

Draft revised professional  
capabilities for medical  
radiation practitioners

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# 1. Introduction

The Medical Radiation Practice Board of Australia (the Board) has powers under the Health Practitioner Regulation National Law, as in force in each state and territory (the National Law), to develop standards, codes and guidelines about the eligibility of individuals for registration in the medical radiation practice profession. The Board developed *Professional capabilities for medical radiation practice* (the professional capabilities) for the three divisions of medical radiation practice.

## Background to medical radiation practice professional capabilities

The Board first published professional capabilities in November 2013, which applied to entry-level medical radiation practitioners seeking to qualify for registration as a diagnostic radiographer, a nuclear medicine technologist, or a radiation therapist. Since 2013, there have been technological developments and changes to the scope and role of medical radiation practitioners, in addition to developments in capability frameworks.

In 2018, the Board reviewed the 2013 professional capabilities. The capabilities in this document build upon the 2013 professional capabilities and reflect changes in medical radiation practice.

## Purpose of the medical radiation practice professional capabilities

The professional capabilities identify the knowledge, skills and professional attributes needed to safely and competently practise as a diagnostic radiographer, a nuclear medicine technologist or a radiation therapist in Australia. They describe the threshold level of professional capability required for both initial and continuing registration.

## Cultural competence and cultural safety

Cultural competence and cultural safety have been included in the professional capabilities because medical radiation practitioners in Australia must be able to work effectively with people from various cultures that may differ from their own. Culture may include, but is not limited to, age, gender, sexual orientation, race, socio-economic status (including occupation), religion, physical, mental or other impairments, ethnicity and organisational culture. A holistic, patient/client-centred approach to practice requires cultural competence.

Cultural competence is defined as a set of congruent behaviours, attitudes, and policies that come together in a system, agency, or among professionals and enables that system, agency, or those professionals to work effectively in cross-cultural situations. The word 'culture' is used because it implies the integrated pattern of human behaviour that includes thoughts, communications, actions, customs, beliefs, values, and institutions of a racial, ethnic, religious, or social group. The word 'competence' is used because it implies having the capacity to function effectively. A culturally competent system of care acknowledges and incorporates – at all levels – the importance of culture, the assessment of cross-cultural relations, vigilance towards the dynamics that result from cultural differences, the expansion of cultural knowledge, and the adaptation of services to meet culturally-unique needs<sup>1</sup>.

Medical radiation practitioners in Australia require a working knowledge of factors that contribute to and influence the health and wellbeing of Aboriginal and Torres Strait Islander Peoples. These factors include history, spirituality and relationship to land, and other determinants of health in Aboriginal and Torres Strait Islander communities.

The Board is part of the National Registration and Accreditation Scheme's (the National Scheme's) Aboriginal and Torres Strait Islander Health Strategy Group (the health strategy group) which published a *Statement of Intent* in July 2018. The statement highlights the health strategy group's intent to achieve equity in health outcomes between Aboriginal and Torres Strait Islander Peoples and other Australians to close the gap by 2031. Its vision is that patient safety for Aboriginal and Torres Strait Islander Peoples is the norm. Patient safety includes the inextricably linked elements of clinical and cultural safety. The health strategy group defines cultural safety as the individual and institutional knowledge, skills, attitudes and competencies needed to deliver optimal healthcare for Aboriginal and Torres Strait Islander Peoples.

At the time of this draft, the Health Professions Accreditation Collaborative Forum is undertaking a collaborative project to determine how programs of study across all health professions prepare their graduates to support Aboriginal and Torres Strait Islander Peoples to achieve their health outcomes. As this project continues to develop a strategy, further content on cultural competence and cultural safety will be incorporated into the professional capabilities and the accreditation standards for medical radiation practice.

### Format of the medical radiation practice professional capabilities

The professional capabilities are organised into five common domains that cover capabilities common to all divisions of medical radiation practice, three sub-domains related specifically to different divisions of medical radiation practice and one sub-domain related to cross-division practice (within Domain 5). Each domain consists of corresponding key capabilities and enabling components.

#### Domains

The domains comprise key capabilities that are thematically arranged and describe the essential characteristics of a competent registered medical radiation practitioner in Australia:

- Domain 1: Medical radiation practitioner:
  - Domain 1A: Diagnostic radiographer
  - Domain 1B: Nuclear medicine technologist
  - Domain 1C: Radiation therapist
- Domain 2: Professional and ethical practitioner
- Domain 3: Communicator and collaborator
- Domain 4: Lifelong learner
- Domain 5: Radiation safety and risk manager

#### Key capabilities – what registered medical radiation practitioners must be able to do

The key capabilities describe the key features of safe and competent practice in a range of contexts and situations of varied complexity and uncertainty. During any one procedure or treatment, practitioners are expected to demonstrate key capabilities from various domains. This recognises that competent professional practice is more than a sum of each discrete part and requires an ability to draw on and integrate the breadth of capabilities to support overall performance.

#### Enabling components – evidence of the key capabilities for general registration as a medical radiation practitioner

The enabling components describe the essential and measurable characteristics of the corresponding key capabilities and facilitate assessment of performance in the practice setting. Medical radiation practitioners must be able to demonstrate all enabling components for all key capabilities for safe and competent practice. This includes applying, adapting and synthesising new knowledge from experience to continually improve performance.

The enabling components include different levels of demonstration requirements:

- **Apply knowledge of/Apply principles of** indicates a practitioner is expected to apply detailed knowledge in the practice setting.
- **Understand** indicates a practitioner is expected to apply broad knowledge and understanding of information for safe practice, but may not be required to understand or interpret detailed information, or may not be required to use their knowledge and understanding to perform certain procedures.

- **Performance e.g. ‘perform’, ‘identify’, ‘respond’, ‘operate’** are used for the majority of enabling components – these are abilities required in the practice setting.

### **Explanatory notes**

Explanatory notes follow some enabling components for clarification and additional information. Where a note includes a list of items, e.g. of legal responsibilities or equipment, the wording used indicates when some or all the listed items are required:

- If a note states ‘must include’, all items on the list are required.
- If a note states ‘may include’, all items on the list are not required; any item on the list may be demonstrated.
- If a note states ‘but is not limited to’, additional items to those listed may be demonstrated to enable flexibility and innovation.
- If there is no note, all items listed in the enabling component/capability statement are required.

### **Uses of the medical radiation practice professional capabilities**

The Board has statutory functions as a regulator of the medical radiation practice profession in Australia. One of the Board’s statutory functions is to ‘register suitably qualified and competent persons in the health profession’<sup>2</sup>. The Board uses the medical radiation practice professional capabilities as a reference point of threshold competence when exercising its statutory functions, including for:

- registration of individuals who complete an approved medical radiation practice program of study in Australia (see section headed ‘Medical radiation practice professional capabilities and accreditation of medical radiation practice education programs in Australia’ for more details)
- registration of individuals who are relying on medical radiation practice qualifications issued in other countries to qualify for general registration in Australia
- re-registration of individuals who were previously registered as a medical radiation practitioner in Australia, and
- evaluation of a registrant whose level of competence to practise may pose a risk of harm to the public, for example, if the Board receives a complaint or notification about that registrant.

The professional capabilities may also be also used:

- by universities for the development of medical radiation practice curricula (learning and assessment), and
- to communicate to the public, consumers, employers, insurance companies and other stakeholders the standards that they can expect from medical radiation practitioners.

The Board recognises that other organisations and individuals may use the professional capabilities as a reference point of threshold competence for other purposes. This may include the registrants’ self-assessment of their competence, employers’ performance evaluation and management of registered medical radiation practitioners in the workplace, and agencies responsible for health policy and health workforce strategy.

### **Medical radiation practice professional capabilities and accreditation of medical radiation practice education programs in Australia**

The Board does not directly examine or assess the competence of applicants for registration who have completed their medical radiation practice education in Australia through an approved program of study. The Board is responsible for the regulation of medical radiation practitioners and established

the Medical Radiation Practice Accreditation Committee (the committee) under the National Law in July 2012.

The committee is responsible for accrediting education providers and medical radiation practice programs of study. It assesses programs against the *Medical radiation practice accreditation standards* (the accreditation standards) that were developed by the committee and approved by the Board. The committee accredits programs that meet, and monitors programs to ensure they continue to meet, the accreditation standards.

The accreditation standards refer to the professional capabilities. The accreditation standards require education providers to design and implement a program where learning outcomes and assessment tasks map to all the professional capabilities. Accreditation of a program therefore provides assurance to the Board and the community that graduating students from the medical radiation practice program have the knowledge, skills and professional attributes that are necessary for safe and competent medical radiation practice in Australia.

### Concept of threshold professional capability and competence

In this document, the description of knowledge, skills and professional attributes necessary for safe and competent medical radiation practice is described by key capabilities and enabling components.

Professional capability is the ability to take appropriate and effective action to formulate and solve problems in both familiar and unfamiliar, complex and changing settings<sup>3</sup>. Capability does not preclude the expression of competence, nor is capability a higher level of competence. Rather, competence is viewed as an essential part of being capable.

Competence refers to the knowledge and skills being applied consistently to the standard of performance required in the workplace<sup>4, 5</sup>. The definition of competence required for the job will change as the job role evolves. Threshold professional capability is the point at which the minimum level of competence required to perform the job safely and competently is reached (see Figure 1).

Capable people have high levels of self-efficacy, know how to learn, work well with others and are creative<sup>6</sup>. A practitioner's capability will expand and improve as they gain professional experience. Professional capability reflects how a practitioner uses their professional judgement, decision-making skills and experiential knowledge to apply their scientific knowledge, practical skills and ability in any given situation.

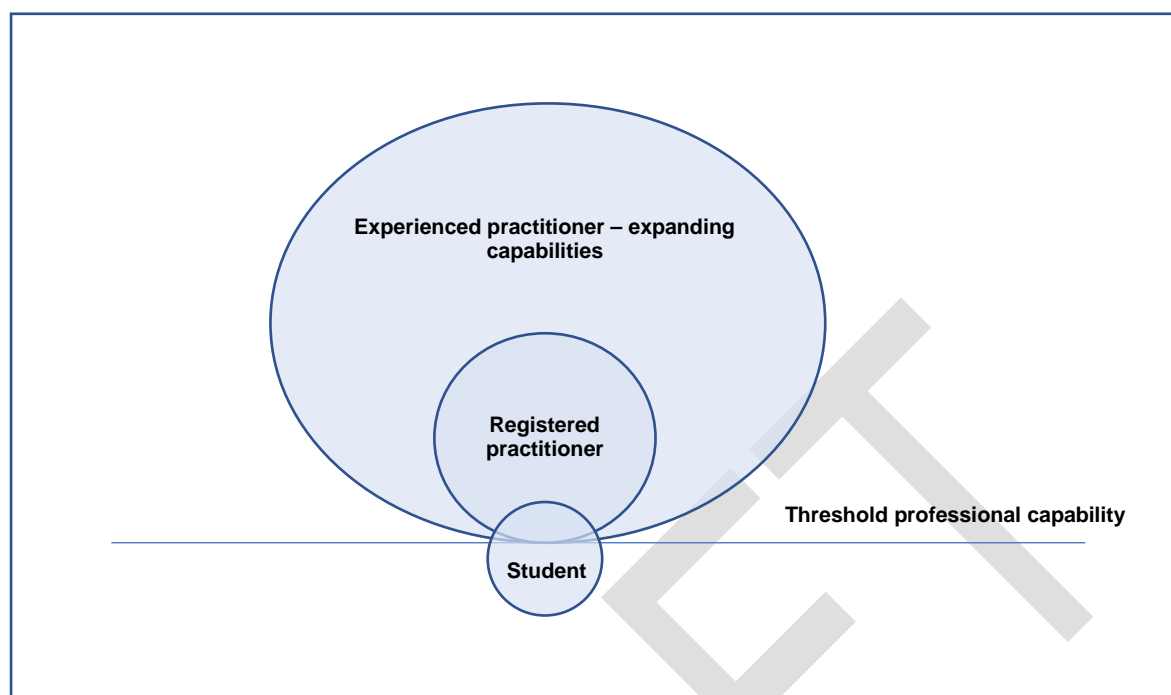
A capability framework can be pitched at the level of ongoing practice rather than being designed for a specific point-in-time assessment. It focuses on activities at the broad level that apply across the profession and allows individuals to develop their capabilities in complex and continually evolving work contexts. The enabling components in these professional capabilities describe the threshold behaviours for safe and competent practice.

The enabling components that describe behaviours for more advanced levels of practice are not covered in this document. That is, this document describes capability at the level of a novice practitioner, rather than an expert.

Professional capability develops over time. The circles in Figure 1 (below) represent different levels of professional capability, synonymous with the different stages of a practitioner's career, from student through to highly experienced practitioner or expert:

- A person who has not reached nor exceeded threshold professional capability across all aspects of practice is represented by the circle that lies only partially above the threshold level. For example, a student learning the job through supervised clinical practice.
- A registered medical radiation practitioner is represented by the circle that sits entirely above the threshold capability level. Many practitioners develop a level of professional capability that is well beyond the threshold as they strive for excellence in their practice.
- A highly experienced practitioner or expert is represented by the largest circle which represents continued development and expansion of their professional capability throughout their practice career.

**Figure 1: Threshold professional capability for registration**



### **Maintenance of professional capability**

The professional capabilities are relevant throughout a registered medical radiation practitioner's career. Registered medical radiation practitioners are required to maintain at least the threshold level of professional capability in all areas relevant to their practice and maintain the currency of their skills and knowledge through continuing professional development.

The level of professional capability and scope of practice for practitioners are likely to change over time as the profession advances and as new roles emerge in the evolving healthcare environment. Practitioners may move into new roles with different responsibilities. These roles may no longer include the direct provision of patient/client care, for example, in research, education, or management. With changes to a practitioner's scope of practice, some of the key capabilities may no longer be relevant to their practice.

Many medical radiation practitioners strive to excel in their provision of services and maintain a level of professional capability above the threshold. If a medical radiation practitioner fails to maintain at least the threshold level of professional capability in all areas relevant to their practice, they could pose a risk to the public.

### **Medical radiation practice professional capabilities and assessment of competence**

The professional capabilities provide a consistent reference point for assessing an individual's performance in the relevant context of medical radiation practice. The key capabilities and enabling components describe abilities and skills that can be assessed in practice and provide a reference point of threshold competence that can be applied across a range of contexts of practice. This includes assessment of:

- a medical radiation practitioner's performance in the context of the workplace or a simulated setting for maintenance of registration
- a medical radiation practice student's performance in the context of a clinical placement or simulated setting for education purposes, and



- individuals who qualify as medical radiation practitioners in other countries in the context of a competence assessment for initial registration in Australia.

The professional capabilities are not designed as a stand-alone means of measuring competence. The document supports the establishment of additional performance indicators and rating scales for valid measurement of a medical radiation practitioner's performance for different purposes, in different settings and across different scopes of practice.

The context of a medical radiation practitioner's practice may not be limited to (and may not necessarily include) direct interaction with patients/clients. Many of the abilities described in the key capabilities and enabling components are required when registered medical radiation practitioners work in management, administration, education, research, policy development, advisory contexts, regulatory or other contexts that have an impact on safe, effective delivery of medical radiation practice services. The performance indicators and rating scales for valid measurement of practitioners' competence will depend upon the purpose of the assessment of an individual's competence and the context of medical radiation practice in which the assessment is taking place.

### **Medical radiation practice professional capabilities and practice in ultrasound**

It is important to note that sonographers are not regulated under the National Law, and the medical radiation practice capabilities do not establish frameworks or capabilities that seek to enforce any regulation of sonographers. The professional capabilities apply in the context of registered medical radiation practitioners only, therefore any reference to ultrasound practices applies to day-to-day practice by a registered medical radiation practitioner.

### **Medical radiation practice professional capabilities and practice in computed tomography**

In the past decade computed tomography (CT) practice has evolved across the three divisions of medical radiation practice, principally driven by advancements in medical imaging and radiation therapy planning technology. Diagnostic radiographers are expected to perform a wide range of CT examinations, including sophisticated vascular and perfusion imaging; nuclear medicine technologists may perform CT imaging in addition to their role in using CT for correlating anatomical and physiological information during nuclear medicine scanning. The role of radiation therapists in providing CT scans as part of the radiation therapy patient journey is becoming more common place. This capability document reflects the evolution in CT practice across each of the divisions of practice, towards a more patient-centred experience.



## 2. Key capabilities and enabling components

### Domain 1: Medical radiation practitioner

This domain covers the knowledge, skills and attributes a medical radiation practitioner requires to practise independently and provide safe, high quality, patient/client-centred care. Key capabilities in this domain are common to medical radiation practitioners registered in any of the three divisions.

<b>Key capabilities</b> – <i>What registered medical radiation practitioners must be able to do</i>	<b>Enabling components</b> – <i>Evidence of this capability for general registration as a medical radiation practitioner</i>
1. Apply knowledge of anatomy, physiology and pathology to practice.	<ul style="list-style-type: none"> <li>a. Apply knowledge of anatomy and physiology of the human body to practice.</li> <li>b. Apply knowledge of the scientific explanations underpinning disease and injuries affecting the human body to enable delivery of safe, high quality examinations/treatment.</li> <li>c. Identify anatomical structures and physiological processes, injuries and diseases of the human body in medical images.</li> </ul>
2. Use clinical information management systems appropriately.	<ul style="list-style-type: none"> <li>a. Understand and comply with legislative responsibilities relating to data privacy; the ownership, storage, retention and destruction of patient/client records and other practice documentation.</li> <li>b. Use clinical information management systems to accurately record patient/client history and any examination/treatment provided to the patient/client, ensuring that the correct examination/treatment is associated with the correct patient.</li> <li>c. Ensure that stored clinical information (information and images) is associated with the correct patient/client and examination/treatment.</li> <li>d. Identify and respond appropriately when clinical information is incorrectly associated with the identity of a patient/client and/or examination/treatment.</li> <li>e. Manage clinical information (information and images) appropriately and consider the workflow between the different clinical information management systems.</li> <li>f. Respond appropriately to data errors and/or system failures.</li> <li>g. Ensure clinical information is made available to the appropriate persons involved in the care of the patient.</li> </ul> <p><b>Understanding legislation</b> may include relevant state/territory and federal legislation regarding privacy of data and the differences across states and territories.</p> <p><b>Clinical information management systems</b> may include, but are not limited to, picture and archiving communication system (PACS), radiation oncology information systems, radiology information system (RIS), electronic medical records, risk management systems, radiation dose tracking systems, radiation oncology information systems (ROIS), or electronic medical records (EMR). Medical radiation practitioners must understand the interaction between different systems, such as between RIS and PACS.</p> <p><b>Managing clinical information</b> includes understanding and following patient/client and examination/treatment-workflows (enter, begin, complete), searching correctly (e.g. by examination, patient/client,</p>

<b>Key capabilities</b> – <i>What registered medical radiation practitioners must be able to do</i>	<b>Enabling components</b> – <i>Evidence of this capability for general registration as a medical radiation practitioner</i>
	<p>modality, location and/or date etc.), understanding and following the folder structures.</p> <p><b>Responding to data errors and/or system failures</b> includes troubleshooting and fixing errors where possible or reporting errors/failures to the systems administrator in a timely manner.</p>
<p>3. Understand the different methods of imaging and treatment to determine the most appropriate option.</p>	<ul style="list-style-type: none"> <li>a. Understand the different imaging and treatment pathways within medical radiation practice.</li> <li>b. Understand the different modalities and equipment used across medical radiation practice.</li> <li>c. Understand use of CT and MRI-based simulation for a range of cancer sites, patient/client presentations and related planning procedures.</li> <li>d. Understand use of CT, MRI and PET datasets in radiation therapy simulation.</li> <li>e. Operate equipment and apply knowledge of laboratory procedures to practice when necessary.</li> </ul> <p><b>Equipment</b> may include, but is not limited to x-ray equipment, computed radiography, digital radiography, mammography, dental panoramic radiograph, fluoroscopy, angiography, computed tomography, magnetic resonance imaging, ultrasound, positron emission tomography, single photon emission computed tomography, dose calibrator, bone mineral densitometry, sample counters, superficial x-ray, linear accelerator, brachytherapy, ion chambers, planning systems, hybrid imaging systems, radiochemistry synthesis units, or radiation therapy treatment delivery systems. Medical radiation practitioners must understand the various modalities used in the different imaging and treatment pathways across medical radiation practice.</p>
<p>4. Confirm the procedure according to clinical indicators.</p>	<ul style="list-style-type: none"> <li>a. Review the patient's/client's clinical history, referral and current medical information to confirm the requested or prescribed procedure is appropriate, drawing on knowledge of other treatment pathways.</li> <li>b. Determine the appropriate imaging and/or treatment protocols and priorities, which consider the information collected during the interaction with the patient/client and knowledge of imaging and/or treatment options.</li> <li>c. Adapt the requested examination/treatment to an individual patient/client considering available clinical information.</li> </ul> <p><b>Clinical history</b> may include patient/client records, previous medical radiation practice services, information collected from patient/client during the procedure.</p>
<p>5. Assess the patient's/client's capacity to receive care.</p>	<ul style="list-style-type: none"> <li>a. Identify factors or conditions that may affect the patient's/client's behaviour and/or capacity to undergo the procedure.</li> <li>b. Identify patient/client preparation requirements.</li> <li>c. Identify patients/clients most at risk; including pregnant women and the foetus; breastfeeding mothers and their children.</li> </ul>

Key capabilities – What registered medical radiation practitioners must be able to do	Enabling components – Evidence of this capability for general registration as a medical radiation practitioner
	<ul style="list-style-type: none"> <li>d. Select appropriate equipment and triage patients/clients according to their clinical presentation, national standards and other factors.</li> <li>e. Identify contraindications and limitations of medical radiation services, determine appropriate adjustments to procedures, and communicate these to the patient/client.</li> <li>f. Perform patient/client assessment and medical radiation interventions in accordance with the patient/client need and choice, legislation, registration standards, and codes and guidelines, including gaining informed consent.</li> </ul> <p><b>Patient/client capacity or behaviour</b> may be influenced by pre-existing medical conditions; physical, physiological or psychological, age, pregnancy, culture, English language skills, or psycho-social and socio-economic factors.</p> <p><b>Selecting appropriate equipment and triaging patients/clients</b> must be undertaken with the application of the <i>Principle of Justice</i> to ensure the fairest distribution of care.</p>
<p>6. Implement equipment and techniques for patient/client immobilisation and reproducibility of procedures and outcomes.</p>	<ul style="list-style-type: none"> <li>a. Consider the limitations/restrictions in the use of techniques and devices for reproducibility of procedures in relation to the patient's/client's condition and presentation.</li> <li>b. Identify the type and method of immobilisation required for the type and purpose of the procedure and the patient/client condition and presentation.</li> <li>c. Use or adapt suitable immobilisation and ancillary equipment.</li> <li>d. Perform the appropriate immobilisation before starting the procedure.</li> </ul> <p><b>Equipment and techniques for patient/client immobilisation and reproducibility of procedures and outcomes</b> include but are not limited to use of immobilisation equipment, masks etc. Where appropriate, immobilisation must be used to stabilise the patient/client and/or the relevant body part, provide comfort to patients/clients during the procedure, and to promote a standardised examination/treatment outcome.</p> <p><b>The type and method of immobilisation required</b> will depend on the type of procedure, i.e. either a diagnostic or therapeutic procedure, the purpose of the procedure, and the patient/client condition and presentation including the physical and psychological state of the patient/client.</p>
<p>7. Deliver patient/client care.</p>	<ul style="list-style-type: none"> <li>a. Recognise and respond in an appropriate and timely way to a patient's/client's deteriorating condition, or inability to undergo a procedure consistent with duty of care and statutory requirements.</li> <li>b. Apply quality criteria to assure image quality, evaluate medical images and identify any urgent and/or unexpected findings.</li> <li>c. Take appropriate and timely action, to ensure the immediate management of the patient/client when any urgent and/or unexpected findings are identified.</li> <li>d. Provide appropriate patient/client care before, during and after the examination/treatment.</li> </ul>

Key capabilities – What registered medical radiation practitioners must be able to do	Enabling components – Evidence of this capability for general registration as a medical radiation practitioner
	<p><b>Recognising and responding to a patient's/client's deteriorating condition</b> must be consistent with the <i>National consensus statement: essential elements for recognising and responding to clinical deterioration</i>.</p> <p><b>Taking appropriate and timely action</b> is a key responsibility when a medical radiation practitioner identifies medically significant findings on an image. Information must be conveyed verbally or in writing, in line with relevant guidelines. Medical radiation practitioners must ensure information is conveyed to, and understood by, the appropriate persons who may include the requesting practitioner or other practitioners, for the immediate and appropriate management of the patient/client. The patient/client and their family/carers should also be informed. Communication between health practitioners about the clinical status of a patient should be recorded.</p> <p><b>Identifying urgent and unexpected findings</b> includes recognising and applying knowledge of normal from abnormal imaging appearances and relating appearances to the patient/client's clinical history.</p>
<p>8. Apply knowledge of safe and effective use of medicines to practice.</p>	<ul style="list-style-type: none"> <li>a. Apply the principles of safe and effective use of medicines to practice.</li> <li>b. Recognise the risks, precautions and contraindications of the use of medicines in practice, informed by the patient's/client's current pathology status.</li> <li>c. Apply knowledge of pharmacokinetics, pharmacodynamics and the potential range of reactions to medicines.</li> <li>d. Safely and effectively deliver medicine to patients/clients in accordance with procedures.</li> <li>e. Actively monitor the effects of medication and manage adverse reactions to medicines in accordance with protocols.</li> </ul> <p><b>Knowledge of safe and effective use of medicines</b> relevant to practice may include state/territory and federal legislation regarding supply and administration of medicines. It also includes understanding how pathological conditions may impact upon the delivery of some medicines.</p> <p><b>Procedures for safe and effective delivery of medicines</b> must be consistent with the National Safety and Quality Health Service (NSQHS) Standard on <i>Medication safety</i> and may include double checking products, confirming correct labelling, accurate calculations and measurements, and correct route.</p>

### Optional key capabilities and enabling components

The following optional key capabilities and enabling components covers the knowledge, skills and attributes required by a diagnostic radiographer, nuclear medicine technologist or radiation therapist who includes medical resonance imaging (MRI) and/or ultrasound in their scope of practice, to practise independently and provide safe, quality, patient/client-centred care.

<b>Key capabilities – What registered medical radiation practitioners must be able to do</b>	<b>Enabling components – Evidence of this capability for general registration as a medical radiation practitioner</b>
9. Perform magnetic resonance imaging (MRI).	<ul style="list-style-type: none"><li>a. Operate MRI systems safely and effectively.</li><li>b. Apply knowledge of the principles of MRI physics and surrounding environment to ensure patient/client and others' safety.</li><li>c. Select suitable imaging parameters for the patient/client presentation and where appropriate, modify imaging parameters to achieve optimal diagnostic outcomes.</li><li>d. Collaborate in the design and evaluation of MRI protocols.</li><li>e. Perform and evaluate MRI and where appropriate, modify the examination according to the MRI findings and clinical presentation.</li><li>f. Perform post-processing techniques.</li></ul> <p><b>MRI</b> includes contrast-enhanced studies and the safe and appropriate selection of MRI contrast agents for the patient/client presentation.</p> <p><b>Post-processing techniques</b> must include 3D dataset manipulation, subtraction and multi-planar reformatting.</p>
10. Perform ultrasound imaging	<ul style="list-style-type: none"><li>a. Operate ultrasound imaging systems safely and effectively.</li><li>b. Apply knowledge of the principles of ultrasound physics to minimise the likelihood of biological effects and identification of artefacts.</li><li>c. Apply knowledge of crosssectional anatomy, embryology, pathophysiology, haemodynamics, and sonographic appearances of normal and abnormal anatomy.</li><li>d. Use standard and non-standard techniques/images and equipment for the body area being examined and, where appropriate, modify them to consider the patient/client presentation and clinical indications.</li><li>e. Perform ultrasound imaging and where appropriate, extend or modify the examination according to the sonographic findings and clinical presentation.</li><li>f. Document the real-time examination and evaluate findings.</li></ul> <p><b>Ultrasound imaging systems</b> must include 2D, Doppler, and may include contrast and 3D where appropriate.</p> <p><b>Ultrasound physics</b> includes transducer design and operation, identification of artefacts and understanding of the biological effects of ultrasound.</p> <p><b>Documenting the real-time examination</b> must follow organisational protocols, and still images/cine loops must accurately represent any pathology present or the absence of.</p>

## Domain 1A: Diagnostic radiographer

This domain covers the additional knowledge, skills and attributes a diagnostic radiographer requires to practise independently. Diagnostic radiographers are responsible for the outcome of the diagnostic imaging examination, for patient/client care before, during and after the examination, and for the timely authorised distribution of medical images to allow for consultation with other health practitioners. Diagnostic radiographers produce high quality diagnostic radiographs and perform diagnostic procedures using ionising radiation, often in a team setting of health practitioners.

<b>Key capabilities – What registered medical radiation practitioners must be able to do</b>	<b>Enabling components – Evidence of this capability for general registration as a medical radiation practitioner</b>
1. Perform diagnostic radiography examinations in a range of settings.	<ul style="list-style-type: none"><li>a. Prepare the patient/client for the examination, including positioning the patient/client for the best diagnostic outcome.</li><li>b. Use standard radiographic projections and exposure factors for the patient's/client's body area being examined and, when appropriate, modify them to consider patient/client presentation, clinical indications and mechanisms of injury.</li><li>c. Apply knowledge of equipment geometry, image acquisition modes and radiation dose rates when performing fluoroscopy and angiography.</li></ul> <p><b>Diagnostic radiography examinations</b> may include but are not limited to fluoroscopy, angiography and mammography examinations.</p> <p><b>Range of settings</b> may include but is not limited to an emergency department, operating theatre, imaging department, angiography suite, mammography screening facility, or use of mobile systems.</p>
2. Perform diagnostic computed tomography (CT) imaging.	<ul style="list-style-type: none"><li>a. Operate CT systems safely and effectively.</li><li>b. Apply appropriate imaging parameters for the patient/client presentation.</li><li>c. Adjust relative dose levels based on the range of patient/client presentations.</li><li>d. Collaborate in the design and evaluation of CT protocols.</li><li>e. Perform and evaluate contrast and non-contrast CT examinations of the body and, when appropriate, modify them to consider patient/client presentation and clinical indications.</li><li>f. Perform post-processing techniques, including multi-planar reformats and volume imaging.</li></ul>



## Domain 1B: Nuclear medicine technologist

This domain covers the additional knowledge, skills and attributes a nuclear medicine technologist requires to practise independently. Nuclear medicine technologists are responsible for the outcome of the nuclear medicine examination, for patient/client care before, during and after the examination, and for the timely authorised distribution of medical images to allow for consultation with other health practitioners. Nuclear medicine technologists prepare, deliver, image and quantify diagnostic radiopharmaceuticals to demonstrate organ and molecular function as well as therapeutic radiopharmaceuticals to treat pathology.

<b>Key capabilities – What registered medical radiation practitioners must be able to do</b>	<b>Enabling components – Evidence of this capability for general registration as a medical radiation practitioner</b>
1. Prepare and assess the purity of radiopharmaceuticals.	<ul style="list-style-type: none"> <li>a. Perform the elution and quality control of the radioisotope generator.</li> <li>b. Assay the eluate and prepare radiopharmaceuticals ensuring critical procedure features are observed, such as correct volume.</li> <li>c. Perform quality control on radiopharmaceuticals and assess for patient/client use.</li> </ul>
2. Perform diagnostic imaging.	<ul style="list-style-type: none"> <li>a. Use standard nuclear medicine planar projections appropriate for the patient's/client's body area being examined.</li> <li>b. Deliver appropriate dosage of both radiopharmaceutical and CT for each patient/client.</li> <li>c. Determine whether the biodistribution of radiopharmaceuticals is normal, altered or unexpected.</li> <li>d. Perform SPECT/CT and PET/CT studies, including positioning the patient/client for the best diagnostic outcome.</li> </ul> <p><b>Studies</b> may include bone, myocardial perfusion, gated heart pool, lung perfusion/ventilation, thyroid, and renal studies as well as oncologic cardiac and neurologic PET studies.</p>
3. Perform nuclear medicine radioisotope examinations and therapies.	<ul style="list-style-type: none"> <li>a. Calculate the dose and decay of radiopharmaceuticals used in examinations and therapies.</li> <li>b. Recognise the difference between therapeutic and diagnostic doses, as it affects the patient/client, health practitioner and the public.</li> <li>c. Apply the principles underpinning nuclear medicine therapies to practice.</li> <li>d. Prepare the patient/client and delivery systems for nuclear medicine radiopharmaceutical therapies.</li> <li>e. Use appropriate radiopharmaceutical delivery systems and safe aseptic techniques.</li> </ul> <p><b>Delivery systems</b> may include arterial, oral, IV, subcutaneous and inhalation.</p>
4. Perform in vivo and in vitro laboratory procedures when necessary.	<ul style="list-style-type: none"> <li>a. Perform safe aseptic blood labelling procedures.</li> <li>b. Perform in vivo laboratory procedures.</li> <li>c. Implement appropriate methods to determine if results of laboratory procedures are normal, altered or unexpected.</li> </ul>



<b>Key capabilities</b> – <i>What registered medical radiation practitioners must be able to do</i>	<b>Enabling components</b> – <i>Evidence of this capability for general registration as a medical radiation practitioner</i>
	<b>Laboratory procedures</b> must be understood by nuclear medicine technologists and may include the use of sample counters such as well counters, operation of centrifuges, and use of fume hoods.
5. Perform computed tomography (CT) imaging.	<ol style="list-style-type: none"> <li>a. Operate CT systems safely and effectively.</li> <li>b. Apply appropriate imaging parameters for the patient/client presentation.</li> <li>c. Adjust relative dose levels based on the range of patient/client presentations.</li> <li>d. Collaborate in the design and evaluation of CT protocols.</li> <li>e. Perform and evaluate contrast and non-contrast CT examinations of the body and, when appropriate, modify them to consider patient/client presentation and clinical indications.</li> <li>f. Perform post-processing techniques, including multi-planar reformats and volume imaging.</li> </ol> <p><b>Contrast CT examinations</b> can be performed by nuclear medicine technologists who are qualified to do so.</p>

## Domain 1C: Radiation therapist

This domain covers the additional knowledge, skills and attributes a radiation therapist requires to practise independently. Radiation therapists are responsible for planning and delivering radiation treatment, primarily for people diagnosed with cancer. Radiation therapists create and evaluate images for the localisation, planning and delivery of radiation treatment according to the prescription of the radiation oncologist, and provide patient/client care before, during and after radiation therapy.

<b>Key capabilities – What registered medical radiation practitioners must be able to do</b>	<b>Enabling components – Evidence of this capability for general registration as a medical radiation practitioner</b>
1. Use equipment and perform techniques for reproducibility of radiation therapy.	<ul style="list-style-type: none"> <li>a. Identify and apply appropriate equipment and techniques to ensure accurate and reproducible simulation, pre-treatment imaging, planning and treatment, relative to the patient's/client's diagnosis and condition.</li> <li>b. Fabricate or adapt suitable immobilisation and ancillary equipment as required.</li> </ul>
2. Perform simulation and pre-treatment imaging.	<ul style="list-style-type: none"> <li>a. Select imaging modalities suited to individual patient/client presentations and related planning procedures.</li> <li>b. Perform CT-based simulation for a range of cancer sites, patient/client presentations and related planning procedures.</li> <li>c. Apply knowledge of the use of MRI and PET in simulation imaging.</li> </ul>
3. Perform treatment planning.	<ul style="list-style-type: none"> <li>a. Apply the principles of radiation physics, dosimetry and radiation biology to treatment planning.</li> <li>b. Apply knowledge of cross-sectional anatomy, physiology and oncology to treatment planning.</li> <li>c. Create clinically acceptable treatment plans.</li> <li>d. Evaluate treatment plans to ensure they are clinically acceptable.</li> </ul> <p><b>Treatment planning</b> may include but is not limited to imaging and treatment modalities used including CT, MRI, PET and may include brachytherapy, superficial radiotherapy, radiosurgery/stereotactic radiotherapy, paediatric radiotherapy, total body irradiation and proton therapy.</p> <p><b>Planning procedures</b> must apply knowledge of tumour and target volumes, and normal tissue volumes.</p> <p><b>Treatment plans</b> may include 2D, 3D and 4D, conformal radiation therapy (CRT), intensity-modulated radiation therapy (IMRT) and may include volumetric-modulated arc therapy (VMAT).</p> <p><b>Evaluating radiotherapy treatment plans</b> may include radiation therapists evaluating and analysing treatment plans that they create, as well as treatment plans created by other practitioners. Treatment plans must be evaluated to ensure that they are acceptable and safe.</p>
4. Perform radiation therapy treatment according to approved radiation therapy treatment prescriptions and plans.	<ul style="list-style-type: none"> <li>a. Operate imaging equipment and radiation therapy treatment systems safely and effectively.</li> <li>b. Operate treatment delivery record and verification systems safely and effectively.</li> <li>c. Implement the radiation therapy treatment plans for a range of treatment techniques.</li> </ul>

<b>Key capabilities</b> – <i>What registered medical radiation practitioners must be able to do</i>	<b>Enabling components</b> – <i>Evidence of this capability for general registration as a medical radiation practitioner</i>
	<b>Implementation of plans</b> must apply knowledge of radical and palliative treatment doses and acceptable dose limits to critical structures.
5. Perform computed tomography (CT) imaging.	<ul style="list-style-type: none"> <li>a. Operate CT systems safely and effectively.</li> <li>b. Apply appropriate imaging parameters for the patient/client presentation.</li> <li>c. Adjust relative dose levels based on the range of patient/client presentations.</li> <li>d. Collaborate in the design and evaluation of CT protocols.</li> <li>e. Perform and evaluate contrast and non-contrast CT examinations of the body and, when appropriate, modify them to consider patient/client presentation and clinical indications.</li> <li>f. Perform post-processing techniques, including multi-planar reformats and volume imaging.</li> </ul> <p><b>Contrast CT examinations</b> can be performed by radiation therapists who are qualified to do so.</p>

## Domain 2: Professional and ethical practitioner

This domain covers medical radiation practitioners' responsibility and commitment to the health and wellbeing of individual patients/clients and society through professional and ethical practice within the current medico-legal framework, high personal standards of behaviour, maintenance of personal health, and accountability to the profession and society. It also addresses their responsibility for ensuring that patient/client confidentiality and privacy is maintained at all times, while recognising the potential role as a patient/client advocate. Key capabilities in this domain are common to medical radiation practitioners registered in any of the three divisions.

Key capabilities – <i>What registered medical radiation practitioners must be able to do</i>	Enabling components – <i>Evidence of this capability for general registration as a medical radiation practitioner</i>
<p>1. Practise in an ethical and professional manner, consistent with relevant legislation and regulatory requirements.</p>	<ul style="list-style-type: none"> <li>a. Understand and comply with legal responsibilities.</li> <li>b. Manage personal, mental and physical health to ensure fitness to practise.</li> <li>c. Follow mandatory and voluntary reporting obligations.</li> <li>d. Apply the Medical Radiation Practice Board of Australia's <i>Code of conduct</i> to practice.</li> <li>e. Provide relevant information to patient/client and implement appropriate methods to obtain informed consent.</li> <li>f. Apply knowledge of the Australian healthcare system to practice.</li> <li>g. Practice the basic principles underpinning bio-ethics within medical radiation practice, and recognise and respond appropriately to ethical issues encountered in practice.</li> <li>h. Exercise appropriate levels of autonomy and professional judgement in a variety of medical radiation practice settings.</li> </ul> <p><b>Legal responsibilities</b> must include but are not limited to, responsibilities contained in relevant state/territory and federal legislation and regulations, specific responsibilities to maintain confidentiality, confirm informed consent and exercise duty of care.</p> <p><b>Principles underpinning bio-ethics</b> must include respecting the rights of the individual, respecting the autonomy of the individual, causing no harm, and advancing the common good.</p> <p><b>Key elements of fitness to practise</b> must include competence, professionalism, including a sense of responsibility and accountability, self-awareness and professional values, sound mental health and the capacity to maintain health and wellbeing for practice.</p> <p><b>Reporting obligations</b> must include making a notification about the health (impairment), conduct or performance of a registered health practitioner that may be placing the public at risk, and about the medical radiation practitioner's own impairments to practice.</p> <p><b>Relevant information provided to patient/client</b> may include explaining the implications of a procedure such as contrast/radiopharmaceutical administration and explaining the considerations for people at risk such as children, pregnant women and their foetus, breastfeeding mothers.</p> <p><b>Relevant aspects of the Australian healthcare system</b> must include but are not limited to, knowledge of service provision arrangements, the structure and role of Medicare and related billing arrangements.</p>

<b>Key capabilities – What registered medical radiation practitioners must be able to do</b>	<b>Enabling components – Evidence of this capability for general registration as a medical radiation practitioner</b>
<p>2. Provide each patient/client with dignity and care.</p>	<ul style="list-style-type: none"> <li>a. Recognise and evaluate the socio-cultural factors that may influence patient/client attitudes and responses to medical radiation services.</li> <li>b. Apply the principles of cultural competence and cultural safety to practice.</li> <li>c. Display appropriate professional behaviour in patient/client interactions.</li> <li>d. Identify and respect appropriate boundaries between patients/clients and health professionals.</li> </ul> <p><b>Socio-cultural factors</b> may include but are not limited to, those related to cultural and linguistic diversity, age, gender, disability, religion, socio-economic, geographic locations; and identifying as Aboriginal and/or Torres Strait Islander.</p> <p><b>Cultural competence</b> is a set of congruent behaviours, attitudes, and policies that come together in a system, agency, or among professionals and enables that system, agency, or those professionals to work effectively in cross-cultural situations. The word 'culture' is used because it implies the integrated pattern of human behaviour that includes thoughts, communications, actions, customs, beliefs, values, and institutions of a racial, ethnic, religious, or social group. The word 'competence' is used because it implies having the capacity to function effectively.</p> <p>A culturally competent system of care acknowledges and incorporates – at all levels – the importance of culture, the assessment of cross-cultural relations, vigilance towards the dynamics that result from cultural differences, the expansion of cultural knowledge, and the adaptation of services to meet culturally-unique needs<sup>1</sup>.</p> <p><b>Cultural safety</b> is defined by the National Scheme's Aboriginal and Torres Strait Islander Health Strategy as the individual and institutional knowledge, skills, attitudes and competencies needed to deliver optimal healthcare for Aboriginal and Torres Strait Islander Peoples.</p> <p><b>Appropriate behaviour</b> must include behaviour that is non-discriminatory, empathetic and respects socio-cultural differences.</p>
<p>3. Assume responsibility and accept accountability for professional decisions.</p>	<ul style="list-style-type: none"> <li>a. Make appropriate professional decisions regarding the care of patients.</li> <li>b. Recognise and respond appropriately to unsafe or unprofessional practice.</li> <li>c. Integrate organisational policies and guidelines with professional standards and apply to practice.</li> </ul>
<p>4. Advocate on behalf of the patient/client when appropriate.</p>	<ul style="list-style-type: none"> <li>a. Support and promote the rights and interests of patients/clients, and support them to represent their own interests, when appropriate.</li> <li>b. Recognise when it may be appropriate to intervene on behalf of the patient/client.</li> <li>c. Recognise when an alternative patient/client pathway may be more appropriate and make recommendations to other practitioners.</li> </ul> <p><b>Recommendations on alternative patient/client pathways</b> must be made when it is recognised that the planned patient/client pathway may</p>

<b>Key capabilities – What registered medical radiation practitioners must be able to do</b>	<b>Enabling components – Evidence of this capability for general registration as a medical radiation practitioner</b>
	<p>not provide the optimal outcome for the patient/client. Medical radiation practitioners must:</p> <ul style="list-style-type: none"> <li>• provide patient/client-centred care</li> <li>• advocate for the patient's/client's equitable access to effective examinations/treatment, other health professionals and services that address their needs as a whole person, and</li> <li>• acknowledge that access broadly includes availability, affordability, acceptability and appropriateness.</li> </ul>
5. Seek opportunities to progress the profession.	<ol style="list-style-type: none"> <li>a. Participate in peer assessment, standard setting and mentorship, and provide developmental support to other medical radiation practitioners and other members of the healthcare team.</li> <li>b. Use appropriate strategies to effectively supervise students in the work environment and deliver appropriate feedback (verbal and written) to the student and the education provider on their performance.</li> </ol>

### Domain 3: Communicator and collaborator

This domain covers medical radiation practitioners' responsibility to communicate clearly, effectively and appropriately with patients/clients and their families or carers. It also addresses their responsibility to work effectively with other health practitioners to provide safe, high-quality, patient/client-centred care. Key capabilities in this domain are common to medical radiation practitioners registered in any of the three divisions.

<b>Key capabilities – What registered medical radiation practitioners must be able to do</b>	<b>Enabling components – Evidence of this capability for general registration as a medical radiation practitioner</b>
<p>1. Communicate clearly, sensitively and effectively with the patient/client and their family or carers.</p>	<ul style="list-style-type: none"> <li>a. Establish rapport with the patient/client to gain understanding of their issues and perspectives.</li> <li>b. Communicate effectively with the patient/client (and at times beyond the patient/client) to collect information and convey information about the proposed examination/treatment.</li> <li>c. Convey knowledge and procedural information in ways that engender trust and confidence and respects patient/client confidentiality, privacy and dignity.</li> <li>d. Provide an opportunity for the patient/client to explore the purpose of the proposed examination/treatment, the methods used and the usual patient/client experience.</li> <li>e. Identify likely communication barriers specific to individual patients/clients and/or family/carers and implement strategies to avoid or overcome these.</li> <li>f. Make appropriate adjustments to communication style to suit the particular needs of the patient/client including Aboriginal and Torres Strait Islander Peoples and those from culturally and linguistically diverse backgrounds.</li> <li>g. Make provisions to engage third parties to facilitate effective communication when required.</li> <li>h. Obtain and document informed consent, explaining the purpose, risks and benefits of the proposed examination/treatment.</li> </ul> <p><b>Communication barriers</b> may arise due to the medical radiation practitioner's own culture and experience affecting their interpersonal style, or due to the patient's/client's or family's/carer's culture and experience. The patient's/client's or family's/carer's capacity to understand may be influenced by English language skills, health literacy, age, and health status.</p> <p><b>Communication beyond patient/client</b> may include with family, significant others, carers, interpreters, legal guardians and medical advocates.</p> <p><b>Effective communication</b> includes active listening, use of appropriate language and detail, use of appropriate verbal and non-verbal cues, and confirming that the other person has understood.</p> <p><b>Informed consent</b> is a person's voluntary decision about healthcare that is made with knowledge and understanding of the benefits and risks involved. A guide to the information that practitioners need to give to patients/clients is available in the National Health and Medical Research Council (NHMRC) publication <i>General guidelines for medical practitioners in providing information to patients</i> (<a href="http://www.nhmrc.gov.au">www.nhmrc.gov.au</a>).</p>



<b>Key capabilities – What registered medical radiation practitioners must be able to do</b>	<b>Enabling components – Evidence of this capability for general registration as a medical radiation practitioner</b>
<p>2. Collaborate with other health practitioners.</p>	<ul style="list-style-type: none"> <li>a. Establish and maintain effective and respectful working relationships with health practitioners.</li> <li>b. Understand, acknowledge and respect the roles and responsibilities of healthcare team members and other service providers, and work effectively and collaboratively with them.</li> <li>c. Follow accepted protocols and procedures to provide relevant and timely verbal and written communication.</li> <li>d. Make recommendations to other members of the healthcare team about the suitability and application of the proposed medical radiation procedure, when appropriate.</li> </ul> <p><b>Healthcare team members</b> may include registered health practitioners, accredited health professionals, and licensed and unlicensed healthcare workers.</p> <p><b>Making recommendations about the suitability and application of procedures</b> requires understanding the relative radiation risks and benefits to patients/clients of the examinations/treatment used and requires effective collaboration and feedback with other members of the healthcare team. More experienced medical radiation practitioners may be expected to direct other members of the healthcare team when appropriate.</p> <p><b>Communication</b> methods must consider the information needs of the audience and may include the medical radiation practitioner using medical terminology and applying knowledge of departmental/practice protocols.</p>

#### Domain 4: Lifelong learner

This domain covers medical radiation practitioners' responsibility to engage in evidence-based practice and to critically monitor their actions through a range of reflective processes. It also addresses their responsibility for identifying, planning and implementing their ongoing professional learning needs. Key capabilities in this domain are common to medical radiation practitioners registered in any of the three divisions.

<b>Key capabilities – What registered medical radiation practitioners must be able to do</b>	<b>Enabling components – Evidence of this capability for general registration as a medical radiation practitioner</b>
1. Resolve challenges through application of critical thinking and reflective practice.	<ul style="list-style-type: none"><li>a. Identify the challenge or question and the information that is required to respond.</li><li>b. Find, critically appraise, interpret and apply best available research evidence to inform clinical reasoning and professional decision-making.</li><li>c. Provide patient/client-centred care by carefully considering the purpose of the proposed examination/treatment, reviewing existing protocols and methods, reflecting on clinical challenges or experiences, and integrating knowledge and findings into practice.</li><li>d. Recognise opportunities to contribute to the development of new knowledge through research and enquiry.</li></ul> <p><b>Challenges or questions</b> are not limited to clinical challenges or questions. Medical radiation practitioners are expected to identify and seek a solution for any challenge or question they encounter in professional practice.</p> <p><b>Best available research evidence</b> is information from valid and clinically relevant research conducted using sound methodology.</p> <p><b>Research</b> design, methodology, analysis, review and publication steps in the research pathway must be understood for participation in research.</p>
2. Identify ongoing professional learning needs and opportunities.	<ul style="list-style-type: none"><li>a. Comply with legal and professional responsibilities to undertake continuing professional development (CPD).</li><li>b. Critically reflect on personal strengths and limitations to identify learning required to improve and adapt professional practice.</li><li>c. Seek input from others to confirm learning needs of self and others to deliver improved patient/client outcomes.</li><li>d. Plan and implement steps to address professional development needs.</li></ul> <p><b>Professional development</b> may be provided by the professional community and the broader healthcare network/practice.</p>

## Domain 5: Radiation safety and risk manager

This domain covers medical radiation practitioners' responsibility to protect patients/clients, others and the environment from harm and unnecessary exposure to radiation. Medical radiation practitioners are directly responsible for managing and responding to the risks inherent in both healthcare and medical radiation practice, including radiation dose to patients/clients. It also addresses their responsibility for providing safe, effective and high-quality professional services, to ensure the safety of patients/clients and other service users. Key capabilities in this domain are common to medical radiation practitioners registered in any of the three divisions.

Key capabilities – What registered medical radiation practitioners must be able to do	Enabling components – Evidence of this capability for general registration as a medical radiation practitioner
1. Perform safe radiation practice.	<ul style="list-style-type: none"> <li>a. Comply with radiation safety legislation.</li> <li>b. Practice in accordance with relevant radiation safety guidelines.</li> <li>c. Apply knowledge of medical radiation physics to examinations/treatment.</li> <li>d. Apply knowledge of radiation biology and radiation dose adjustment to deliver safe and effective patient/client outcomes.</li> <li>e. Review the referral and procedures to ensure appropriate: <ul style="list-style-type: none"> <li>• Justification</li> <li>• Limitation</li> <li>• Optimisation.</li> </ul> </li> <li>f. Identify radiation risks and implement effective and appropriate risk management systems and procedures.</li> <li>g. Recognise and report on near misses and their consequences, in addition to adverse events and relevant contributing factors.</li> </ul> <p><b>Radiation safety legislation and guidelines</b> may include state/territory and federal radiation safety legislation and guidelines, and the differences across the states and territories.</p> <p><b>Risk management</b> includes an understanding of relevant quality assurance frameworks and their application to practice.</p> <p><b>Justification</b> involves assessing whether more good than harm results from a radiation practice.</p> <p><b>Limitation</b> involves setting radiation dose limits, or imposing other measures, so that the health risks to any person exposed to radiation are within an acceptable range.</p> <p><b>Optimisation</b> involves minimising health risks to any person, with the broad objective that the degree of exposure to radiation, number of persons exposed, and likelihood of exposure be kept as low as reasonably achievable, having regard to economic and social factors.</p>
2. Protect and enhance patient/client safety.	<ul style="list-style-type: none"> <li>a. Follow patient/client identification procedures to confirm the correct match of the patient/client with the intended procedure and the correct anatomical site.</li> <li>b. Review, communicate, record and manage patient/client information accurately, consistent with protocols, procedures and legislative requirements for maintaining patient/client records.</li> <li>c. Identify and manage risks associated with patient/client transfer.</li> </ul>

Key capabilities – What registered medical radiation practitioners must be able to do	Enabling components – Evidence of this capability for general registration as a medical radiation practitioner
	<p>d. Identify and manage risk of infection, including during aseptic procedures.</p> <p>e. Apply relevant quality frameworks to practice.</p> <p><b>Patient/client identification procedures</b> must use at least three recognised patient/client identifiers and may include procedures for transferring patients/clients from other health professionals. Procedures may be contained in national protocols published by the Australian Commission on Safety and Quality in Health Care, relevant state/territory and federal guidance materials, and workplace materials.</p> <p><b>Infection control risk management</b> includes managing transmission modes of hospital-acquired infections (host, agent and environment); preventing the transmission including effective hand hygiene; and implementing NHMRC's <i>Australian Guidelines for the Prevention and Control of Infection in Healthcare (2010 guidelines)</i>.</p> <p><b>Quality frameworks</b> may include workplace specific frameworks, relevant jurisdiction publications, and frameworks relevant to the context of practice such as the <i>Australian Safety and Quality Framework for Health Care</i> published by the Australian Commission on Safety and Quality in Health Care.</p>
3. Implement quality assurance processes before imaging or treating patients/clients.	<p>a. Check and confirm that all equipment is in good order and operating within acceptable parameters.</p> <p>b. Identify and take appropriate action to correct unacceptable condition or operation of all equipment.</p> <p>c. Follow protocols to record and report non-conformance of all equipment.</p> <p><b>Equipment</b> includes all main equipment and related accessory equipment (instruments) used to image or treat a patient/client.</p> <p><b>Good order</b> may be achieved by following cleaning and hygiene protocols, calibration/testing regimes and acceptable operating standards. Issues affecting the functioning of equipment must be fully resolved before imaging or treating patients/clients.</p>
4. Maintain safety of the workplace and associated environments.	<p>a. Identify safety hazards in the workplace and respond to incidents (including radiation and radioactivity incidents) in a timely and appropriate manner, in accordance with protocols and procedures.</p> <p>b. Report on all incidents (including radiation and radioactivity incidents) in accordance with relevant requirements.</p> <p>c. Manage the environmental risks of manufactured radiation and radioactivity.</p> <p>d. Identify, confirm and implement methods of radiation management.</p> <p>e. Use safe and legal methods for handling radioactive materials, including using appropriate personal protective clothing and equipment and complying with shielding requirements.</p> <p>f. Use safe and legal methods for storing and disposing radioactive material and identify and minimise occupancy risks related to proximity of radiation and radioactive storage.</p>

<b>Key capabilities</b> – <i>What registered medical radiation practitioners must be able to do</i>	<b>Enabling components</b> – <i>Evidence of this capability for general registration as a medical radiation practitioner</i>
	<p>g. Provide information on radiation-related hazards and control measures to others in the workplace.</p> <p><b>Incident reporting requirements</b> may be identified in protocols procedures and workplace materials, and may include legal requirements identified in relevant state/territory and federal legislation and regulations, including those published by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA).</p> <p><b>Control measures</b> must include time, distance and patient/client shielding.</p>

## Key terms

<b>Apply knowledge/Apply principles of</b>	Indicates a practitioner is expected to apply detailed knowledge in the practice setting.
<b>Enabling components</b>	Describe the essential and measurable characteristics of the corresponding key capabilities and facilitate assessment of performance in the practice setting. Medical radiation practitioners are expected to demonstrate all enabling components for all key capabilities for safe and competent practice. This includes applying, adapting and synthesising new knowledge and skills gained from experience to continually improve performance.
<b>Key capabilities</b>	Describe the key features of safe and competent practice in a range of contexts and situations of varied complexity and uncertainty. During any one procedure or treatment, practitioners are expected to demonstrate key capabilities from various domains. This recognises that competent professional practice is more than a sum of each discrete part and requires an ability to draw on and integrate the breadth of capabilities to support overall performance.
<b>Understand</b>	Indicates a practitioner is expected to apply broad knowledge and understanding of information for safe practice, but may not be required to understand or interpret detailed information, or may not be required to use their knowledge and understanding to perform certain procedures.

## Glossary

<b>Accreditation committee</b>	Appointed by the Medical Radiation Practice Board of Australia (the Board), the Medical Radiation Practice Accreditation Committee is responsible for implementing and administering accreditation.
<b>Accreditation standards</b>	Used to assess whether a program of study, and the education provider that provides the program provide persons who complete the program with the knowledge, skills and professional attributes needed to safely and competently practise as a medical radiation practitioner in Australia.
<b>Education provider</b>	The term used by National Law to describe universities; tertiary education institutions or other institutions or organisations that provide vocational training; or specialist medical colleges or health professional colleges.
<b>Impairment</b>	<p>The term “impairment” has a specific meaning under the National Law in Australia. In relation to a person, means the person has a physical or mental impairment, disability, condition or disorder (including substance abuse or dependence) that detrimentally affects or is likely to detrimentally affect:</p> <ul style="list-style-type: none"> <li>a) for a registered health practitioner or an applicant for registration in a health profession, the person’s capacity to practise the profession; or</li> <li>b) for a student, the student’s capacity to undertake clinical training— <ul style="list-style-type: none"> <li>i. as part of the approved program of study in which the student is enrolled; or</li> <li>ii. arranged by an education provider.<sup>7</sup></li> </ul> </li> </ul>
<b>Learning outcomes</b>	<p>The expression of the set of knowledge, skills and the application of the knowledge and skills a person has acquired and is able to demonstrate as a result of learning.</p> <p>(Adapted from: <i>Australian Qualifications Framework</i>, January 2013).</p>
<b>Program of study</b>	A program of study provided by an education provider. Note the term ‘course’ is used by many education providers.
<b>Radiation therapy simulation/Radiation therapy treatment planning</b>	<p>Radiation therapy simulation or radiation therapy treatment planning is the preparation of the patient/client for radiation therapy treatment and includes positioning the patient/client (with masks and casts where relevant), performing a clinical mark-up/skin markings and CT planning. CT planning describes the process where a patient is required to undertake a CT scan for the purposes of planning a proposed radiation therapy treatment, including correct patient placement and ascertaining appropriate doses of radiation therapy to be administered<sup>8</sup>. MRI and PET are also used in radiation therapy simulation.</p> <p>Radiation therapy simulation is separate to simulation used in education which refers to the artificial representation of a real-world process to achieve educational goals via experimental learning<sup>9</sup>.</p>



## Abbreviations

<b>ARPANSA</b>	Australian Radiation Protection and Nuclear Safety Agency
<b>CPD</b>	Continuing professional development
<b>CRT</b>	Conformal radiation therapy
<b>CT</b>	Computed tomography
<b>EMR</b>	Electronic medical records
<b>IMRT</b>	Intensity-modulated radiation therapy
<b>MRI</b>	Magnetic resonance imaging
<b>NHMRC</b>	National Health and Medical Research Council
<b>NSQHS</b>	National Safety and Quality Health Service
<b>PACS</b>	Picture and Archiving Communication System
<b>PET</b>	Positron emission tomography
<b>RIS</b>	Radiology information system
<b>ROIS</b>	Radiation oncology information systems
<b>SPECT</b>	Single-photon emission computed tomography
<b>VMAT</b>	Volumetric-modulated arc therapy

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