

Rough Guide to Implementation 2021 Nuclear Medicine Curriculum Guidance for training programme directors, supervisors and trainees

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Introduction

This guide for Nuclear Medicine is to help training programme directors (TPDs), supervisors, trainees and others with the practicalities of implementing the new curriculum. It is intended to supplement rather than replace the curriculum document itself. The curriculum, ARCP decision aid and this guide are available on the JRCPTB website.

The Rough Guide has been put together by members of the Nuclear Medicine SAC with additional help from many external stakeholders especially trainees. It is intended to be a 'living document' and we value feedback via curriculum@jrcptb.org.uk.

What is different about the 2021 Nuclear Medicine curriculum?

Background

There have been two major drives to the need for change. Firstly the move away from the 'tick-box' approach associated with the current competency-based curricula to the holistic assessment of high level learning outcomes. The new curriculum has a relatively small number of 'capabilities in practice' (CIPs) which are based on the concept of entrustable professional activities (EPAs). Secondly, the GMC has mandated that all postgraduate curricula must incorporate the essential generic capabilities required by all doctors as defined in the [Generic Professional Capabilities \(GPC\) framework](#).

Specialty specific changes

Dual CCT in Nuclear Medicine and Clinical Radiology is now a GMC approved training pathway and doctors completing the requirements of the curricula will be awarded a CCT in both specialties.

In addition, doctors will now be able to enter dual training from the alternative core training pathways of core surgical training with MRCP and paediatrics with MRCPCH.

The content of training and the format of the training programme has changed very little from the 2014 curriculum.

Duration of training

Following core training, Nuclear Medicine and Clinical Radiology higher specialty training will usually be completed in six years of full-time training. There will be options for those trainees who demonstrate exceptionally rapid development and acquisition of capabilities to complete training sooner than the indicative time. There may also be trainees who develop more slowly and will require an extension of training as indicated in the Reference Guide for Postgraduate Specialty Training in the UK (The Gold Guide).

The Nuclear Medicine curriculum

The purpose of the curriculum is to produce doctors with the generic professional and specialty specific capabilities required to practice in Nuclear Medicine and Clinical Radiology. The curriculum will deliver education and clinical experience for both the therapeutic and diagnostic aspects of Nuclear Medicine to allow licensing by the Administration of Radioactive Substances Advisory Committee (ARSAC) so they can lead departments as consultants. Their diagnostic expertise includes both imaging and non-imaging studies. CCT holders will clinically lead teams of experts who support them in this provision including Nuclear Medicine physicists, radiopharmacists, Nuclear Medicine technologists, radiographers and nurses.

Doctors in training will learn in a variety of settings using a range of methods, including workplace-based experiential learning, formal postgraduate teaching and simulation-based education.

By the end of their final year of training, the trainee will receive dual CCTs in Nuclear Medicine and Clinical Radiology.

Capabilities in Practice (CiPs)

The **generic CiPs** cover the universal requirements of all specialties as described in the GPC framework. The generic CiPs are common across all physician specialties. Assessment of the generic CiPs will be underpinned by the GPC descriptors. Satisfactory sign off will indicate that there are no concerns.

The **specialty CiPs** describe the professional tasks or work within the scope of Nuclear Medicine.

Each CiP has a set of descriptors associated with that activity or task. Descriptors are intended to help trainees and trainers recognise the minimum level of knowledge, skills and attitudes which should be demonstrated for an entrustment decision to be made.

By the completion of training and award of CCT, the doctor must demonstrate that they are capable of unsupervised practice (level 4) in all specialty CiPs.

Capabilities in practice (CiPs)

Generic CiPs

1. Able to successfully function within NHS organisational and management systems
2. Able to deal with ethical and legal issues related to clinical practice
3. Communicates effectively and is able to share decision making, while maintaining appropriate situational awareness, professional behaviour and professional judgement
4. Is focussed on patient safety and delivers effective quality improvement in patient care

5. Carrying out research and managing data appropriately
6. Acting as a clinical teacher and clinical supervisor to be assessed by DOPS

Specialty CiPs

1. Advising and authorising appropriate Nuclear Medicine diagnostic and therapeutic interventions for individual patients
2. Ability to direct optimisation of imaging and non-imaging diagnostic Nuclear Medicine investigations in terms of patient preparation, data and image acquisition, post processing and display
3. Providing timely, accurate and clinically pertinent reports on all Nuclear Medicine diagnostic studies
4. Providing a safe and comprehensive radionuclide therapy service
5. Leading all the clinical aspects of the Nuclear Medicine department in terms of compliance with regulations

Learning outcomes for Clinical Radiology

The Clinical Radiology CiPs and the level of performance expected in each training year are set out in the [Clinical Radiology curriculum](#) and in Appendix 1 of the Nuclear Medicine curriculum.

Evidence of capability

The curriculum describes the evidence that can be used by the educational supervisor to make a judgement of the trainee's capability (please see the CiPs tables and the assessment blueprint). The educational supervisor will make a holistic judgement based on the evidence provided, particularly the feedback from clinical supervisors and the multi disciplinary team. The list of evidence for each CiP is not exhaustive and other evidence may be equally valid.

Clinical scenarios and interventions

The curriculum provides guidance clinical scenarios which Nuclear Medicine interventions commonly contribute to. The curriculum provides guidance on the indicative number of cases it is likely a trainee will need to experience for each system area and scan type to achieve capability.

Essential knowledge base and practical procedures

The curriculum sets out the essential knowledge base and practical procedures required in the following areas:

- Nuclear Physics
- Radiation biology
- Radiation detection and image formation

- Camera quality assurance
- Principles of Nuclear Medicine image acquisition and optimisation
- Radionuclide production
- Radionuclide Instrumentation
- Radiopharmaceutical preparation
- Radiopharmaceutical tracer mechanisms of uptake within the body
- Regulatory Aspects of diagnostic studies and treatments to the patient
- Regulatory aspects of providing the service to the public/staff/environment and application of these to the Nuclear Medicine departmental structures and protocols
- Clinical application of Nuclear Medicine: Pulmonary, Musculoskeletal, Cardiovascular, Neurological, Gastrointestinal, Genitourinary, Infection/inflammation, Blood/lymphatics
- Clinical and practical skills .

Training programme

As with the current curriculum, the training programme will comprise an indicative three years of training focussed on Clinical Radiology (80% of the training time) during which the FRCR should be completed. The second period of training (indicative three years) will focus on Nuclear Medicine for 80% of the training time and trainees will complete a postgraduate diploma in Nuclear Medicine. This training pathway will deliver dual training in Nuclear Medicine and Clinical Radiology and trainees will be eligible for a CCT in both specialties.

Years	Grade	Time in NM	Time in CR	Curriculum & ePortfolio	Exams	ARCP led by
1-3	ST3-5	20%	80%	RCR CR	First FRCR Final FRCR Part A	CR regional
4-6	ST6-8	80%	20%	JRCPTB NM	Final FRCR Part B NMPGDip	NM national

Assessment: What is required from trainees and trainers?

Introduction

Decisions about a trainee's competence progression will be based on an assessment of how they are achieving their CiPs. For the generic CiPs it will be a straightforward statement as to whether they are operating at, above, or below level expected for the current year of training. For the specialty CiPs there will be a judgement made at what level of supervision they require (i.e. unsupervised or with direct or indirect supervision). For each of these CiP there is a level that is to be achieved at the end of each year in order for a standard outcome to be achieved at the Annual Review of Competence Progression (ARCP). The levels expected are given in the grid below and in the ARCP decision aid.

What the trainee needs to do

Trainees will need to do an appropriate number of supervised learning events (SLEs) and workplace based assessments (WPBAs). The requirements are documented in the ARCP decision aid (see ARCP section below) but it should be appreciated by trainer and trainee that the decision aid sets out the absolute minimums. SLEs and formative DOPS are not pass/fail summative assessments but should be seen by both trainer and trainee as learning opportunities for a trainee to have one to one teaching and receive helpful and supportive feedback from an experienced senior doctor. Trainees should therefore be seeking to have SLEs performed as often as practical. They also must continue to attend and document their teaching sessions and must continue to reflect (and record that reflection) on teaching sessions, clinical incidents and any other situations that would aid their professional development.

Each trainee must ensure that they have acquired multi-source feedback (MSF) on their performance each year and that this feedback has been discussed with their Educational Supervisor (ES) and prompted appropriate reflection. They also need to ensure that they have received a minimum of two reports from consultants who are familiar with their work and who will contribute to the Multiple Consultant Report (MCR). Each consultant contributing to the MCR will give an advisory statement about the level at which they assess the trainee to be functioning for each clinical CiP.

As the ARCP approaches, trainees need to arrange to see their ES to facilitate preparation of the ES report (ESR). They will have to self-assess the level at which they feel they are operating at for each CiP. In an analogous fashion to the MSF, this self- assessment allows the ES to see if the trainee's views are in accord with those of the trainers and will give an idea of the trainee's level of insight.

Interaction between trainer and trainee

Regular interaction between trainees and their trainers is critical to the trainee's development and progress through the programme. Trainees will need to engage with their clinical and educational supervisors.

At the beginning of the academic year there should be a meeting with the ES to map out a training plan for the year. This should include;

- how to meet the training requirements of the programme, addressing each CiP separately
- a plan for taking the FRCR and Nuclear Medicine Postgraduate Diploma
- a discussion about what resources are available to help with the programme
- develop a set of SMART Personal Development Plans (PDPs) for the training year
- a plan for using study leave
- use of the various assessment/development tools

The trainee should also meet with the clinical supervisor (CS) to discuss the opportunities in the current placement including;

- develop a PDP including SMART objectives for the placement
- access to clinics and how to meet the learning objectives

Depending on local arrangements there should be regular meetings (we recommend approximately one hour most weeks) for personalised, professional development discussions which will include;

- writing and updating the PDP
- reviewing reflections and SLEs
- reviewing MCR and other feedback
- discussing leadership development
- discussing the trainee's development as a physician and career goals
- discussing things that went well or things that went not so well

Self-assessment

Trainees are required to undertake a self-assessment of their engagement with the curriculum and in particular the CiPs. This is not a 'one-off' event but should be a continuous process from induction to the completion of the programme and is particularly important to have been updated ahead of the writing of the ES report and subsequent ARCP. Self-assessment for each of the CiPs should be recorded against the curriculum on the trainee's ePortfolio account.

The purpose of asking trainees to undertake this activity is:

- To guide trainees in completing what is required of them by the curriculum and helping to maintain focus of their own development. To initiate the process it is important that the induction meeting with a trainee's ES reviews how the trainee will use the opportunities of the coming academic year to best advantage in meeting the needs of the programme. It will allow them to reflect on how to tailor development to their own needs, over-and-above the strict requirements laid out in the curriculum
- To guide the ES and the ARCP panel as to how the trainee considers they have demonstrated the requirements of the curriculum as set out in the Decision Aid and where this evidence may be found in the trainee's portfolio. This will help the ARCP panel make a more informed judgement as to the trainee's progress and reduce the issuing of outcome 5s as a result of evidence not being available or found by the panel

What the Educational Supervisor (ES) needs to do

The educational supervisor and trainee should meet beforehand to plan what evidence will need to be obtained. This can be used by the ES to write an important and substantial ES report (ESR).

The ESR will be the central piece of evidence considered by the ARCP Panel when assessing whether the trainee has attained the required standard as set out in the Decision Aid. As such, both time and planning will need to be given to writing it; this process will need to start at the beginning of the training year.

Educational Supervisor Report (ESR)

The ESR should be written ahead of the ARCP and discussed between the supervisor and the trainee before the ARCP, with any aspects likely to result in a non-standard outcome at ARCP made clear. This conversation should be documented. The report documents the entrustment decisions made by the supervisor for all the CiPs set out in the curriculum. The decisions should be based on evidence gathered across the training year as planned at the Induction Meeting with the trainee and modified through subsequent, regular, professional development meetings. The evidence should be gathered from several sources as appropriate for the particular CiP.

In completing the ESR, assessments are made for each **generic CiP** using the following anchor statements:

Below expectations for this year of training; may not meet the requirements for critical progression point
Meeting expectations for this year of training; expected to progress to next stage of training
Above expectations for this year of training; expected to progress to next stage of training

Comments must be made, as a minimum, for any rating of below expectation. It is good practice to narrate all decisions. The narration should include;

- Source of the evidence and its context, outlining contradicting evidence if appropriate
- Examples (of statements)
- Direction for future development/improvement

For the **specialty CiPs**, the ES makes a judgement using the levels of entrustment in the table below.

Level 1: Entrusted to observe only – no provision of clinical care
Level 2: Entrusted to act with direct supervision: The trainee may provide clinical care, but the supervising physician is physically within the hospital or other site of patient care and is immediately available if required to provide direct bedside supervision
Level 3: Entrusted to act with indirect supervision: The trainee may provide clinical care when the supervising physician is not physically present within the hospital or other site of patient care, but is available by means of telephone and/or electronic media to provide advice, and can attend at the bedside if required to provide direct supervision
Level 4: Entrusted to act unsupervised

Only the ES makes entrustment decisions. Detailed comments must be given to support entrustment decisions that are below the level expected. As above, it is good practice to provide a narrative for all ratings given.

Important Points

- Plan the evidence strategy from the beginning of the training year
- Write the report in good time ahead of the ARCP
- Discuss the ESR with the trainee before the ARCP
- Give specific, examples and directive narration for each entrustment decision

Types of Evidence

The assessments required for the first three years of Nuclear Medicine and for the full Clinical Radiology programme are described in the curriculum for Clinical Radiology.

Multi-Source Feedback (MSF)

The MSF provides feedback on the trainee that covers areas such as communication and team working. It closely aligns to the Generic CiPs. Feedback should be discussed with the trainee. If a repeat MSF is required it should be undertaken in the subsequent placement.

Multiple Consultant Report (MCR)

The MCR captures the views of consultant (and other senior staff) based on observation of a trainee's performance in practice. The MCR feedback gives valuable insight into how well the trainee is performing, highlighting areas of excellence and areas of support required.

The *minimum* number of MCRs considered necessary is two per training year.

Consultant supervisors completing the MCR will use the global anchor statements [meets, below or above expectations] to give feedback on areas of clinical practice. If it is not possible for an individual to give a rating for one or more area they should record 'not observed'. Comments must be made, as a minimum, for any rating of below expectation. It is good practice to narrate all decisions. The narration should include:

- Source of the evidence and its context, outlining contradicting evidence if appropriate
- Examples (of statements)
- Direction for future development/improvement

Supervised Learning Events

Case based Discussion (CbD)

This tool is designed to provide feedback on discussions around elements of the care of a particular patient. This can include elements of the particular case and the general management of the condition. It is a good vehicle to discuss management decisions.

Mini-Clinical Evaluation (mini-CEX)

This tool is designed to allow feedback on the directly observed management of a patient and can focus on the whole case or particular aspects.

mini-Imaging Interpretation Exercise (mini-IPX)

Given the strong diagnostic imaging requirements of Nuclear Medicine practice, mini-IPX is the most common form of assessment. This method of assessment has been developed by the Royal College of Radiologists and is designed to assess a trainee's skills in interpreting an image in the context of the patient's presentation and previous imaging and to provide rapid and prompt feedback to a trainee in a particular area of diagnostic imaging. More information concerning how to use this assessment is available on www.rcr.ac.uk.

Workplace-Based Assessments

Direct Observation of Procedural Skill (DOPS)

This tool is designed to give feedback and assessment for trainees on how they have undertaken a procedural skill. This may be in a simulated or real environment. Formative DOPS may be undertaken as many times as the trainee and supervisor feel is necessary. A trainee can be signed off as able to perform a procedure unsupervised using the summative DOPS.

Some examples of DOPS in Nuclear Medicine practice include (with appropriate documentation): radiopharmaceutical draw up, radiopharmaceutical dose calibration, radiopharmaceutical dose administration, interventions such as cardiac stressing, image post processing and quantification.

Teaching Observation (TO)

The TO form is designed to provide structured, formative feedback to trainees on their competences at teaching. The TO form can be based on any instance of formalised teaching by the trainee which has been observed by the assessor. The process should be trainee-led (identifying appropriate teaching sessions and assessors).

Quality Improvement Project Assessment Tool (QIPAT)

The QIPAT is designed to assess a trainee's competence in completing a quality improvement project. The QIPAT can be based on a review of quality improvement documentation or on a presentation of the quality improvement project at a meeting. If possible, the trainee should be assessed on the quality improvement project by more than one assessor. Guidance on how to assess QI skills and behaviours has been developed by the Academy of Medical Royal Colleges and is available via [this link](#).

Patient Survey (PS)

A trainee's interaction with patients should be continually observed and assessed. The Patient Survey provides a tool to assess a trainee during one consultation period. The Patient Survey assesses the trainee's performance in areas such as interpersonal skills, communication skills and professionalism.

Examinations

- **Fellowship of the Royal College of Radiologists (FRCR)**

This FRCR is run by the Royal College of Radiologists and is the summative assessment of both the Nuclear Medicine and Clinical Radiology curricula. Further information is available on the website www.rcr.ac.uk. Full FRCR is required by completion of training.

Trainees will normally be expected to complete the FRCR 2A examination by the end of the first three years of training (ST5) before entering 80% Nuclear Medicine training and completing the Nuclear Medicine postgraduate diploma.

- **Nuclear Medicine Post-graduate Diploma (NMPGDip)**

The NMPGDip is the summative assessment of the Nuclear Medicine curriculum. Alternative knowledge based assessments may be accepted provided they have proven educational equivalence to the NMPGDip and have been approved by the Nuclear Medicine SAC and the GMC. The Programme Director for the NMPGDip is a member of the Nuclear Medicine SAC. This ensures that the NMPGDip meets the needs of trainees across the UK in Nuclear Medicine with regard to content, standard and accessibility of teaching material. Trainees will be required to pass the NMPGDip or an approved alternative by completion of training.

Reflection

Undertaking regular reflection is an important part of trainee development towards becoming a self-directed professional learner. Through reflection a trainee should develop SMART learning objectives related to the situation discussed. These should be subsequently incorporated into their PDP. Reflections are also useful to develop 'self-knowledge' to help trainees deal with challenging situations.

It is important to reflect on situations that went well in addition to those that went not so well. Trainees should be encouraged to reflect on their learning opportunities and not just clinical events

Suggested evidence for each CiP

The suggested evidence to inform entrustment decisions is listed for each CiP in the curriculum and ePortfolio. However, it is critical that trainers appreciate that trainees do not need to present every piece of evidence listed and the list is not exhaustive and other evidence may be equally valid.

Induction Meeting with ES: Planning the training year

Writing the ESR essentially starts with the induction meeting with the trainee at which the training year should be planned. The induction meeting between the ES and the trainee is pivotal to the success of the training year. It is the beginning of the training relationship between the two and needs both preparation and time. The induction meeting should be

recorded formally in the trainee's ePortfolio. The meeting should be pre-planned and undertaken in a private setting where both can concentrate on the planning of the training year. This is also a time for ES and trainee to start to get to know each other.

Ahead of the meeting review:

- Review Transfers of Information on the trainee
- Review previous ES, ARCP etc. reports if available
- Agree with the placement CSs how other support meetings will be arranged. Including:
 - Arrangements for LFGs or equivalent
 - Arrangements for professional development meetings

At the meeting the following need to be considered:

- Review the placements for the year
- Review the training year elements of the generic educational work schedule or its equivalent
- Construct the personalised educational work schedule for the year or its equivalent
- Construct the annual PDP and relevant training courses
- Discuss the trainee's career plans and help facilitate these
- Discuss the use of reflection and make an assessment of how the trainee uses reflection and dynamic PDPs
- Discuss the teaching programme
- Discuss procedural simulation
- Discuss procedural skill consolidation
- Discuss arrangements for LTFT training if appropriate
- Plan additional meetings including the professional development meetings and the interaction with the placement CSs
- Planning of SLEs and WPBA
- Arrangements for MSF
- Review the ARCP decision aid
- Arrangements for Interim Review of Competence Progression (IRCP)
- Arrangements for ARCP and the writing and discussion of the ESR
- Pastoral support
- Arrangements for reporting of concerns
- Plan study leave

At the end of the meeting the trainee should have a clear plan for providing the evidence needed by the ES to make the required entrustment decisions.

Important Points

- Prepare for the meeting
- Make sure that knowledge of the curriculum is up-to-date
- Set up a plan for the training year

Induction Meeting with Clinical Supervisor (CS)

The trainee should also have an induction meeting with their placement CS (who may also be their ES). The meeting should be pre-planned and undertaken in a private setting where both can concentrate on the planning of the placement. This is also a time for CS and trainee to start to get to know each other.

Ahead of the meeting review the following should be considered;

- Review Transfers of Information on the trainee
- Review previous ES, ARCP etc. reports if available
- Arrangements for LFGs or equivalent

The following areas will need to be discussed, some of which will reinforce areas already covered by the ES but in the setting of the particular placement:

- Review the training placement elements of the generic educational work schedule or its equivalent
- Construct the personalized educational work schedule for the placement or its equivalent
- Construct the set of placement-level SMART objectives in the PDP
- Discuss the use of reflection and make an assessment of how the trainee uses reflection and dynamic PDPs
- Discuss procedural skill consolidation
- Discuss arrangements for LTFT training if appropriate
- Plan additional meetings including professional development meetings and the interaction with the placement CSs (depending on whether the ES or CS will be undertaking these)
- Arrangements for MSF
- Review the ARCP decision aid
- Pastoral support
- Arrangements for reporting of concerns
- Plan study leave

Professional Development Meetings

Trainers and trainees need to meet regularly across the training year. The GMC recommend an hour per week is made available for this activity. While it is not expected or possible for it to be an hour every week, the time not used for these meetings can be used to participate in LFG and ARCPs etc.

These meetings are important and should cover the following areas. This list is not exhaustive. Meet away from the clinical area regularly to:

- Discuss cases
- Provide feedback

- Monitor progress of learning objectives
 - Discuss reflections
 - Provide careers advice
 - Monitor and update the trainee's PDP
- Record meeting key discussion points and outcomes using the Educational Meeting form on the ePortfolio
 - Record progress against the CiPs by updating the comments in the CiP section of the portfolio (this will make writing the ESR at the end of the year much easier)
 - Provide support around other issues that the trainee may be encountering

Transition arrangements for trainees already in programme

Trainees currently in training at the time the new curricula are implemented (August 2021) should transfer to the new curricula for Nuclear Medicine and Clinical Radiology unless they are in their final year of training (pro rata for less than full time trainees).

Transfer to the new curricula and dual CCT should be formally recorded. Trainees and educational supervisors should have a discussion early in the training year to determine the training needs to meet the requirements of both the new Nuclear Medicine and Clinical Radiology curricula and whether additional training time is needed. This may alter the CCT dates (the CCT date must be the same for both specialties).

The 2021 NM curriculum, ARCP decision aid, mapping of CiPs to the previous curriculum competencies and the 'rough guide' to the curriculum are available on the [JRCPTB specialty page for Nuclear Medicine](#). The CR curriculum and associated guidance is available on the [RCR curriculum webpages](#) and includes [transition guidance for CR](#). NM trainees/supervisors should familiarise themselves with the new curricula and supporting documents.

Trainees in their final year are exempt from transfer but can choose to transfer, with the support of the relevant deanery and TPDs.

Trainees will not be required to re-link evidence recorded against the previous versions of the curricula.

Annual Review of Competence Progression (ARCP)

Introduction

The ARCP is a procedure for assessing competence annually in all medical trainees across the UK. It is owned by the four Statutory Education Bodies (Health Education England, NHS Education for Scotland, Health Education and Improvement Wales and Northern Ireland Medical & Dental Training Agency) and governed by the regulations in the Gold Guide. The JRCPTB can therefore not alter the way in which an ARCP is run but can provide guidance for

trainees and trainers in preparing for it and guide panel members on interpretation of both curricular requirements and the decision aid when determining ARCP outcomes. Although receiving a non-standard ARCP outcome (i.e. anything but an outcome 1 or 6) should not be seen as failure, we know that many trainees are anxious about such an outcome and everything possible should be done to ensure that no trainee inappropriately receives a non-standard outcome.

The ARCP gives the final summative judgement about whether the trainee can progress into the subsequent year of training (or successfully complete training if in the final year). The panel will review the ePortfolio (especially the ES report) in conjunction with the decision aid for the appropriate year. The panel must assure itself that the ES has made the appropriate entrustment decisions for each CiP and that they are evidence based and defensible. The panel must also review the record of trainee experience to ensure that each trainee has completed (or is on track to complete over ensuing years) the various learning experiences mandated in the curriculum.

There will be key progression points at the end of the three years of 80% clinical radiology training (ST5) and on completion of specialty training. Trainees will be required to be entrusted at level 4 in all CiPs by the end of training in order to achieve an ARCP outcome 6 and be recommended for a CCT.

The levels expected for the Clinical Radiology learning outcomes at the first critical progression point are set out in the Clinical Radiology curriculum. Trainees will be required to be level 4 for Clinical Radiology learning outcomes by the end of training in order to be awarded a CCT in both specialties in the dual programme.

ARCPs in the first three years of training will be led by Clinical Radiology and evidence of training progression will be recorded in Radiology eportfolio. The ARCPs in the final three years of training will be led by Nuclear Medicine and evidence recorded in the JRCPTB portfolio.

The educational supervisor report will make a recommendation to the ARCP panel as to whether the trainee has met the defined levels for the CiPs and acquired the procedural competence required for each year of training. The ARCP panel will make the final decision on whether the trainee can be signed off and progress to the year of training.

Relationship with Educational Supervisor (ES)

It is vital that the trainee and the ES develop a close working relationship and meet up as soon as possible after the start of training. At that meeting, the ES should discuss how the various curriculum requirements will be met and how evidence will be recorded to ensure that it can be demonstrated that the Capabilities in Practice have been achieved at the appropriate level. This meeting should also result in the production of a Personal Development Plan (PDP) consisting of a number of SMART objectives that the trainee should seek to achieve during that training year. The trainee should meet up with their ES on a number of other occasions during the training year so that the ES can be reassured that appropriate evidence is being accumulated to facilitate production of a valid ES report

towards the end of the year and guide the trainee as to further evidence that might be required.

Clinical supervisor (CS)

The trainee should have a Clinical Supervisor for each attachment and once again the trainee should meet up with the CS at the start of the attachment. Similar discussions should be held with the CS as have been held with the ES and once again, a PDP with SMART objectives should be constructed for each attachment. At the end of the attachment, the CS should be well placed to complete a Multiple Consultant Report (MCR). The CS should also document the progress that the trainee has made towards completing all the objectives of the PDP.

The trainee should provide a MCR from each designated CS as they are best placed to provide such a report but in addition should approach other consultants with whom they have had a significant clinical interaction and ask them also to provide a MCR. Throughout the attachment the trainee should be having SLEs completed by both consultants and more senior trainees. The number of SLEs demanded by the decision aid should be regarded as an absolute minimum and additional ones should be sought because

- Although they are formative, not summative assessments, they do provide additional evidence to show that a trainee is acquiring clinical (and generic) capabilities
- They may give the trainee the opportunity to have additional one to one clinical teaching from a senior colleague
- They allow the excuse for trainees to receive targeted and constructive feedback from a senior colleague.

Completing reports

When completing reports, all consultants should do more than just tick a box and make some generic comment such as “good trainee”. It is important that they make meaningful comments about why they have assigned that particular level of performance/behaviour to that particular trainee. In doing this, the descriptors assigned to each CiP should be especially useful as an *aide-memoire*. They should specifically not be used as a tick list that requires a comment for each descriptor but should just allow the senior doctor completing the report to reflect on what comments would be helpful to the ES for completion of their report and to the ARCP panel in determining whether the trainee can progress to the next year of training. Constructive comments are also of course valued by the trainee. It is very helpful if the trainee can have constructive comments if they are progressing along the “normal” trajectory and especially if they are exceeding expectations either globally or in certain areas. If a trainee is performing below expectations then it is absolutely mandatory that meaningful, insightful and precise comments are provided.

ARCP preparation

As the ARCP approaches, it is essential that the trainee reviews their ePortfolio and ensures that all requisite information is available in a logical and accessible format. In particular they should ensure that:

- All appropriate certificates have been uploaded to the personal library and are clearly signposted
- An appropriate amount of reflection has been documented
- As a bare minimum (see comments above), the requisite number of SLEs (as demanded by the annual decision aid) has been completed and recorded in the ePortfolio
- MSF has been completed and the results released by the ES. It is critical that appropriate discussion/reflection has occurred and been recorded in response to the MSF
- MCR has been completed by each CS and additional ones have been completed by any supervisor with whom the trainee has had significant clinical/educational interaction
- The trainee has self-rated themselves for each CiP on the curriculum page
- The SMART objectives documented in their PDP have either been achieved fully and the evidence for that achievement has been clearly documented. If any objectives of the PDP have not been fully achieved, then the reasons for that have been clearly documented and evidenced.
- An appointment has been made with their ES to discuss the annual ES report that will inform the ARCP panel

The ES should review the portfolio to ensure that all the above requirements have been met and record a final rating for each CiP on the curriculum page. The ES should meet up with the trainee to discuss the ESR so that there are no surprises.

The ARCP

At the ARCP, the panel should review the ePortfolio and in particular it should focus on the ESR report but also review the MCRs, the MSF, the PDPs and reflection. It should also reassure itself that all the mandatory courses and exams have been attended/passed. If members of the panel have any concerns that the trainee under review is not eligible for a standard outcome (outcome 1 or outcome 6) then they should examine more detail in the ePortfolio and review more of the SLEs and other subsidiary information.

ARCP Decision Aid for Nuclear Medicine

This decision aid provides guidance on the requirement to be achieved for a satisfactory ARCP outcome at the end of each training year. The knowledge and workplace based assessment required for **Clinical Radiology** are set out in the curriculum and decision aid available on the Royal College of Radiologists website www.rcr.org.uk. Trainees will need to meet the requirements for **both** specialties in the dual CCT programme.

Evidence / requirement	Notes	Year 1 – Year 3 (ST3-ST5)	Year 4 (ST6)	Year 5 (ST7)	Year 6 (ST8)
		Evidence recorded in Radiology eportfolio	Evidence recorded in JRCPTB eportfolio	Evidence recorded in JRCPTB eportfolio	Evidence recorded in JRCPTB eportfolio
Educational supervisor (ES) report	There should be an ES report for both Clinical radiology and Nuclear Medicine in each training year	Confirms meeting or exceeding expectations and no concerns	Confirms meeting or exceeding expectations and no concerns	Confirms meeting or exceeding expectations and no concerns	Confirms will meet all requirements needed to complete training
Generic capabilities in practice (CiPs)	Trainees should record self-rating to facilitate discussion with ES. ES to record rating for each CiP	ES to confirm trainee meets expectations for level of training as set out in the Clinical Radiology curriculum	ES to confirm trainee meets expectations for level of training	ES to confirm trainee meets expectations for level of training	ES to confirm trainee meets expectations for level of training
Specialty capabilities in practice (CiPs)	Trainee should complete self-rating to facilitate discussion with ES. ES report will confirm entrustment level for each CiP	ES to confirm trainee is performing at or above the level expected for all CiPs as set out in the Clinical Radiology curriculum	ES to confirm trainee is performing at or above the level expected for all CiPs as set out in grid below	ES to confirm trainee is performing at or above the level expected for all CiPs as set out in grid below	ES to confirm level 4 in all CiPs by end of training

Evidence / requirement	Notes	Year 1 – Year 3 (ST3-ST5) Evidence recorded in Radiology eportfolio	Year 4 (ST6) Evidence recorded in JRCPTB eportfolio	Year 5 (ST7) Evidence recorded in JRCPTB eportfolio	Year 6 (ST8) Evidence recorded in JRCPTB eportfolio
Multiple consultant report (MCR)	Indicative minimum number. Each MCR is completed by a consultant who has supervised the trainee's clinical work. The ES should not complete an MCR for their own trainee	N/A	2	2	2
Multi-source feedback (MSF)	An indicative minimum of 12 raters including 3 consultants and a mixture of other staff (medical and non-medical). MSF report must be released by the ES and feedback discussed with the trainee before the ARCP. If significant concerns are raised then arrangements should be made for a repeat MSF	1	1	1	1
Case-based discussion (CbD) and mini-clinical evaluation exercise (mini-CEX)	Indicative minimum number to be carried out by consultants. Trainees are encouraged to undertake more and supervisors may require more if concerns are identified.	As per Clinical Radiology ARCP decision aid	4 CbD and 1 mini-CEX	4 CbD and 1 mini-CEX	4 CbD and 1 mini-CEX

Evidence / requirement	Notes	Year 1 – Year 3 (ST3-ST5) Evidence recorded in Radiology eportfolio	Year 4 (ST6) Evidence recorded in JRCPTB eportfolio	Year 5 (ST7) Evidence recorded in JRCPTB eportfolio	Year 6 (ST8) Evidence recorded in JRCPTB eportfolio
	Assessments should be undertaken throughout the training year. Structured feedback should be given to aid the trainee's personal development and reflected on by the trainee				
Mini-imaging interpretation exercise (Mini-IPX)	Indicative minimum number by a range of assessors including at least one of consultant level in each 4-6 months. Structured feedback should be given to aid the trainee's personal development and reflected on by the trainee	As per Clinical Radiology ARCP decision aid	4	8	8
Radiology-direct/direct observation of procedural skills (Rad-DOPS/ DOPS)	Indicative number	As per Clinical Radiology ARCP decision aid	2 DOPS	1 DOPS	1 DOPS

Evidence / requirement	Notes	Year 1 – Year 3 (ST3-ST5) Evidence recorded in Radiology eportfolio	Year 4 (ST6) Evidence recorded in JRCPTB eportfolio	Year 5 (ST7) Evidence recorded in JRCPTB eportfolio	Year 6 (ST8) Evidence recorded in JRCPTB eportfolio
Quality improvement (QI) project	Project to be assessed with quality improvement project tool (QIPAT)	As per Clinical Radiology ARCP decision aid		Design and undertake 1 quality improvement project (which may include audit) with presentation at a local audit meeting	Design and undertake 1 quality improvement project (which may include audit) with presentation at a local audit meeting
Patient survey		As per Clinical Radiology ARCP decision aid	1		1
Teaching observation	Indicative number	As per Clinical Radiology ARCP decision aid		1	
Examination		FRCR 1 & 2a passed	FRCR 2b passed		Post Graduate Diploma in Nuclear Medicine passed
Advanced life support (ALS)		Valid	Valid		Valid

Clinical scenarios and interventions

The table below details clinical scenarios which Nuclear Medicine interventions commonly contribute to. The numbers provided are indicative and are intended to help guide the levels of training typically required to achieve competence.

System	Type of scan	Examples of common indications	Indicative numbers
Oncological Nuclear Medicine	Whole body PET-CT, SUV quantification	PET-CT staging of tumours, primarily 18F-FDG but to also include experience in other tracers such as PSMA, choline, somatostatin analogues	800
	Whole body single photon, SPECT, SPECT-CT	Staging of bone metastatic disease	700
	Lymphoscintigraphy	Sentinel node mapping	50
Cardiovascular Nuclear Medicine	SPECT, PET cardiac scans, quantification	Myocardial ischaemia, stress/rest, gated function (MUGA), viability, sarcoid, amyloid, sympathetic innervation	500
Musculoskeletal Nuclear Medicine	Dynamic, planar, whole body, SPECT, SPECT-CT bone scans	Bone scans for musculoskeletal problems, white cell scan for infection	130
Pulmonary Nuclear Medicine	Planar, SPECT, SPECT-CT, possibly with quantification	Lung scans for pulmonary embolism evaluation, lobar quantification, shunt evaluation	140
Renal Nuclear Medicine	Dynamic, static, with quantification	Dynamic for renal function, drainage and micturating cystogram Static for renal function and parenchymal evaluation	140
Neurological Nuclear Medicine	SPECT, PET	Dementia, epilepsy, movement disorders etc.	250
Gastrointestinal Nuclear Medicine	Dynamic, static, possibly quantification	GI bleed, ectopic gastric mucosa, transit, biliary, liver & spleen parenchyma studies	60

System	Type of scan	Examples of common indications	Indicative numbers
Endocrine Nuclear Medicine	Static, SPECT, SPECT-CT, possibly quantification	Thyroid, parathyroid, adrenal pathologies	150
Infection or Inflammatory Nuclear Medicine	FDG PET-CT or single photon whole body labelled white cell scan	Pyrexia of Unknown Origin, vasculitis, activity of inflammatory bowel disease	40
Miscellaneous		e.g. Lymphoscintigraphy for oedema dacroscintigraphy for epiphora	30

Nuclear Medicine Therapies	Examples of organ systems	Examples of common indications	Indicative numbers
Benign	Thyroid	Thyrotoxicosis Non-toxic goitre	50
	Joint	Synovitis	5
Malignant	Bone	Metastasis	30
	Thyroid	Primary lesion ±metastases	20
	Neuroendocrine	Primary lesion ±metastases	10
	Liver	Liver metastases (SIRT)	5
Nuclear Medicine quantification without imaging	GFR, red cell mass, platelet non imaging studies, GFR, SeHCAT etc	N/A	50

Levels to be achieved by the end of each training year and at critical progression points for Nuclear Medicine specialty CiPs

Level 1: Entrusted to observe only – no clinical care; Level 2: Entrusted to act with direct supervision; Level 3: Entrusted to act with indirect supervision;

Level 4: Entrusted to act unsupervised

Specialty CiP	ST3	ST4	ST5	CRITICAL PROGRESSION POINT	ST6	ST7	ST8	CRITICAL PROGRESSION POINT
1. Advising and authorising appropriate Nuclear Medicine diagnostic and therapeutic interventions for individual patients	2	2	2		3	3	4	
2. Ability to direct optimisation of diagnostic Nuclear Medicine image quality in terms of patient preparation, image acquisition, post processing and display	2	2	2		3	4	4	
3. Providing timely, accurate and clinically pertinent reports on all Nuclear Medicine diagnostic studies	2	2	2		3	3	4	
4. Providing a safe and comprehensive radionuclide therapy service	2	2	2		2	3	4	
5. Leading all the clinical aspects of the Nuclear Medicine department in terms of compliance with regulations	2	2	2		2	3	4	

Enrolment and membership

The JRCPTB is responsible for trainee support for Internal Medicine Training (IMT) and the higher training in NM. The RCR is responsible for trainee support for CR training. Both the JRCPTB and the RCR will make the recommendation for award of CCT to the GMC with the process being coordinated by the JRCPTB.

New trainees should enrol with the RCR and pay membership for the first three years of training when they are predominantly based in CR. They must also enrol with the Joint Royal Colleges of Physicians (JRCPTB) but do not pay the JRCPTB trainee fee until completion of the first three years of CR.

Trainees will be appointed at ST3 level to NM but for the purpose of clinical reporting and within the RCR eportfolio trainees are identified by both their training level in nuclear medicine and their training year in clinical radiology (eg ST3 nuclear medicine / ST1 clinical radiology).

At the start of the second three years of training (ST6) trainees will stop paying the membership fee to RCR (unless they choose to maintain membership) and will pay two years of training fees to JRCPTB. This is in line with JRCPTB policy that all physician trainees pay equivalent of five years of trainee fees in total, regardless of programme length.

Trainees will be contacted by both organisations with further information at the time of enrolment. JRCPTB and RCR provide support to individual trainees in a number of ways including calculation of certificate of completion of training (CCT) dates, approval of out of programme (OOP) time, providing advice about curriculum and training processes, eportfolio support and recommendation for CCT.

NM trainees who have not passed the full FRCR during the first three years of CR training will still be eligible to apply for the examination after they stop paying membership to the RCR.

Following successful completion of the Final FRCR examination, trainees are entitled to continue as full, subscribing Fellows of the RCR throughout their career. This is an individual choice which does not form part of any training requirement.

Membership of one of the Royal Colleges of Physicians is separate to the JRCPTB trainee fee and payment of membership fees is an individual choice which does not form part of any training requirement.

Eportfolio

There are two eportfolios for CR and NM: Kaizen and NES eportfolios. It will be important for trainees and supervisors to record progression and acquisition of

capabilities in both specialties throughout training. The following guidance relates to use of eportfolios for this purpose:

- Trainees will not be required to maintain two eportfolios during training.
- Trainees will use the Kaizen eportfolio for the first three years of predominantly CR training and the NES JRCPTB eportfolio for the following three years of predominantly NM training.
- Both eportfolios will support the recording of evidence for CR and NM including educational supervisor reports and workplace based assessments.
- The requirement for recording of evidence will be lighter touch for the specialty in which the doctor is training at 20% but must include an educational supervisor report and MSFs should include feedback from the MDT.
- Trainees should ensure CR and NM educational supervisors and clinical supervisors have access to the relevant eportfolio.
- NM and CR programme directors and ARCP panels should have access to the RCR and JRCPTB eportfolios.

Glossary of abbreviations

ARCP	Annual Review of Competence Progression
CaP	Capabilities in Practice
CbD	Case-based Discussion
CCT	Certificate of Completion of Training
CS	Clinical Supervisor
NMPGDip	Nuclear Medicine Post-graduate Diploma
DOPS	Direct Observation of Procedural Skills
EPA	Entrustable Professional Activity
ES	Educational Supervisor
FRCR	Fellowship of the Royal College of Radiologists
GPC	Generic Professional Capabilities
GMC	General Medical Council
HoS	Head of School
JRCPTB	Joint Royal Colleges of Physicians Training Board
MDT	Multidisciplinary Team
MCR	Multiple Consultant Report
Mini CEX	Mini Clinical Evaluation Exercise
Mini IPEX	mini-Imaging Interpretation Exercise
MSF	Multi-Source Feedback
NTN	National Training Number
PDP	Professional Development Plan
PS	Patient Survey
SLE	Supervised Learning Event
WPBA	Workplace Based Assessment

JRCPTB

Joint Royal Colleges of Physicians Training Board

