



Medical Radiation Technologists Board

Competencies Required for the Practice of:

ULTRASOUND

September 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 Ultrasound 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. Ultrasound

REQUIRED COMPETENCIES

The competencies detailed in this document identify the set of key minimum competencies required to register and practise in the Sonographer 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 Sonographer scope of practice in medical radiation technology.
- Cross-reference/assess overseas applicants' qualifications for registration in New Zealand.

- Identify areas in which prospective Sonographers need education to comply with defined New Zealand standards.
- Provide guidelines for tertiary institutions who are providing or anticipating providing a course in ultrasound.
- 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 Sonographer scope of practice has a number of competencies that are specific to Ultrasound.

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

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| Competency Area | Skill | Skill Level |
|---|--|-------------|
| 8 Management | 8.1 Describe and apply management principles | 3 |
| | 8.2 Demonstrate stock control measures | 3 |
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| 10 Research and professional development | 10.1 Describe principles of research and development | 3 |
| | 10.2 Initiate a report on research and development | 2 |
| | 10.3 Demonstrate an understanding of the principles of continuing professional development (CPD) | 3 |

Skills Development Profile

Competency Area Communication

Skill 1.1 Respect others as individuals

Performance Criteria The Sonographer 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 The Sonographer must be able to:

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 Processing and analysing information

Sequencing instructions

Verification process

Sensory feedback

Body language

Physical signs and symptoms

Language/jargon/colloquialism

Articulation and clarity

Safety/screening protocols

Skills Development Profile

| | |
|-----------------------------|--|
| Competency Area | Communication |
| Skill | 1.3 Utilise appropriate communication media |
| Performance Criteria | <p>The Sonographer must be able to:</p> <ol style="list-style-type: none"> 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 | <p>Office systems</p> <p>Patient data documentation</p> <p>Quality assurance documentation</p> <p>Library systems</p> <p>Written, oral, electronic media</p> <p>Confidentiality</p> <p>Privacy Act 1993</p> <p>Health Information Privacy Code 1994</p> |

Skills Development Profile

Competency Area Communication

Skill 1.4 Demonstrate appropriate staff interactions

Performance Criteria The Sonographer must be able to:

1. Describe the role of the SONOGRAPHER 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 Sonographer 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 Apply professional standards

Skill 2.1 Use protocols, policies and procedures

Performance Criteria The Sonographer 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 Sonographer 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 | 3 |
|----------------|---|---|
| | Accident Compensation Corporation booklet on the Code of Safe Practice (Chemical) | Health Practitioners Competence Assurance Act 2003 |
| | Official Information Act 1982 | Health and Disability Commissioners Act 1994 and Code of Health and Disability Consumers Rights 1996 |
| | Consumer Guarantees Act 1993 | Health and Safety in Employment Act 1992 |
| | Employment Legislation: Holidays Act 2003 Employment Relations Act | 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 |
| | ASUM guidelines | |

Skills Development Profile

Competency Area Apply professional standards

Skill 2.3 Apply the Board's Code of Ethics

Performance Criteria The Sonographer 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 Sonographer 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 Sonographer 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 Sonographer 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 | <p>The Sonographer must be able to:</p> <ol style="list-style-type: none"> 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 | <p>2</p> <p>Dressings</p> <p>IV check/assist skills</p> <p>Suction</p> <p>Oxygen saturation monitor</p> | <p>3</p> <p>Aseptic technique</p> <p>Toileting patients</p> <p>Infection control</p> <p>Manual handling techniques</p> <p>Signs of life</p> <p>Wound/skin reactions</p> <p>Contrast media and other drugs commonly used in the clinical setting (patient allergies: eg latex)</p> |

Skills Development Profile

Competency Area Provide holistic patient care

Skill 3.3 Apply first aid and emergency procedures

Performance Criteria The Sonographer 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 Sonographer 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 Sonographer 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 Sonographer 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 Sonographer 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 Sonographer 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 Sonographer 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 Sonographer 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 Sonographer 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 The Sonographer must be able to:

1. Describe basic components of an ultrasound unit.
2. Describe the operation of general ultrasound unit including Doppler function and specialised transducers
3. Describe basic photographic and digital imaging processes.

Skill Level 3

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

Content

- Transducers
- Processing
- Signal processing
- Sensitometry
- Beam formers
- Electronic data storage
- Scan conversion
- Doppler
- Display and archiving
- Artefacts

Skills Development Profile

Competency Area Operate equipment

Skill 5.2 Prepare equipment for use

Performance Criteria The Sonographer must be able to:

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

Skill Level 3

Learning Outcome Demonstrates preparation procedures for a range of imaging equipment

Content Room preparation

Equipment preparation

Patient identification

Start-up procedures

Skills Development Profile

Competency Area Operate equipment

Skill 5.3 Use ancillary equipment

Performance Criteria The Sonographer 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/support devices
- Gel
- Gel warmer
- Disinfection systems
- Beds
- Needle guides

Skills Development Profile

Competency Area Operate equipment

Skill 5.4 Operation of equipment

Performance Criteria The Sonographer must be able to:

1. Apply knowledge of the structure and function of equipment to enable its efficient and safe use
2. Operate ultrasound equipment effectively.

Skill Level 3

Learning Outcome Demonstrates the effective and safe use of equipment

Content

- Transducers
 - External
 - Intra-cavity
- Real-time scanning
 - Imaging parameters selection
 - Area specific presets
- Doppler
 - Colour
 - Power
 - Pulsed wave
 - Continuous wave
- Advanced imaging processing /transducer technologies
 - Harmonics

 - Compound imaging
 - 3D/4D imaging
 - Extended field of view
 - Matrix imaging
- Measurement packages
- General ultrasound equipment
- Computers

Skills Development Profile

| | | |
|-----------------------------|--|---|
| Competency Area | Operate equipment | |
| Skill | 5.5 Use data processing equipment (digital imaging) | |
| Performance Criteria | <p>The Sonographer must be able to:</p> <ol style="list-style-type: none"> 1. Utilise data processing equipment (digital imaging). 2. Utilise data storage. 3. Demonstrate storage, manipulation and retrieval of data and images from various systems. | |
| Skill Level | 2 or 3 (as indicated in content) | |
| Learning Outcome | Utilises data storage equipment effectively | |
| Content | <p>2</p> <p>Clinical database</p> <p>Statistics</p> | <p>3</p> <p>Data storage</p> <p>Imaging archival</p> <p>Information systems</p> <p>Record and verify systems</p> <p>Quality assurance</p> <p>Storage devices/PACS</p> |

Skills Development Profile

Competency Area Operate equipment

Skill 5.6 Ensure equipment is maintained

Performance Criteria The Sonographer must be able to:

1. Describe the role of quality assurance with respect to equipment.
2. Perform regular quality control procedures and evaluate data.
3. Understand the need for planned maintenance

Skill Level 2 or 3 (as indicated in content)

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

Content

Equipment specifications

Planned maintenance
Quality assurance, calibration, information systems, phantom tests
Analysis of reporting

Fault reporting system

Regular cleaning

Skills Development Profile

Competency Area Imaging requirements

Skill 6.1 Interpret request and gather information

Performance Criteria The Sonographer must be able to:

1. Interpret and understand request.
2. Assemble the required information.
3. Recommend referral to other health care professionals.
4. Determine the urgency of the request.

Skill Level 3

Learning Outcome Interprets the request form and gather information

Content

- Medical terminology
- Informed consent
- Pathology
- Basic biochemistry
- Comparative knowledge of imaging modality
- Contra indications

Skills Development Profile

Competency Area Imaging requirements

Skill 6.2 Evaluate patient compatibility with protocols and imaging requirements

Performance Criteria The Sonographer must be able to:

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. Obtain and evaluate previous related imaging examinations/reports

Skill Level 3

Learning Outcome Determines the appropriate protocol/modality to suit the required diagnostic outcome

Content Interview techniques
Physical limitations
Biological limitations
Psychological factors
Equipment limitations
Pathology

Skills Development Profile

Competency Area

Imaging requirements

Skill

6.3 Obtain informed consent

Performance Criteria

The Sonographer must be able to:

1. Describe the principles of informed consent.
 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 | Auxiliary staff |
| Regulations/protocols | Chaperone/support person |
| Procedural explanations | |
| Principles of informed consent | |
| Interpersonal skills | |
| Levels of consent | |
| Health and Disability Code of Rights | |

Skills Development Profile

Competency Area Imaging requirements

Skill 6.4 Ensure patient preparation

Performance Criteria The Sonographer 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 and psychological needs
Documentation prior and present
Patient instructions

Skills Development Profile

Competency Area Imaging requirements

Skill 6.5 Recognise the need to consult

Performance Criteria The Sonographer 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

Department protocols

Skills Development Profile

Competency Area Produce diagnostic image

Skill 7.1 Select appropriate equipment

Performance Criteria The Sonographer 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/ancillary equipment

Capabilities of the patient

Ultrasound equipment selection

Protocols

Skills Development Profile

| | |
|-----------------------------|---|
| Competency Area | Produce diagnostic image |
| Skill | 7.2 Select appropriate technique/protocol |
| Performance Criteria | <p>The Sonographer must be able to:</p> <ol style="list-style-type: none"> 1. Describe and justify the appropriate manipulation of imaging parameters. 2. Apply appropriate patient manipulation techniques. 3. Demonstrate manipulation of transducer to produce images in correct scan planes. 4. Apply knowledge of normal anatomical variants and pathology. 5. Discuss examination extension or adaptations to standard technique |
| Skill Level | 3 |
| Learning Outcome | Evaluates information obtained and makes the appropriate choice of technique/protocols |
| Content | <p>Imaging parameters</p> <p>Transducer selection</p> <p>Respiratory techniques</p> <p>Body positioning and manipulation</p> <p>Acoustic windows</p> <p>Assessment of anatomy in orthogonal planes</p> <p>Knowledge of organ specific scan planes</p> <p>Protocols</p> <p>Measurement tools</p> |

Skills Development Profile

Competency Area Produce diagnostic image

Skill 7.3 Image/data evaluation

Performance Criteria The Sonographer must be able to:

1. Demonstrate continuous evaluation of the image and adapt the technique as appropriate.
2. Identify the need to extend/modify the examination.
3. Apply the knowledge of anatomy, physiology and pathology whilst evaluating the image.

Skill Level 2

Learning Outcome Demonstrates the correct evaluation of image/data

Content

Anatomy

Physiology

Normal anatomical variants

Pathology

Technique adaptation

Recognition of artefacts

Protocols

Medical terminology

Skills Development Profile

Competency Area Produce diagnostic image

Skill 7.4 Select and store image/data

Performance Criteria The Sonographer must be able to:

1. Demonstrate and justify the ability to select a representative set of image/data for storage.
2. Determine the appropriate image/data storage media.
3. Demonstrate the correct use of image/data storage systems

Skill Level 2

Learning Outcome Demonstrates the selection and storage of image/data

Content

Protocols

Digital storage techniques

Anatomy

Physiology

Pathology

Skills Development Profile

Competency Area Produce diagnostic image

Skill 7.5 Consultation and reporting

Performance Criteria The Sonographer must be able to:

1. Summarise the image/data acquired including clinical information.
2. Identify situations requiring consultations.
3. Apply the department protocols regarding the reporting process.

Skill Level 2

Learning Outcome Demonstrates the ability to consult and report on clinical and imaging findings

Content

Protocols

Problem solving skills

Clinical knowledge

Reference sources

International guidelines - e.g. Australian Society for Ultrasound in Medicine (ASUM) "policies and Statements Handbook" and "statements Relating to Ultrasound Safety" 2001 (subject to continuous review); American Institute for Ultrasound in Medicine (AIUM) "Medical Ultrasound Safety"

Worksheets

Complementary procedures

Skills Development Profile

Competency Area Management

Skill 8.1 Describe and apply management principles

Performance Criteria The Sonographer 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 Sonographer 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 | <p>The Sonographer 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 | Recognise the need for a working schedule that is flexible and adaptable to meet service 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 Sonographer 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 Sonographer 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 Sonographer 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 Sonographer 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 Sonographer 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 Sonographer 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 | giving a good reason for, validating, or substantiating 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