



Medical Radiation Technologists Board

Competencies Required for the Practice of:

MAGNETIC RESONANCE IMAGING

March 2011

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Revision

It is the intent of the Board that this document be reviewed at least once every three years. The profession cannot be static due to the ongoing emergence of new analysis and treatment techniques. This document has been written in such a way that new changes in practice and technology can be accommodated readily within the parameters.

INTRODUCTION

This document sets out the competencies and skills required by the Medical Radiation Technologists Board (the Board) to practise Magnetic Resonance Imaging(MRI) technology in New Zealand in a safe, professional, patient, and focused manner.

The aim is to register:

- Entry level practitioners who are capable of functioning with a high level of independence, as well as being able to work as part of a team, to provide quality cost-effective services.
- Graduates who have attained a comprehensive knowledge base that enables specialisation in advanced procedures including those with separate registration requirements.
- Graduates who are responsible and caring, who have developed attitudes and skills that enable adaptation to health reforms, ongoing ethical issues and technological advances.

The document is based on the need for professional competencies consistent with the recommendations of the International Professional Bodies.

Please note: this document is not to be viewed as a curriculum. Teaching related to a particular competency can take many different forms and may occur at any time during a course.

REGISTRATION IN A SPECIFIED SCOPE OF PRACTICE

Medical radiation technology is a registered occupation in New Zealand. It is a legal requirement for people wishing to call themselves medical radiation technologists and practice in any of the defined scopes of practice of medical radiation technology, to be registered with the Medical Radiation Technologists Board and to hold a current practising certificate.

The Board has defined the competencies and skill levels required for medical radiation technologists to be registered in any of the following scopes of practice:

1. Diagnostic Imaging General Technologist
2. Radiation Therapist
3. Nuclear Medicine Technologist
4. Magnetic Resonance Imaging Technologist
5. Sonographer

REQUIRED COMPETENCIES

The competencies detailed in this document identify the set of key minimum competencies required to register and practise in the Magnetic Resonance Imaging(MRI) Technologist scope of practice, and include a definition of the skills and knowledge required to fulfil those competencies.

These minimum competencies are used to:

- Set national standards for the MRI Technologist scope of practice in medical radiation technology.
- Cross-reference/assess overseas applicants' qualifications for registration in New Zealand.

- Identify areas in which prospective MRI Technologists need education to comply with New Zealand standards.
- Provide guidelines for tertiary institutions who are providing or anticipating providing a course in MRI technology.
- Assist in the development of core standard units in education.
- Monitor programme delivery in the educational institutions.

COMPETENCIES AND SKILL LEVELS

The Board has identified a set of generic competencies that are applicable to and required for registration in all five defined scopes of practice. In addition the MRI Technologist scope of practice has a number of competencies that are specific to MRI.

Each competency area is further defined by a number of required skills. Each of these skills is then defined according to a required skill level. The Board has identified three distinctive skill levels:

3. Can perform the skill satisfactorily without guidance and/or supervision
2. Can perform the skill satisfactorily but requires guidance and/or supervision
1. Can perform some parts of the skill satisfactorily but requires guidance and/or supervision to perform the entire skill

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Skills Development Profile

Competency Area Communication

Skill 1.1 Respect others as individuals

Performance Criteria The MRI Technologist must be able to:

1. Identify ways in which gender, age, ethnicity, culture, socioeconomic status, disability and other factors may impact on interpersonal interactions.
 2. Evaluate appropriate respect, empathy, cultural sensitivity and rapport in a variety of situations.
 3. Establish and maintain rapport.
-

Skill Level 3

Learning Outcome Demonstrates respect for all others in clinical and professional situations

Content

Values and self concept

Social, culture, religious and gender grouping

Physical and mental disabilities

Communication styles

Appropriate and inappropriate rapport

Empathy

Treaty of Waitangi

Health beliefs and attitudes

Skills Development Profile

Competency Area	Communication
Skill	1.2 Interpret information
Performance Criteria	<p>The MRI Technologist must be able to:</p> <ol style="list-style-type: none"> 1. Demonstrate skills of active listening. 2. Demonstrate observational skills and appropriate responses in clinical settings. 3. Demonstrate the ability to interpret information appropriately . 4. Discuss a range of ways in which instructions may be given, and evaluate the effectiveness of each.
Skill Level	3
Learning Outcome	Uses appropriate listening and observational skills and appropriate responses in the clinical setting
Content	<p>Processing and analysing information</p> <p>Sequencing instructions</p> <p>Verification process</p> <p>Sensory feedback</p> <p>Body language</p> <p>Physical signs and symptoms</p> <p>Language/jargon</p> <p>Articulation and clarity</p> <p>Safety/screening protocols</p>

Skills Development Profile

Competency Area Communication

Skill 1.3 Utilise appropriate communication media

Performance Criteria The MRI Technologist must be able to:

1. Identify areas where communication of data is part of the professional role.
 2. Describe and evaluate a range of media which can be used to communicate information.
 3. Identify confidentiality issues in relation to documentation.
 4. Demonstrate communication through a range of media.
-

Skill Level 3

Learning Outcome Use a range of media to communicate information effectively

Content

Radiology Information systems

Patient data documentation

Quality assurance documentation

Library systems

Written, oral, electronic media

Confidentiality

Privacy Act 1993

Health Information Privacy Code 1994

Skills Development Profile

Competency Area Communication

Skill 1.4 Demonstrate appropriate staff interactions

Performance Criteria The MRI Technologist must be able to:

1. Describe the role of the MRT in a variety of clinical settings and situations.
 2. Discuss factors which facilitate or interfere with a team meeting its objectives.
 3. Identify ways in which a team can resolve conflict.
 4. Identify leadership styles and management styles
 5. Demonstrate knowledge of the role and function of other staff groups within a clinical setting.
 6. Demonstrate ability to function within a multidisciplinary team.
-

Skill Level 3

Learning Outcome Interacts with staff in an appropriate professional manner in a range of clinical settings and situations

Content Professionalism

 Barriers to communication

 Organisational structures

 Leadership

 Group dynamics

 Conflict resolution

 Multidisciplinary team setting

Skills Development Profile

Competency Area	Communication
Skill	1.5 Demonstrate appropriate interactions with others
Performance Criteria	The MRI Technologist must be able to: <ol style="list-style-type: none"> Determine the behaviours which are appropriate to patient, public and the health practitioner relationship.
Skill Level	3
Learning Outcome	Uses appropriate interactions with patients, public, and peers in a range of clinical settings and situations
Content	Professionalism Patients' rights and responsibilities Human rights Health Practitioners Competence Assurance Act 2003 Health and Disability Commission Act 1994 Code of Health and Disability Consumers Rights 1996

Skills Development Profile

Competency Area	Communication
Skill	1.6 Perform in an instructional/educational role
Performance Criteria	The MRI Technologist must be able to: <ol style="list-style-type: none"> 1. Discuss the role of the MRT as instructor. 2. Discuss the role of the MRT as educator. 3. Understand and acknowledge the different ways in which individuals learn. 4. Identify and apply a range of teaching methods.
Skill Level	2
Learning Outcome	Communicates with individuals and groups in a role which facilitates understanding and learning
Content	Preparation of educational material Methods of facilitating learning Feedback/assessment/evaluation Use of educational aids Clinical supervision

Skills Development Profile

Competency Area Apply professional standards

Skill 2.1 Use protocols, policies and procedures

Performance Criteria The MRI Technologist must be able to:

1. Evaluate the role of protocols.
 2. Select and apply relevant protocols, policies and procedures.
-

Skill Level 3

Learning Outcome Complies with protocols, policies and procedures

Content

Types of protocols

Technique fundamentals

Health and safety

Organisational protocols, policies and procedures

Skills Development Profile

Competency Area Apply professional standards

Skill 2.2 Apply regulations and guidelines

Performance Criteria The MRI Technologist must be able to:

1. Locate relevant legislation.
 2. Apply relevant legislation to workplace.
 3. Identify responsibilities of designated staff.
-

Skill Level 2 or 3 (as indicated in the content)

Learning Outcome Complies with legislation and codes of safe practice in all aspects of work

Content

2

Accident Compensation Corporation booklet on the Code of Safe Practice (Chemical)

Official Information Act 1982

Consumer Guarantees Act 1993

Employment Legislation:
Holidays Act 2003
Employment Relations Act

3

Health Practitioners Competence Assurance Act 2003

Health and Disability Commissioners Act 1994 and Code of Health and Disability Consumers Rights 1996

Health and Safety in Employment Act 1992

Privacy Act 1993 and Health Information Privacy Code 1994

New Zealand Bill of Rights 1990

Human Rights Act 1993

Radiation Protection Act 1965

National Radiation Laboratory Codes of Safe Practice

RANZCR Guidelines

Skills Development Profile

Competency Area Apply professional standards

Skill 2.3 Apply the Board's Code of Ethics

Performance Criteria The MRI Technologist must be able to:

1. Describe the role and application of the Code of Ethics.
 2. Evaluate ethical principles relating to health care systems.
 3. Discuss moral positions in relation to ethical problems.
-

Skill Level 3

Learning Outcome Complies with the Board's Code of Ethics

Content Concept of ethics and morals

- Ethical principles
 - Medico-legal issues
 - Privacy/confidentiality
 - Informed consent
 - Patient advocacy
 - Patient rights and responsibilities
 - Bioethics
 - Values
-

Skills Development Profile

Competency Area Apply professional standards

Skill 2.4 Practise as a professional

Performance Criteria The MRI Technologist must be able to:

1. Identify professional domain and responsibilities.
 2. Justify boundaries created by own value system.
 3. Evaluate extent of own competency.
 4. Maintain minimum competency standards.
 5. Determine professional limitations.
 6. Display personal integrity.
-

Skill Level 3

Learning Outcome Demonstrates professional, competent behaviour

Content Self and peer appraisal/evaluation

Principles of professionalism

Skills Development Profile

Competency Area Apply professional standards

Skill 2.5 Maintain standards of practice

Performance Criteria The MRI Technologist must be able to:

1. Identify and participate in continuing education opportunities.
 2. Demonstrate professional accountability for their work and behaviour.
 3. Discuss the legal implication of errors
 4. Support peers in acquisition of knowledge and skills.
-

Skill Level 3

Learning Outcome Demonstrates commitment to professional responsibility and accountability

Content Evaluation and appraisal programmes

Annual practising certificates

Professional associations and affiliations

Continuing professional development

Relevant legislation

International standards of practice

Skills Development Profile

Competency Area Provide holistic patient care

Skill 3.1 Assess and provide for physical and psychological needs of patients

Performance Criteria The MRI Technologist must be able to:

1. Identify when there is a need to assist the patient.
 2. Demonstrate a non-judgmental caring respect for patients in all situations.
 3. Discuss age and developmental differences in patients.
 4. Perform procedures ensuring patient safety.
 5. Identify and respond to patient's psychosocial needs.
-

Skill Level 3

Learning Outcome Responds appropriately to an assessment of a patient's physical and psycho-social condition

Content	Human development	Special needs
	Manual handling	Warmth and comfort
	Privacy and confidentiality	Safety and security
	Anxiety, depression and stress	Empathy
	Human motivation and emotion	Human rights
	Health and Disability Commission Act 1994	Claustrophobia

Skills Development Profile

Competency Area Provide holistic patient care

Skill 3.2 Demonstrate basic patient care skills

Performance Criteria The MRI Technologist must be able to:

1. Recognise the need for basic patient care practices.
 2. Demonstrate basic patient care practices.
-

Skill Level 2 or 3 (as indicated in content)

Learning Outcome Demonstrates an ability to carry out basic patient care skills

Content	2 Dressings	3 Aseptic technique
	IV check/assist skills	Toileting patients
	Suction	Infection control
	Oxygen saturation monitor	Manual handling techniques
		Signs of life
		Wound/skin reactions
		Contrast media and other drugs commonly used in the clinical setting

Skills Development Profile

Competency Area Provide holistic patient care

Skill 3.3 Apply first aid and emergency procedures

Performance Criteria The MRI Technologist must be able to:

1. Identify when there is an emergency situation.
 2. Describe protocols for dealing with an emergency situation.
 3. Identify patients at risk from allergic reactions.
 4. Demonstrate first aid to the level as expected of a comprehensive first aid certificate.
-

Skill Level 3

Learning Outcome Reacts appropriately in an emergency situation

Content Cardio Pulmonary Resuscitation

Emergency protocols

Triage procedures

Signs and symptoms of allergic reaction

Signs and symptoms of respiratory and cardiac arrest

Diabetic/asthmatic and other high-risk patients

Skills Development Profile

Competency Area Provide holistic patient care

Skill 3.4 Ensure patient care

Performance Criteria The MRI Technologist must be able to:

1. Discuss procedure instructions with patients.
 2. Recognise physical signs of procedural complications.
 3. Describe interventions in a crisis situation.
 4. State and carry out care during and post procedure.
 5. Describe post procedure instructions to patients.
-

Skill Level 3

Learning Outcome Demonstrates holistic patient care

Content Procedural complication

Critical situation intervention

Post procedure care

Ongoing instruction

Communicate with appropriate personnel

Skills Development Profile

Competency Area Maintain safe practices

Skill 4.1 Identify and use relevant safety regulations and procedures

Performance Criteria The MRI Technologist must be able to:

1. Implement the principles which dictate the criteria for a safe environment and practice.
-

Skill Level 3

Learning Outcome Demonstrates knowledge and application of documents relative to safe practice

Content

- Legislation
- Regulations
- Policies, protocols and procedures
- Standards of practice
- Incident reporting
- Hazard identification

Skills Development Profile

Competency Area Maintain safe practices

Skill 4.2 Identify equipment faults

Performance Criteria The MRI Technologist must be able to:

1. Identify when equipment is not operating correctly.
 2. Verify fault where possible through appropriate test procedure.
 3. Implement reporting and corrective action procedures.
 4. Identify appropriate follow-up procedure.
-

Skill Level 3

Learning Outcome Demonstrates recognition of equipment faults and responds appropriately

Content

Equipment design

Principles of equipment operation

Quality assurance procedures

Physical environment

Service protocols

Skills Development Profile

Competency Area Maintain safe practices

Skill 4.3 Minimises potential hazards - chemical

Performance Criteria The MRI Technologist must be able to:

1. Recognise chemical hazards in the workplace.
 2. Demonstrate ways of minimising chemical hazards.
 3. Describe the effects on the body of chemicals used in the workplace.
-

Skill Level 2 or 3 (as indicated in content)

Learning Outcome Maintains a working environment safe from chemical hazards

Content	2	3
	Resource Management Act 1991	Health and Safety in Employment Act 1992
	Air-conditioning/venting systems	Chemical handling/storage/spills
		Protective equipment
		Monitoring of staff - sensitivity, allergies

Skills Development Profile

Competency Area Maintain safe practices

Skill 4.4 Minimise potential hazards - physical

Performance Criteria The MRI Technologist must be able to:

1. Recognise physical hazards in the workplace.
 2. Demonstrate ways of minimising physical hazards in the workplace.
-

Skill Level 3

Learning Outcome Maintains a working environment safe from physical hazards

Content

- Types of physical hazards
- Emergency equipment and systems
- Emergency procedures
- Design of equipment and accessories
- Safe use of equipment
- Ergonomics

Skills Development Profile

Competency Area Maintain safe practices

Skill 4.5 Minimise potential hazards - biological

Performance Criteria The MRI Technologist must be able to:

1. Recognise biological hazards in the workplace.
 2. Demonstrate ways of minimising biological hazards in the workplace.
 3. Display ability to decrease the risk of cross infection in a department.
-

Skill Level 3

Learning Outcome Maintains a working environment safe from biological hazards

Content Correct use and disposal of sharps

Infection control and universal precautions

Sterile procedures

Waste disposal

Skills Development Profile

Competency Area Maintain safe practices

Skill 4.6 Minimise potential hazards - electrical

Performance Criteria The MRI Technologist must be able to:

1. Recognise electrical hazards in the workplace.
 2. Demonstrate ways of minimising electrical hazards in the workplace.
-

Skill Level 3

Learning Outcome Maintains an electrically safe environment in the workplace

Content

Relative risks

Fault reporting procedures

Electrical regulations regarding zones

Basic electrical safety

Compatibility of equipment with other electrical devices

Equipment manual

Skills Development Profile

Competency Area Maintain safe practices

Skill 4.7 Minimise potential hazards - electro-magnetic radiation

Performance Criteria The MRI Technologist must be able to:

1. Recognise electro-magnetic hazards.
 2. Demonstrate ways to minimise electro-magnetic hazards.
-

Skill Level 3

Learning Outcome Maintains a working environment safe from radiation hazards

Content MRI safety guidelines

Safety reference documentation and media

Skills Development Profile

Competency Area Operate equipment

Skill 5.1 Describe the principles and operation of equipment

Performance Criteria The MRI Technologist must be able to:

1. Describe components of a MRI unit.
 2. Explain the operation of a MRI unit including coils.
 3. Discuss the selection of pulse sequences.
 4. Explain and justify the manipulation of imaging parameters and options.
 5. Describe image reconstruction processors
-

Skill Level 3

Learning Outcome Explains the main structural features and operation of specialised equipment

Content	Types of MRI scanners	Magnetic field strength
	Types of coils	RF system
	Gradients	Image reconstruction
	Pulse sequences	Artefact reduction techniques
	Technical parameters	Image optimisation
	Additional imaging options	

Skills Development Profile

Competency Area Operate equipment

Skill 5.2 Prepare equipment for use

Performance Criteria The MRI Technologist must be able to:

1. Justify the need for start-up procedures.
2. Describe equipment preparation for imaging.
3. Perform start-up procedures.

Skill Level 3

Learning Outcome Demonstrates preparation procedures for a range of imaging equipment

Content

- Coil selection
- Room preparation
- Equipment preparation
- Start-up procedures
- Department protocols
- QA protocols

Skills Development Profile

Competency Area Operate equipment

Skill 5.3 Use ancillary equipment

Performance Criteria The MRI Technologist must be able to:

1. Evaluate the need for the use of specific ancillary equipment.
 2. Discuss the construction and application of ancillary equipment.
 3. Use ancillary equipment as necessary.
-

Skill Level 3

Learning Outcome Selects and demonstrates effective and safe use of ancillary equipment

Content

Immobilisation devices

Protective equipment

Injectors

Patient observation monitors

Physiological monitors

Patient call bell/anaesthetic equipment

MRI safe equipment

Patient sound system

Skills Development Profile

Competency Area	Operate equipment
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Skill	5.4 Operation of equipment
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Performance Criteria	The MRI Technologist must be able to: <ol style="list-style-type: none"> 1. Apply knowledge of the structure and function of equipment to enable its efficient and safe use. 2. Operate MRI equipment effectively. 3. Perform post processing functions
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Skill Level	3
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Learning Outcome	Demonstrates the effective and safe use of equipment
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Content	MRI scanner Image reconstruction
	Coils
	Operating interface
	Post processing techniques

Skills Development Profile

Competency Area Operate equipment

Skill 5.5 Use processing/printing equipment

Performance Criteria The MRI Technologist must be able to:

1. Perform standard darkroom procedures.
 2. Maintain photographic equipment for ongoing use.
 3. Describe fault finding procedures.
 4. Operate processing/printing equipment.
 5. Participate in a maintenance programme for all processing/printing equipment.
-

Skill Level 3

Learning Outcome Demonstrates the safe and effective use of processing/printing equipment

Content

Processors/daylight systems

Auto/manual mixing

Testing

Film identification

Silver recovery

Quality assurance programmes

Health and safety

Photographic chemistry

Skills Development Profile

Competency Area Operate equipment

Skill 5.7 Ensure equipment is maintained

Performance Criteria The MRI Technologist must be able to:

1. Explain the role of quality assurance with respect to equipment.
 2. Perform regular quality control procedures and evaluate data.
-

Skill Level 3

Learning Outcome Ensures all imaging and associated equipment is maintained for operational use

Content

- Sensitometry
- Reporting faults system
- Phantoms
- Department QA protocols
- SMPTE pattern test
- Regular cleaning and inspection
- Preventative maintenance programme
- System reproducibility

Skills Development Profile

Competency Area Operate equipment

Skill 5.8 Shut down equipment

Performance Criteria The MRI Technologist must be able to:

1. Explain the shutdown procedure.
 2. Secure the area.
 3. Describe emergency shutdown.
-

Skill Level 3

Learning Outcome Demonstrates shutdown procedure of equipment

Content Shutdown procedure Trouble shooting procedure

Securing MRI environment

Emergency shutdown

Quench

Skills Development Profile

Competency Area Imaging requirements

Skill 6.1 Interpret radiology request

Performance Criteria The MRI Technologist must be able to:

1. Evaluate and justify the imaging protocols required to answer the diagnostic question.
 2. Demonstrate an understanding of medical terminology.
 3. Explain the significance of pathological terms.
 4. Assess the urgency of the form/request.
 5. Assess the preliminary patient requirements.
 6. Discuss the appropriateness of requested imaging modality.
-

Skill Level 3

Learning Outcome Interprets the radiology request

Content Medical terminology Imaging protocols

Anatomy and physiology

Pathology

Basic biochemistry

Comparative knowledge of imaging modalities

Contraindications

Skills Development Profile

Competency Area	Imaging requirements	
Skill	6.2 Evaluate patient compatibility with protocols and imaging requirements	
Performance Criteria	<p>The MRI Technologist must be able to:</p> <ol style="list-style-type: none"> 1. Discuss possible problems/limitations and justify adaptations to technique. 2. Assess the patient's psychological needs with respect to the examination being performed. 3. Relate and apply protocols to the situation presented. 4. Assess the patient's medical and physical limitations with respect to the examination performed. 5. Assess the patient for possible contra-indications for the examination presented. 6. Obtain and evaluate previous related imaging and reports. 	
Skill Level	3	
Learning Outcome	Determines the appropriate protocol/modality to suit the required diagnostic outcome	
Content	<p>MRI screening and safety checklist</p> <p>Interview techniques</p> <p>Physical limitations</p> <p>Biological limitations</p> <p>Psychological factors</p> <p>Equipment limitations</p> <p>Pathology</p>	<p>Patient ability</p> <p>Creatinine/eGFR levels</p>

Skills Development Profile

Competency Area Imaging requirements

Skill 6.3 Obtain informed consent

Performance Criteria The MRI Technologist must be able to:

1. Describe the principles of informed consent and requirements for a chaperone.
 2. Explain all examination procedures to the patients and their relatives where appropriate.
 3. Display a high level of interpersonal skills.
 4. Identify patients correctly.
 5. Ensure patients' rights concerning consent are not compromised.
-

Skill Level 3

Learning Outcome Ensures that informed consent is obtained appropriate to the examination

Content

Identification methods	Regulations/protocols
Procedural explanations	Principles of informed consent
Interpersonal skills	Levels of consent
New Zealand Bill of Rights Act 1990	Interpreter
Auxiliary staff/patient support personnel	
Health and Disability Code of Rights	

Skills Development Profile

Competency Area Imaging requirements

Skill 6.4 Ensure patient preparation

Performance Criteria The MRI Technologist must be able to:

1. Adhere to MRI safety/screening form and processes.
 2. Describe patient preparations appropriate to procedures.
 3. Deliver appropriate explanations to patients regarding their examinations.
 4. Instruct patients in the correct preparation for the examination.
 5. Verify the appropriate physical preparation.
 6. Verify the instructions given to patients have been carried out.
-

Skill Level 3

Learning Outcome Ensures correct patient preparation and patient safety

Content

Understanding of examinations

Physical and psychological needs

Documentation prior and present

MRI safety and screening

Instruction to patient

Skills Development Profile

Competency Area Imaging requirements

Skill 6.6 Recognise the need to consult

Performance Criteria The MRI Technologist must be able to:

1. Evaluate information presented.
 2. Recognise and explain normal vs abnormal anatomy.
 3. Recognise and explain normal vs abnormal signal characteristics.
 4. Develop a network of information resources.
 5. Recognise the need for input from other sources.
 6. Access relevant sources of information.
 7. Follow instructions given by relevant experts.
-

Skill Level 3

Learning Outcome Demonstrates consultation necessary to facilitate the procedure and acts appropriately

Content

Knowledge of procedures	Anatomy and pathology
Sources of information	Signal characteristics
Artefacts	Current safety media
Self awareness of personal capabilities	Continuing professional education
Interpersonal skills	
Department protocols and support networks	

Skills Development Profile

Competency Area	Produce diagnostic image
Skill	7.1 Select appropriate equipment
Performance Criteria	<p>The MRI Technologist must be able to:</p> <ol style="list-style-type: none"> 1. Evaluate the capability of various equipment. 2. Compare features of available equipment. 3. Discuss selection of equipment appropriate for use.
Skill Level	3
Learning Outcome	Demonstrates appropriate selection of equipment consistent with the examination to be performed
Content	<p>Examination requested</p> <p>Accessory equipment</p> <p>Coils selection</p> <p>Patient safety</p> <p>Image quality</p> <p>Capabilities of the patient</p>

Skills Development Profile

Competency Area Produce diagnostic image

Skill 7.2 Select appropriate technique/protocol

Performance Criteria The MRI Technologist must be able to:

1. Describe and justify the appropriate manipulation of imaging parameters.
 2. Relate knowledge of anatomy and physiology to the examination being performed.
 3. Integrate signal characteristic knowledge.
 4. Discuss adaptations to standard techniques.
-

Skill Level 3

Learning Outcome Evaluates information obtained and makes the appropriate choice of technique/protocol

Content Technique knowledge Patient abilities

Positioning knowledge

Department protocols

Anatomy, pathology

Signal characteristics

Availability of resources

Clinical indications

Adaptability

Respiratory and gating techniques

Tissue suppression techniques

Skills Development Profile

Competency Area	Produce diagnostic image	
Skill	7.3	Position patient and coil
Performance Criteria	The MRI Technologist must be able to:	
	1.	Utilise safe methods of patient transfer.
	2.	Demonstrate a knowledge of surface anatomy to enable accurate and safe palpation.
	3.	Demonstrate the safe handling of equipment and ancillary devices.
	4.	Position the patient and coil appropriately.
	5.	Assess the patient's capability.
Skill Level	3	
Learning Outcome	Demonstrates the correct and safe positioning of the patient for acquiring the image	
Content	Anatomy and surface anatomy	Patient safety
	Palpation skills	
	Manual handling skills	
	Patient assessment	
	Technique adaptations	
	Patient transfer devices	
	Coil suitability	

Skills Development Profile

Competency Area Produce diagnostic image

Skill 7.4 Acquire images

Performance Criteria The MRI Technologist must be able to:

1. Evaluate and determine imaging parameters to produce optimum images.
 2. Understand and apply the parameters of image/data acquisition.
 3. Apply knowledge to acquire the images within the correct timeframe.
 4. Assess the patient's capability.
-

Skill Level 3

Learning Outcome Demonstrates the acquisition of an image using the correct imaging parameters

Content Knowledge of MRI physics

Pulse sequences

Available techniques

Manipulation of parameters

Appropriate acknowledgement of error messages

Department protocols

Patient condition

Patient monitoring

Skills Development Profile

Competency Area Produce diagnostic image

Skill 7.5 Evaluate and store image

Performance Criteria The MRI Technologist must be able to:

1. Evaluate the diagnostic and technical quality of the image.
 2. Discuss evaluation criteria for diagnostic images.
 3. Explain and utilise appropriate post processing techniques.
 4. Archive image appropriately.
-

Skill Level 3

Learning Outcome Demonstrates the evaluation and storage of an image

Content

Anatomy

Physiology

Pathology

Artefact

Technical image evaluation

Coil effectiveness

Post processing

Data storage

Skills Development Profile

Competency Area	Produce diagnostic image	
Skill	7.6	Assess further requirements
Performance Criteria	The MRI Technologist must be able to:	
	1.	Ascertain whether further imaging is necessary to complete the examination in progress.
	2.	Describe and discuss the application of complementary and supplementary procedures.
	3.	Assess patient capability.
	4.	Provide an informed opinion to medical staff as appropriate
Skill Level	3	
Learning Outcome	Utilise protocols to facilitate a radiological diagnosis	
Content	Problem-solving skills	Decision making
	Contrast media	
	Artefacts	
	Additional pulse sequences	
	Anatomy	
	Pathology/Physiology	
	Communication with patient	
	Time management	

Skills Development Profile

Competency Area Management

Skill 8.1 Describe and apply management principles

Performance Criteria The MRI Technologist must be able to:

1. Describe the basic principles of management.
 2. Demonstrate basic management skills.
 3. Demonstrate proficient time management skills.
 4. Discuss the rationale of performance appraisal systems.
-

Skill Level 3

Learning Outcome Utilises the basic principles of management

Content Organisation, planning and control Staff recruitment

Delegation

Negotiation

Industrial relations

Rostering

Performance evaluation

Interview/curricula vitae

Time management

Discipline

Skills Development Profile

Competency Area Management

Skill 8.2 Demonstrate stock control measures

Performance Criteria The MRI Technologist must be able to:

1. Describe purchasing procedures.
 2. Describe stock holding methods.
 3. Discuss documentation associated with ordering goods and supplies.
 4. Assess the safety, accessibility and storage of goods and supplies.
-

Skill Level 3

Learning Outcome Recognise appropriate levels of goods and supplies

Content

- Rotation
- Ordering
- Stock level
- Suitability
- Storage
- Safety
- Suppliers
- Responsibility
- Environmental impact chemicals
- Accessibility

Skills Development Profile

Competency Area	Management
Skill	8.3 Contribute to work flow to optimise equipment resources and facilities
Performance Criteria	<p>The MRI Technologist must be able to:</p> <ol style="list-style-type: none"> 1. Evaluate available resources to enable their efficient and effective use to provide the service. 2. Discuss principles of rostering. 3. Assess patient condition to enable prioritisation. 4. Evaluate work flow patterns to enable the optimum use of resources.
Skill Level	3
Learning Outcome service	Recognise the need for a working schedule that is flexible, efficient and adaptable to meet requirements
Content	<p>Knowledge of departmental protocols</p> <p>Knowledge of equipment capabilities</p> <p>Staff resources and capabilities</p> <p>Appointment systems</p> <p>Workflow patterns</p> <p>Rostering</p> <p>Planned maintenance</p>

Skills Development Profile

Competency Area Management

Skill 8.4 Contribute towards an optimal cost effective service

Performance Criteria The MRI Technologist must be able to:

1. Discuss the economic use of resources consistent with procedure outcomes.
 2. Participate in planning for routine maintenance.
 3. Identify strategies to enable maximum utilisation of supplies.
-

Skill Level 3

Learning Outcome Demonstrates the prudent use of resources

Content	Costs	Equipment
	Staff levels	Department philosophy
	Facilities	Appointment schedules
	Silver recovery	Equipment/machine maintenance
	Strategic planning	Support services
	Business plans	Reject film analysis
	Communication systems	Work flow patterns

Skills Development Profile

Competency Area Quality service management

Skill 9.1 Describe fundamental principles of quality management

Performance Criteria The MRI Technologist must be able to:

1. Define the principles of quality management.
 2. Discuss the need for quality management.
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Skill Level 3

Learning Outcome Demonstrates an awareness of the principles of quality management

Content

- Definitions
- Standards
- Cost-effectiveness
- Quality assurance
- Safety
- Accountability

Skills Development Profile

Competency Area	Quality service management	
Skill	9.2 Participate in and evaluate quality assurance (QA) programmes	
Performance Criteria	The MRI Technologist must be able to: <ol style="list-style-type: none"> 1. Discuss the effectiveness of QA programmes. 2. Develop and perform QA procedures. 3. Recognise the need to consult. 4. Demonstrate an ability to evaluate QA programmes. 5. Implement and monitor remedial measures when necessary. 	
Skill Level	2 or 3 (as indicated in content)	
Learning Outcome	Participates in and evaluates quality assurance programmes	
Content	2	3
	Systems appraisal	QA protocols/systems
	Evaluation methods	Policies, protocols, and procedures

Skills Development Profile

Competency Area Research and professional development

Skill 10.1 Describe principles of research and development

Performance Criteria The MRI Technologist must be able to:

1. Describe various methods of data collection.
 2. Compare methods of research.
 3. Discuss issues relating to intellectual property.
 4. Discuss methods of analysis.
 5. Describe principles of supervision.
 6. Discuss ethical considerations for research.
-

Skill Level 3

Learning Outcome Describes the principles of research and [development](#)

Content

- Research models
- Methods of research
- Data collection
- Analysis of data
- Reporting of data
- Supervision
- Ethical considerations
- Dissemination of research outcomes

Skills Development Profile

Competency Area Research and professional development

Skill 10.2 Initiate a report on research and development

Performance Criteria The MRI Technologist must be able to:

1. Adhere to ethical guidelines.
 2. Identify resources.
 3. Produce and present research proposal to appropriate body.
 4. Identify and negotiate with an appropriate supervisor.
 5. Outline the mechanism by which research can be carried out.
 6. Compile and present research report.
-

Skill Level 2

Learning Outcome Undertakes basic research resulting in a written document

Content Writing proposals/applications

Identify source of funding

Awareness of ethical considerations

Analysis of data

Literature review

Preparation of research material

Awareness of publishing criteria

Methodology and design

Skills Development Profile

Competency Area	Research and professional development
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Skill	10.3 Demonstrate an understanding of the principles of continuing professional development (CPD)
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Performance Criteria	The MRI Technologist must be able to:
	1. Discuss the concept of CPD and life-long learning.
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Skill Level	3
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Learning Outcome	Demonstrates a knowledge of and participates in CPD
<hr/>	
Content	<p>Performance appraisal methods</p> <p>Health Practitioners Competence Assurance Act 2003</p> <p>Code of Ethics</p> <p>Continuing professional development programme</p> <p>Board requirements</p> <p>Evidence-based practice</p>
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Glossary Specific to Learning Outcomes

Analysis	To break the subject up into its main ideas and evaluate them
Assess	To determine, estimate
Adapt	Assimilate and use new knowledge
Apply	Make use of; put to practical use
Define	State clearly and concisely the meaning of
Demonstrate	Make clear by examples and/or doing
Describe	Give a complete account of, in oral or in written form
Determine	Sort out and decide on, based on a judgement as to whether the conclusions are supported by data
Discuss	Analyse by argument and/or reasoning
Engage	Participate or take part in
Evaluate	Make judgements against criteria, standards and/or evidence
Explain	Analyse, clarify and draw conclusion(s)
Identify	Recognise according to established criteria
Integrate	Incorporate theory and practice into a total unit
Interpret	Bring out the meaning of, and draw conclusion(s)
Justify	To give a good reason for, validate, or substantiate a subject
Maintain	Keep to an agreed standard
Manage	Direct with a degree of skill
Modify	Make changes to an existing methodology
Outline	Give main points and essential supplementary materials in a systematic arrangement
Perform	To carry out and accomplish
Plan	Design and/or organise method or data or management
Practice	Carry out an action; perform a procedure under specified conditions

Relate	Establish logical or causal relationships
Report	Prepare and present a formal statement with conclusions
State	Express the main points in brief, clear narrative terms, oral or written
Summarise	Give the main points or facts in condensed oral or written form