



Medical Radiation Technologists Board

Competencies Required for the Practice of:

DIAGNOSTIC IMAGING GENERAL

March 2011

Copyright

This document is copyright to the Medical Radiation Technologists Board (the Board) and should not be reproduced in whole or part without permission of the Board.

©	First Edition	December 1999
	Second Edition	June 2002
	Third Edition	September 2004
	Fourth Edition	June 2009
	Current Edition	March 2011

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 Diagnostic Imaging General 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 practise 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 Diagnostic Imaging General 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 Diagnostic Imaging General Technologist scope of practice in medical radiation technology.
- Cross-reference/assess overseas applicants' qualifications for registration in New Zealand.

- Identify areas in which prospective Diagnostic Imaging General Technologists need education to comply with New Zealand standards.
- Provide guidelines for tertiary institutions who are providing or anticipating providing a course in medical radiation 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 Diagnostic Imaging General Technologist scope of practice has a number of competencies that are specific to Diagnostic Imaging General.

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

Competency and Learning Outcomes Index

Competency Area	Skill	Skill Level
1 Communication	1.1 Respect others as individuals	3
	1.2 Interpret information	3
	1.3 Utilise appropriate communication media	3
	1.4 Demonstrate appropriate staff interactions	3
	1.5 Demonstrate appropriate interactions with others	3
	1.6 Perform in an instructional/educational role	2
2 Apply professional standards	2.1 Use protocols, policies and procedures	3
	2.2 Apply regulations and guidelines	3
	2.3 Apply Board's Code of Ethics	3
	2.4 Practise as a professional	3
	2.5 Maintain standards of practice	3
3 Provide holistic patient care	3.1 Assess and provide for physical and psychological needs of patients	3
	3.2 Demonstrate basic patient care skills	2/3
	3.3 Apply first aid and emergency procedures	3
	3.4 Ensure patient care	3
4 Maintain safe practices	4.1 Identify and apply relevant safety requirements and procedures	3
	4.2 Identify equipment faults	3
	4.3 Minimise potential hazards - chemical	2/3
	4.4 Minimise potential hazards - physical	3
	4.5 Minimise potential hazards - biological	3
	4.6 Minimise potential hazards - electrical	3
	4.7 Minimise potential hazards - ionising and non-ionising radiation	3
5 Operate equipment	5.1 Describe the principles and operation of equipment	3
	5.2 Prepare equipment for use	3
	5.3 Use ancillary equipment	3
	5.4 Operation of equipment	1/2/3
	5.5 Use processing equipment	3
	5.6 Use data storage equipment	2/3
	5.7 Ensure equipment is maintained	1/2
6 Imaging requirements	6.1 Interpret request form	3
	6.2 Evaluate patient compatibility with protocols and imaging requirements	3
	6.3 Obtain informed consent	3
	6.4 Ensure patient preparation	3
	6.5 Recognise the need to consult	3
7 Produce diagnostic image	7.1 Select appropriate equipment	3
	7.2 Select appropriate technique/protocol	3
	7.3 Position patient	3
	7.4 Acquire image	2/3
	7.5 Process and evaluate image	2/3
	7.6 Assess further requirements	2

Competency Area	Skill	Skill Level
8 Management	8.1 Describe and apply management principles 8.2 Demonstrate stock control measures 8.3 Contribute to work flows to optimise equipment, resources and facilities 8.4 Contribute towards an optimal cost effective service	3 3 3 3
9 Quality service management	9.1 Describe fundamental principles of quality management 9.2 Participate in and evaluate quality assurance programmes	3 2/3
10 Research and professional development	10.1 Describe principles of research and development 10.2 Initiate a report on research and development 10.3 Demonstrate an understanding of the principles of continuing professional development (CPD)	3 2 3

Skills Development Profile

Competency Area Communication

Skill 1.1 Respect others as individuals

Performance Criteria The MRT 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 MRT 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 MRT 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 Office 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 MRT 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
 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 MRT must be able to: 1. 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 MRT must be able to:

1. Discuss the role of the MRT as instructor.
 2. Discuss the role of the MRT as educator.
 3. Describe and apply the 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 MRT 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 MRT 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 MRT 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 MRT 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 MRT 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 implications 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 Respect others as individuals

Performance Criteria The MRT 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 MRT 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 MRT 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 MRT 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 MRT 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 MRT 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 MRT 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 MRT 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 MRT 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 MRT 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 - ionising radiation and non-ionising radiation

Performance Criteria The MRT must be able to:

1. Recognise radiation hazards.
 2. Demonstrate ways to minimise radiation hazards.
 3. Describe the potential effects of radiation on the body.
 4. Rationalise radiation dose in terms of risk versus benefit.
-

Skill Level 3

Learning Outcome Maintains a working environment safe from radiation hazards

Content Radiobiology

National Radiation Laboratory publications

Non-ionising radiation

Concepts of dose

Personnel monitoring

Radiation protection

ALARA principle (As Low As Reasonably Achievable)

Skills Development Profile

Competency Area	Operate equipment	
Skill	5.1 Describe the principles and operation of equipment	
Performance Criteria	<p>The MRT must be able to:</p> <ol style="list-style-type: none"> 1. Describe basic x-ray circuits. 2. Describe the basic structure and operation of: <ol style="list-style-type: none"> a. General x-ray equipment b. Specialised x-ray equipment c. Photographic processors 3. Describe basic photographic and digital imaging processes. 	
Skill Level	3	
Learning Outcome	Explains the main structural features and operation of general, specialised and processing equipment	
Content	X-ray tubes	Mammography
	Generators	Fluoroscopy/image intensifiers
	Mobiles/portables	Image Processing
	General radiating apparatus	Digital subtraction imaging
	Computer tomography	Computer and digital radiography (CR, DR)
	Picture Archiving Communication System (PACS)	

Skills Development Profile

Competency Area Operate equipment

Skill 5.3 Use ancillary equipment

Performance Criteria The MRT must be able to:

1. Evaluate the need for the use of specific ancillary equipment.
 2. Describe 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/compression devices	Automatic exposure measures
Protective equipment	Other hospital equipment eg beds, trolleys
Film identification devices	
Grids	
Cassettes/image reporter	
Filters	
Protractors/measuring devices	
Infection control measures	
Fault finding and reporting	

Skills Development Profile

Competency Area	Operate equipment		
Skill	5.4 Operation of equipment		
Performance Criteria	<p>The MRT must be able to:</p> <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 general imaging equipment effectively. 3. Assist with the operation of specialised imaging equipment. 4. Demonstrate the effective use of computer systems. 		
Skill Level	1 or 2 or 3 (as indicated in the content)		
Learning Outcome	Demonstrates the effective and safe use of equipment		
Content	1	2	3
	Magnetic resonance imaging	Mammography	General equipment
	Nuclear medicine	Computed Tomography	Mobiles
	Ultrasound	Digital subtraction imaging	Computers
			Image processing
			General radiography
			Fluoroscopy

Skills Development Profile

Competency Area Operate equipment

Skill 5.5 Use processing equipment

Performance Criteria The MRT must be able to:

1. Operate image processing equipment.
 2. Describe fault finding procedures.
 3. Participate in a maintenance programme for all photographic processing equipment.
 4. Maintain image processing equipment for ongoing use.
-

Skill Level 3

Learning Outcome Demonstrates the safe and effective use of image processing equipment

Content CR/DR readers

Image processing equipment

Chemical processing equipment

Image plate identification

Silver recovery

Quality assurance programmes

Health and safety

Skills Development Profile

Competency Area Operate equipment

Skill 5.6 Use data storage equipment

Performance Criteria The MRT must be able to:

1. Evaluate image storage media in terms of their suitability for various applications.
 2. Describe data and image processing procedures.
 3. Demonstrate storage manipulation and retrieval of data and images from various systems.
-

Skill Level 3

Learning Outcome Utilises data storage equipment effectively

Content Information systems
Data storage
Image reconstruction
Image archival
Post processing
Storage devices

Skills Development Profile

Competency Area Operate equipment

Skill 5.7 Ensure equipment is maintained

Performance Criteria The MRT must be able to:

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

Skill Level 2 or 3 (as indicated in content)

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

Content	2	3
	SMPTEX monitor test	Lightbeam diaphragm
	System reproducibility	Radiation protection
	Grids	Maintaining imaging plates
	Stepwedge	Reject analysis
	Film/screen contact	Quality control measures
	Safelights	Exposure linearity

Skills Development Profile

Competency Area Imaging requirement

Skill 6.1 Interpret radiology request

Performance Criteria The MRT must be able to:

1. Differentiate between the types of imaging requests
 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.
-

Skill Level 3

Learning Outcome Interprets the request form

Content Medical terminology

Anatomy and physiology

Pathology

Basic biochemistry

Skills Development Profile

Competency Area	Imaging requirements
Skill	6.2 Evaluate patient compatibility with protocols and imaging requirements
Performance Criteria	<p>The MRT must be able to:</p> <ol style="list-style-type: none"> 1. Discuss possible problems/limitations and suggest 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. Assess examination requested appropriate for clinical presentation
Skill Level	3
Learning Outcome	Determines the appropriate protocol/modality to suit the required diagnostic outcome
Content	<p>Interview techniques</p> <p>Physical limitations</p> <p>Biological limitations</p> <p>Psychological factors</p> <p>Equipment limitations</p> <p>Pathology</p>

Skills Development Profile

Competency Area Imaging requirements

Skill 6.4 Ensure patient preparation

Performance Criteria The MRT must be able to:

1. Describe patient preparations appropriate to procedures.
 2. Deliver appropriate explanations to patients regarding their examinations.
 3. Instruct patients in the correct preparation for the examination.
 4. Supervise the appropriate physical preparation.
 5. Verify the instructions given to patients have been carried out.
-

Skill Level 3

Learning Outcome Ensures correct patient preparation

Content Understanding of examinations

Physical, psychological and cultural needs

Documentation prior and present

Relevant clinical tests

Appropriate use of interpreters

Skills Development Profile

Competency Area Imaging requirements

Skill 6.5 Recognise the need to consult

Performance Criteria The MRT must be able to:

1. Evaluate information presented.
2. Develop a network of information resources.
3. Recognise the need for input from other sources.
4. Access relevant sources of information.
5. Follow instructions given by relevant experts.

Skill Level 3

Learning Outcome Demonstrates consultation necessary to facilitate the procedure

Content Knowledge of procedures

Sources of information

Self awareness of personal capabilities

Interpersonal skills

Continuing professional development

Skills Development Profile

Competency Area Produce diagnostic image

Skill 7.1 Select appropriate equipment

Performance Criteria The MRT must be able to:

1. Describe 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

Examination requested

Accessory equipment

Appropriate image receptor

Speed class/exposure index

Radiation protection

Radiographic unit selection with regard to capabilities of the patient

Skills Development Profile

Competency Area Produce diagnostic image

Skill 7.2 Select appropriate technique/protocol

Performance Criteria The MRT must be able to:

1. Describe the technique appropriate to the part under examination.
 2. Relate knowledge of anatomy and pathology to the examination being performed.
 3. Discuss possible adaptations to standard techniques.
-

Skill Level 3

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

Content

- Technique knowledge
- Positioning knowledge
- Department protocols
- Anatomy and pathology
- Availability of resources
- Clinical indications
- Adaptability

Skills Development Profile

Competency Area Produce diagnostic image

Skill 7.3 Position patient

Performance Criteria The MRT must be able to:

1. Discuss methods of safely moving the patient.
 2. Demonstrate a knowledge of surface anatomy to enable accurate and safe positioning.
 3. Demonstrate the safe handling of equipment and ancillary devices.
 4. Position the patient, source of radiation and image recording device, and any ancillary equipment appropriately.
-

Skill Level 3

Learning Outcome Demonstrates the correct positioning of the patient for acquiring the image

Content

Anatomy and surface anatomy	Identification of hazards
Palpitation skills	Cultural and gender awareness
Manual handling skills	
Patient assessment	
Technique adaptations	
Equipment manoeuvrability	

Skills Development Profile

Competency Area Produce diagnostic image

Skill 7.4 Acquire images

Performance Criteria The MRT must be able to:

1. Evaluate and determine suitable combinations of exposure factors and image recording materials to produce optimum images.
 2. Apply the principle of image/data acquisition.
 3. Accurately acquire a diagnostic image using general radiographic equipment.
 4. Acquire the image using a specialised piece of equipment with assistance if necessary.
-

Skill Level 3

Learning Outcome Demonstrates the acquisition of an image using a range of equipment

Content 3

Technical factors and relationships

Radiation safety procedures

Image acquisition

Optical and digital image acquisition techniques

Data acquisition techniques

Skills Development Profile

Competency Area	Produce diagnostic image	
Skill	7.5	Process and evaluate image
Performance Criteria	<p>The MRT must be able to:</p> <ol style="list-style-type: none"> 1. Perform the steps involved in the production and storage of a permanent and visible image. 2. Discuss evaluation criteria for diagnostic images. 3. Evaluate the diagnostic and technical quality of the image. 4. Describe post-image processing techniques. 	
Skill Level	2 or 3 (as indicated in content)	
Learning Outcome	Demonstrates the production and evaluation of an image	
Content	2	3
	Image evaluation criteria pathological (imaging pathology)	Post acquisition manipulation (post image processing techniques) Image processing Image evaluation criteria - technical, anatomical

Skills Development Profile

Competency Area Produce diagnostic image

Skill 7.6 Assess further requirements

Performance Criteria The MRT must be able to:

1. Recognise the need to consult
 2. Ascertain whether further projections are necessary to complete the examination in progress.
 3. Describe and discuss the application of complementary and supplementary procedures.
 4. Provide an informed opinion to medical staff as appropriate.
-

Skill Level 2

Learning Outcome Evaluates a full range of procedures necessary to enable a satisfactory radiological diagnosis

Content Problem-solving skills

Complementary procedures

Workplace protocols

Skills Development Profile

Competency Area Management

Skill 8.1 Describe and apply management principles

Performance Criteria The MRT 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

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 MRT 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 flows to optimise equipment resources and facilities

Performance Criteria The MRT must be able to:

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 Recognise the need for a working schedule that is flexible and adaptable to meet service requirements

Content Knowledge of departmental protocols
Knowledge of equipment capabilities
Staff resources and capabilities
Appointment systems
Workflow patterns
Rostering
Planned maintenance

Skills Development Profile

Competency Area Management

Skill 8.4 Contribute towards an optimal cost effective service

Performance Criteria The MRT 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 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 MRT must be able to:

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

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 MRT must be able to:

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 Demonstrates respect for all others in clinical and professional situations

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 MRT 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

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 MRT 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

Skill 10.3 Demonstrate an understanding of the principles of continuing professional development (CPD)

Performance Criteria The MRT must be able to:

1. Discuss the concept of CPD and life-long learning.
-

Skill Level 3

Learning Outcome Demonstrates a knowledge of and participates in CPD

Content Performance appraisal methods
Health Practitioners Competence Assurance Act 2003
Code of Ethics
Continuing professional development programme
Board requirements
Evidence-based practice

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