Neuroradiology
Training Experiences

2024
VERSION 1.0

These training requirements apply to those who begin training on or after July 1, 2024.

ELIGIBILITY REQUIREMENTS TO BEGIN TRAINING

Royal College certification in Diagnostic Radiology.

OR

Eligibility for the Royal College examination in Diagnostic Radiology.

OR

Registration in a Royal College accredited residency program in Diagnostic Radiology.

A maximum of one year of training in Neuroradiology may be undertaken during the final year of training for certification in Diagnostic Radiology.

ELIGIBILITY REQUIREMENTS FOR EXAMINATION[1]

All candidates must be Royal College certified in Diagnostic Radiology in order to be eligible for the Royal College examination in Neuroradiology.

The following training experiences are required, recommended, or optional as indicated:

TRANSITION TO DISCIPLINE (TTD)

This stage focuses on introducing residents to the subspecialty of Neuroradiology by providing a comprehensive orientation to the setting(s) in which they will work and the goals of the educational program. Residents will learn to use the equipment and technology of the neuroradiology service to retrieve and manipulate images, access clinical information, recognize normal neuroanatomy, and document findings.

[1] These eligibility requirements do not apply to Subspecialty Examination Affiliate Program (SEAP) candidates. Please contact the Royal College for information about SEAP.

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Required training experiences (TTD stage):

1. Clinical training experiences
    1.1. Neuroradiology services for emergent, urgent, and non-urgent conditions in hospitalized patients
        1.1.1. Computed tomography (CT)
        1.1.2. Magnetic resonance imaging (MRI)
        1.1.3. After-hours coverage
        1.1.4. Participation in multidisciplinary rounds

2. Other training experiences
    2.1. Orientation to the residency program, including Competence by Design (CBD), the curriculum, and the assessment system
    2.2. Orientation to the university, including policies and procedures, university resources, and wellness resources
    2.3. Orientation to the hospital(s), including policies and procedures, information systems, and electronic medical records
        2.3.1. The medical imaging department(s) and workflow processes, including picture archiving and communication systems (PACS) and voice dictation training
    2.4. Formal instruction in
        2.4.1. The basic and clinical sciences of Neuroradiology
            2.4.1.1. Neuroanatomy
            2.4.1.2. Disorders of the nervous system, head, neck, and spine
            2.4.1.3. Imaging-related complications, including contrast reactions and extravasation

Recommended training experiences (TTD stage):

3. Clinical training experiences
    3.1. Percutaneous spinal intervention, including lumbar puncture and myelography

4. Other training experiences
    4.1. Formal instruction in
        4.1.1. MRI safety
        4.1.2. Radiation safety
        4.1.3. Aseptic and sterile technique
    4.2. Critical appraisal activities, such as journal club

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FOUNDATIONS OF DISCIPLINE (F)

The focus of this stage is the development of the knowledge and skills required to integrate clinical and imaging information in the evaluation of common and acute patient presentations relevant to Neuroradiology. Clinical experiences will include triaging, protocolling, interpretating and reporting routine examinations, and overseeing the acquisition of neuroimages using both CT and MRI. The resident will also perform diagnostic procedures and examinations such as lumbar puncture and myelography.

Required training experiences (Foundations stage):

1. Clinical training experiences
    1.1. Neuroradiology services for emergent, urgent, and non-urgent conditions in hospitalized patients and outpatients
        1.1.1. CT
        1.1.2. MRI
        1.1.3. Percutaneous spinal intervention, including lumbar puncture and myelography
        1.1.4. After-hours coverage
        1.1.5. Participation in multidisciplinary rounds

2. Other training experiences
    2.1. Formal instruction in the basic and clinical sciences of Neuroradiology
    2.2. Critical appraisal activities, such as journal club
    2.3. Examination preparation, including in-training examinations
    2.4. Aseptic and sterile technique, if not completed in TTD

Recommended training experiences (Foundations stage):

3. Other training experiences
    3.1. Attendance at a national or international course in Neuroradiology (e.g., Canadian Neuroradiology Course)

CORE OF DISCIPLINE (C)

In this stage, residents build on the skills and knowledge of the previous stages to protocol, perform, supervise, interpret, and report all neuroimaging examinations of adult and pediatric patients. They perform image-guided minimally invasive procedures. At this stage residents are advisors to other physicians on all neuroradiology examinations and procedures. They also apply their expertise and collaboration skills to participate in multidisciplinary rounds.

Required training experiences (Core stage):

1. Clinical training experiences
    1.1. Neuroradiology services for emergent, urgent, and non-urgent conditions in hospitalized patients and outpatients
        1.1.1. CT

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1.1.2. MRI

1.1.3. Neuroangiography

1.1.4. Percutaneous spinal intervention, including lumbar puncture, myelography, and pain management procedures

1.1.5. After-hours coverage

1.1.6. Participation in multidisciplinary rounds

1.2. Pediatric neuroradiology

2. Other training experiences
   2.1. Formal instruction in the basic and clinical sciences of Neuroradiology
   2.2. Critical appraisal activities, such as journal club
   2.3. Examination preparation, including in-training examinations
   2.4. Teaching junior learners

Recommended training experiences (Core stage):

3. Other training experiences
   3.1. Simulation-based education for procedural skills, including
      3.1.1. Lumbar puncture for complex patients
      3.1.2. Image-guided biopsy
      3.1.3. Facet block
      3.1.4. Selective nerve root block
      3.1.5. Epidural block

   3.2. Presentation or attendance at a national or international scientific meeting relevant to Neuroradiology, such as the Canadian Neurological Sciences Federation Congress or the American Society of Neuroradiology Annual Meeting
   3.3. Participation in quality improvement activities, including morbidity and mortality rounds or quality assurance rounds
   3.4. Development and completion of a scholarly research, quality improvement, or educational project

Optional training experiences (Core stage):

4. Clinical training experiences
   4.1. Neuroradiology
      4.1.1. Performance of neuroangiography
      4.1.2. Radionuclide imaging

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4.1.3. Ultrasound (US)

4.1.4. Community setting

4.1.5. Specific or enhanced skills acquisition in specialized areas of Neuroradiology related to defined learning needs based on individual interest, career plan, or community needs

4.2. Neurology

4.3. Neurosurgery

4.4. Neuro-oncology

4.5. Neuropathology

4.6. Head and neck surgery

4.7. Radiation oncology

TRANSITION TO PRACTICE (TTP)

In this stage, residents consolidate and integrate their knowledge and skills to provide neuroradiology services. They demonstrate autonomy with the full range of imaging modalities and minimally invasive procedures. The resident contributes expertise at multidisciplinary rounds and supports clinical colleagues in the development of management plans. This stage also focuses on preparation for independent practice, with instruction and experience in areas of administrative and professional responsibility, including leadership of the neuroradiology service.

Required training experiences (TTP stage):

1. Clinical training experiences
   1.1. Neuroradiology in the role of junior attending,[2] with clinical and administrative responsibilities, including
      1.1.1. After-hours coverage
      1.1.2. Participation in multidisciplinary rounds

2. Other training experiences
   2.1. Formal instruction in the basic and clinical sciences of Neuroradiology
   2.2. Critical appraisal activities, such as journal club
   2.3. Teaching junior learners
   2.4. Formulation of a plan for continuing professional development

[2] "Junior attending" means that the resident assumes responsibility for patient care, and leadership in the education and clinical supervision of junior colleagues, with as much independence as permitted by ability, law, and hospital policy

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Recommended training experiences (TTP stage):

3. Other training experiences
   - 3.1. Formal instruction in
     - 3.1.1. Practice management
     - 3.1.2. Physician wellness
   - 3.2. Specific or enhanced skills acquisition in specialized areas of Neuroradiology related to defined learning needs based on individual interest, career plan, or community needs

CERTIFICATION REQUIREMENTS

Royal College certification in Neuroradiology requires all of the following:

1. Royal College certification in Diagnostic Radiology
2. Successful completion of the Royal College examination in Neuroradiology
3. Successful completion of the Neuroradiology Portfolio

NOTES:

The Neuroradiology Portfolio refers to the list of entrustable professional activities across all four stages of the residency Competence Continuum and associated national standards for assessment and achievement.

CREDIT FOR TRAINING IN THE UNITED STATES OF AMERICA

Candidates who have successfully completed one year of residency in an Accreditation Council for Graduate Medical Education (ACGME) accredited neuroradiology program and an additional year of training, which must include a required training experience in pediatric neuroradiology under the auspices of an ACGME or Royal College accredited program in neuroradiology, may be eligible for the Royal College examination in Neuroradiology.

MODEL DURATION OF TRAINING

Progress in training occurs through demonstration of competence and advancement through the stages of the Competence Continuum. Neuroradiology is planned as a two-year residency training program. There is no mandated period of training in each stage. Individual duration of training may be influenced by many factors, which may include the resident's singular progression through the stages and/or overlap training. Duration of training in each stage is therefore at the discretion of the Faculty of Medicine, Competence Committee, and program director.

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Guidance for programs

The Royal College Specialty Committee in Neuroradiology suggested course of training, for the purposes of planning learning experiences and schedules, is as follows:

- 1-2 months in Transition to Discipline
- 3-6 months in Foundations of Discipline
- 6-12 months in Core of Discipline
- 2-4 months in Transition to Practice

Guidance for postgraduate medical education offices

The stages of the Competence Continuum in Neuroradiology are usually no longer than

- 2 months for Transition to Discipline
- 6 months for Foundations of Discipline
- 12 months for Core of Discipline
- 4 months for Transition to Practice

Total duration of training - 24 months

This document is to be reviewed by the Specialty Committee in Neuroradiology by December 31, 2025.

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