Clinical Radiology
Curriculum 2021

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The Royal College of Radiologists

Guidance on training in radionuclide radiology (RNR)

What is radionuclide radiology?

Radionuclide radiology (RNR) comprises those diagnostic imaging techniques which use radio-labelled tracers for diagnosis. This includes molecular imaging, which provides images of metabolic and physiological processes at the molecular and cellular level. RNR requires an understanding of the physiology and metabolism of radioactive tracers within the body in conjunction with knowledge of normal and pathological anatomy to diagnose the causes of disease and monitor disease progression.

Why is RNR represented differently in the curriculum to other special interest areas?

Most special interest areas in radiology focus on an anatomical area. Table 1 on page 29 in the 2021 clinical radiology curriculum lists presentations, conditions and modalities by anatomical area. All trainees are expected to have some knowledge of each anatomical area, however there are some modalities or techniques in each anatomical area, labelled as 'experience' or 'specialist', which only trainees with a special interest in that anatomical area would be expected to be able to reach level 4 (independent practice) in.

RNR differs from other special interest areas in radiology as it can be applied to many body systems, as well as being used to study physiological and metabolic processes. Table 1 gives examples of RNR and molecular imaging techniques that apply to each anatomical area, and there is a second table on page 40 of the 2021 curriculum that provides further examples of the clinical uses of radionuclide and molecular imaging.

What are the requirements for RNR training for all trainees?

All clinical radiology trainees should demonstrate a basic knowledge of the spectrum of techniques utilised in RNR (including dynamic, planar, PET-CT, and SPECT-CT) and an awareness of the biological processes that can be assessed using these methods. All trainees should also have more detailed knowledge and experience of radionuclide studies within their area of interest and be able to present these, including PET-CT at multi-disciplinary meetings.

What are the requirements for special interest training in RNR?

Trainees with a special interest in RNR will complete three years of general radiology training before beginning two years of training in RNR, with maintenance and further development of general radiology capabilities. The trainee must demonstrate an in-depth knowledge of the full range of RNR and molecular imaging techniques and their uses. They should be able to report RNR studies across all anatomical areas and disease processes, and evaluate and present complex investigations such as PET-CT and SPECT-CT.

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RNR special interest training may be done in conjunction with training in another special interest area depending on trainee interest and service need. Trainees should discuss their career aims with their supervisors to determine whether a second special interest is appropriate and should bear in mind that for some roles two years of RNR special interest training may normally be expected.

What is an ARSAC licence and do I need one?

The Administration of Radioactive Substances Advisory Committee (ARSAC) advises the licensing authorities on applications from practitioners, employers and researchers who want to use radioactive substances on people. An ARSAC licence is not a requirement for a CCT in clinical radiology, however the experience gained through RNR training will support trainees to obtain an ARSAC licence. This is recommended for clinical radiology trainees with a special interest in radionuclide radiology so that they can lead departments as consultants.

It is important to note that a clinical radiology CCT alone will not be sufficient evidence for an ARSAC licence to be granted and trainees with a special interest in RNR should discuss with their supervisors what else they may need to do to ensure that they can successfully apply for an ARSAC licence covering the appropriate procedures for their intended practice.

Requirements for ARSAC licensing are updated from time to time and both trainees and supervisors should ensure that they are up to date with current guidance available on the ARSAC web page.

What is the difference between RNR and nuclear medicine?

RNR focuses on diagnosis, whereas nuclear medicine includes therapeutic use of unsealed radioisotopes, as well as diagnosis. Trainees may enter clinical radiology training following foundation training, however entry to nuclear medicine requires further training through one of the following routes, to ensure that nuclear medicine trainees have the required skills to manage therapy patients:

- two years of internal medicine (formerly core medical) training and full MRCP(UK)
- three years of Acute Care Common Stem – Acute Medicine/Internal Medicine (ACCS-AM/IM) and full MRCP(UK)
- three years of Level 1 Paediatrics and full MRCPCH
- two years of Core Surgical Training and full MRCS

Nuclear medicine trainees follow the clinical radiology curriculum alongside the nuclear medicine curriculum and can gain entry on the GMC's specialist register for both nuclear medicine and clinical radiology, provided that they have met the requirements of both curricula.