Medical Radiation Practice Board
Ahpra

Professional capabilities for medical radiation practitioners

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Contents

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 has developed the *Professional capabilities for medical radiation practice* (the professional capabilities) and approved them in accordance with s.39 of the National Law.

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 2019 the Board reviewed and revised the first edition of the professional capabilities. The capabilities in this document build on the professional capabilities developed in 2013 and reflect changes in medical radiation practice.

Purpose of the medical radiation practice professional capabilities

The professional capabilities identify the minimum 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 may be used as evidence of what constitutes appropriate professional conduct or practice for the profession.

Cultural competence and culturally safe care

The professional capabilities include cultural competence and culturally safe care 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 health impairments, ethnicity and organisational culture. A holistic, patient/client-centred approach to practice needs 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[1].

Medical radiation practitioners in Australia need 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) 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 care that is both clinically and culturally safe. 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.

Format of the medical radiation practice professional capabilities

The professional capabilities are organised into five domains that cover capabilities common to all divisions of medical radiation practice and three sub-domains related to the different divisions of medical radiation practice. Each domain consists of corresponding key capabilities and enabling components.

Domains

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

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	Evidence-informed practitioner
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 needs 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 ways of demonstrating capability:

- **Apply knowledge / 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, however may not need to understand or interpret detailed information or may not need to use their knowledge and understanding to perform certain procedures.
- **Performance e.g. 'perform', 'identify', 'respond' and/or 'operate'** are used for the majority of enabling components – these are abilities needed 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 needed:

- If a note states 'must include', all items on the list are needed.
- If a note states 'may include', all items on the list are not needed, any item on the list may be demonstrated.
- If a note states 'but is/are 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 and/or capability statement are needed.

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'[2].

The Board uses the medical radiation practice professional capabilities as a reference point for a threshold of competence when exercising its statutory functions, including for:

- registration of individuals who complete an approved medical radiation practice program of study in Australia (see the section *Medical radiation practice professional capabilities and accreditation of medical radiation practice education programs in Australia* below 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 concern 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 for a threshold of 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 or 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 the accreditation standards and monitors programs to ensure they continue to meet the 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[3]. 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 needed in the workplace[4,5]. The definition of competence needed for the job will change as the job role evolves. Threshold professional capability is the point at which the minimum level of competence 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[6]. 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.

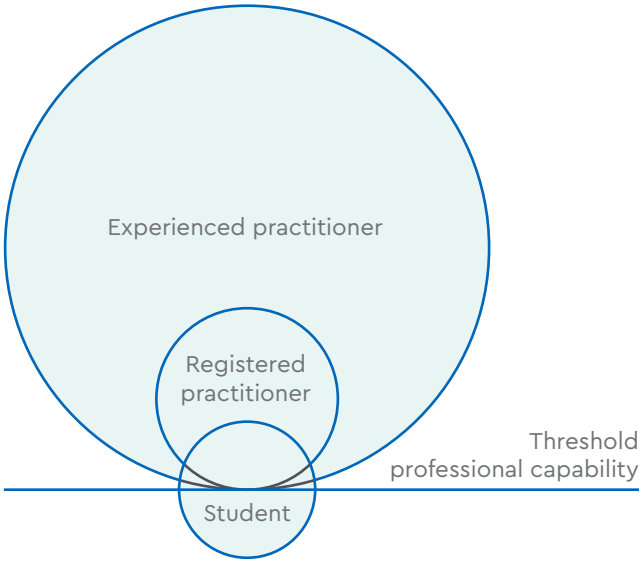
A capability framework can be pitched at the level of ongoing practice rather than being designed for a specific point-in-time assessment. It focuses on activities at the broad level that apply across the profession and allows individuals to develop their capabilities in complex and continually evolving 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 or 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 on 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 need 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 (CPD).

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 when providing 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 and/or clients. Many of the abilities described in the key capabilities and enabling components are needed when registered medical radiation practitioners work in management, administration, education, research, policy development, advisory contexts, regulatory or other contexts that impact on safe, effective delivery of medical radiation practice services.

The performance indicators and rating scales for valid measurement of practitioners' competence depend on 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 Magnetic Resonance Imaging (MRI)

The level of understanding of practice in Magnetic Resonance Imaging (MRI) in the 2013 professional capabilities was not sufficient to enable a practitioner to use MRI in practice without the involvement of a more experienced practitioner. This capability document contains revised content related to the use of MRI in practice to address the requirements for a practitioner to safely and competently use MRI.

Medical radiation practice professional capabilities and practice in computed tomography (CT)

In the past decade computed tomography (CT) practice has evolved across the three divisions of medical radiation practice, principally driven by improvements 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 corelating 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 needs to practise independently and provide safe, high quality, patient/client-centred care.

Key capabilities in this domain are common to all three divisions of the register of medical radiation practitioners.

Key capabilities What registered medical radiation practitioners must be able to do	**Enabling components** Evidence of this capability for safe and competent practice as a medical radiation practitioner
1. Apply knowledge of anatomy, physiology and pathology to practice.	a. Apply knowledge of anatomy and physiology of the human body to practice. b. Apply knowledge of the scientific explanations underpinning disease and injuries affecting the human body to enable delivery of safe, high-quality examinations/ treatment. c. Identify anatomical structures and physiological processes, injuries and diseases of the human body in medical images.
2. Use clinical information management systems appropriately.	a. Understand and comply with legislative responsibilities about data privacy, the ownership, storage, retention and destruction of patient/client records and other practice documentation. 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. c. Ensure that stored clinical information (information and images) is associated with the correct patient/client and examination/treatment. d. Identify and respond appropriately when clinical information is incorrectly associated with the identity of a patient/client and/or examination/treatment. e. Manage clinical information (information and images) appropriately and consider the workflow between the different clinical information management systems. f. Respond appropriately to data errors and/or system failures. g. Ensure clinical information is made available to the appropriate persons involved in the care of the patient. **Understanding legislation** may include relevant state and territory and/or federal legislation about privacy of data and the differences across states and territories. **Clinical information management systems** may include but are not limited to picture and archiving communication system (PACS), radiology information system (RIS), radiation oncology information systems (ROIS), risk management systems, radiation dose tracking systems, or electronic medical records (EMR). Medical radiation practitioners must understand the interaction between different systems such as between RIS and PACS. **Managing clinical information** includes understanding and following patient/client and examination/treatment workflows (enter, begin, complete), searching correctly (e.g. by examination, patient/client, modality, location and/or date etc.), understanding and following the folder structures. **Responding to data errors and/or system failures** includes troubleshooting and fixing errors where possible or reporting errors/failures to the systems administrator in a timely manner.

Key capabilities What registered medical radiation practitioners must be able to do	Enabling components Evidence of this capability for safe and competent practice as a medical radiation practitioner
3. Understand and apply the different methods of imaging and treatment.	a. Understand the different imaging and treatment pathways in medical radiation practice. b. Understand the modalities and equipment used in the different imaging and treatment pathways across medical radiation practice. c. Understand use of CT, MRI and PET in the localisation of a range of cancer sites, patient/client presentations and related planning procedures. d. Operate equipment and apply knowledge of laboratory procedures to practice when necessary. **Modalities and equipment** may include but are 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.
4. Confirm the procedure according to clinical indicators.	a. Understand 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 imaging and treatment pathways. 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. c. Adapt the requested examination/treatment to an individual patient/client considering available clinical information. **Clinical history** may include patient/client records, previous medical radiation practice services, information collected from patient/client during the procedure.
5. Assess the patient's/client's capacity to receive care.	a. Identify factors or conditions that may affect the patient's/client's behaviour and/or capacity to provide informed consent and undergo the procedure and triage patients/clients when needed. b. Identify patient/client preparation requirements. c. Identify patients/clients most at risk, including pregnant women and the foetus, breastfeeding mothers and their children. d. Select appropriate equipment and triage patients/clients according to their clinical presentation, national standards and other factors. e. Identify contraindications and limitations of medical radiation services, determine appropriate adjustments to procedures. f. Perform patient/client assessment and medical radiation examination/treatment in accordance with the patient/client need and choice, legislation, registration standards, codes and guidelines. **Patient/client capacity or behaviour** may be influenced by pre-existing medical conditions including physical, physiological or psychological, age, pregnancy, culture, English language skills, or psycho-social and socio-economic factors. **Selecting appropriate equipment and triaging patients/clients** must be undertaken with the application of the *Principle of Justice* to ensure the fairest distribution of care.

Key capabilities What registered medical radiation practitioners must be able to do	Enabling components Evidence of this capability for safe and competent practice as a medical radiation practitioner
6. Implement techniques for patient/client stabilisation and reproducibility of procedures and outcomes.	a. Consider the limitations/restrictions in the use of techniques and devices for reproducibility of procedures concerning the patient's/client's condition and presentation. b. Identify the type and method of stabilisation needed for the type and purpose of the procedure and the patient/client condition and presentation. c. Use or adapt suitable stabilisation and ancillary equipment. d. Perform the appropriate stabilisation before starting the procedure. **Equipment and techniques for patient/client stabilisation and reproducibility of procedures and outcomes** include but are not limited to stabilisation devices for radiation therapy. Where appropriate, stabilisation 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. **The type and method of stabilisation needed** depends 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.
7. Deliver patient/client care	a. Recognise patients/clients whose condition is deteriorating, or who are unable to undergo an examination/treatment and respond to their needs in an appropriate and timely way consistent with standards of safe and high-quality care. This includes calling for emergency help when needed. b. Apply quality criteria to assure image quality, evaluate medical images and identify any urgent and/or unexpected findings. c. If the practitioner identifies any urgent or unexpected findings, take appropriate and timely action to ensure the immediate management of the patient/client. d. Provide appropriate patient/client care before, during and after the examination/treatment. **Recognising and responding to a patient's/client's deteriorating condition** must be interpreted in the context of the Australian Commission on Safety and Quality in Healthcare *National consensus statement: essential elements for recognising and responding to clinical deterioration* (National Consensus Statement) and the National Safety and Quality Health Service's (NSQHS) – Standard 8 Recognising and Responding to Acute Deterioration. These documents help practitioners to recognise patients whose condition is deteriorating and to respond to patient needs in an appropriate and timely way as essential components of safe and high-quality care. The National Consensus Statement also identifies that recognition of and response to deterioration requires practitioners who are appropriately trained. **Taking appropriate and timely action** is a key responsibility if a medical radiation practitioner identifies medically significant findings on an image and must be interpreted in the context of Australian Commission on Safety and Quality in Healthcare National Safety and Quality Health Service Standards (NSQHS) Standard 6 Communicating for Safety. 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 reporting medical specialist, 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 if further medical advice is required prior to them leaving the hospital/clinic. Communication between health practitioners about the clinical status of a patient should be recorded in accordance with relevant procedures. **Identifying urgent and unexpected findings** includes recognising and applying knowledge of normal from abnormal imaging appearances and relating appearances to the patient/client's clinical history.

Key capabilities What registered medical radiation practitioners must be able to do	**Enabling components** Evidence of this capability for safe and competent practice as a medical radiation practitioner
8. Apply knowledge of safe and effective use of medicines.	a. Apply the principles of safe and effective use of medicines to practice. b. Recognise the risks, precautions and contraindications of the use of medicines, informed by the patient's/client's current pathology status. c. Apply knowledge of pharmacokinetics, pharmacodynamics and the potential range of reactions to medicines. d. Safely and effectively deliver medicine to patients/clients, in accordance with procedures. e. Actively monitor the effects of medication and manage adverse reactions to medicines, in accordance with protocols. **Knowledge of safe and effective use of medicines** relevant to practice may include state and territory and/or federal legislation about the supply and administration of medicines. It also includes understanding how pathological conditions may affect the delivery of some medicines. **Procedures for safe and effective delivery of medicines** must be consistent with the NSQHS's Medication Safety Standard and may include checking products, confirming correct labelling, accurate calculations and measurements and correct route.

Capabilities if magnetic resonance imaging (MRI) and/or ultrasound are part of your practice

The following key capabilities and enabling components cover the knowledge, skills and attributes needed by all diagnostic radiographers, nuclear medicine technologists and radiation therapists who use MRI and/or ultrasound as part of their practice. These key capabilities and enabling components are required to enable practitioners who use MRI and/or ultrasound to provide safe, quality, patient/client-centred care.

Key capabilities What registered medical radiation practitioners must be able to do	**Enabling components** Evidence of this capability for safe and competent practice as a medical radiation practitioner
9. Perform magnetic resonance imaging (MRI).	a. Operate MRI systems safely and effectively. b. Apply knowledge of the principles of MRI physics and surrounding environment to ensure patient/client and others' safety. c. Select equipment and imaging parameters relevant to the patient/client presentation and where appropriate, modify imaging parameters to achieve optimal diagnostic outcomes. d. Collaborate in the design and evaluation of MRI protocols. e. Perform and evaluate MRI examinations where appropriate, modify the examination according to the MRI findings and clinical presentation. f. Process image data sets. **MRI** includes contrast-enhanced studies and the safe and appropriate selection of MRI contrast agents for the patient/client presentation. **MRI safety** includes but is not limited to: • maintaining the integrity of MRI safety zones • applying principles of electro-magnetic forces and fields (static and gradient and radiofrequency) • minimising the bioeffects of magnetic fields (including tissue heating and peripheral nerve stimulation) • exposure limits (including specific absorption rates) • assessing and managing risks associated with devices/implants/projectiles, acoustic risks, and • implementing emergency procedures in the event of quench or the distressed and/or deteriorating patient.
10. Perform ultrasound imaging	a. Operate ultrasound imaging systems safely and effectively. b. Apply knowledge of the principles of ultrasound physics to minimise the likelihood of biological effects and identification of artefacts. c. Apply knowledge of cross-sectional anatomy, embryology, pathophysiology, haemodynamic and sonographic appearances of normal and abnormal anatomy. d. Use 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. e. Perform and evaluate ultrasound imaging and where appropriate, extend or modify the examination according to the sonographic findings and clinical presentation. f. Document the real-time examination and evaluate findings. **Ultrasound imaging systems** must include 2D, Doppler and may include contrast and 3D where appropriate. **Ultrasound physics** includes transducer design and operation, identification of artefacts and understanding of the biological effects of ultrasound. **Documenting the real-time examination** must follow organisational protocols and still images/cine loops must accurately represent any pathology present or absent.

Domain 1A: Diagnostic radiographer

This domain covers the additional knowledge, skills and attributes a diagnostic radiographer needs 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 medical images and perform diagnostic procedures using ionising radiation, often in a team setting of health practitioners.

Key capabilities What registered medical radiation practitioners must be able to do	**Enabling components** Evidence of this capability for safe and competent practice as a medical radiation practitioner
1. Perform projection radiography examinations in a range of settings	a. Operate projection radiography systems safely and effectively in a range of settings. b. Prepare the patient/client for the examination, including positioning the patient/client for the best diagnostic outcome. c. 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. d. Select appropriate equipment, receptor type and set equipment geometry for the examination. e. Perform image post-processing techniques. f. Critically evaluate images against radiographic criteria including assessment of exposure index, field of view and anatomical rotation. g. Collaborate in the design and evaluation of projection radiography protocols. **Projection Radiography examinations** may include but are not limited to appendicular and axial skeleton and associated soft tissues, chest and abdomen performed on patients from across the life span using fixed and mobile projection radiography equipment. It may also include bone mineral densitometry, mammography, orthopantomography and dental imaging. **Range of settings** may include but are not limited to the imaging department, emergency department, operating theatre, intensive care unit, mammography screening facility or use of mobile systems. **Appropriate equipment parameter settings** include but are not limited to source-image distance, x-ray scatter reducing devices, vertical or horizontal configuration, fixed or free receptor configurations, anatomical and directive radio-opaque markers, x-ray beam collimation and filtration.

Key capabilities What registered medical radiation practitioners must be able to do	Enabling components Evidence of this capability for safe and competent practice as a medical radiation practitioner
2. Perform fluoroscopy and angiography examinations in a range of settings.	a. Operate fluoroscopy and angiography systems safety and effectively in a range of settings. b. Effectively communicate with the multidisciplinary team as the imaging request, patient history and previous medical images are reviewed, the patient is assessed to receive care and the procedure is planned. c. Prepare the patient/client for the examination, including positioning the patient/client for the best diagnostic outcome. d. Apply knowledge of equipment geometry for procedures. e. Apply knowledge of imaging acquisition modes and radiation dose rates. f. Perform image post-processing techniques. g. Prepare the patient/client and delivery systems with the appropriate contrast media using aseptic techniques. h. Apply knowledge of medical equipment and prostheses used in the angiography and operating theatre setting. i. Collaborate in the design and evaluation of fluoroscopy and angiography protocols. **Range of settings** may include but are not limited to an imaging department, emergency department, operating theatre, intensive care unit, an angiography suite with both fixed and mobile equipment. **Knowledge of equipment geometry for the procedure** may include but is not limited to beam-receptor angulation, source-image distance, rotational imaging, anti-scatter equipment (physical and digital) and radiation protective shielding. **Knowledge of radiation dose delivery** may include but is not limited to radiation dose factors, image frame rate for fluoroscopy and image acquisition, x-ray beam collimation and filtration, geometric and digital magnification and fluoroscopic road-mapping. **Delivery systems** may include but are not limited to intra-arterial, intravenous, oral, and hepatobiliary. **Medical equipment used in angiography** may include but is not limited to catheters, guide wires, stents, vascular occlusion devices, vascular clips and filters, and prostheses.
3. Perform computed tomography (CT) imaging	a. Operate CT systems safely and effectively. b. Apply appropriate imaging parameters for the patient/client presentation. c. Adjust relative dose levels based on the range of patient/client presentations. d. Collaborate in the design and evaluation of CT protocols. 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. f. Process data image sets, including multi-planar reformats and volume imaging.

Domain 1B: Nuclear medicine technologist

This domain covers the additional knowledge, skills and attributes a nuclear medicine technologist needs 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.

Key capabilities What registered medical radiation practitioners must be able to do	**Enabling components** Evidence of this capability for safe and competent practice as a medical radiation practitioner
1. Prepare and assess the purity of radiopharmaceuticals	a. Perform the elution and quality control of the radioisotope generator. b. Assay the eluate and prepare radiopharmaceuticals ensuring critical procedure features are observed, such as correct volume and radioactivity. c. Perform quality control on radiopharmaceuticals and assess for patient/client use.
2. Perform nuclear medicine examinations and therapies	a. Calculate the dose and decay of radiopharmaceuticals used in examinations and therapies. b. Recognise the difference between therapeutic and diagnostic doses, as it affects the patient/client, health practitioner and the public. c. Deliver appropriate dosage of radiopharmaceutical delivery systems and safe aseptic techniques for each patient/client. d. Use appropriate radiopharmaceutical delivery systems. e. Perform planar, SPECT/CT and PET/CT studies, including positioning the patient/client for the best diagnostic outcome. f. Process data image sets, including multi-planar reformats and volume imaging. g. Determine whether the biodistribution of radiopharmaceuticals is normal, altered or unexpected. h. Apply the principles underpinning nuclear medicine therapies to practice. i. Prepare the patient/client and delivery systems for nuclear medicine radiopharmaceutical therapies. **Delivery systems** may include but are not limited to intra-arterial, intravenous, oral, subcutaneous and inhalation. **Planar, SPECT/CT and PET/CT Studies** may include but are not limited to bone, myocardial perfusion, gated heart pool, lung perfusion/ventilation, thyroid, and renal studies as well as oncologic, cardiac and neurologic PET studies.
3. Perform in vivo and in vitro laboratory procedures when necessary.	a. Perform safe aseptic blood labelling procedures. b. Perform in vivo laboratory procedures. c. Implement appropriate methods to determine if results of laboratory procedures are normal, altered or unexpected. **Laboratory procedures** 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.
4. Perform computed tomography (CT) imaging.	a. Operate CT systems safely and effectively. b. Apply appropriate imaging parameters for the patient/client presentation. c. Adjust relative dose levels based on the range of patient/client presentations. d. Collaborate in the design and evaluation of CT protocols. 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. f. Process data image sets, including but not limited to multi-planar reformats and volume imaging. **Contrast CT examinations** can be performed by those who are suitably trained and qualified to do so.

Domain 1C: Radiation therapist

This domain covers the additional knowledge, skills and attributes a radiation therapist needs 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.

Key capabilities What registered medical radiation practitioners must be able to do	**Enabling components** Evidence of this capability for safe and competent practice as a medical radiation practitioner
1. Use equipment and perform techniques to ensure reproducibility of the patient's position for radiation therapy	a. Identify and apply appropriate equipment and techniques to ensure accurate and reproducible localisation, pre-treatment imaging, planning and treatment, for the patient's/client's diagnosis and condition. b. Fabricate or adapt suitable stabilisation and ancillary equipment as needed.
2. Perform localisation and pre-treatment imaging	a. Select imaging modalities suited to individual patient/client presentations and related planning procedures. b. Perform localisation for a range of cancer sites using other modalities. c. Apply knowledge of a range of imaging modalities for use in localisation.
3. Perform treatment planning	a. Apply the principles of radiation physics, dosimetry and radiobiology to treatment planning. b. Apply knowledge of tumour and target volumes, and normal tissue volumes to treatment planning. c. Apply knowledge of cross-sectional anatomy, physiology and oncology to treatment planning. d. Create clinically acceptable treatment plans. e. Evaluate treatment plans to ensure they are clinically acceptable and safe. **Treatment planning** may include but is not limited to imaging and treatment modalities used including CT, MRI, PET and may include brachytherapy, superficial radiation therapy, radiosurgery/stereotactic radiation therapy, paediatric radiation therapy, total body irradiation and proton therapy. **Treatment plans** may include but are not limited to 2D, 3D and 4D, conformal radiation therapy (CRT), intensity-modulated radiation therapy (IMRT) and may include volumetric-modulated arc therapy (VMAT). **Evaluating radiation therapy treatment plans** may include but are not limited to radiation therapists evaluating and analysing treatment plans that they create, as well as treatment plans created by other practitioners.
4. Perform radiation therapy treatment according to approved radiation therapy prescriptions and treatment plans	a. Operate imaging equipment and radiation therapy treatment systems safely and effectively. b. Operate treatment delivery record and verification systems safely and effectively. c. Implement the radiation therapy treatment plans for a range of treatment techniques. d. Apply knowledge of radical and palliative treatment doses and acceptable dose limits to critical structures during implementation of treatment plans. e. Evaluate treatment verification images and modify the patient's treatment delivery according to local protocols.

Key capabilities What registered medical radiation practitioners must be able to do	Enabling components Evidence of this capability for safe and competent practice as a medical radiation practitioner
5. Perform computed tomography (CT) imaging.	a. Operate CT systems safely and effectively. b. Apply appropriate imaging parameters for the patient/client presentation. c. Adjust relative dose levels based on the range of patient/client presentations. d. Collaborate in the design and evaluation of CT protocols. 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. f. Process data image sets, including multi-planar reformats and volume imaging. **Contrast CT examinations** can be performed by those who are appropriately trained and qualified to do so.

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 to the community through professional and ethical practice in the current medico-legal framework, high personal standards of behaviour, maintenance of personal health, and accountability to the profession and the public. 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 all three divisions of the register of medical radiation practitioners.

Key capabilities What registered medical radiation practitioners must be able to do	**Enabling components** Evidence of this capability for safe and competent practice as a medical radiation practitioner
1. Practise in an ethical and professional manner, consistent with relevant legislation and regulatory requirements.	a. Understand and comply with legal responsibilities. b. Manage personal, mental and physical health to ensure fitness to practise. c. Understand mandatory reporting obligations and the grounds for a voluntary notification. d. Apply the Medical Radiation Practice Board of Australia's *Code of conduct* to practice. e. Provide relevant information to the patient/client and implement appropriate methods to obtain informed consent. f. Apply knowledge of the Australian healthcare system to practice. g. Practice the basic principles underpinning bio-ethics in medical radiation practice and recognise and respond appropriately to ethical issues encountered in practice. h. Exercise appropriate levels of autonomy and professional judgement in a variety of medical radiation practice settings. **Legal responsibilities** must include but are not limited to, responsibilities contained in relevant state and territory and/or federal legislation and regulations, specific responsibilities to maintain confidentiality, obtain informed consent and exercise duty of care. **Principles underpinning bio-ethics** must include respecting the rights and acting in the best interests of others, respecting the autonomy of the individual, causing no harm and advancing the common good. **Key elements of fitness to practise** 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. **Reporting obligations** must include making a mandatory notification when needed about impairment, intoxication while practising, significant departure from accepted professional standards, and sexual misconduct and when to notify the Australian Health Practitioner Regulation Agency (AHPRA) about certain notifiable events. **Relevant information provided to patient/client** 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 and breastfeeding mothers. **Relevant aspects of the Australian healthcare system** must include but are not limited to, knowledge of service provision arrangements, the structure and role of Medicare and billing arrangements.

Key capabilities What registered medical radiation practitioners must be able to do	Enabling components Evidence of this capability for safe and competent practice as a medical radiation practitioner
2. Provide each patient/client with dignity and care	a. Recognise and evaluate the socio-cultural factors that may influence patient/client attitudes and responses to medical radiation services. b. Apply the principles of cultural competence and culturally safe care to practice. c. Display appropriate professional behaviour in patient/client interactions. d. Identify and respect appropriate boundaries between patients/clients and health professionals. **Socio-cultural factors** may include but are not limited to cultural and linguistic diversity, age, gender, disability, religion, socio-economic, geographic locations and identifying as Aboriginal and/or Torres Strait Islander Peoples. **Cultural competence** 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. 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.[1] **Cultural safety** is defined in 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. **Appropriate behaviour** must include behaviour that is non-discriminatory, empathetic and respects socio-cultural differences.
3. Take responsibility and accountability for professional decisions	a. Make appropriate professional decisions about the care of patients. b. Recognise and respond appropriately to unsafe or unprofessional practice. c. Integrate organisational policies and guidelines with professional standards and apply to practice.
4. Advocate on behalf of the patient/ client when appropriate.	a. Support and promote the rights and interests of patients/clients and support them to represent their own interests, when appropriate. b. Recognise when it may be appropriate to intervene on behalf of the patient/client. c. Recognise when an alternative patient/client pathway may be more appropriate and make recommendations to other practitioners. **Recommendations on alternative patient/client pathways** are made when it is recognised that the planned patient/client pathway may not provide the optimal outcome for the patient/client. Medical radiation practitioners must: • provide patient/client-centred care • advocate for the patient's/client's equitable access to effective examinations/ treatment, other health professionals and services that address their needs, and • acknowledge that access broadly includes availability, affordability, acceptability and appropriateness.
5. Seek opportunities to progress the profession.	a. Participate in peer assessment, standard setting, mentorship and provide developmental support to other medical radiation practitioners and other members of the healthcare team. b. Use appropriate strategies to effectively supervise students in the work environment and deliver feedback (verbal and written) to the student and the education provider on their performance.

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, evidence-informed patient/client-centred care.

Key capabilities in this domain are common to all three divisions of the register of medical radiation practitioners.

Key capabilities What registered medical radiation practitioners must be able to do	**Enabling components** Evidence of this capability for safe and competent practice as a medical radiation practitioner
1. Communicate clearly, sensitively and effectively with the patient/client and their family or carers	a. Establish rapport with the patient/client to understand their issues and perspectives. b. Communicate effectively with the patient/client (and at times beyond the patient/client) to collect and convey information about the proposed examination/treatment. c. Convey knowledge and procedural information in ways that create trust and confidence and respects the patient/client's confidentiality, privacy and dignity. 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. e. Identify likely communication barriers specific to individual patients/clients and/or family/carers and implement strategies to avoid or overcome them. 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. g. Make provisions to engage third parties to facilitate effective communication when needed. h. Obtain informed consent, explaining the purpose, risks and benefits of the proposed examination/treatment. **Communication barriers** may arise because the medical radiation practitioner's own culture and experience affect their interpersonal style, or because of 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. **Communication beyond patient/client** may include with family, significant others, carers, interpreters, legal guardians and medical advocates. **Effective communication** 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. **Informed consent** is a person's voluntary decision about healthcare that is made with knowledge and understanding of the benefits and risks involved. (see the NSQHS Standards for further guidance)
2. Collaborate with other health practitioners	a. Establish and maintain effective and respectful working relationships with health practitioners. b. Understand, acknowledge and respect the roles and responsibilities of healthcare team members and other service providers, and work effectively and collaboratively with them. c. Follow accepted protocols and procedures to provide relevant and timely verbal and written communication. d. Make recommendations to other members of the healthcare team about the suitability and application of the proposed medical radiation examination/treatment, when appropriate. **Healthcare team members** may include registered health practitioners, accredited health professionals, and licensed and unlicensed healthcare workers **Making recommendations about the suitability and application of procedures** requires understanding of the relative radiation risks and benefits to patients/clients of each examinations/treatment used and effective collaboration 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. **Communication** 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.

Domain 4: Evidence-informed practitioner

This domain covers medical radiation practitioners' responsibility to engage in evidence-informed 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 all three divisions of the register of medical radiation practitioners.

Key capabilities What registered medical radiation practitioners must be able to do	**Enabling components** Evidence of this capability for safe and competent practice as a medical radiation practitioner
1. Resolve challenges through application of critical thinking and reflective practice	a. Identify the challenge or question and the information that is needed to respond. b. Find, critically appraise, interpret and apply best available research evidence to inform clinical reasoning and professional decision-making. c. Provide evidence-informed 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. d. Recognise opportunities to contribute to the development of new knowledge through research and enquiry. **Challenges or questions** 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. **Best available research evidence** is credible information from valid and clinically relevant research conducted using sound methodology. **Recognise opportunities to contribute to the development of new knowledge** requires a practitioner to have a basic understanding of research design, methodology, analysis, review and publication steps in the research pathway.
2. Identify ongoing professional learning needs and opportunities	a. Comply with legal and professional responsibilities to complete CPD. b. Critically reflect on own strengths and limitations to identify learning needed to improve and adapt professional practice. c. Seek input from others to confirm learning needs of self and others to enhance the quality of patient/client care. d. Plan and implement steps to address professional learning and development needs. **Professional development** may be provided by the professional community and the broader healthcare network/practice.

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 in both healthcare and medical radiation practice. This includes 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 all three divisions of the register of medical radiation practitioners.

Key capabilities What registered medical radiation practitioners must be able to do	**Enabling components** Evidence of this capability for safe and competent practice as a medical radiation practitioner
1. Perform and provide safe radiation practice	a. Comply with relevant radiation safety legislation. b. Practice in accordance with relevant radiation safety guidelines. c. Apply knowledge of radiobiology and medical radiation physics to examinations/treatment. d. Apply knowledge of radiobiology and radiation dose adjustment to deliver safe and effective patient/client outcomes. e. Review the referral and associated examinations/treatment prescription to ensure appropriate justification, limitation and optimisation. f. Identify radiation risks and implement effective and appropriate risk management systems and procedures. g. Recognise and report on near misses and their consequences, in addition to adverse events and relevant contributing factors. **Radiation safety legislation and guidelines** may include state and territory or federal radiation safety legislation and guidelines, and the differences across the states and territories including but not limited to radiation management plans. **Risk management** includes an understanding of relevant quality assurance frameworks and their application to practice. **Justification** involves assessing whether more good than harm results from a radiation practice. **Limitation** 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 having regard to safety, image quality and treatment effectiveness. **Optimisation** involves minimising health risks to any person, with the broad objective that the degree of exposure to radiation, number of people exposed and likelihood of exposure be kept as low as reasonably achievable, while considering economic and social factors.

Key capabilities What registered medical radiation practitioners must be able to do	**Enabling components** Evidence of this capability for safe and competent practice as a medical radiation practitioner
2. Protect and enhance patient/ client safety	a. Follow patient/client identification procedures to confirm the correct match of the patient/client with the intended examination/treatment and the correct anatomical site. b. Review, communicate, record and manage patient/client information accurately, consistent with protocols, procedures and legislative requirements for maintaining patient/client records. c. Identify and manage risks associated with patient/client transfer. d. Identify and manage risk of infection, including during aseptic procedures. e. Apply relevant quality frameworks to practice. **Patient/client identification procedures** 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 (ACSQHC), relevant state and territory or federal guidance and workplace materials. **Infection control risk management** includes managing transmission modes of hospital-acquired infections (host, agent and environment), preventing transmission (including effective hand hygiene) and implementing National Health and Medical Research Council's (NHMRC) Australian Guidelines for the Prevention and Control of Infection in Healthcare (2019 guidelines). **Quality frameworks** may include workplace specific frameworks, relevant jurisdictional publications and frameworks relevant to the context of practice such as the *Australian Safety and Quality Framework for Health Care* published by the ACSQHC.
3. Implement quality assurance processes imaging or treating patients/clients	a. Check and confirm that all equipment is in good order and operating within acceptable parameters. b. Follow protocols to record details of all routine equipment checks. c. Identify and take appropriate action to correct unacceptable condition or operation of all equipment. d. Follow protocols to record and report non-conformance of all equipment. **Equipment** includes all main equipment and accessory equipment (instruments) used to image or treat a patient/client. **Good order** 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.

Key capabilities What registered medical radiation practitioners must be able to do	Enabling components Evidence of this capability for safe and competent practice as a medical radiation practitioner
4. Maintain safety of the workplace and associated environments	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. b. Report on all incidents (including radiation and radioactivity incidents) as needed. c. Manage the environmental risks of manufactured radiation and radioactivity. d. Identify, confirm and implement methods of radiation management. e. Use safe and legal methods for managing manufactured radiation sources, including using appropriate personal protective clothing and equipment and complying with shielding requirements. f. Use safe and legal methods for storing and disposing radioactive material and identify and minimise occupancy risks about proximity of radiation and radioactive storage. g. Provide information on radiation-related hazards and control measures to others in the workplace. **Incident reporting requirements** may be identified in protocols and procedures and workplace materials and may include legal requirements identified in the relevant state and territory or federal legislation and regulations, including those published by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). **Control measures** must include time, distance and patient/client shielding.

Key terms

Apply knowledge	Indicates a practitioner is expected to apply detailed knowledge in the practice setting.
Clinically acceptable treatment plans	The International Commission on Radiation Units and Measurements (ICRU) sets out the requirements to develop a clinically acceptable treatment plan.
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 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.
Examination/ treatment	The terms examination/treatment are common terms used in the context of particular divisions of practice.
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 examination/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 needs an ability to draw on and integrate the breadth of capabilities to support overall performance.
Medicines	A medication in this context refers to anything administered to a patient/client to create or enhance a diagnostic quality image; and/or where imaging is used as part of an interventional procedure. (note: taken from DIAS Practice Accreditation Standards) A medicine may also include but is not limited to contrast media.
Procedures	May refer to procedures and protocols (i.e. NSQHS Standards) or may refer to medical procedures. Procedures can also be used interchangeably with examination/treatment.
Understand	Indicates a practitioner is expected to apply broad knowledge and understanding of information for safe practice but may not need to understand or interpret detailed information or may not need to use their knowledge and understanding to perform certain examination/ treatment.

Glossary

Accreditation committee	Appointed by the Medical Radiation Practice Board of Australia (the Board), the Medical Radiation Practice Accreditation Committee is responsible for implementing and administering accreditation.
Accreditation standards	Used to assess whether a program of study, and the education provider that provides the program, provide people who complete the program with the knowledge, skills and professional attributes to safely and competently practise as a medical radiation practitioner in Australia.
Education provider	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.
Impairment	The term 'impairment' has a specific meaning under the National Law in Australia. It 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: a) for a registered health practitioner or an applicant for registration in a health profession, the person's capacity to practise the profession, or b) for a student, the student's capacity to undertake clinical training— i. as part of the approved program of study in which the student is enrolled; or ii. arranged by an education provider.[7]
Learning outcomes	The expression of the set of knowledge, skills and the application of the knowledge and skills a person has and is able to demonstrate as a result of learning (note: adapted from: *Australian Qualifications Framework*, January 2013).
Localisation	Techniques used to conform the radiation dose distribution to the target(s) of interest while sparing surrounding normal tissues.
Medicine	A substance or preparation used in treating disease (Merriam-Webster Dictionary)
Program of study	A program of study provided by an education provider. Note the term 'course' is used by many education providers.
Radiation therapy localisation/ Radiation therapy treatment planning	Radiation therapy localisation 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 needs to complete 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.[8] MRI and PET are also used in radiation therapy localisation. Radiation therapy localisation is separate to localisation used in education which refers to the artificial representation of a real-world process to achieve educational goals via experimental learning.[9]
Reporting medical specialist	Reporting medical specialist may include, but is not limited to a radiologist, radiation oncologist, nuclear medicine specialist, cardiologist, gastroenterologist, obstetrician/ gynaecologist or vascular surgeon.
Stabilisation	Techniques and methods used by medical radiation practitioners to ensure the positioning of patients/clients is precise and reproducible.

Abbreviations

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

References

1. Cross T, Bazron B, Dennis K and Isaacs M. Towards A Culturally Competent System of Care. Washington, DC: Georgetown University Child Development Center, CASSP Technical Assistance Center. 1989:1.
2. Section 35(1)(a) of the Health Practitioner Regulation National Law Act as in force in each state and territory in Australia.
3. Davis L and Hase S. 'Developing capable employees: the work activity briefing', Journal of Workplace Learning. 1999;8:35–42.
4. Department of Health and Human Services State of Victoria. Allied health: credentialing, competency and capability framework (revised edition). Melbourne: State of Victoria Department of Health and Human Services; 2016 [available from www.health.vic.gov.au/health-workforce/allied-health-workforce/allied-health-ccc-framework].
5. Australian Skills Quality Authority. Users' Guide to the Standards for RTOs 2015, Canberra: Australian Government 2017 [available from: www.asqa.gov.au/standards].
6. Lester S. Professional standards, competence and capability. Higher Education, Skills and Work-based Learning. 2014;4(1):31–43.
7. Section 5 of the of the Health Practitioner Regulation National Law Act as in force in each state and territory in Australia (the National Law).
8. Cancer Council NSW, 2017, Planning the treatment, viewed 14 November 2018 [www.cancercouncil.com.au/cancer-information/cancer-treatment/radiation-therapy/external-beam-radiation-therapy/planning-treatment].
9. Flangan B, Nestel D, Joseph M. Making patient safety the focus: Crisis resource management in the undergraduate curriculum. Medical education. 2004;38:56–66.