



The Royal Australian
and New Zealand
College of Radiologists®

The Faculty of Clinical Radiology

Specialist Interventional Radiology and Interventional Neuroradiology Range of Practice

Clinical Radiology

Position Paper

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About RANZCR

The Royal Australian and New Zealand College of Radiologists (RANZCR) is committed to improving health outcomes for all, by educating and supporting clinical radiologists and radiation oncologists. RANZCR is dedicated to setting standards, professional training, assessment and accreditation, and advocating access to quality care in both professions to create healthier communities.

RANZCR creates a positive impact by driving change, focusing on the professional development of its members and advancing best practice health policy and advocacy, to enable better patient outcomes. RANZCR members are critical to health services: radiation oncology is a vital component in the treatment of cancer; clinical radiology is central to the diagnosis and treatment of disease and injury.

RANZCR is led by clinicians who are democratically elected by the membership. The ultimate oversight and responsibility for RANZCR is vested in the Board of Directors. The work of RANZCR is scrutinised and externally accredited against industry standards by the Australian Medical Council and the Medical Council of New Zealand.

Our Vision

RANZCR as the peak group driving best practice in clinical radiology and radiation oncology for the benefit of our patients.

Our Mission

To drive the appropriate, proper and safe use of radiological and radiation oncological medical services for optimum health outcomes by leading, training and sustaining our professionals.

Our Values

Commitment to Best Practice

Exemplified through an evidence-based culture, a focus on patient outcomes and equity of access to high quality care; an attitude of compassion and empathy.

Acting with Integrity

Exemplified through an ethical approach: doing what is right, not what is expedient; a forward thinking and collaborative attitude and patient-centric focus.

Accountability

Exemplified through strong leadership that is accountable to members; patient engagement at professional and organisational levels.

Code of Ethics

The Code defines the values and principles that underpin the best practice of clinical radiology and radiation oncology and makes explicit the standards of ethical conduct the College expects of its members.

1. INTRODUCTION

1.1 Purpose and scope

- (a) This RANZCR Specialist Interventional Radiology and Interventional Neuroradiology Range of Practice document is intended to assist The Royal Australian and New Zealand College of Radiologists® (ABN 37 000 029 863) (the College), its staff, Fellows, members and other individuals to identify the range of practice of a specialist interventional radiologist and interventional neuroradiologist in Australia and New Zealand. It is important to note that the term 'range of practice' in this document refers to the full range of clinical interventional radiology or interventional neuroradiology practice rather than an individual specialist's scope of practice as determined by a local hospital or healthcare facility. The latter will vary from site to site and is dependent upon factors such as local staffing and expertise, available equipment and other facilities required to support a given clinical practice.
- (b) The RANZCR Specialist Interventional Radiology and Interventional Neuroradiology Range of Practice document is not designed to be a measure to:
 - (i) Restrict a suitably qualified and experienced individual's practice
 - (ii) Inappropriately seek to restrict another practitioner's practice
 - (iii) Assert a right to practice
 - (iv) Unfairly demand resources
 - (v) Engender an expectation that every interventional radiologist or interventional neuroradiologist be able to do everything within it.

1.2 Definitions

In this Specialist Interventional Radiology and Interventional Neuroradiology Range of Practice document:

Range of practice is the full range of interventional radiology or interventional neuroradiology that an interventional radiologist or interventional neuroradiologist may practice based on their training, qualifications, competency, performance, and professional experience. This differs from an individual's scope of practice as defined below.

Scope of practice refers to the extent of an individual specialist's practice based on their training, qualifications, competence, currency of practice, performance and professional experience, and importantly, the needs and the capability of the environment (e.g. local staffing and expertise, available equipment and other facilities) to support that clinical practice.

College means The Royal Australian and New Zealand College of Radiologists.

Member means a member of the College.

Clinical Radiology range of practice includes diagnostic radiology, basic procedural radiology and advanced training pathways of nuclear medicine, interventional radiology (IR) and/or interventional neuroradiology (INR)¹. This Specialist Interventional Radiology and Interventional Neuroradiology Range of Practice document does not replace the range of core procedural radiology practice that is part of diagnostic radiology training.

New and comprehensive specialist interventional radiology and interventional neuroradiology RANZCR training programs are in development and will contain various entry points including for international medical graduates.

2. INTERVENTIONAL RADIOLOGY PRACTICE

2.1 What is Interventional Radiology?

Interventional radiology is a clinical specialty that integrates core principles of image-guided diagnosis, treatment, and clinical management across a wide range of medical conditions and procedures that span the peripheral and central vasculature, hollow viscera and solid organs, the musculoskeletal system including vertebral column and the peripheral nervous system, in adults and/or children²⁻⁴.

Specialist interventional radiology practice requires advanced clinical knowledge, behaviours and skills with image interpretation and technical competencies across all imaging modalities to manage a wide range of conditions and to perform complex image-guided diagnostic and therapeutic procedures beyond the core procedural radiology skills acquired by all radiologists during [diagnostic radiology training](#)⁵⁻⁷.

Interventional radiology encompasses elective and emergency inpatient and outpatient services. Specialist interventional radiology practice provides high quality patient-centred care that can benefit patients, the health system and the broader society, usually with lower treatment costs. Minimally-invasive, image-guided procedures and treatments are associated with improved treatment outcomes, shorter recovery times, earlier return to daily activities and reduced morbidity and mortality compared to more invasive surgical and other active medical treatments⁸⁻¹⁸. Interventional radiology also provides diagnosis and treatment options for disease that is surgically inaccessible, or where no other alternative treatment options are viable.

2.2 Who is a Specialist Interventional Radiologist?

A specialist interventional radiologist is a [clinical radiologist](#)¹ who has completed additional specialty training in advanced interventional radiology. Interventional radiologists diagnose and manage diseases of the peripheral and central vasculature, the hollow viscera and solid organs, the musculoskeletal system including vertebral column and the peripheral nervous system, both in adults and/or children. They perform more advanced diagnostic and therapeutic minimally invasive image-guided procedures beyond the [core radiology training program](#).

Specialist interventional radiologists have a professional and ethical multidisciplinary approach to patient care; demonstrating effective communication with patients, referrers and other clinical colleagues. As a specialist interventional radiologist, they participate in holistic clinical care, in pre-procedural assessment, clinical management and follow-up of their patients, including appropriate complication avoidance, assessment and management.

Specialist interventional radiologists apply advanced knowledge in anatomy, pathology, pharmacology and physiology. Advanced training and understanding of applied physics and imaging technology, including radiation and magnetic resonance safety, advanced radiodiagnosis incorporating angiography, ultrasound, radiography, computed tomography, magnetic resonance imaging and nuclear medicine enhances the overall accuracy and safety of the treatments delivered. Their expertise includes clinical assessment of patients, ward-based care, minimally-invasive image-guided techniques, peri-procedural care and outpatient management of conditions and pathologies included in a clinical range of interventional radiology practice.

Specialist interventional radiology practice involves lifelong continuing medical education and professional development, ongoing competency of practice, and quality control including audit, follow-up and attendance at multidisciplinary meetings. Specialist interventional radiologists engage in advancing academia, interventional radiology teaching, training, and research, and continual invention and innovation of new techniques, devices, and procedures.

2.3 Specialist Interventional Radiology Range of Practice

Specialist interventional radiology range of practice includes diagnosis, image-guided treatments and non-interventional management of congenital and acquired diseases in adults and/or children affecting the peripheral and central vasculature, the hollow viscera and solid organs, and the musculoskeletal system including vertebral column and the peripheral nervous system.

Advanced peripheral and central vascular diagnostics includes diagnostic angiography including arteriography, venography and lymphangiography, endovascular vessel wall imaging including IVUS and OCT and non-invasive imaging including US, Doppler US, CTA, MRA and Nuclear Medicine.

Image-guided endovascular, endoluminal, percutaneous, hollow viscus, visceral and solid organ interventions include, but is not limited to:

- Central and peripheral arterial, venous and lymphatic interventions
- Thoracic interventions
- Abdominal interventions
- Gastrointestinal interventions
- Hepatobiliary interventions
- Genitourinary interventions
- Gynaecological interventions
- Musculoskeletal interventions
- Orthopaedic interventions
- Pain interventions
- Interventional oncology
- Paediatric interventions.

3. INTERVENTIONAL NEURORADIOLOGY PRACTICE

3.1 What is Interventional Neuroradiology?

Interventional neuroradiology is a clinical specialty that integrates core principles of diagnosis, management and image-guided endovascular, endoluminal and percutaneous treatment of patients with congenital and acquired diseases affecting the nervous system, principally the neurovasculature, brain, sensory organs, meninges, CSF, head and neck, spinal cord, vertebral column and adjacent structures, in adults and/or children.

Specialist interventional neuroradiology practice requires advanced clinical knowledge, behaviours and skills with image interpretation and technical competencies across all imaging modalities to manage a wide range of conditions and to perform complex image-guided diagnostic and therapeutic procedures beyond the core procedural radiology skills acquired by all radiologists during [diagnostic radiology training](#).

Interventional neuroradiology encompasses elective and emergency inpatient and outpatient services. Specialist interventional neuroradiology practice provides high quality patient-centred care that can benefit patients, the health system and the broader society, usually with lower treatment costs. Minimally-invasive, image-guided procedures and treatments are associated with improved treatment outcomes, shorter recovery times, earlier return to daily activities and reduced morbidity and mortality compared to more invasive surgical and other active medical treatments¹⁹⁻³¹. Interventional neuroradiology also provides diagnosis and treatment options for disease that is surgically inaccessible, or where no other alternative treatment options are viable.

3.2 Who is a Specialist Interventional Neuroradiologist?

A specialist interventional neuroradiologist is a [clinical radiologist](#)¹ who has completed additional specialty training in interventional neuroradiology. Interventional neuroradiologists diagnose, manage and treat conditions affecting the nervous system, principally the neurovasculature, brain, sensory organs, meninges, CSF, head and neck, spinal cord, vertebral column and adjacent structures. They perform a range of advanced diagnostic and therapeutic, minimally-invasive, image-guided procedures beyond the [core radiology training program](#).

Specialist interventional neuroradiologists have a professional and ethical multidisciplinary approach to patient care; demonstrating effective communication with patients, referrers and other clinical colleagues. As a specialist interventional neuroradiologist, they participate in holistic clinical care, in pre-procedural assessment, clinical management and follow-up of their patients, including appropriate complication avoidance, assessment and management.

Specialist interventional neuroradiologists apply advanced knowledge of the anatomy and physiology of the nervous system, pathology, pharmacology including coagulation pathophysiology and use of anticoagulant, antiplatelet and procoagulant medications and clinical management of common neurointerventional conditions. Advanced training and understanding of applied physics and imaging technology, including radiation and magnetic resonance safety, advanced radiodiagnosis incorporating angiography, ultrasound, radiography, computed tomography, magnetic resonance imaging and nuclear medicine enhances the overall accuracy and safety of the treatments delivered. Their expertise includes clinical assessment of patients, ward-based care, minimally-invasive image-guided techniques, peri-procedural care and outpatient management of conditions and pathologies included in a clinical range of interventional neuroradiology practice.

Specialist interventional neuroradiology practice involves lifelong continuing medical education and professional development, ongoing competency of practice and quality control including audit, follow-up and attendance at multidisciplinary meetings. Specialist interventional Neuroradiologists engage in advancing academia, interventional neuroradiology teaching, training, and research, and continual invention and innovation of new techniques, devices, and procedures.

3.3 Specialist Interventional Neuroradiology Range of Practice

Specialist Interventional neuroradiology range of practice includes diagnosis, image-guided treatments and non-interventional management of congenital and acquired diseases in adults and/or children affecting the nervous system, principally the neurovasculature, brain, sensory organs, meninges, CSF, head and neck, spinal cord, vertebral column and adjacent structures, as well as the peripheral nervous system.

Advanced neurodiagnostics include cranial, head and neck, and spinal diagnostic angiography, endovascular vessel wall imaging including IVUS and OCT and non-invasive imaging and functional imaging with CT, MRI, Doppler US, US and TCD, and Nuclear Medicine.

Image-guided endovascular, endoluminal, percutaneous interventions of the neurological system and supporting structures include, but is not limited to:

- Neurovascular interventions, including intracranial aneurysms, ischaemic stroke, vascular malformations and steno-occlusive lesions
- CSF intervention, including sampling, therapeutic infusion, diversion, drain insertion, treatment of leakage and fistula
- Cranial, head and neck, and spinal oncology interventions
- Neurophysiological interventions including WADA and balloon test occlusion
- Spinal interventions including axial skeleton and pelvis
- Pain interventions
- Paediatric interventions.

4. CHANGES TO THE SPECIALIST INTERVENTIONAL RADIOLOGY AND INTERVENTIONAL NEURORADIOLOGY RANGE OF PRACTICE DOCUMENT

The College may amend the RANZCR Specialist Interventional Radiology and Interventional Neuroradiology Range of Practice document at any time and will ensure that future amendments comply with applicable law.

5. RELATED DOCUMENTS

- [RANZCR Clinical Radiology Range of Practice](#)
- [RANZCR Clinical Radiology Trainee Curriculum](#)

6. ACKNOWLEDGEMENTS

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