

# Medical Imaging Services

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## Module overview

Please note: This module must be read in conjunction with the Fundamentals of the Framework (including the glossary and acronym list).

Medical imaging is a generic term used to define the use of conventional and sophisticated diagnostic practices. Medical imaging encompasses general radiography, ultrasound, computed tomography (CT) scan, fluoroscopy, mammography, angiography, interventional radiology, magnetic resonance imaging (MRI) and bone mineral densitometry. Nuclear medicine diagnostic imaging is delineated separately from diagnostic imaging services in the Framework due to the distinctive capability requirements for clinical and technical support, staff training and accreditation. Cardiac diagnostic and interventional imaging is also not covered here, as it constitutes a section of the Cardiac Services module.

Medical imaging services vary according to several factors, including:

- capacity to develop documented processes with public and private service providers
- geographic location of the service and proximity to required support services
- modalities available and complexity of procedures able to be provided.

Medical imaging is provided either on-site or by another facility under a contractual agreement (or similar). A variety of technologies, such as picture archiving and communication systems (PACS) or teleradiology, may be required to augment service provision. Individual patient records must be maintained by both the initiating and providing sites and exchanged within clinically relevant timeframes. Documented processes between services are also required.

Interventional radiology is defined as a subspecialty of radiology, in which minimally invasive procedures are performed using image guidance. The Royal Australian and New Zealand College of Radiologists (RANZCR) and the Interventional Radiology Society of Australasia (IRSA) have divided interventional radiological procedures into two groups—Tiers A and B—as outlined at the specific levels. The ability of a health service to perform interventional radiology procedures is dependent largely on the availability of additional support services and the service profile of the facility.

## Service requirements

In addition to the requirements outlined in the Fundamentals of the Framework, specific service requirements include:

- further facility requirements, which are outlined within local radiation safety and protection plans.

## Workforce requirements

In addition to requirements outlined in the Fundamentals of the Framework, specific workforce requirements include:

- an appointed radiation safety officer
- a qualified radiology medical physicist must be available for consultation on optimisation, dosimetry, quality assurance and additional matters relating to radiation protection in medical exposure

- where MRI services are available, MRI safety training is provided
- staff with required competencies in order to administer contrast
- Licensed Operators who do not have formal qualifications in diagnostic radiography permitted to use only plain-film diagnostic x-ray equipment to perform a limited range of plain-film diagnostic radiography involving the irradiation of a person (this does not include persons performing plain-film diagnostic radiography for dental or chiropractic purposes).

## Level 1 Medical Imaging Service

### Service description

A Level 1 service provides low-risk ambulatory care services during business hours and may provide some limited after-hours services. This service involves a single, mobile or fixed, general x-ray unit and is predominantly delivered by Licensed Operators.

Computed radiography is present to improve image quality and facilitate image transfer. The service must be able to provide resuscitation and stabilisation of patient emergencies until transfer or retrieval to a back-up health facility. The service must have documented processes with a public or suitably licensed private health facility for patient referral and transfer to/from a higher level of service. Transfer occurs within 24 hours.

### Service requirements

As per module overview, plus:

- for general radiography
  - a registered medical practitioner or radiologist in consultation with radiographic advisors, responsible for ensuring appropriate protocols are developed and implemented
  - signed x-ray requests provided by an authorised person
  - diagnostic radiography protocols and the scope of the Licensed Operator's licence determine the radiographic views and anatomical regions allowed to be radiographed
  - radiologist readily contactable to discuss findings and provide a report
  - a registered medical practitioner (rural general practitioner) may, in certain circumstances, be responsible for interpreting and reporting the images.

### Workforce requirements

As per module overview, plus:

#### Medical

- access to a specialist radiologist participating in a medical imaging service with either a Diploma of the Royal Australian College of Radiologists (DRACR) or Fellowship of the Royal Australian and New Zealand College of Radiologists (FRANZCR) certificate or certification from the National Specialist Qualification Advisory Committee (NSQAC)/Specialist Recognition Advisory Committee
- access to registered medical practitioners, using the Primary Clinical Care Manual as a resource for care and treatment

#### Allied health

- access—24 hours—to an appointed radiographic advisor for supervision of Licensed Operators

#### Other

- Licensed Operators employed in rural and remote facilities where a sole radiographer service needs support or where no radiographer service exists

- an appointed radiographic advisor (or other designated radiographer) to coordinate all Licensed Operator services including:
  - oversight of service provision
  - site visits at least annually to locations where Licensed Operators are engaged, ensuring professional support
- annual competency assessment by a diagnostic radiographer (approved by the lead clinician with responsibility for clinical governance of the service to conduct Licensed Operator competency assessment) prior to a Licensed Operator's x-ray licence renewal (licence is valid for one year)
- a Licensed Operator provided with:
  - opportunities to maintain skills and competencies in the permitted range of diagnostic radiography
  - a minimum of two rostered working days per year with the radiographic advisor or other designated radiographer
- three main types of Licensed Operator licence:
  - chest and extremities
  - chest and extremities (rural and remote—extended)
  - rural and remote—medical practitioner.

## Level 2 Medical Imaging Service

### Service description

A Level 2 service provides a low-risk ambulatory care and inpatient service. This service is predominantly delivered by a sole radiographer with support provided by Licensed Operators. There is a designated room on-site with a fixed x-ray unit and digital radiography; however, depending on the range of services provided at the facility (e.g. day hospitals), a mobile image intensifier may be the only modality available. Access to ultrasound for non-complex conditions or an outreach service may be available.

### Service requirements

As per Level 1, plus:

- the range of images not restricted when a radiographer is on duty
- access to non-complex ultrasound
- a mobile image intensifier may be available to provide fluoroscopy assistance for minor procedures; where the facility/service provides mobile fluoroscopy services, a radiographer must be in attendance during this procedure.

### Workforce requirements

As per Level 1, plus:

#### Medical

- access to a registered medical practitioner, with appropriate credentials in the administration of diagnostic ultrasound, for consultation where ultrasound is provided in areas classified as rural and remote locations (as recognised by Medicare Australia)

#### Allied health

- radiographers:
  - registered as medical imaging technologists with the Medical Radiation Technologists Board of Queensland
  - holding a current licence issued under the *Radiation Safety Act 1999* with an authority to use diagnostic x-ray equipment, relevant to the modalities being operated
  - available and contactable (e.g. by telephone) to provide advice to Licensed Operators

#### Other

- as per Level 1 service.

## Level 3 Medical Imaging Service

### Service description

A Level 3 service may have ultrasound services for more complex conditions, which may include obstetric and breast ultrasound. Sites may perform examinations involving contrast, such as intravenous pyelograms. A CT service may also be available off-site and provided under arrangement with another facility.

### Service requirements

As per level 2, plus:

- where ultrasound services are provided, the imaging is undertaken by a sonographer or registered medical practitioner trained in ultrasound
- rural and remote services (as recognised by Medicare Australia) comply with supervision requirements, including that sonographers performing ultrasounds have access to medical libraries and teleradiology, and/or telephone access to the reporting radiologist or registered medical practitioner
- where intravenous contrast examinations (e.g. intravenous pyelograms) are performed, the following resources are readily available:
  - local policy for information on emergency management processes
  - resuscitation trolley and automatic defibrillator
  - a registered medical practitioner on-site in the event of an emergency
  - paediatric resuscitation equipment where children are treated
- access to an off-site CT service provided under an arrangement with another facility (refer to Level 4 service requirements).

### Workforce requirements

As per Level 2, plus:

#### Medical

- a radiologist or registered medical practitioner with supervision responsibility for all contrast media examinations; however, administration of contrast may be delegated to a radiographer or registered nurse (a radiographer or nursing staff member is available to observe the patient post-procedure)
- where a radiologist is not on-site, a registered medical practitioner must be on-site at all times when procedures involving contrast are performed
- access—24 hours—to a registered medical practitioner to interpret/report on CT images
- an anaesthetist must be available for consultation/support where it has been identified that administration of contrast poses known risks

#### Nursing

- registered nurses who have been delegated administration of intravenous contrast must demonstrate competence in contrast administration and intravenous cannulation
- registered nurses are available in services with a higher level of patient acuity or a high throughput of patient examinations

## Allied health

- access—24 hours—to radiographers to provide appropriate imaging services
- radiographers who have been delegated administration of intravenous contrast must demonstrate competence in contrast administration and intravenous cannulation
- radiographers with clinical competency and experience appropriate to the modalities/services being provided
- sonographers are required to be on the Register of Accredited Sonographers or Student Sonographers, as administered by the Australian Sonographer Accreditation Registry Limited, or registered directly with the Department of Health and Ageing

## Other

- based on the type of modality and service offered, the following staff may be required:
  - medical imaging assistants
  - operational officers.

## Support service requirements

A Level 3 service requires:

Service	On-site	Accessible
medication	2	

## Level 4 Medical Imaging Service

### Service description

A Level 4 service provides fixed-room fluoroscopy, on-site CT services, complex ultrasound, interventional radiology Tier A, and mammography and interventional breast imaging services.

A facility or service may provide general radiography services and CT services even if a supervising radiologist is not on-site. The facility or service must develop documented processes with a radiologist (in the case of CT) and/or other suitably qualified medical practitioner (in the case of general radiography) to provide the necessary level of supervision and support to the service. Protocols would also be required that identify:

- clinical indications for conducting a CT
- indications for administration of contrast
- the acquisition of images and timely interpretation.

Similarly, if the facility or service wishes to provide fluoroscopy services, a radiographer and a radiologist or registered medical specialist must be in attendance during this procedure. This level service may insert peripherally inserted central catheters (PICCs) under imaging guidance (e.g. ultrasound plus/minus fluoroscopy).

Where a mammography service is provided, ultrasound and interventional breast imaging services are available. Image-guided breast procedures require radiologist supervision and specialist equipment attachments.

In the case of interventional radiology, the types of services provided in a Level 4 interventional radiology service would be those defined by the IRSA and the RANZCR as Tier A. Procedures that are performed by such a service would include basic diagnostic angiography and interventional techniques (e.g. nephrostomy, abscess drainage and biopsy).

Where a Level 4 service performs Tier A procedures, there must be access to either on-site surgical support or documented processes with a service capable of accepting patients on emergency transfer within 60 minutes for peripheral interventions and within 30 minutes for aortic/visceral/renal interventions in normal circumstances. A Level 4 service can provide resuscitation and stabilisation of emergencies, in line with RANZCR guidelines, until transfer or retrieval to a back-up facility.

This level of service may have access to off-site MRI and bone mineral densitometry services (refer to Level 5 service requirements).

Please note that not all modalities described in this section will be provided in all services; however, where they are, this section describes the minimum requirements for the provision of a safe imaging service.

### Service requirements

As per Level 3, plus:

- services performing fluoroscopy develop and implement a documented quality assurance program that, as a minimum, includes reviewing screening times and dosages at least monthly, and conducting a department-based image review program

- only basic interventional radiology Tier A (e.g. basic diagnostic angiography, nephrostomy, abscess and cyst drainage and biopsy, simple venous access, breast localisation, joint arthrography and injection, spinal tap, epidural and spinal nerve root block)
- access—24 hours—to a radiologist to interpret/report on CT images, discuss an examination and alter the conduct of the procedure, if necessary
- access to an electrocardiograph, blood pressure monitoring and a pulse oximeter where angiography is performed, patient acuity is high or sedation is used
- an on-site CT service with demonstrable and documented protocols that determine
  - the authorisation of CT requests as per Radiation Safety Regulation 1999
  - which CT examinations require intravenous contrast (including type, strength and volume of contrast to be administered)
  - the screening of patients for contrast risk
  - consent requirements
  - the technical protocol required for the clinical indication
  - consultation requirements with a supervising radiologist, and image reviewing and reporting arrangements
- complex ultrasound may be provided for diagnosing deep vein thrombosis, and vascular and musculoskeletal conditions, and for performing Doppler studies undertaken by a sonographer or registered medical practitioner trained in ultrasound
- PICC insertion may be performed by non-medical staff who meet the required guidelines, providing access to a registered nurse is available; the person performing the procedure may provide a descriptive comment regarding the outcome until a radiologist report is available
- access to MRI services may be available off-site and provided under an arrangement with another facility—see Level 5 for service characteristics.

## Workforce requirements

As per Level 3, plus:

- where a patient requires sedation, a registered nurse with appropriate competency or an anaesthetist must be responsible for the patient's airway and for providing care

### Medical

- a radiologist performing Tier A procedures must hold a current DRACR/FRANZCR certificate or current certification from the NSQAC
- a radiologist performing Tier A procedures must:
  - demonstrate currency of ongoing activity in performing such procedures
  - undertake relevant, continuing professional development activities as defined by the IRSA's *Guidelines for Credentialling for Interventional Radiology*
- radiologist in charge for clinical governance oversight available during business hours
- access to other medical specialists with appropriate credentials for the interventional procedures being performed

### Nursing

- a nurse manager (however titled)
- a senior registered nurse in charge of each shift

- registered nurses with relevant clinical knowledge, demonstrated evidence of ongoing clinical competency and experience in medical imaging practices
- nursing staff available on-site during business hours and available after hours, as required
- registered nurses and nursing staff supporting the registered nurse/s (under supervision) assigned to modalities that have procedures or patient areas where patients (e.g. inpatients) require nursing care and pre- and post-procedures
- access to appropriate staff for counselling and surgical assessment where breast intervention is performed

### Allied health

- senior radiographers with clinical management skills assigned to individual imaging modalities or group of modalities (subject to service size and workloads) to coordinate service delivery and quality
- radiographer with clinical competency and experience appropriate to the modality being provided must be present to operate each apparatus
- access—24 hours—to radiographers

### Other

- at least one staff member within the department with advanced infection control skills
- access to service engineers with qualifications, training and experience relevant to the model and make of the equipment in use by the service.

## Support service requirements

A Level 4 service requires:

Service	On-site	Accessible
anaesthetic		3
medication	3	

## Level 5 Medical Imaging Service

### Service description

A Level 5 service may provide MRI, some Tier B interventional radiology services and endovascular aneurysm repair. Tier B procedures include:

- all vascular interventional procedures other than basic diagnostic angiography (e.g. stents, angioplasty, thrombolysis, thrombectomy, atherectomy, embolisation, retrieval of foreign bodies, and laser and mechanical angioplasty)
- venous and arteriovenous graft interventions other than basic diagnostic venography or fistulography (e.g. thrombolysis, angioplasty, stents, atherectomy, pulmonary embolism/thrombolysis and caval filter insertion)
- biliary intervention, including transjugular intrahepatic portosystemic shunt
- thoracic intervention, embolisation of arteriovenous malformations, bronchial stents, occlusion of bronchopleural fistulae and bronchial artery embolisation
- gastrointestinal intervention (e.g. oesophageal and duodenal stents, percutaneous gastrostomy, gastrointestinal vascular procedures other than diagnostic angiography, embolisation, chemoembolisation and transplant intervention)
- urological intervention (e.g. renal artery embolisation, angioplasty or stenting, and percutaneous nephrolithotomy)
- gynaecological (e.g. Fallopian tube recanalisation, embolisation of fibroids and bilateral internal iliac occlusion)
- orthopaedic (e.g. percutaneous vertebroplasty and percutaneous discectomy).

This level service excludes provision of neurological interventional procedures but may have on-site or access to bone mineral densitometry services.

### Service requirements

As per Level 4, plus:

- each MRI unit must:
  - be registered with the RANZCR MRI Program
  - align with the MRI Supervision Framework
  - have different levels of supervision applied to specific components of the MRI examination
- MRI requests are to be reviewed and a protocol drawn up by an appropriately qualified MRI registered medical practitioner before an examination occurs
- MRI Level IB supervision generally applies (as above), except:
  - for examinations to be flagged as requiring (or possibly requiring) contrast
  - for examinations to be flagged as requiring an MRI radiologist review before discharge
  - where the facility identifies those clinical conditions/examinations that routinely require a prompt MRI radiologist review before discharge (e.g. suspected cord compression)
- all MRI examinations reported by a radiologist with appropriate training and experience

- a registered medical practitioner with appropriate credentials and clinical privileges has responsibility for:
  - specifying the use and dosage of contrast agents
  - specifying the pulse sequences being performed
  - assuring the quality of the images and interpretations
- where patients are sedated for MRI procedures:
  - patients are monitored appropriately
  - monitoring equipment must be accessible both in and out of the MRI magnet room
  - for paediatric patients, equipment sizes appropriate to paediatric patients must also be available
- for procedures involving anaesthesia, a registered nurse plus an anaesthetic technician/assistant to the anaesthetist is required (refer to ANZCR's Recommendations on minimum facilities for safe anaesthesia practice outside operating suites)
- breast imaging includes access to the higher level modalities required for diagnostic surveillance and may be provided in conjunction with a high-risk clinic.

## Workforce requirements

As per Level 4, plus:

### Medical

- specialists performing Tier B procedures (excluding neurological interventional procedures) must hold a current DRACR/FRANZCR certificate or current certification from the NSQAC and must demonstrate that the training requirements are met
- registered medical practitioners performing Tier B procedures must demonstrate current, ongoing activity in procedures and relevant, continuing professional development activities, as defined in the IRSA's *Guidelines for Credentialing for Interventional Radiology*
- access—24 hours—to a registered medical practitioner (radiologist)
- the radiologist reporting and interpreting MRI examinations must hold a current DRACR/FRANZCR certificate or current certification from the NSQAC and must be either:
  - registered as a RANZCR supervising radiologist for MRIor
  - participating in the RANZCR's Continuing Professional Development Program for MRI and working at a site that has a registered MRI supervising radiologist
- a radiologist with credentials in breast MRI

### Nursing

- registered nurses available after hours to assist radiologists with interventional procedures
- a dedicated midwife for pregnant patients undergoing an interventional procedure with sole responsibility for the patient and foetus
- a nurse escort may be required to stay with and provide care for patients needing specialist care
- may have some staff who are competent in providing advanced life support
- may have dedicated nursing staff who undertake pre-admission of patients

### Allied health

- radiographers who conduct MRI examinations as independent or sole operators must have appropriate training, such as the Australian Institute of Radiography Level 1 Certificate or equivalent training and experience
- specialist radiographers assigned to each of the modality areas with responsibility for service delivery and quality

### Other

- as per Level 4 service.

## Support service requirements

A Level 5 service requires:

Service	On-site	Accessible
anaesthetic		4
medication	4	
pathology		3

## Level 6 Medical Imaging Service

### Service description

A Level 6 service provides complex, on-site interventional and neurointerventional procedures and MRI services that must be available on-site.

### Service requirements

As per Level 5, plus:

- a CT service that supports increased complexity of clinical interventions, which may include diagnostic cardiac angiography (refer to the Cardiac Services module)
- an MRI service that supports more complex service profile/higher acuity patients
- an interventional radiology service that supports a more complex service profile for complex/higher acuity patients
- neurosurgery facilities and a neurosurgeon must be available on-site when an intracranial neuroradiology procedure is performed.

### Workforce requirements

As per Level 5, plus:

#### Medical

- specialists performing Tier B procedures (including neurointerventional procedures, such as neuroangiography and/or carotid stenting and ablation therapy) must hold a current DRACR/FranzCR certificate or current certification from the NSQAC and must demonstrate that they meet the training requirements as described in the RANZCR/ANZSNR/IRSA *Guidelines for Accreditation and Credentialing in Interventional Neuroradiology*

#### Nursing

- registered nurses with specific competencies relevant to the services being provided

#### Allied health

- specialist radiographers with neurointerventional competency assigned to that modality with responsibility for service delivery and quality

#### Other

- as per Level 4 service.

### Support service requirements

A Level 6 service requires:

Service	On-site	Accessible
anaesthetic		5
medication	4	
pathology		5

## Legislation, regulations and legislative standards

In addition to what is outlined in the Fundamentals of the Framework, medical imaging services must comply with the following:

- Australian Radiation Protection and Nuclear Safety Agency. Radiation Protection Series No.14. Code of Practice for Radiation Protection in the Medical Applications of Ionizing Radiation; 2008
- Diagnostic Imaging Accreditation Scheme Standards, Department of Health and Ageing (DoHA).  
[www.health.gov.au/internet/main/publishing.nsf/Content/diagnosticimaging-accred2](http://www.health.gov.au/internet/main/publishing.nsf/Content/diagnosticimaging-accred2)
- Health Insurance (Diagnostic Imaging Services Table) Regulations
- Radiation Safety Regulation 1999
- Schedule 3A of the Radiation Safety Regulation 1999 identifies:
  - ‘authorised persons’ and the conditions in which these people can request radiological investigations/interventions
  - person listed in schedule 3A of the Regulation may authorise another person to be irradiated.

## Non-legislative standards, guidelines, benchmarks, policies and frameworks

In addition to what is outlined in the Fundamentals of the Framework, the following are relevant to medical imaging services:

- Australasian Society for Ultrasound in Medicine. Policies and Statements B1. Policy on Diagnostic Ultrasound Services. ASUM; 1999.  
[www.asum.com.au/site/files/P&S/B1\\_policy.pdf](http://www.asum.com.au/site/files/P&S/B1_policy.pdf)
- Australian College of Operating Room Nurses. ACORN standards, nursing roles, guidelines and position statements. ACORN; 2008.  
[www.acorn.org.au/content/view/42/51/](http://www.acorn.org.au/content/view/42/51/)
- Australian Institute of Radiography. Competency based standards for the accredited practitioner. AIR; 2005  
[www.air.asn.au/files/uploads/0710\\_CBS\\_Accredited\\_Practioner\\_Nov2005.pdf](http://www.air.asn.au/files/uploads/0710_CBS_Accredited_Practioner_Nov2005.pdf)
- Australian Institute of Radiography. Guidelines for radiographers involved in venepuncture. AIR; 2009. [www.air.asn.au](http://www.air.asn.au)
- Australian Institute of Radiography. Guidelines for professional conduct for radiographers, radiation therapists and sonographers. AIR; 2007. [www.air.asn.au](http://www.air.asn.au)
- Australian and New Zealand College of Anaesthetists. Recommendations on minimum facilities for safe anaesthesia practice outside operating suites. ANZCA; 2000. [www.anzca.edu.au](http://www.anzca.edu.au)
- Australian and New Zealand College of Anaesthetists. Technical standard T1: Recommendations of minimum facilities for safe administration of anaesthesia in operating suites and other anaesthetising locations. ANZCA; 2008.  
[www.anzca.edu.au/resources/professional-documents/](http://www.anzca.edu.au/resources/professional-documents/)
- Australian Sonographers Association. Guidelines. [www.a-s-a.com.au](http://www.a-s-a.com.au)
- Interventional Radiology Society of Australasia. Guidelines for credentialing for interventional radiology. [www.irsa.com.au/guidelines.html](http://www.irsa.com.au/guidelines.html)
- Queensland Government. Anatomical radiographic guidelines. Queensland Health; 2008.  
<http://qis.health.qld.gov.au/DocumentManagement/Default.aspx?DocumentID=24329>

- Queensland Government. Diagnostic radiography protocol (for registered nurses). Queensland Health; 2006.  
<http://qhpss.health.qld.gov.au/cass/radiation/resources/documents/DiagnosticRadiographyProtocol.pdf>
- Queensland Government. Ensuring correct patient, correct site and side, correct procedure (3Cs) policy. Queensland Health; 2009.  
[www.health.qld.gov.au/patientsafety/eis/webpages/3c\\_poldev.asp](http://www.health.qld.gov.au/patientsafety/eis/webpages/3c_poldev.asp)
- Queensland Government. I-Care guidelines. Preventing intravascular device related bloodstream infections: Recommended practices for the insertion and management of peripherally inserted central venous catheters (PICC). Queensland Health, Centre for Healthcare Related Infection Surveillance and Prevention.  
[www.health.qld.gov.au/chrisp/icare/picc\\_rec\\_prac.pdf#page=1](http://www.health.qld.gov.au/chrisp/icare/picc_rec_prac.pdf#page=1)
- Queensland Government. Radiographic protocols for licensed x-ray operators: for Queensland Health facilities. Queensland Health; 2008.  
<http://qis.health.qld.gov.au/DocumentManagement/Default.aspx?DocumentID=25634>
- Royal Australian and New Zealand College of Radiologists. RANZCR Guidelines [www.ranzcr.edu.au/search/index.cfm](http://www.ranzcr.edu.au/search/index.cfm) including:
  - Guidelines for Diagnostic Ultrasound Services
  - Guidelines for Iodinated Contrast Administration 2009
  - Guidelines on the Use of Gadolinium-Containing MRI Contrast Agents October 2009
  - MRI Safety Guidelines
- Royal Australian and New Zealand College of Radiologists. RANZCR Standards of practice for diagnostic and interventional radiology.  
[www.ranzcr.edu.au/qualityprograms/accreditation/standards2008.cfm](http://www.ranzcr.edu.au/qualityprograms/accreditation/standards2008.cfm)
- Royal Australian and New Zealand College of Radiologists/Australian and New Zealand Society of Neuroradiology/Interventional Radiology Society of Australasia. RANZCR/ANZSNR/IRSA Guidelines for Accreditation and Credentialling in Interventional Neuroradiology  
[www.ranzcr.edu.au/documents/download.cfm/RANZCR\\_ANZSNR\\_IRSA%20Guidelines.pdf?txtLibraryID=ranzcr&txtFileName=ACF1B9D%2Epdf](http://www.ranzcr.edu.au/documents/download.cfm/RANZCR_ANZSNR_IRSA%20Guidelines.pdf?txtLibraryID=ranzcr&txtFileName=ACF1B9D%2Epdf)