatments used in their defined area of practice • The pharmacological basics of drugs commonly encountered within those imaging settings relevant to their defined area of practice and with a particular emphasis on contrast agents • The principles underpinning moving and handling • The principles underpinning emergency aid • The principles underpinning assessment, monitoring and care of the patient before, during and after examination in their defined area of practice 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Implement identified procedures under supervision and protocol • Participate effectively within the multi-disciplinary healthcare team • Collate data and information relevant to the care and management of patients in their defined area of practice • Offer the highest standards of care within their sphere of competence and in their defined area of practice • Make informed, sensitive and ethically sound judgements in relation to their involvement in those imaging procedures within their scope of practice • Apply safe and effective moving and handling skills in order to protect all individuals • Demonstrate proficiency in basic life support skills and initiate resuscitation where necessary
<p>Practitioners need to possess a thorough and detailed knowledge and understanding of:</p> <ul style="list-style-type: none"> • The risk/benefit philosophy as applied to medical radiation exposure • The scientific basis for imaging examinations and interventions • Legal basis of supply, administration and prescribing of medicines • The pharmacology of drugs commonly encountered within imaging settings with a particular emphasis on contrast agents, associated drugs and radiopharmaceuticals • The methods of administration of drugs. • The role of the diagnostic radiographer in the promotion of health, health education and health screening • Current developments and trends in the science and practice of diagnostic radiography • The principles underpinning moving and handling • The principles underpinning emergency aid • The principles underpinning assessment, monitoring and care of the patient before, during and after examination 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the assistant practitioner • Select, plan, implement, manage and evaluate imaging procedures that are appropriate to, and take account of, individuals' health status, environment and needs • Participate effectively within multi-professional health care and multi-agency teams, and in health care environments both within and beyond clinical imaging services • Analyse systematically, evaluate and act upon all data and information relevant to the care and management of the patient • Select imaging modalities and techniques appropriate to the patients' needs • Assess patients' needs and where necessary refer to other relevant health care professional • Offer the highest standards of care in both physical and psychological respects in all aspects of examinations and interventions in order to ensure effective procedures that ultimately achieve measurable health gains • Make informed, sensitive and ethically sound professional judgements in relation to imaging procedures in which they are involved • Ensure that consent given by patients to procedures is 'informed' • Apply safe and effective moving and handling skills in order to protect all individuals • Demonstrate proficiency in basic life support skills and initiate resuscitation where necessary • Safely introduce contrast agents into the body when appropriate • Within the legal framework, supply, administer and prescribe medicines

Levels of knowledge and understanding	Outcomes to be achieved
<p>Advanced practitioners, where applicable to their particular area of practice, need to possess advanced knowledge and understanding of all of the above with a particular emphasis on their specialist area of practice</p> <p>Consultant practitioners will possess highly specialised and detailed knowledge and understanding within the specific area of individual practice/expertise and contribute to the generation of new theoretical and practical knowledge within their profession</p>	<p>Their level of knowledge should be sufficient to enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the practitioner, particularly in complex and/or unusual clinical scenarios • Actively engage in multi-professional health care and multi-agency teams, and in health care environments both within and beyond clinical imaging services • Develop, implement and review care packages and strategies appropriate to their specialist area of practice • Critically evaluate care packages and strategies in their specialist area of practice in order to underpin professional decision making • Train and educate other staff in relevant clinical aspects of their specialist area of practice • Within the legal framework, supply, administer and prescribe medicines <p>Their particular depth and breadth of knowledge and expertise will enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the advanced practitioner • Exhibit expert clinical practice in managing complete episodes of care that lead to satisfactory patient outcomes and/or health gains • Deliver a whole-system, patient-focused, approach rooted in a multi-professional perspective • Work interprofessionally and across professional/organisational boundaries • Manage case loads effectively • Engage in the development and advancement of innovative practice • Be accountable for care and clinical governance issues for their practice and sphere of influence • Evaluate, identify gaps in, and integrate the evidence base into practice such that they can exercise expert professional judgements routinely • Within the legal framework, supply, administer and prescribe medicines

Applications and techniques

Levels of knowledge and understanding	Outcomes to be achieved
<p>Assistant practitioners need to possess a knowledge and understanding of:</p> <ul style="list-style-type: none"> • The basic principles underpinning the range of techniques and applications encountered in their defined area of practice within the imaging setting <p>Practitioners, taking into consideration different client groups, need to possess:</p> <ul style="list-style-type: none"> • A thorough and detailed knowledge and understanding of the principles and concepts underpinning the broad range of applications and techniques used for imaging. This will include projections and examinations of appendicular and axial skeleton; projections of chest, abdomen and soft tissue structures (including mammography); standard contrast agent examinations (including IVU and GI tract); fluoroscopy; mobile radiography; operating theatres; dental radiography; computed tomography • A knowledge and understanding of the principles and concepts underpinning magnetic resonance, nuclear medicine, ultrasound, positron emission tomography, forensic, lithotripsy, bone densitometry, invasive and interventional procedures • A knowledge and understanding of how current trends and developments are influencing applications and techniques in clinical imaging 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Participate in procedures within their defined area of practice safely and accurately under protocol, and under the supervision of registered practitioners <p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the assistant practitioner • Perform the full range of plain film and standard contrast agent examinations, including those requiring to be undertaken on patients suffering from acute trauma, and where the patient's medical, physical or mental health needs require examinations to be carried out in non-standard imaging environments • Manage and assist with fluoroscopic and complex contrast agent procedures • Undertake computed tomographic examinations of the head, neck, chest and abdomen in acute trauma cases, and contribute effectively to other computed tomographic studies • Evaluate imaging modalities, applications and techniques such that they are able to make informed professional judgements in relation to imaging and intervention procedures • Advise appropriately other health care professionals about the relevance and application of other imaging modalities to the patient's needs

Levels of knowledge and understanding	Outcomes to be achieved
<p>Advanced practitioners, where applicable to their particular area of practice, need to possess advanced knowledge and understanding of:</p> <ul style="list-style-type: none"> • Theoretical and practical perspectives relating to the applications and techniques used within the clinical imaging setting in general and their specialist area of practice in particular • Current trends and developments in applications and techniques used within clinical imaging in general and their specialist area of practice in particular <p>Consultant practitioners will possess highly specialised and detailed knowledge and understanding within the specific area of individual practice/expertise and contribute to the generation of new theoretical and practical knowledge within their profession</p>	<p>Their level of knowledge should be sufficient to enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the practitioner, particularly in complex and/or unusual scenarios • Perform imaging examinations and interventions in those environments and/or using those modalities normally beyond the scope of the practitioner as outlined above • Develop, implement and review applications and techniques appropriate to their specialist area of practice • Critically evaluate applications and techniques used in their specialist area of practice in order to underpin professional decision making • Train and educate other staff in those applications and techniques encountered in their specialist area of practice • Participate in peer review of their specialist area of practice <p>Their particular depth and breadth of knowledge and expertise will enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the advanced practitioner • Exhibit expert clinical practice in managing complete episodes of care that lead to satisfactory patient outcomes and/or health gains • Deliver a whole-system, patient-focused, approach rooted in a multiprofessional perspective • Work interprofessionally and across professional/organisational boundaries • Manage case loads effectively • Engage in the development and advancement of innovative practice • Be accountable for care • Evaluate, identify gaps in, and integrate the evidence base into, practice such that they can exercise expert professional judgements routinely

Behavioural and communication sciences

Levels of knowledge and understanding	Outcomes to be achieved
<p>Assistant practitioners need to possess a knowledge and understanding of:</p> <ul style="list-style-type: none"> • The basic principles of psychological, sociological and cultural factors relevant to health care, clinical imaging in general and their defined area of practice in particular • The impact of these factors on the care of those patients encountered within their defined area of practice • The principles and concepts relating to communication and teamwork <p>Practitioners need to possess a thorough and detailed knowledge and understanding of:</p> <ul style="list-style-type: none"> • Psychological, sociological and cultural factors, and their relevance and impact upon the management and care of patients undergoing imaging procedures and interventions • The dynamics of health, illness and healthcare in general • The principles and concepts relating to communication and teamwork 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Care effectively for patients and their carers with due regard for human dignity, personal values, ethics, religion, cultural, ethnic and other diversity • Be aware of the psychology of illness, anxiety and uncertainty and likely behaviour of patients (and carers) routinely encountered within their defined area of practice • Apply effective interpersonal, communication and listening skills to routine situations within the scope of their practice • Communicate and collaborate inter and intra-professionally in written and oral formats to ensure that identified procedures are implemented appropriately under protocol • Use information technology skills to support their practice as appropriate and respond to developments in information technology <p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the assistant practitioner • Care effectively for patients and their carers with due regard for human dignity, personal values, ethics, religion, cultural, ethnic and other diversity, ensuring equality • Be aware of and respond to the psychology of illness, anxiety and uncertainty and the likely behaviour of patients undergoing imaging procedures, as well as that of their carers • Exercise highly developed interpersonal, communication and listening skills • Provide support and information to patients and their carers in a timely, appropriate and sensitive manner • Ensure that consent given by patients to procedures is 'informed' • Communicate and collaborate inter and intra-professionally in written, oral and presentation formats to ensure that patients receive high quality and continuing care • Evaluate and modify their own communication style appropriately according to the needs of the situation • Use information technology to support practice as appropriate and respond to developments in information technology • Supervise and effectively mentor students, assistant practitioners and less experienced staff

Levels of knowledge and understanding	Outcomes to be achieved
<p>Advanced practitioners, where applicable to their particular area of practice, need to possess advanced knowledge and understanding of:</p> <ul style="list-style-type: none"> • psychological, sociological and cultural factors and their relevance and impact upon the management and care of patients undergoing imaging procedures and interventions, with a particular emphasis on their own specialist area of practice • the philosophies and dynamics of health, illness and healthcare in general • theoretical and practical perspectives relating to complex and/or contentious communication and teamwork issues <p>Consultant practitioners will possess highly specialised and detailed knowledge and understanding within the specific area of individual practice/expertise and contribute to the generation of new theoretical and practical knowledge within their profession</p>	<p>Their level of knowledge should be sufficient to enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the practitioner • Develop, implement and review care packages and strategies appropriate to their specialist area of practice • Critically evaluate care packages and strategies in their specialist area of practice in order to underpin professional decision making • Demonstrate effective clinical supervision, teaching and team leadership in their specialist area of practice • Participate in peer review of their specialist area of practice • Disseminate knowledge and best practice widely through lectures, publications, posters and other appropriate mechanisms <p>Their particular depth and breadth of knowledge and expertise will enable them, where appropriate, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the advanced practitioner • Exhibit expert clinical practice in managing complete episodes of care that lead to satisfactory patient outcomes and/or health gains • Deliver a whole-system, patient-focused, approach rooted in a multiprofessional perspective • Work interprofessionally and across professional/organisational boundaries • Exhibit excellent interpersonal skills in the clinical environment and demonstrate inspirational personal characteristics • Exercise effective professional, clinical and team leadership within their discipline and, where necessary, across professional/organisational boundaries • Contribute to and promote the education, training and continuing professional development of other staff and students including other staff groups • Lead dissemination of knowledge and best practice

Legislative, policy, ethical and research dimensions

Levels of knowledge and understanding	Outcomes to be achieved
<p>Assistant practitioners need to possess a knowledge and understanding of:</p> <ul style="list-style-type: none"> • The legislative, ethical and policy frameworks that underpin, inform and influence clinical imaging in general and their defined area of practice in particular. Within the area of individual practice/ expertise, particular emphasis should be placed on the legislation relating to the use of radiations within the clinical imaging setting • The quality assurance processes and systems in place within their area of practice and their relationship to current legislation <p>Practitioners need to possess a thorough and detailed knowledge and understanding of:</p> <ul style="list-style-type: none"> • The legislative, policy and ethical frameworks that underpin, inform and influence the practice of diagnostic radiographers. Particular emphasis should be placed on the legislation relating to the use of radiations within the clinical imaging setting • Developments and trends in legislation and health and social care policy, with a focus on issues of particular relevance to clinical imaging services • The quality assurance processes and systems in place and their relationship to current legislation • The research process, research methodologies, and the principles of audit 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Practise legally and ethically in all circumstances within their scope of practice • Demonstrate personal responsibility in all circumstances • Practise within local and national frameworks relating to their conduct • Participate actively, under protocol, in quality assurance procedures and quality management systems • Recognise and respond appropriately to their personal strengths and limitations in knowledge and competence <p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the assistant practitioner • Practise legally, ethically and professionally in all circumstances • Evaluate legal, ethical and professional issues and contribute towards the development of existing and evolving frameworks relevant to the profession • Demonstrate personal accountability and appreciate the significance of professional regulation and responsibility • Practise within the framework set out by the Society and College of Radiographers' Statements for Professional Conduct (2002), and the Health Professions Council's Standards of Conduct, Performance and Ethics (2003) • Participate actively in and evaluate the effectiveness of quality assurance procedures and relevant quality management systems • Engage in research and development • Interpret and evaluate the results of research and audit such that it informs and impacts positively on their practice • Recognise and respond appropriately to personal strengths and limitations in knowledge and competence

Levels of knowledge and understanding	Outcomes to be achieved
<p>Advanced practitioners, where applicable to their particular area of practice, need to possess advanced knowledge and understanding of:</p> <ul style="list-style-type: none"> • The legislative, policy, ethical and research frameworks that underpin, inform and influence clinical imaging in general and their specialist area of practice in particular • Developments and trends in legislation and health and social care policy, with a focus on issues of particular relevance to their own specialist area of practice • The quality assurance processes and systems in place and their relationship to current legislation • The research process, research methodologies, and audit 	<p>Their level of knowledge should be sufficient to enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the practitioner • Take responsibility for ensuring that all those working within their specialist area practise legally, ethically and professionally in all circumstances and within an evidence-based framework • Interpret and translate relevant legal, ethical and professional frameworks in the development, implementation and review of evidence-based care packages and strategies within their specialist area of practice • Interpret and critically evaluate legal, ethical and professional issues and the evidence base underpinning their specialist area of practice to inform professional decision making • Demonstrate accountability and promote professional self-regulation and responsibility within the profession • Critically evaluate the effectiveness of quality assurance procedures and quality management systems in their specialist area of practice • Actively engage in research and development in order to contribute to the evidence base of their field

Levels of knowledge and understanding	Outcomes to be achieved
<p>Consultant practitioners will possess highly specialised and detailed knowledge and understanding within the specific area of individual practice/expertise and contribute to the generation of new theoretical and practical knowledge within their profession</p>	<p>Their particular depth and breadth of knowledge and expertise will enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • identify and respond to those situations that are beyond the scope of practice of the advanced practitioner • challenge current legal, ethical and professional frameworks, within the area of individual practice/expertise, in order to identify professional and or organisation barriers that limit and or inhibit services • lead and collaborate on the development, implementation and review of protocols of care and patient care pathways • process complex, sensitive or contentious legal, ethical and policy issues in order to develop and implement strategic plans (including relevant national policies) which will drive change within their discipline and across the healthcare organisation • provide expert input into their organisation's quality strategy, including influencing and delivering clinical governance • be accountable for care and responsible for ensuring that legal, ethical and professional dimensions of practice are adhered to • evaluate, identify gaps in, and integrate the evidence base into practice through an advanced level of clinical reasoning and decision making • initiate and lead research and audit and disseminate the outcomes in order that they enhance the evidence base and impact beyond their local health care economy

SECTION C

DISCIPLINE SPECIFIC KNOWLEDGE AND UNDERSTANDING TO BE ACHIEVED AT THE FOUR LEVELS OF PRACTICE ONCOLOGY

Biological sciences

Levels of knowledge and understanding	Outcomes to be achieved
<p>Assistant practitioners need to possess a knowledge and understanding of:</p> <ul style="list-style-type: none">• The structure and function of the human body in health and disease with a particular emphasis on those body systems commonly encountered in their defined area of practice• Basic pathophysiological processes in relation to oncology• The radiobiological principles on which the practice of radiotherapy is based <p>Practitioners need to possess a thorough and detailed knowledge and understanding of:</p> <ul style="list-style-type: none">• The structure and function of the human body in health and disease, with particular emphasis on regional and cross-sectional anatomy of the head and trunk, histology, haematology and the lymphatic and immune systems• Concurrent and common pathologies and mechanisms of disease• The biochemical science of radiation pathophysiology• The radiobiological principles on which the practice of radiotherapy is based	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none">• Select and use appropriate terminology• Understand the significance of the relationship between anatomy, physiology, the malignant disease process and defined radiotherapeutic applications• Implement identified pre-treatment / treatment procedures under protocol• Ensure that they can work safely under the supervision of registered practitioners and within relevant legal and professional frameworks.• Apply their knowledge of hazards and biological effects of radiations to their practice within a risk-benefit philosophy and work within current legislation and regulations relating to radiation protection <p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none">• Identify and respond to those situations that are beyond the scope of practice of the assistant practitioner• Relate anatomy and pathophysiology to malignant disease processes and cancer management• Recognise and respond to both normal and aberrant anatomy and pathophysiology in routine clinical situations• Select, plan, implement, manage and evaluate care packages that account for individuals' health status, environment and needs• Apply their knowledge of hazards and biological effects of radiations to their practice within a risk-benefit philosophy and work within current legislation and regulations relating to radiation protection• Participate in the development and advancement of practice

Levels of knowledge and understanding	Outcomes to be achieved
<p>Advanced practitioners, where applicable to their particular area of practice, need to possess advanced knowledge and understanding of:</p> <ul style="list-style-type: none"> • The structure and function of the human body in health and disease, with particular emphasis on anatomy and pathophysiology of strongest relevance to their specialist area of practice • The range of pathologies encountered within their specialist area of practice and associated mechanisms of disease • The biochemical science of radiation pathophysiology • Radiobiological concepts and theories and the implications of radiation exposure within a broad range of contexts <p>Consultant practitioners will possess highly specialised and detailed knowledge and understanding within the specific area of individual practice/expertise and contribute to the generation of new theoretical and practical knowledge within their profession</p>	<p>Their level of knowledge should be sufficient to enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the practitioner • Develop and review care packages and strategies appropriate to their specialist area of practice • Evaluate hazards and biological effects of radiations within a broad range of contexts and utilise this to underpin professional decision-making and risk management in practice • Contribute to the development and advancement of innovative practice <p>Their particular depth and breadth of knowledge and expertise will enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the advanced practitioner • Exhibit expert clinical practice in managing pathways of care that lead to optimum patient outcomes and/or health gains • Deliver a whole-system, patient-focused, approach rooted in a multi-professional perspective • Lead the development and advancement of innovative practice • Apply integrated knowledge and clinical governance principles to inform risk management across practice and care episodes

Physical science and technology

Levels of knowledge and understanding	Outcomes to be achieved
<p>Assistant practitioners need to possess a knowledge and understanding of:</p> <ul style="list-style-type: none"> • The fundamental principles of medical radiation generation, interaction, modification and protection (including essential coverage of the requirements defined in schedule 2 of IR(ME)R 2000). There should be a particular emphasis on those principles strongly related to their defined area of practice • Radiation dosimetry and the principles of simple dose calculation systems used within radiotherapy in accordance with departmental protocol • The principles of radiation dose minimisation and dose limits of examinations carried out in their defined area of practice • The capability, applications and range of technological equipment used in radiotherapy, with a particular emphasis on that used in their defined area of practice • The basic principles of safe operation of equipment and technology used in the radiotherapy process, with a particular emphasis on that used in their defined area of practice 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Adhere to the role of 'operator' in accordance with IR(ME)R 2000 and IR(ME)(Amendment)R 2006 • Ensure the radiation safety of all individuals in their working environment • Interpret the radiation prescription and treatment plan in such a way that procedures relevant to the defined area of practice are implemented safely and accurately under protocol • Generate simple radiation dose delivery calculations relevant to their defined area of practice • Undertake equipment testing and quality monitoring according to protocol • Effectively operate radiotherapy and relevant imaging and dose monitoring equipment under supervision and in their defined area of practice to ensure safety and accuracy • Effectively use the currently available information technology-based systems employed in their defined area of practice • Follow protocols effectively in the event of faults and malfunctions or deviations from normal operation and be aware of the possible implications of such faults or deviations on treatment delivery and patient safety

Levels of knowledge and understanding	Outcomes to be achieved
<p>Practitioners need to possess a thorough and detailed knowledge and understanding of:</p> <ul style="list-style-type: none"> • The physical principles of medical radiation generation, interaction, modification and protection (including essential coverage of the requirements defined in schedule 2 of IR(ME)R 2000) • Radiation dosimetry and the principles of dose calculation systems used within radiotherapy, including multidimensional computer modelling • Principles of radiation dose minimisation and dose units of examinations • The capability, applications and range of technological equipment used in radiotherapy • The principles of safe operation of equipment and technology used in the radiotherapy process • Current developments and trends in technology and its applications to radiotherapy 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the assistant practitioner • Distinguish between the prime roles described in IR(ME)R 2000 and competently perform the ‘practitioner’ , ‘operator’ and “referrer” roles, as appropriate, in accordance with IR(ME)(Amendment)R 2006 • Ensure the radiation safety of all individuals in their working environment • Undertake and evaluate radiation dose delivery calculations involving a range of radiation types and energies • Undertake equipment testing and quality monitoring in own area of practice • Generate a treatment plan and evaluate its accuracy, effectiveness and appropriateness in terms of the delivery of the optimal radiation prescription and with regard to practicality and patient compliance • Interpret, monitor and evaluate the radiation prescription in its broadest context in such a way that radiotherapy is delivered accurately and reproducibly • Manipulate exposure and image recording parameters to optimal effect for both pre-treatment and treatment imaging procedures • Evaluate treatment and imaging modalities in relation to ensuring appropriateness to need • Evaluate the contribution of advances in technology to developments in the management and treatment of malignant disease • Effectively operate radiotherapy and dose monitoring equipment to ensure safety, accuracy and efficient usage • Generate and evaluate clinically appropriate treatment plans • Evaluate delivery of radiotherapy through application and interpretation of treatment verification procedures • Use imaging technology safely and effectively to maximise treatment- related decisions and minimise radiation detriment • Effectively use the currently available information technology based systems employed in the radiotherapy process • Recognise faults and malfunctions or deviations from normal operation and the possible implications of such faults or deviations on treatment delivery

Levels of knowledge and understanding	Outcomes to be achieved
<p>Advanced practitioners, where applicable to their particular area of practice, need to possess advanced knowledge and understanding of:</p> <ul style="list-style-type: none"> • The theoretical concepts and practical perspectives relating to radiation generation, interaction, modification and protection in their specialist area of practice • Radiation dosimetry and the principles of dose calculation systems used within radiotherapy, including multidimensional computer modelling • Radiation fractionation and radiobiological effect • The principles of radiation dosimetry • The capability, applications and range of technological equipment used in their specialist area of practice • The principles of operation of equipment and technology used in their specialist area of practice • Current developments and trends in technology and its application to their specialist area of practice in particular and radiotherapy in general 	<p>Their level of knowledge should be sufficient to enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the practitioner • Take responsibility for the radiation safety of all individuals in their working environment • Function as ‘operator’, ‘practitioner’ or ‘referrer’ as defined by IR(ME)R 2000 and in accordance with IR(ME)(Amendment)R 2006 • Develop and review pre-treatment and/or treatment procedures and strategies appropriate to their specialist area of practice • Critically evaluate pre-treatment and/or treatment procedures and strategies within their specialist area of practice such that they make informed professional decisions regarding patient management, care and risk management • Generate a complex treatment plan and assess for use • Develop and review pre-treatment and/or treatment procedures and strategies appropriate to their specialist area of practice • Evaluate delivery of radiotherapy through application and interpretation of treatment verification procedures • Use imaging technology safely and effectively to maximise treatment related decisions and minimise radiation detriment • Critically evaluate technology and technological advances in their specialist area of practice (including information technology based systems) in order to underpin professional decision making • Contribute to the planning, selection and purchase of new technology and associated facilities • Contribute to and apply clinical testing in the implementation of new technology and related practice development • Contribute to training packages and train and educate other staff in the use of technology in their specialist area of practice

Levels of knowledge and understanding	Outcomes to be achieved
<p>Consultant practitioners will possess highly specialised and detailed knowledge and understanding of all the above within the specific area of individual practice/expertise and contribute to the generation of new theoretical and practical knowledge, including development of new technology, within their profession</p>	<p>Their particular depth and breadth of knowledge and expertise will enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the advanced practitioner • Function as ‘operator’, ‘practitioner’ or ‘referrer’ as defined by IR(ME)R 2000 and in accordance with IR(ME)(Amendment)R 2006 • Exhibit expert clinical practice in managing complete episodes of care that lead to satisfactory patient outcomes and/or health gains • Deliver a whole-system, patient-focused, approach rooted in a multi-professional perspective • Lead in the development and advancement of innovative practice • Evaluate, identify gaps in and integrate the evidence-base into practice such that they can routinely exercise expert professional judgements • Apply integrated knowledge and clinical governance principles to inform risk management across practice and care episodes • Manage clinical case loads effectively • Lead in the development and advancement of innovative practice, including evaluation of new technology • Identify and create strategies for new equipment and associated services

Clinical sciences

Levels of knowledge and understanding	Outcomes to be achieved
<p>Assistant practitioners need to possess a knowledge and understanding of:</p> <ul style="list-style-type: none"> • The risk/benefit principles involved in radiotherapy • Oncology, the pathophysiology of those common solid and systemic malignancies and the management of cancers routinely encountered in their defined area of practice • The pharmacological basics of those drugs routinely used in their defined area of practice • The principles of health and safety related to the radiotherapy environment • The principles underpinning assessment, monitoring and care of the patient before, during and after irradiation in their defined area of practice 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Implement identified pre-treatment / treatment procedures under protocol • Ensure that consent has been given by the patient • Participate effectively within the multi-disciplinary healthcare team • Collate data and information relevant to the care and management of individuals in their area of practice • Offer the highest standards of care within their sphere of competence and in their defined area of practice • Make sound judgements in relation to their involvement in the radiotherapy process • Apply safe and effective moving and handling skills in order to protect all individuals • Demonstrate proficiency in basic life support skills and initiate resuscitation where necessary
<p>Practitioners need to possess a thorough and detailed knowledge and understanding of:</p> <ul style="list-style-type: none"> • The risk/benefit philosophy and principles involved in radiotherapy and multimodality therapies • Oncology, the pathophysiology of solid and systemic malignancies, epidemiology, aetiology, and the management and impact of cancer • The pharmacology of drugs used in the relief of symptoms commonly encountered within the oncology setting, cytotoxic drugs, hormonal agents, imaging contrast agents and radiopharmaceuticals • The methods of administration of drugs • The role of the therapeutic radiographer in the promotion of health and health education in relation to cancer prevention and treatment and to the care pathway • Current developments and trends in cancer management and therapy • The principles underpinning assessment, monitoring and care of the patient before, during and after irradiation • Complementary therapies 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the assistant practitioner • Select, plan, implement, manage and evaluate care packages that account for individuals' health status, environment and needs • Participate effectively in interprofessional approaches to oncology management • Analyse systematically and evaluate all data and information relevant to the care and management of individuals and groups in order to ensure the most appropriate management • Evaluate and schedule clinical workloads with regard to patient needs and resources • Offer the highest standards of care in both physical and psychological respects at all stages of the radiotherapy process in order to ensure effective procedures that ultimately achieve therapeutic health gains • Make informed, sensitive and ethically sound professional judgements in relation to each part of the radiotherapy process in which they are involved • Anticipate, identify and actively manage common and complex treatment related side effects • Ensure that consent given by patients to procedures is 'informed' • Apply safe and effective moving and handling skills in order to protect all individuals • Demonstrate proficiency in basic life support skills and initiate resuscitation where necessary • Safely introduce contrast agents into the body when appropriate • Within the legal framework, supply, administer and prescribe medicines • Assess patients' needs and, where necessary, refer to relevant health care professionals

Applications and techniques

Levels of knowledge and understanding	Outcomes to be achieved
<p>Assistant practitioners need to possess a knowledge and understanding of:</p> <ul style="list-style-type: none"> • The basic principles underpinning the range of treatment techniques and applications encountered within the radiotherapy setting with a particular focus on techniques applied within their defined area of practice <p>Practitioners, taking into consideration different client groups, need to possess:</p> <ul style="list-style-type: none"> • A thorough and detailed knowledge and understanding of the principles and concepts underpinning the broad range of applications and techniques used to plan, treat, verify and evaluate malignancies and other diseases encountered within the oncology setting. This will include pre-treatment imaging, dosimetry, external beam radiotherapy, brachytherapy, radionuclide therapy and verification, to encompass emerging techniques and technology • A knowledge and understanding of the principles and concepts underpinning more specialist applications and techniques to encompass emerging techniques and technology • Knowledge and understanding of the influence of current trends and developments on applications and techniques in radiotherapy individuals' health status, environment and needs 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Participate in pre-treatment and treatment procedures within their defined area of practice safely and accurately under protocol, and under the supervision of a registered practitioner <p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the assistant practitioner • Select, plan, implement, manage and evaluate pre-treatment, treatment, on treatment (offline, on-line real time image review) and post-treatment procedures and care safely and accurately and in such a way that they take account of individuals' health status, environment and needs • Evaluate applications and techniques such that they are able to make informed professional judgements in relation to each part of the radiotherapy process in which they are involved • Advise other professionals about suitability of various applications and techniques to individual patients with regard to needs and compliance
<p>Levels of knowledge and understanding</p> <p>Advanced practitioners, where applicable to their particular area of practice, need to possess advanced knowledge and understanding of:</p> <ul style="list-style-type: none"> • Theoretical and practical perspectives relating to the applications and techniques used within the oncology setting in general and their specialist area of practice in particular • Current trends and developments in applications and techniques used within the oncology setting in general and their specialist area of practice in particular <p>Consultant practitioners will possess highly specialised and detailed knowledge and understanding within the specific area of individual practice/expertise and contribute to the generation of new theoretical and practical knowledge within their profession</p>	<p>Outcomes to be achieved</p> <p>Their level of knowledge should be sufficient to enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the practitioner, particularly in complex and/or unusual scenarios • Actively engage in interprofessional approaches to oncology management • Develop, implement and review applications and techniques appropriate to their specialist area of practice • Critically evaluate applications and techniques used in their specialist area of practice in order to underpin professional decision making • Train and educate other staff in those applications and techniques encountered in their specialist area of practice • Advise others on the appropriate applications and techniques in relation to their specialist area of practice <p>Their particular depth and breadth of knowledge and expertise will enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the advanced practitioner • Exhibit expert clinical practice in managing pathways of care that lead to the optimum patient outcomes and/or health gains • Deliver a whole-system, patient focused, approach rooted in a multiprofessional perspective • Work interprofessionally and across professional/organisational boundaries • Manage case loads effectively • Engage in the development and advancement of innovative practice • Be accountable for care and clinical governance issues for their practice and sphere of influence • Evaluate, identify gaps in and integrate the evidence base into practice such that they can routinely exercise expert professional judgements

Behavioural and communication sciences

Levels of knowledge and understanding	Outcomes to be achieved
<p>Assistant practitioners need to possess a knowledge and understanding of:</p> <ul style="list-style-type: none"> • The basic principles of psychological, sociological and cultural factors relevant to health care in general and the oncology setting in particular • The impact of these factors on the care of those patients encountered within their defined area of practice • The principles and concepts relating to effective communication and teamwork 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Care effectively for patients and their carers with due regard for human dignity, personal values, religious, cultural, ethnic and other diversity • Identify the impact that cancer and its treatment may have upon the physical and psychological needs of patients • Recognise the more explicit psychosocial needs of patients, their relatives and carers • Apply effective interpersonal, communication and listening skills to routine situations within the scope of their practice and teamwork • Communicate and collaborate inter- and intra-professionally in written and oral formats to ensure that care packages are implemented appropriately under protocol • Use information technology skills to support their practice as appropriate
<p>Practitioners need to possess a thorough and detailed knowledge and understanding of:</p> <ul style="list-style-type: none"> • Psychological, sociological and cultural factors, and their relevance and impact upon the management and care of patients with cancer and undergoing cancer treatment, particularly radiotherapy • The philosophies and dynamics of health, illness and healthcare in general • The principles and concepts relating to communication (including basic counselling skills) and teamwork 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the assistant practitioner • Care effectively for patients and their carers with due regard for human dignity, personal values, ethical, religious, cultural, ethnic and other diversity so as to ensure equality • Identify, assess and forward plan for the impact that cancer and its treatment may have upon the physical and psychological needs of patients • Recognise, monitor and respond to the psychosocial needs of patients, their relatives and carers before, during and after radiotherapy • Exercise highly developed interpersonal, communication and listening skills • Provide support and information to patients and their carers in a timely, appropriate and sensitive manner • Ensure that consent given by patients to procedures is 'informed' • Communicate and collaborate inter and intra-professionally in written, oral and presentation formats to ensure that patients receive high quality and continuing care • Evaluate and modify their own communication style appropriately according to the needs of the situation • Use information technology to support practice as appropriate and respond to developments in information technology • Train, assess, supervise and effectively mentor students, assistant practitioners and other less experienced staff • Support the development of the team • Manage case loads effectively • Engage in the development and advancement of innovative practice • Be accountable for care and clinical governance issues for their practice and sphere of influence • Evaluate, identify gaps in and integrate the evidence base into practice such that they can exercise expert professional judgements routinely

Levels of knowledge and understanding	Outcomes to be achieved
<p>Advanced practitioners, where applicable to their particular area of practice, need to possess advanced knowledge and understanding of:</p> <ul style="list-style-type: none"> • Psychological, sociological and cultural factors, and their relevance and impact upon the management and care of patients with cancer and undergoing cancer treatment, with a particular emphasis on their own specialist area of practice • The philosophies and dynamics of health, illness and healthcare in general with particular emphasis on oncology services and care pathway mechanisms • Theoretical and practical perspectives relating to complex and/or contentious communication and teamwork issues <p>Consultant practitioners will possess highly specialised and detailed knowledge and understanding within the specific area of individual practice/expertise and contribute to the generation of new theoretical and practical knowledge within their profession</p>	<p>Their level of knowledge should be sufficient to enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the practitioner • Develop, implement and review care packages and strategies appropriate to their specialist area of practice • Critically evaluate care packages and strategies in their specialist area of practice in order to underpin professional decision making • Demonstrate effective clinical supervision, teaching and team leadership in their specialist area of practice • Participate in peer review of their specialist area of practice • Disseminate knowledge and best practice widely through lectures, publications, posters and other appropriate mechanisms <p>Their particular depth and breadth of knowledge and expertise will enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the advanced practitioner • Exhibit expert clinical practice in managing complete episodes of care that lead to satisfactory patient outcomes and/or health gains • Deliver a whole-system, patient-focused, approach rooted in a multi-professional perspective • Work interprofessionally and across professional/organisational boundaries • Exhibit excellent interpersonal skills in the clinical environment and demonstrate inspirational personal characteristics • Exercise effective professional, clinical and team leadership within their discipline and, where necessary, across professional/organisational boundaries • Contribute to and promote the education, training and continuing professional development of other staff and students, including other staff groups • Lead dissemination of knowledge and best practice

Legislative, policy, ethical and research dimensions

Levels of knowledge and understanding	Outcomes to be achieved
<p>Assistant practitioners need to possess a knowledge and understanding of:</p> <ul style="list-style-type: none"> • The legislative, ethical and policy frameworks that underpin, inform and influence radiotherapy practice. Particular emphasis should be placed on the legislation relating to the use of ionising radiation within the oncology setting • The quality assurance processes and systems in place within their area of practice and their relationship to current legislation <p>Practitioners need to possess a thorough and detailed knowledge and understanding of:</p> <ul style="list-style-type: none"> • The legislative, policy, ethical and research frameworks that underpin, inform and influence the practice of therapeutic radiographers. Particular emphasis should be placed on the legislation relating to the use of ionising radiation within the radiotherapy and oncology setting • Developments and trends in legislation and health and social care policy, with a focus on issues of particular relevance to radiotherapy and oncology services • The quality assurance processes and systems in place and their relationship to current legislation • The research process and research methodologies, and the principles of audit 	<p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Practise legally and ethically in all circumstances within their scope of practice • Demonstrate personal responsibility in all circumstances • Practise within local and national frameworks relating to their conduct • Participate actively, under protocol, in quality assurance procedures and radiotherapy quality management systems • Recognise and respond appropriately to their personal strengths and limitations in knowledge and competence <p>Their level of knowledge should be sufficient to enable them to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the assistant practitioner • Practise legally, ethically and professionally in all circumstances and within an evidence based framework • Evaluate legal, ethical and professional issues and contribute towards the development of existing and evolving frameworks relevant to the profession • Demonstrate personal accountability and appreciate the significance of professional regulation and responsibility • Practise within the framework set out by the Society and College of Radiographers' Statements for Professional Conduct (2002), and the Health Professions Council's Standards of Conduct, Performance and Ethics (2003) • Participate actively in, and evaluate the effectiveness of, quality assurance procedures and radiotherapy quality management systems • Engage in research and development • Interpret and evaluate the results of research and audit such that it informs and impacts positively on their practice • Recognise and respond appropriately to their personal strengths and limitations in knowledge and competence

Levels of knowledge and understanding	Outcomes to be achieved
<p>Advanced practitioners, where applicable to their particular area of practice, need to possess advanced knowledge and understanding of:</p> <ul style="list-style-type: none"> • The legislative, policy, ethical and research frameworks that underpin, inform and influence cancer therapy in general and their specialist area of practice in particular • Developments and trends in legislation and health and social care policy, with a focus on issues of particular relevance to their own specialist area of practice • The quality assurance processes and systems in place and their relationship to current legislation • The research process, research methodologies, and audit 	<p>Their level of knowledge should be sufficient to enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the practitioner • Take responsibility for ensuring that all those working within their specialist area practice legally, ethically and professionally in all circumstances and within an evidence-based framework • Interpret and translate relevant legal, ethical and professional frameworks in the development, implementation and review of evidence-based care packages and strategies within their specialist area of practice • Interpret and evaluate critically legal, ethical and professional issues and the evidence base underpinning their specialist area of practice to inform professional decision making • Demonstrate accountability and promote professional regulation and responsibility within the profession • Critically evaluate the effectiveness of quality assurance procedures and radiotherapy quality management systems in their specialist area of practice • Actively engage in research and development in order to contribute to the evidence-base of their field
Levels of knowledge and understanding	Outcomes to be achieved
<p>Consultant practitioners will possess highly specialised and detailed knowledge and understanding within the specific area of individual practice/expertise and contribute to the generation of new theoretical and practical knowledge within their profession</p>	<p>Their particular depth and breadth of knowledge and expertise will enable them, within the area of individual practice/expertise, to:</p> <ul style="list-style-type: none"> • Identify and respond to those situations that are beyond the scope of practice of the advanced practitioner • Challenge current legal, ethical and professional frameworks within the area of individual practice/expertise in order to identify professional/organisation barriers that limit/inhibit services • Lead and collaborate on the development, implementation and review of protocols of care and patient care pathways • Process complex, sensitive or contentious legal, ethical and policy issues in order to develop and implement strategic plans (including relevant national policies) which will drive change within their discipline and across the healthcare organisation • Provide expert input into their organisation's quality strategy, including influencing and delivering clinical governance • Be accountable for care and responsible for ensuring that legal, ethical and professional dimensions of practice are adhered to • Evaluate, identify gaps in and integrate the evidence base into practice through an advanced level of clinical reasoning and decision making • Initiate and lead research and audit and disseminate the outcomes in order that they enhance the evidence base and impact beyond their local health care economy



The College of Radiographers

Limited company registration number 1287383

Registered charity number 272505

September 2007

First edition

(supercedes the College of Radiographers' Curriculum Framework published in May 2003)

The Society of Radiographers

207 Providence Square

Mill Street

London SE1 2EW

Telephone 020 7740 7200

Facsimile 020 7740 7233

E-mail info@sor.org

Website www.sor.org