Learning and Development Framework for Hybrid Nuclear Medicine/ Computed Tomography Practice (SPECT-CT/ PET-CT)

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Summary

This document sets out the learning and development requirements for this aspect of practice within the context of the career progression framework. It is envisaged that these standards will:

- Support the development of suitable education provision for this area of practice
- Support the approval of such programmes by the AAB
- Define clear standards of practice in hybrid imaging; anecdotal evidence suggests that inappropriate skills mix is being used
- Promote the development of advanced and consultant practitioner roles in nuclear medicine

Purpose

This document is produced as authoritative guidance to practitioners. For the purposes of this document the term hybrid imaging is taken to refer only to SPECT-CT or PET-CT at this time. The document will be reviewed in line with practice and service developments.

This document should not be viewed in isolation; it is intended to function as an annex to (and should be read in conjunction with) the Learning and Development Framework of the Society and College of Radiographers (SoR 2007)1. This document is structured to reflect all levels of practice and practitioners at all four levels are advised to familiarise themselves with the Learning and Development Framework as a whole, which includes generic skills, knowledge and understanding (eg Information Technology and data management) as well as those which relate specifically to clinical imaging (eg Physical science and technology).

A prerequisite to SPECT-CT/ PET-CT training is a thorough understanding of the science, instrumentation and clinical applications of nuclear medicine. In the interests of patient safety and management, in the event that a procedure is required to be performed using a hybrid installation (eg SPECT-CT/ PET-CT), the Society of Radiographers expects that the procedure be performed by a practitioner who is registered with the HPC (Health Professions Council) and /or the VRCT (Voluntary Register for Clinical Technologists). Practitioners need to recognise that diagnostic SPECT-CT machines (as opposed to low-dose hybrid installations) require an appropriate level of understanding of X-ray science, including image quality and dose considerations [1].

The four levels of practice within nuclear medicine and hybrid imaging are presented on the subsequent tables.

Levels of knowledge and understanding	Outcomes to be achieved
Assistant practitioners need to possess a current knowledge and understanding of: • the risk-benefit philosophy as applied to nuclear medicine and hybrid imaging • the scientific basis for examinations used in nuclear medicine and hybrid imaging • the pharmacological basics of drugs commonly encountered within nuclear medicine and hybrid imaging and with a particular emphasis on radiopharmaceuticals and 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 nuclear medicine and hybrid imaging examinations • the principles of information handling and data management in the clinical setting • radiation safety and protection of staff and patients.	Their level of knowledge should be sufficient to enable them to: • work within 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 for nuclear medicine and hybrid imaging examinations • offer the highest standards of patient care within their sphere of competence of nuclear medicine and hybrid imaging • make informed, sensitive and ethically sound judgements in relation to their level of involvement in nuclear medicine and hybrid imaging procedures • 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 • record and retrieve data in line with protocols and legal requirements.

Levels of knowledge and understanding	Outcomes to be achieved
Practitioners need to possess a current knowledge and understanding of: • the risk-benefit philosophy as applied to nuclear medicine and hybrid imaging • the scientific and legal basis for nuclear medicine and hybrid imaging examinations and interventions including the legal basis and practical implementation of radiation protection relevant to IRMER, RSA93 and IRR99 • the legal basis of supply, administration and prescribing of medicines • drug interactions, pharmacology and adverse reactions of drugs commonly encountered within imaging settings with a particular emphasis on radiopharmaceuticals and contrast agents • the methods of administration of drugs including the associated health, safety and legal issues • developments and trends in the science and practice of nuclear medicine • the safe practice of CT when used as an adjunct to a nuclear medicine service (SPECT or PET)	Their level of knowledge should be sufficient to enable them to; • 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 and the legal framework of practice • 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 • be able to acquire and process CT images and data that have clinical relevance within nuclear medicine, observing the principles of exposure optimisation particularly with respect to attenuation correction and diagnostic CT

• the principles underpinning moving and handling • the principles underpinning emergency aid • the principles (including health, safety and legal issues) underpinning assessment, monitoring and care of the patient before, during and after examination.	• assess patients' needs and, where necessary, refer to other relevant health care professionals • be able to manipulate written and image data in differing formats for the benefit of the patient • offer the highest standards of care in both physical and psychological respects in all aspects of nuclear medicine and hybrid imaging examinations and interventions in order to ensure effective procedures • 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

Levels of knowledge and understanding	**Outcomes to be achieved**
Advanced practitioners need to possess advanced, current knowledge and understanding of all of the above with a particular emphasis on nuclear medicine technology and hybrid imaging.	Their level of knowledge should be sufficient to enable them to: • identify and respond to those situations that are beyond the scope of practice of the practitioner, particularly in complex and/or unusual clinical scenarios • perform complex nuclear medicine and hybrid imaging examinations including the optimisation of CT dose by means of informed manipulation of exposure parameters • be able to manipulate written and image data in differing formats for the benefit of the patient • 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 management strategies appropriate to nuclear medicine and hybrid imaging • critically evaluate nuclear medicine techniques and technologies in order to underpin professional decision making, utilising research evidence • train and provide mentorship and supervision for other staff in the nuclear medicine and hybrid imaging team • supply and administer medicines within the legal framework • undertake image interpretation and/or reporting in line with departmental requirements and protocols • lead non-medical cardiac stress sessions

	in association with hybrid cardiac imaging • demonstrate proficiency in advanced life support skills • act as Radiation Protection Supervisor • resolve non-routine camera maintenance issues with the manufacturer • perform and understand outcomes and required actions of monthly equipment quality control.

Levels of knowledge and understanding	**Outcomes to be achieved**
In addition to the above, **Consultant practitioners** need to possess a highly specialised and detailed, current knowledge and understanding of nuclear medicine practice and hybrid imaging. They will be expert practitioners and clinical leaders who will contribute to clinical and theoretical innovation through research.	Their depth and breadth of knowledge and expertise in nuclear medicine practice and hybrid imaging will enable them to: • identify and respond to those situations that are beyond the scope of practice of the advanced practitioner, providing training, supervision and mentorship as part of the role • effectively lead the clinical team in the delivery of the nuclear medicine service, including hybrid imaging • exhibit expert clinical practice in managing complete episodes of care that lead to satisfactory patient outcomes and/or health gains, including determining the suitability of clinical requests • deliver a whole-system, patient-focused, approach rooted in a multi-professional perspective • lead and /or represent the team at multidisciplinary meetings • provide clinical leadership locally and across professional/organisational boundaries at a national and/or international level where appropriate • manage personal case loads including wide-ranging decision making and the provision of a clinical report • engage in the development and advancement of innovative practice by means of an active involvement in research • be accountable for safety, legal and clinical governance issues for nuclear medicine and hybrid imaging practice • evaluate, identify gaps in, and integrate the research evidence base into practice such that they can exercise expert professional judgements routinely • supply and administer medicines within the legal framework • assist with EA, HSE, CQC inspections.

Abbreviations

CQC	Care Quality Commission
CT	Computed Tomography
EA	Environmental Agency
HPC	Health Professions Council
HSE	Health & Safety Executive
IRMER	Ionising Radiations (Medical Exposures) Regulations
PET	Positron Emission Tomography
RSA93	Radioactive Substances Act 1993
SPECT	Single Photon Emission Computed Tomography
VRCT	Voluntary Register for Clinical Technologists

Reference

1. Society of Radiographers *Learning & Development Framework for Clinical Imaging & Oncology* (2007) pp 30-31 London SoR