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# Professional Competency Framework for Sonographers





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# Introduction

The purpose of competencies is to establish consistent standards practitioners consider necessary whilst providing direct observable indicators to assess professional performance. They are commonplace and form the foundation of registration and credentialing processes for health professionals.

Developing a multi-dimensional competency framework sets out the current expectations for professional competency in medical sonography. Clearly, it defines the skills, knowledge and attitudes required at all levels of sonographic practice from beginner to expert. Threshold criteria within the framework provide a method to assess the attainment of competency.

A profession-wide collaborative research project was conducted from 2019-2020 and supported financially by the Australian Sonographers Accreditation Registry. This document is the complete data output of this research. It is intended to be subject to regular review in line with the dynamic health care environment and expansion of the sonography profession. It is available for researchers to explore, conduct further research, provide feedback upon, and use in the current sonographic environment. We sincerely thank and acknowledge those whose expertise and participation in the project culminated in this document.



# **Competency Framework Overview**

# Background

The project team consisted of representatives from Australian sonography professional bodies and educational institutions.

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|---------------------|--|
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\*left ASUM in Feb 2020

^Joined group late Feb 2020 as ASUM representative

Fifty-five sonographers participated in the research project which used an anonymised Delphimethodology to build this competency framework. This group included sonography clinicaleducators, supervising sonographers and sonographer managers across Australia, from metropolitan/rural/remote and public/private/mixed work settings. Participants collectively had experience in different areas of sonographic practice (Cardiac, General and Specialist vascular, Obstetrics and Gynaecology, Breast, Abdominal, Superficial Parts, and Paediatric).

## What is a competency?

A competency can be defined as:

*'a measurable human capability that is required for effective performance. It is comprised of knowledge, a single skill or ability, or personal characteristic—or a cluster of these building blocks of work performance. Successful completion of most tasks requires the simultaneous or sequenced demonstration of multiple competencies'*<sup>1</sup>

<sup>1</sup> Hoge MA, Tondora J, Marrelli AF. The fundamentals of workforce competency: Implications for behavioral health. Administration and Policy in Mental Health and Mental Health Services Research. 2005;32(5-6):509-31.

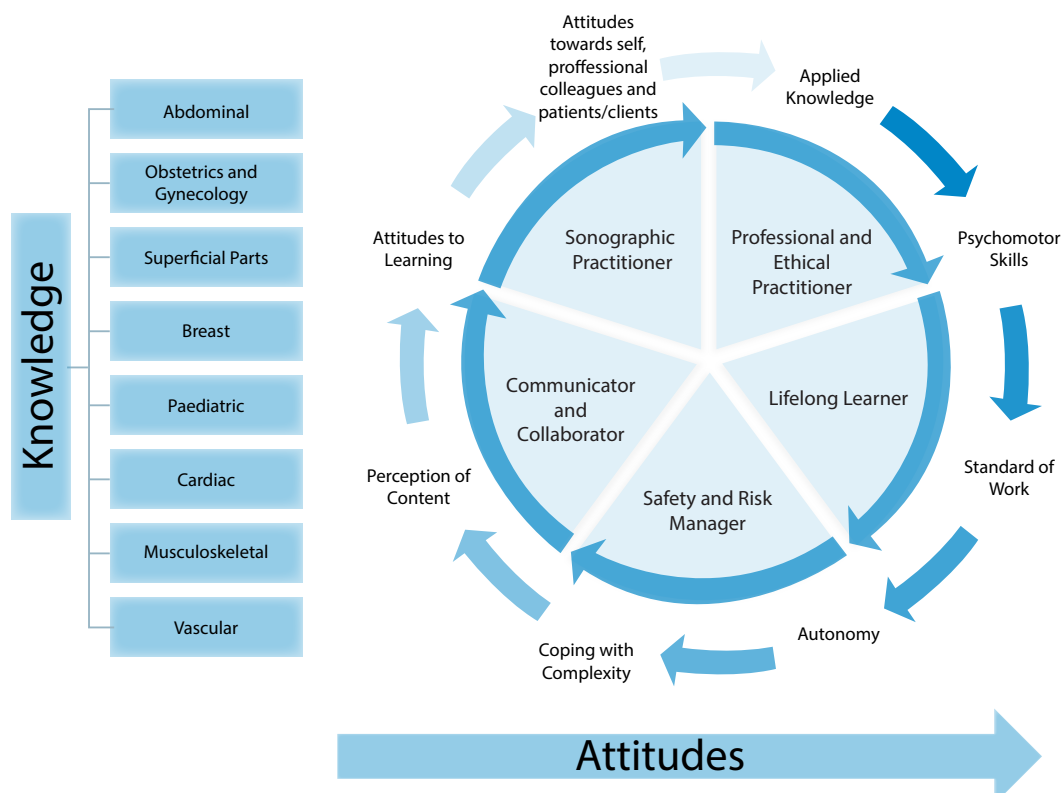
## What is a competency framework?

A competency framework organises a collection of competencies relevant to the effective performance of a particular job, job family or functional area<sup>2</sup>. A key component of competency frameworks is the idea of observable behaviours. These describe behaviours that evidence the ability to effectively perform the task, and which are underpinned by knowledge, skills and attitudes.

<sup>2</sup> Marrelli AF, Tondora J, Hoge, M.A., Strategies for developing competency models. Administration and Policy in Mental Health and Mental Health Services Research. 2005;32 (5-6):.533-61.

## The structure of the Professional Sonographer Competency Framework

The following diagram and text illustrate and describe the components of the Professional Sonographer Competency Framework.





The following provides a broad explanation of the components of the framework:

1. Sonographer competencies are represented by 'performance criteria'. The 'performance criteria' describe the required knowledge and skills for sonographers to perform effectively in any area of sonographic practice. They lie within 'units' which are denoted by the inner pie of the diagram above. 'Performance criteria' are described in Section 2.
2. The components in the outer rim of the pie in the diagram above represent 'general competencies', which holistically describe the combination of skills and attitudes that are required from sonographers to perform effectively across a wide range of tasks/roles at different levels. 'General competencies' are described in Section 3.
3. Attitudes are applicable across all sonographer levels and across all sonographer roles. Attitudes are described in Section 3.
4. The vertical 'Knowledge' bar describes different knowledge areas of sonographic practice. Some sonographers may be 'generalist' and practice across a breadth of knowledge areas, other sonographers may be 'specialist' and practice across one or limited areas of practice. 'Knowledge' elements are described in more detail in Section 4.

## How can the Sonographer Professional Competency Framework be used?

The developed competency framework provides descriptors for the expected behaviours, knowledge, skills and attitudes of sonography students and accredited sonographers at different stages of learning.

The framework:

- Enables the development of pre-accreditation and advanced practice curricula
- Enables the development of assessment tools for pre-accreditation, advanced practice and return to practice
- Can provide guidance for self-assessment for continuing professional development and career planning
- Enables sonographers to understand, discuss and apply the competencies to workforce performance
- Informs sonography students on their knowledge, skills and attitude development





# Sonographer Competency Standards

## S E C T I O N 1

'Performance criteria' are core requirements for accredited sonographers working in all areas of sonographic practice and across all levels. They are nested within 'elements', which are further nested into 'units'.

Each 'performance criteria' has 'cues' which describe the 'performance criteria' by providing more specific examples of the skills and knowledge that should be demonstrated and observed for each of the 'performance criterion'. 'Cues' are illustrative rather than definitive—i.e. they may be not applicable to all situations and other examples of behaviour are also possible. In particular, some 'cues' may describe skills and knowledge that is 'beyond core requirements', or not necessarily an expectation for an entry level accredited sonographer. Icons (see below) have been used to denote if 'cues' are beyond the expectations of an entry-level sonographer.

- ◆ the cue exceeds the core (minimum) expectation of entry-level accredited sonographers.
- ❖ consensus agreement was not reached in the Delphi research study underpinning this framework, but the majority of respondents thought this was a 'core' requirement of an accredited entry-level sonographer.
- ❖ consensus agreement was not reached in the Delphi research study underpinning this framework, but the majority of respondents thought this was a beyond the expectations of an entry-level accredited sonographer.

## Unit 1: Professional and ethical practitioner

### ELEMENT 1: PRACTISE IN AN ETHICAL AND PROFESSIONAL MANNER, CONSISTENT WITH RELEVANT LEGISLATION AND REGULATORY REQUIREMENTS

| PERFORMANCE CRITERIA  | CUES   |
|---|--|
| 1. Comply with legal re-sponsibilities and relevant ethical and professional standards                        | <b>Requires working knowledge of:</b> <ul style="list-style-type: none"> <li>- legal responsibilities and professional and ethical standards which include but are not limited to responsibilities contained in relevant state/territory and federal legislation and regulation. Includes the Australian Privacy Legislation/Act which protects patients'/clients' health information and records</li> </ul> |
|   | <ul style="list-style-type: none"> <li>- patient/client confidentiality, consent, duty of care, negligence, occupational health and safety, anti-discrimination, professional misconduct, standards of service provision, resource management, scope of practice, the requirement for professional indemnity insurance, consequences of non-conformance with ethical and professional standards</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- organisational and professional protocols which may include workplace protocols and protocols endorsed by ASUM, ASA (e.g. Australasian Sonographers Association code of conduct), WFUMB or other international ultrasound professional organisations</li> </ul>   |
| 2. Follow mandatory and voluntary reporting obligations to ensure safe conduct and maintain the public safety | <b>Requires knowledge of:</b> <ul style="list-style-type: none"> <li>- current reporting obligations and reporting processes, in accordance with legislation, and which may include making a notification about the health (impairment), conduct or performance of a registered or non-registered health practitioner that may be placing the public at risk</li> </ul>                                      |
|   | <ul style="list-style-type: none"> <li>- health complaints organisations, including AHPRA</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- notifiable conduct of health professionals to patients/clients; i.e., deviation of professional standards in patient/client care</li> </ul>   |
|   | <b>Requires skills to:</b> <ul style="list-style-type: none"> <li>- keep current with mandatory and voluntary reporting obligations</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- recognise and notify impairments in health, conduct or performance of self, other sonographers or health professionals</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- consider reporting with caution and consideration</li> </ul>  |

| PERFORMANCE CRITERIA  | CUES   |
|---|--|
| 3. Apply the codes of conduct relevant to sonographic practice            | <b>Requires knowledge of:</b><br>- what a code of conduct is; i.e., a set of rules outlining the norms, rules and responsibilities of, and/or practices for, an accredited sonographer   |
|   | - standards of practice and codes of conduct applicable to sonographers (i.e. of professional accrediting bodies and professional associations relating to sonography)   |
|   | <b>Requires skills to:</b><br>- conduct sonographic examination/procedures in a professional and culturally aware manner, respectful to and recognising sensitivities of individuals   |
|   | - follow principles, values and standards as outlined by relevant standards and codes of conduct   |
| 4. Provide relevant information to patient/client to obtain valid consent | <b>Requires knowledge of:</b><br>- what constitutes valid consent (voluntary, capacity, informed, specific), 'permission to continue'  |
|   | - relevant information relating to the implications of a sonographic examination/procedure, including considerations for people at risk (i.e. children, pregnant women and their fetuses, breastfeeding mothers, people with cognitive deficiencies)   |
|   | - workplace protocols in gaining consent   |
|   | - the importance of obtaining consent  |
|   | <b>Requires skills to:</b><br>- communicate and explain to the patient/client, in clear lay terms that can be understood, relevant information about the examination/procedure, and implications and considerations of the examination/procedure, with cultural sensitivity, to obtain valid consent (or permission to continue). Personal safety issues should be outlined in higher risk or invasive examinations/procedures |
|   | - overcome language barriers, and when appropriate to use a translator   |
|   | - assess and recognise capacity to provide informed consent, and when the patient's/client's guardian or representative should be consulted. Capacity to consent may be impaired by mental health, alcohol or substance abuse, learning disabilities or dementia   |
|   | - answer questions asked by the patient/client, within the sonographer's scope of practice. In some circumstances, consultation with a more senior sonographer, radiologist, referring doctor or specialist may be required  |

| PERFORMANCE CRITERIA   | CUES   |
|--|--|
| 5. Apply knowledge of the Australian healthcare system to practice   | <b>Requires knowledge of:</b> <ul style="list-style-type: none"> <li>- relevant aspects of the Australian healthcare system, which may include but are not limited to; service provision arrangements (including tertiary referrals), the structure and role of Medicare in billing for imaging services ♦</li> </ul>  |
| 6. Practice the basic principles underpinning bioethics within sonographic practice, and recognise and respond appropriately to ethical issues encountered in practice | <b>Requires knowledge of:</b> <ul style="list-style-type: none"> <li>- what bioethics is; i.e. the ethical issues emerging from advances in biology and medicine</li> <li>- the underlying principles of bioethics and how they broadly relate to sonographic practice and healthcare, which includes respecting the rights, autonomy, and dignity of the individual, causing no harm, and practicing justice and veracity</li> </ul> <b>Requires skills to:</b> <ul style="list-style-type: none"> <li>- apply the fundamental principles of bioethics to sonographic practice and the broader field of healthcare</li> </ul>   |
| 7. Exercise appropriate levels of autonomy and professional judgement in sonographic practice and related settings   | <b>Requires skills to:</b> <ul style="list-style-type: none"> <li>- make decisions within one's professional knowledge base and scope of practice, recognise when decisions and actions are within and outside the scope of practice, knowledge or skills, and when to seek assistance from other health professionals</li> <li>- identify areas of risk (risk may be related to patient/client transfers, the appropriateness of ultra-sound equipment, the physical/mental state of the patient/client, the appropriateness of the examination/procedure to the patient/client or situation)</li> <li>- employ strategies, including critical thinking, to ensure clinical decisions are based on each individual case, with well-informed theoretical knowledge and clinical experience, and are transferred/communicated to the other health professionals responsible for the patient/client</li> </ul> <b>Requires knowledge of:</b> <ul style="list-style-type: none"> <li>- sonographer scope of practice</li> <li>- when it is appropriate to extend the examination/procedure</li> </ul> |

| PERFORMANCE CRITERIA                              | CUES   |
|---|--|
| 8. Act within the scope of patient/client consent | <b>Requires knowledge of:</b><br>- what is considered appropriate consent and assumed consent. Patient/client consent may require obtaining consent from parents, guardians and carers; i.e. for children, and adults and children with cognitive deficiencies |
|   | <b>Requires skills to:</b><br>- reconfirm consent if it is clinically indicated for the examination/procedure to be extended and changed, or if there are cues from the patient/client that they may wish to withdraw consent. These cues may be non-verbal    |
|   | - effectively communicate with patients/clients/guardians/carers to obtain valid informed consent to achieve the clinical goal of the sonographic examination/procedure  |
|   | - recognise when a translator is required and effectively communicate with translators in the event of a language barrier  |
|   | - follow workplace protocols for verbal and written consent, and consent for non-English speaking patient/clients or those who lack cognition (which may be due to treatment interventions)  |
|   | - recognise and offer alternatives to patient/client care when consent to an ultrasound examination/procedure has been declined ◆  |

## ELEMENT 2: PROVIDE EACH PATIENT/CLIENT WITH DIGNITY AND CARE (UNIT 1)

| PERFORMANCE CRITERIA   | CUES  |
|--|---|
| 1. Recognise and evaluate the sociocultural factors that may influence patient/client attitudes and responses to servicers | <p><b>Requires knowledge:</b></p> <ul style="list-style-type: none"> <li>- of the meaning of “sociocultural factors”; i.e., the diversity of people’s thoughts, feelings, and behaviours (due to social and cultural diversity within Australia)</li> <li>- that sociocultural factors may include, but are not limited to; cultural and linguistic diversity, age, gender, disability, religion, socioeconomic status, geographic locations, and identifying as Aboriginal and/or Torres Strait Islander</li> </ul> <p><b>Requires skills to:</b></p> <ul style="list-style-type: none"> <li>-explain limitations of an examination/procedure to a patient/client if the examination procedure is limited by sociocultural factors</li> </ul>  |
| 2. Apply the principles of cultural competence and cultural safety to practice   | <p><b>Requires knowledge:</b></p> <ul style="list-style-type: none"> <li>- that cultural competence is the ability to participate ethically and effectively in personal and professional intercultural settings. It requires being aware of one’s own cultural values and worldview and their implications for making respectful, reflective and reasoned choices, including the capacity to imagine and collaborate across cultural boundaries (from <a href="https://sydney.edu.au/nccc/about-us/what-is-cultural-competence.html">https://sydney.edu.au/nccc/about-us/what-is-cultural-competence.html</a>)</li> <li>- that cultural safety is an environment that is spiritually, socially and emotionally safe, as well as physically safe for people; where there is no assault challenge or denial of their identity, of who they are and what they need. It is about shared respect, shared meaning, shared knowledge and experience of learning together (Williams, R. (1999). Cultural safety – what does it mean for our work practice? Australian and New Zealand Journal of Public Health, 23(2), 213-214)</li> <li>- how cultural sensitivities may impact on deviations from normal sonographic examinations/procedures, and the need for shared decision making, involving communication that conveys consequences of altering the sonographic examination/procedure</li> </ul> |
| 3. Display appropriate professional behaviour in patient/client interactions   | <p><b>Requires skills to:</b></p> <ul style="list-style-type: none"> <li>- exhibit appropriate professional behaviours and relationships in all aspects of practice, demonstrating honesty, empathy, integrity, humility, commitment, compassion, respect, altruism, respect for diversity, maintenance of confidentiality and non-discriminatory practice, respecting sociocultural differences, and understanding the patient/client perspective</li> </ul>   |



### ELEMENT 3: ASSUME RESPONSIBILITY AND ACCEPT ACCOUNTABILITY FOR PROFESSIONAL DECISIONS (UNIT 1)

| PERFORMANCE CRITERIA   | CUES   |
|--|--|
| 1. Recognise and respond appropriately to unsafe or unprofessional practice                                | <b>Requires knowledge of:</b><br>- appropriate response, which may include ensuring student and accredited sonographers are given clear instruction and feedback about deficient practice ♦  |
|  | <b>Requires skills to:</b><br>- demonstrate awareness of relevant reporting pathways for unsafe or unprofessional practice within the workplace and external bodies  |
|  | - ensure student sonographers are appropriately supervised, and provided with constructive and timely feedback ♦   |
|  | - provide accredited sonographers with clear instruction and timely feedback about deficient practice ♦  |
|  | - self-reflect to identify deficiencies in own performance, learn from errors and near misses  |
| 2. Integrate organisational policies and guidelines with professional standards and apply to practice      | <b>Requires knowledge of:</b><br>- organisational policies and guidelines, which may include workplace specific frameworks, relevant jurisdiction publications, and the Australian Safety and Quality Framework for Health Care (Australian Commission on Safety and Quality in Health Care) ❖ |
| 3. Make appropriate professional decisions regarding the care of patients/clients within scope of practice | <b>Requires knowledge of:</b><br>- expectations and limitations of sonographer scope of practice within a healthcare setting   |
|  | - protocols of departmental emergency procedures   |
|  | <b>Requires skills to:</b><br>- follow instructions by attending radiologist or specialist instructions during an examination/procedure or incident  |
|  | - decide if it would be unsafe to continue the ultrasound examination/procedure for either self or patient/client, and be confident in making the decision to stop   |
|  | - communicate and/or collaborate with colleagues of various disciplines. It also requires the sonographer to be adaptable and vary their response according to the situation at hand   |
|  | - interpret and decode patient/client medical history, including receiving a handover from nursing staff, patient/client resuscitation status, etc   |

**ELEMENT 4: DEMONSTRATE A COMMITMENT TO SOCIETY BY  
RECOGNISING AND RESPONDING TO SOCIETAL EXPECTATIONS IN  
SONOGRAPHIC PRACTICE (UNIT 1)**

| PERFORMANCE CRITERIA  | CUES   |
|---|--|
| 1. Demonstrate accountability to patients/clients, society, and the profession by responding to societal expectations of sonographers within ethical and best practice boundaries | <b>Requires knowledge of:</b>  |
|   | - the role of sonographers in the Australian healthcare system   |
|   | - the length and depth (difficulty) of training courses for sonographers   |
|   | - the sonographer's responsibility to facilitate professional examinations/procedures  |
|   | - the influence of social media on societal expectations ❖   |
|   | - the societal expectations of a healthcare professional. Examples are: competence, accountability, transparency, integrity  |
|   | - the sonographer's responsibility for their professional action and sonographic practices   |
|   | - how to promote the profile and role of the accredited medical sonographer in healthcare during interactions with patients/clients, other health professionals and society ❖  |
|   | <b>Requires skills to:</b>   |
|   | - listen to patients/clients and referrers, to better understand the requirements of the community   |
|   | - actively engage in continuing professional development (CPD)   |
|   | - advocate to the public and other health professionals for the role of sonographers in healthcare, and how their role influences the patient/client. This may include communicating scope of practice in multidisciplinary settings ◆   |
|   | - promote understanding of the role of the sonographer by introducing self as a sonographer and explaining role, range and limitations of skills and knowledge to client/patient   |
|   | - recognise what the patient/client expects from their examination/procedure and act within scope of practice to meet those expectations.  |
|   | - speak positively about the profession  |
|   | - meet societal expectations within reason (e.g., without harm to the sonographer, without breaching professional, ethical, or legal requirements). Certain required traits may include compassion, reasoning, and conflict resolution when societal expectations differ from what is able to be done within scope of practice |

| PERFORMANCE CRITERIA   | CUES   |
|--|--|
| 2. Demonstrate a commitment to patient/client safety and quality improvement | <b>Requires skills to:</b><br>- facilitate change in sonographic work practices to enhance service quality and outcomes (examples; audits, on-going education, equipment reviews, protocol reviews, risk assessments to improve waiting times, customer satisfaction, reduction adverse effects, reduction of diagnostic errors) ◆ |
|  | - respond to feedback from patients/clients communicated to all staff and management ◆   |
|  | - ensure student sonographers are appropriately supervised using constructive feedback, active facilitation, confirmation of understanding to ensure patient/client safety ◆   |
|  | - use innovative solutions to improve service delivery ◆   |
|  | <b>Requires knowledge of:</b><br>- quality improvement pathways ◆  |

## ELEMENT 5: ADVOCATE ON BEHALF OF THE PATIENT/CLIENT WHEN APPROPRIATE (UNIT 1)

| PERFORMANCE CRITERIA  | CUES  |
|---|---|
| 1. Support and promote the rights and interests of patients/clients to represent their own interests when appropriate | <b>Requires knowledge of:</b><br>- advocacy strategies, which include supporting and empowering the patient/client to voice their own interests and perspective in relation to their sonographic examination/ procedure ❖ |
|   | - healthcare rights of patients/client, which may include information contained in Australian Charter of Healthcare rights ❖  |
|   | <b>Requires skills to:</b><br>- communicate effectively and with diplomacy  |
|   | - recognise limits of advocacy defined by sonographer scope of practice (i.e., advocating on course of patient/client treatment is beyond scope) ❖  |

| PERFORMANCE CRITERIA   | CUES   |
|--|--|
| 2. Recognise when it may be appropriate to intervene on the patient's/client's behalf and understand the appropriate intervention pathways   | <b>Requires knowledge of:</b>  |
|  | - appropriate interventions, which may include involving another health/medical practitioner, and alternate imaging pathways   |
|  | - when intervention is appropriate; i.e., if the patient/client demonstrates mental or physical duress during the course of an examination/procedure   |
|  | - circumstances in which a patient/client is a risk to others  |
|  | - appropriate reporting pathways   |
|  | <b>Requires skills to:</b>   |
| 3. Recognise when an alternative patient/client pathway may be more appropriate and make recommendations to other practitioners within established protocols to make recommendations | - recognise when an alternate pathway would be appropriate for the patient/client (examples may be; better choice of equipment, an alternate examination/procedure might answer clinical question better, the examination/procedure is contraindicated by the patient's/client's condition)    |
|  | - work within sonographer scope of practice and workplace protocols  |
|  | - collaborate and communicate with other members of healthcare team and the patient/client to change examination/procedure plan  |
|  | <b>Requires knowledge of:</b>  |
|  | - relative risks and benefits to the patient/client from sonographic examination/procedures  |
|  | <b>Requires skills to:</b>   |
|  | - communicate with other healthcare professionals to recommend alternative patient/client pathways when it is recognised that the planned patient/client pathway may not provide the optimal outcome for the patient/client ♦  |
|  | - provide patient/client-centred care  |
|  | - advocate for the patient's/client's equitable access to effective examinations/procedures, other health professionals and services that address their needs as a whole person, and acknowledge that access broadly includes availability, affordability, acceptability and appropriateness ♦ |
|  | - work within sonographer scope of practice and workplace protocols  |

## ELEMENT 6: SEEK OPPORTUNITIES TO PROGRESS THE PROFESSION (UNIT 1)

| PERFORMANCE CRITERIA   | CUES   |
|--|--|
| 1. Participate in peer assessment, self-reflection, standard goal setting and mentorship, and provide developmental support to other sonographers and other members of the healthcare team | <b>Requires knowledge of:</b>  |
|  | - leadership and feedback techniques, and appropriate resources to facilitate others to meet learning and performance goals ♦                    |
|  | - best practice, current professional standards, guidelines and assessment tools   |
|  | - professional standards and feedback mechanisms at peer level, and up and down the hierarchy  |
|  | - principles of peer review, mentorship and professional supervision used across the various professions of the healthcare team ♦                |
|  | - basic knowledge of where to access tools for learning/development that can be passed on to peers   |
|  | - reflective practice techniques   |
|  | <b>Requires skills to:</b>   |
|  | - lead, mentor and support junior staff and students ♦   |
|  | - manage interpersonal relationships within working groups and departments, and across departments/organisations to benefit the workplace        |
|  | - actively participate in professional development activities of relevant professional bodies and the workplace                                  |
|  | - recognise when peers need assistance   |
|  | - give and receive constructive criticism  |
|  | - clearly describe sonographic principles and examinations/procedures to other members of a healthcare team                                      |
|  | - inspire and motivate other members of the healthcare team to best practice; lead by example ❖  |
|  | - openly seek, share and discuss interesting cases, new research or gaps in knowledge base   |
|  | - participate in teamwork and collaboration to foster the development of knowledge and collaborative learning relationships amongst sonographers |
|  | - effectively communicate expectations, suggestions and concerns, and address concerns in a collaborative manner                                 |
|  | - provide clear and concise feedback in an appropriate format ♦  |
|  | - provide emotional support to colleagues and students ♦   |
|  | - recognise knowledge gaps in self and others and treat as development opportunities   |
|  | - develop and implement training tools ♦   |
|  | - critically read articles/journals and apply their conclusions if they improve quality of care and quality of service                           |

| PERFORMANCE CRITERIA   | CUES   |
|--|--|
| 2. Use appropriate strategies to effectively supervise students in the work environment and deliver appropriate feedback (verbal and written) to the student and the education provider on their performance | <b>Requires knowledge of:</b><br>- supervision of students, clinical teaching and assessment, education provider learning and assessment requirements ◆  |
|  | <b>Requires skills to:</b><br>- supervise, teach and assess students, and liaise effectively with education providers ◆  |
|  | - stay current with education research, and apply to supervision and practise accordingly ◆  |
|  | - seek out opportunities to share knowledge and collaborate with peers, mentors and students   |
|  | - provide feedback ◆   |
| 3. Demonstrate an understanding of service audits and evidence-based policy making for the profession  | <b>Requires knowledge of:</b><br>- current questions in sonographic practice that could be answered through research and/or audit of service ❖   |
|  | - current professional policies which require updating ❖   |
|  | - areas of deficit within professional polices for sonographic practice ❖  |
|  | - steps in the research pathway; research design and methodologies, analysis, review, and publication steps (may include case studies and reviewing available evidence to test hypotheses)   |
|  | <b>Requires skills to:</b><br>- conduct research and/or audit of service(s) ❖  |
|  | - understand and uphold policy   |
|  | - collect and analyse existing literature, develop and follow research protocols compliant with ethical requirements, collect and analyse data, synthesise and disseminate findings and integrate research findings into professional practice ❖ |
|  | - critically assess the best available research evidence: information from valid and clinically relevant research conducted using sound quantitative or qualitative methodology ❖  |





## Unit 2: Lifelong Learner

### ELEMENT 1: APPLY CRITICAL AND REFLECTIVE THINKING TO RESOLVE CLINICAL CHALLENGES

| PERFORMANCE CRITERIA   | CUES   |
|--|--|
| 1. Describe and resolve clinical challenges or questions with best practice using evidence-based learning through the application of critical thinking and reflective practice | <b>Requires knowledge of:</b>  |
|  | - steps in the research pathway  |
|  | - best available research evidence: information from valid and clinically relevant research conducted using sound quantitative or qualitative methodology  |
|  | - critical appraisal: the assessment of information for its adequacy to address requirements   |
|  | - critical thinking: questioning, analysing, synthesising, interpreting, cognitive reasoning and critical appraisal of literature and evidence   |
|  | - reflective thinking: self-reflection during and after a clinical challenge or experience, structured and informal reflection to review and integrate knowledge and findings into practice and identify any limitations or risks to practices   |
|  | <b>Requires skills to:</b>   |
|  | - identify the challenge or question and the information that is required to respond   |
|  | - seek a solution for any challenge or question encountered in any aspect of professional practice. This may include prioritising the questions to be answered and determining the nature, scope and urgency of the information that is required to respond                                |
|  | - find, critically appraise, interpret, and apply best available research evidence to inform clinical reasoning and professional decision making   |
|  | - recognise the need to consult with other health/medical professionals in clinical situations   |
|  | - provide patient/client-centred care by carefully considering the purpose of the proposed examination/procedure, reviewing existing protocols and methods, reflecting on clinical challenges or experiences, and integrating knowledge and findings into practice                         |
|  | - recognise opportunities to contribute to the development and communication of new knowledge through research and enquiry   |
|  | - review clinical action plans/protocols and assess if they are aligned with current best practice and evidence. This may include reviewing detailed plans/proposals, informal updates and journal articles and implementation/actions plans that are sequenced to form a clear strategy ♦ |

| PERFORMANCE CRITERIA   | CUES  |
|--|---|
| 2. Identify ongoing professional learning needs and opportunities to promote best practice | <b>Requires knowledge of:</b><br>- where and how professional development can be accessed (i.e. from the professional community and the broader healthcare network/practice)  |
|  | <b>Requires skills to:</b><br>- comply with legal and professional responsibilities to undertake continuing professional development (CPD can include CPD programs, conferences, seminars, workshops and professional courses, CPR courses, correct ergonomic posture workshop from physiotherapist,) |
|  | - critically reflect on personal strengths and limitations to identify learning required to improve and adapt professional practice   |
|  | - seek input and discuss with others to identify learning needs of self and others to deliver improved patient/client outcomes  |
|  | - plan and implement steps to address professional development needs  |

## ELEMENT 2: PARTICIPATE IN ONGOING PROFESSIONAL LEARNING (UNIT 2)

| PERFORMANCE CRITERIA   | CUES  |
|--|---|
| 1. Demonstrate understanding of legal and professional responsibilities to undertake continuing professional development (CPD)       | <b>Requires skills to:</b><br>- comply with accreditation responsibilities and documentation requirements   |
|  | - demonstrate participation in a CPD program  |
|  | - identify and engage in a variety of CPD activities  |
| 2. Critically reflect on personal strengths and limitations to identify learning required to improve and adapt professional practice | <b>Requires knowledge of:</b><br>- methods of critical reflection, which may include but are not limited to using a diary, professional development logbook or personal learning plan |
|  | - how to perform an internet search to access to expand knowledge as the need arises  |
|  | <b>Requires skills to:</b><br>- implement processes to ensure personal practice improvement   |
|  | - critically evaluate and reflect on work practices and seek feedback on resources which may include, but is not limited to; case studies, image gallery                              |
|  | - seek improvement through a variety of resources   |

| PERFORMANCE CRITERIA   | CUES  |
|--|---|
| 3. Seek feedback to confirm learning needs of self and others to improve client outcomes | <b>Requires knowledge of:</b> <ul style="list-style-type: none"> <li>- 'others' who may be a valuable resource in determining individual or collective learning needs. This may be workplace or professional peers and may not be confined to sonographers. Other professionals may assist</li> </ul> |
|  | <b>Requires skills to:</b> <ul style="list-style-type: none"> <li>- seek feedback from others, where circumstances allow</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>- use collaborative learning to improve personal practice and contribute to collective improvements in practice</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>- use collaborative learning to encourage mentorship, and effective communication strategies to safely deliver/receive feedback ♦</li> </ul>   |
| 4. Plan and implement steps to address professional development needs                    | <b>Requires knowledge that:</b> <ul style="list-style-type: none"> <li>- CPD is a career-long process, is an accreditation requirement and its aim is to improve practice</li> </ul>  |
|  | <b>Requires skills to:</b> <ul style="list-style-type: none"> <li>- address professional development needs via self-reflection, the professional community and the broader healthcare network/practice</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>- align learning goals to development of competence and improvement of clinical practice quality, and gaps in clinical knowledge, including the technical/operational knowledge of the equipment being used</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>- seek a variety of reputable education resources</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>- appraise if resources and educational tools are appropriate and effective ❖</li> </ul>   |

### ELEMENT 3: FACILITATE UNDERSTANDING AND LEARNING IN A CLINICAL ENVIRONMENT (UNIT 2)

| PERFORMANCE CRITERIA   | CUES   |
|--|--|
| 1. Use communication strategies to facilitate professional understanding and learning individually and/or from the wider healthcare team and community | <b>Requires knowledge of:</b><br>- a range of clinical teaching methods and methods to transfer knowledge effectively ♦  |
|  | <b>Requires skills to:</b><br>- provide clinical supervision to students or qualified sonography practitioners ♦   |
|  | - assess, evaluate, and provide feedback to individuals and groups ♦   |
|  | - promote a safe learning environment  |
|  | - recognise the value of role-modelling and mentoring  |
|  | - recognise the impact of the formal, informal, and hidden curriculum on learners ♦  |
|  | - ensure patient/client safety is maintained when learners are involved  |
|  | - seek and collect useful teaching resources ♦   |
|  | - prioritise and create group learning opportunities ♦   |
|  | - recognise the learning styles of learners and any issues hindering the learning process, with the aim to resolve as soon as possible ♦   |
|  | - encourage and demonstrate information/answer seeking   |
|  | - develop and implement training tools and assessments ♦   |
|  | - recognise the impact of verbal and non-verbal behaviours by supervisors, other sonographers and the wider healthcare team on the performance and confidence of the learner, answer questions in a collaborative manner |

## Unit 3: Safety and Risk Manager

### ELEMENT 1: PERFORM SAFE SONOGRAPHIC PRACTICE

| PERFORMANCE CRITERIA  | CUES  |
|---|---|
| 1. Comply with of state and federal safety legislation, safe sonographic practice guidelines for best practice  | <b>Requires knowledge of:</b> <ul style="list-style-type: none"> <li>- safety legislation and guidelines, which may include state/territory and federal safety legislation and guidelines, and the differences across the states and territories ❖</li> </ul> |
|   | <ul style="list-style-type: none"> <li>- relevant quality standards, requirements and protocols, patient/client-centred processes, consent, and scope of practice</li> </ul>  |
| 2. Apply knowledge of ultrasound equipment to sonographic <b>examination</b> /procedures  | <b>Requires knowledge of:</b> <ul style="list-style-type: none"> <li>- ultrasound physics, ultrasound instrumentation, ultrasound limitations</li> </ul>  |
|   | <b>Requires skills to:</b> <ul style="list-style-type: none"> <li>- optimise and safely use all ultrasound modalities and image optimisation parameters available</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- recognise different imaging parameters for different machines and how to adjust them</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- apply knowledge of ultrasound equipment to effectively answer the diagnostic question</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- use strategies to work around limitations of ultrasound technology to deliver the best result</li> </ul>   |
| 3. Apply knowledge of ultrasound bioeffects and dose to identify ultrasound dose risks, deliver safe, effective and ethical patient/client outcomes and implement effective and appropriate risk management systems and procedures. | <b>Requires knowledge of:</b> <ul style="list-style-type: none"> <li>- ultrasound bioeffects, ALARA principle</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- differences of exposure between different machines, imaging presets and scan types</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- relevant quality assurance frameworks and their application to practice. This includes audit, risk registers and associated processes ◆</li> </ul>   |
|   | <b>Requires skills to:</b> <ul style="list-style-type: none"> <li>- monitor the acoustic output of the ultrasound equipment</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- identify and report risk</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- take action to rectify non-conformance ❖</li> </ul>  |

| PERFORMANCE CRITERIA   | CUES   |
|--|--|
| 4. Recognise and report on near misses and their consequences and contributing factors within established policy frameworks. | <b>Requires knowledge of:</b>  |
|  | - definition of near miss and adverse events   |
|  | - relevant departmental/organisational procedures for reporting on adverse events or near misses (how and to whom, which forms to fill in, recording)  |
|  | <b>Requires skills to:</b>   |
|  | - clearly communicate with management and colleagues, and collaborate with colleagues to gauge the best course of action   |
|  | - identify a near miss as an event that had potential to cause harm or an adverse outcome, but did not eventuate due to intervention or good fortune. An example would be identifying a transducer that had fail to undergo reprocessing and intervening (by reprocessing the transducer) prior to the transducer being used |
|  | - analyse situations and processes that contribute to adverse events ❖   |
|  | - maintain an incident reporting register, with risk assessment and practice improvement strategies ◆  |
|  | - undertake reflective practice, quality improvement, and clear and accurate documentation   |

| PERFORMANCE CRITERIA  | CUES   |
|---|--|
| 5. Review the referral and procedures to ensure appropriate: justification, limitation, optimisation and safety in practice | <b>Requires knowledge of:</b>  |
|   | - justification; which involves assessing whether more good than harm (physical or mental) results from a sonographic examination/procedure  |
|   | - limitation; which involves setting ultrasound dose limits, or imposing other measures to reduce health risks to an acceptable range for any person   |
|   | - optimisation; which involves minimising health risks to any person, with the broad objective that the degree of exposure to ultrasound be kept as low as reasonably achievable, having regard to economic and social factors (ALARA principle) |
|   | - ultrasound physics   |
|   | - sonographer's role within the healthcare team, pertaining to justification, limitation and optimisation  |
|   | <b>Requires skills to:</b>   |
|   | - actively review clinical notes on referral to ensure they are in alignment with type of sonographic examination/procedure being requested  |
|   | - undertake a scan efficiently to answer the clinical question, to adhere to ALARA. An efficient scan also reduces patients'/ clients' time cost, and operational cost to health sector  |
|   | - understand contraindications, patient/client limitations, to limit patient/client risk and obtain optimal results. Compliance with department protocols and consultation with other health professionals may be required                       |
|   | - communicate with other health professionals if decisions are outside of sonographer scope of practice  |



| PERFORMANCE CRITERIA  | CUES  |
|---|---|
| 6. Manage personal, mental, and physical health to ensure fitness to practice | <b>Requires knowledge of:</b>   |
|   | - elements of fitness to practise which include competence, professionalism, sound mental health  |
|   | - organisational policies and guidelines which may include workplace specific frameworks, relevant jurisdiction publications and the Australian Safety and Quality Framework for Health Care (Australian Commission on Safety and Quality in Health Care)                           |
|   | - workplace health and safety practices   |
|   | - good ergonomic practice within and outside of the workplace   |
|   | - reporting pathways if fitness to practice is threatened   |
|   | <b>Requires skills to:</b>  |
|   | - be self-aware of physical and mental health   |
|   | - undertake self-reflection and self-assessment   |
|   | - recognise and resolve work practises that are inconsistent with maintaining personal, mental and physical health  |
|   | - set priorities and manage time to integrate practice and personal life  |
|   | - carry out professional duties in the face of multiple, competing personal and professional demands  |
|   | - recognise and respond to the complexity, uncertainty, and ambiguity inherent in sonographic practice  |
|   | - maintain physical and mental health and wellbeing for sustainable professional performance; this may include physical conditioning  |
|   | - promote a culture that recognises, supports, and responds effectively to colleagues in need; this may be achieved by effective communication that ensures that self and colleagues can discuss any health concerns that may affect fitness to work safely and without prejudice ◆ |

## ELEMENT 2: PROTECT AND ENHANCE PATIENT/CLIENT SAFETY (UNIT 3)

| PERFORMANCE CRITERIA  | CUES   |
|---|--|
| 1. Follow identification procedures to confirm the correct match of patient/client with intended sonographic <b>examination</b> / procedure, the correct anatomical site/ side and that the intended <b>examination</b> / procedure matches the clinical question | <b>Requires knowledge of:</b> <ul style="list-style-type: none"> <li>- patient/client identification examination/procedure contained in national protocols published by the Australian Commission on Safety and Quality in Health Care, relevant state/territory and federal guidance materials, and workplace protocols</li> </ul>  |
|   | <b>Requires skills to:</b> <ul style="list-style-type: none"> <li>- identify patient/client using at least three recognised patient/client identifiers, and may include procedures for transferring clients/patients from other health professionals</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- ensure appropriate means of identification are utilised if patient/client cannot do so</li> </ul>   |
| 2. Review, communicate, record and manage patient/client information accurately and confidentially, consistent with protocols, procedures, and legislative requirements for maintaining patient/client records  | <b>Requires knowledge of:</b> <ul style="list-style-type: none"> <li>- protocols, procedures and legislative requirements for maintaining patient/client records (ownership, storage, retention and destruction of patient/client records, confidentiality, privacy) which may be contained in workplace materials, relevant jurisdictions' materials and the Australian Commission on Safety and Quality in Health Care publications</li> </ul> |
|   | <ul style="list-style-type: none"> <li>- handover protocols to communicate information about the examination/procedure with staff of other disciplines</li> </ul>  |
|   | <b>Requires skills to:</b> <ul style="list-style-type: none"> <li>- confidentially obtain correct patient/client information</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- liaise with administrative/clerical staff and medical record staff to ensure correct patient/client information is obtained, input, and the relevant records are stored correctly and safely</li> </ul>   |

| PERFORMANCE CRITERIA   | CUES   |
|--|--|
| 3. Identify and manage risks associated with the sonographic <b>examinations/</b> procedures | <b>Requires knowledge of:</b> <ul style="list-style-type: none"> <li>- risks which may include those related to patient/client transfers, infection (including during aseptic procedures), misidentification of patient/client, anatomic site or examination/ procedure, patient/client emotional stress, equipment, a patient's/client's deteriorating condition, which may include an inability to undergo an examination/procedure</li> </ul> |
|  | - an understanding of transmission modes of hospital-acquired infections (host, agent and environment)   |
|  | - established practices for preventing the transmission, including effective hand hygiene and published guidelines/standards   |
|  | - organisational protocols involving the use of clean/sterile gel and probe covers (when clinically appropriate)   |
|  | - risk prevention strategies e.g. falls prevention   |
|  | <b>Requires skills to:</b> <ul style="list-style-type: none"> <li>- analyse patient/client safety incidents to enhance systems of care ❖</li> </ul>  |
|  | - use health informatics to improve the quality of patient/client care and optimise patient/client safety ❖  |
|  | - apply the science of quality improvement ❖   |
|  | - manage a patient's/client's deteriorating condition, or inability to undergo an examination/procedure that is consistent with duty of care and statutory requirements  |
|  | - contribute to a culture that promotes patient/client safety  |
|  | - contribute to improving systems of patient/client care   |
|  | - recognise when patients/clients need assistance, and the appropriate action (i.e. press the code button, duress button, seek assistance from expert)   |
|  | - provide basic life support   |
| 4. Apply relevant quality frameworks to practice   | <b>Requires knowledge of:</b> <ul style="list-style-type: none"> <li>- quality frameworks, which may include workplace specific frameworks, relevant jurisdiction publications, and frameworks relevant to the context of practice such as the Australian Safety and Quality Framework for Health Care published by the Australian Commission on Safety and Quality in Health Care. ❖</li> </ul>   |

### ELEMENT 3: IMPLEMENT QUALITY ASSURANCE PROCESSES BEFORE IMAGING OR TREATING (UNIT 3)

| PERFORMANCE CRITERIA   | CUES  |
|--|---|
| <p>1. Check and confirm that all equipment is in good order and operating within acceptable parameters</p> <p>2. Identify and take action to correct unacceptable condition or operation of all equipment</p> <p>3. Follow workplace protocols to record and report non-conformance of equipment</p> | <p><b>Requires knowledge of:</b></p> <ul style="list-style-type: none"> <li>- the requirements of the equipment/housekeeping in order to perform optimally and safely</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>- routine equipment cleaning, including machine, transducer, monitor and cables (in accordance with organisational and manufacturer protocols). Equipment includes all main equipment and related accessory equipment (instruments) used to image or treat a patient/client</li> </ul> |
|  | <ul style="list-style-type: none"> <li>- how to maintain good order of equipment i.e. cleaning and hygiene protocol acceptable operating standards</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>- appropriate organisational processes to report equipment problems, including the logging of jobs with ultrasound vendors where appropriate</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>- service contracts to ensure equipment is maintained ◆</li> </ul>   |
|  | <p><b>Requires skills to:</b></p> <ul style="list-style-type: none"> <li>- resolve issues affecting the functioning of equipment before commencing examination/procedures on patients/clients</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>- identify a malfunctioning machine, and refrain from operating faulty equipment for the safety of the patients/clients and the operators</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>- identify when a service/regular maintenance of the machine is required to ensure normal operation ◆</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>- resolve technical issues during an examination/procedure should a fault /problem occur at that time</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>- recognise when to report equipment malfunctions to the responsible party, i.e. senior sonographer, department head, equipment manufacturer</li> </ul>  |

## ELEMENT 4: MAINTAIN SAFETY OF THE WORKPLACE AND ASSOCIATED ENVIRONMENTS (UNIT 3)

| PERFORMANCE CRITERIA  | CUES   |
|---|--|
| <p>1. Demonstrate working knowledge of legal responsibilities for health and safety of self and others</p> <p>2. Identify safety hazards in the workplace and respond to and report on incidents in a timely and appropriate manner, in accordance with protocols and procedures</p> <p>3. Identify, confirm and implement methods of safe work practices</p> <p>4. Provide information on hazards and control measures to others in the workplace</p> <p>5. Use appropriate personal protective clothing and equipment</p> | <p><b>Requires knowledge of:</b></p> <ul style="list-style-type: none"> <li>- basic knowledge of legal responsibilities, or documentation needed to have on hand for reference. This may include relevant incident reporting requirements, which may be identified in protocols, procedures, and workplace materials, and may include legal requirements identified in relevant state/territory and federal legislation and regulations</li> </ul> |
|   | <ul style="list-style-type: none"> <li>- safety hazards related to ergonomics, trip hazards, equipment, patient/client and staff interactions</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- relevant protocols and procedures may include workplace and organisational procedures or guidelines published in professional literature</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- infection control protocols</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- hazardous waste management, including sharps and biomedical waste</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- safe ergonomic practice</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- personal cleanliness</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- manual handling procedures</li> </ul>   |
|   | <p><b>Requires skills to:</b></p> <ul style="list-style-type: none"> <li>- perform and be aware of safe work practices, particularly those pertaining to sonographers</li> </ul>   |

## Unit 4: Communicator and Collaborator

### ELEMENT 1: COMMUNICATE CLEARLY, SENSITIVELY AND EFFECTIVELY WITH PATIENT/CLIENT AND THEIR FAMILY OR CARERS

| PERFORMANCE CRITERIA  | CUES   |
|---|--|
| 1. Establish rapport with patient/client to gain understanding of their issues and perspectives and relevant clinical history   | <b>Requires knowledge that:</b> <ul style="list-style-type: none"> <li>- communication barriers may arise due to the sonographer's own culture and experience affecting their interpersonal style, or due to the patient's/client's or family's/carer's culture and experience, limited English language skills, health literacy, age, and health status</li> </ul>  |
| 2. Communicate effectively with the patient/client to collect and convey information about the proposed sonographic <b>examination</b> /procedure, using an interpreter if necessary  | <ul style="list-style-type: none"> <li>- communication beyond patient/client may include family, significant others, carers, interpreters, legal guardians, and medical advocates</li> </ul>   |
| 3. Convey knowledge and sonographic <b>examination</b> /procedural information clearly and concisely, and in ways that engender trust and confidence, and which respect patient/client confidentiality, privacy and dignity | <ul style="list-style-type: none"> <li>- effective communication includes active listening, use of appropriate language/terminology and detail that can be understood, use of appropriate verbal and non-verbal cues</li> </ul>  |
| 4. Provide an opportunity for the patient/client to explore the purpose of the proposed sonographic <b>examination/procedure</b> , the methods used and the usual patient/client experience                                 | <ul style="list-style-type: none"> <li>- informed consent is a person's voluntary decision about healthcare that is made with knowledge and understanding of the benefits and risks involved. A guide to the information that practitioners need to give to patients/clients is available in the National Health and Medical Research Council (NHMRC) publication General Guidelines for Medical Practitioners in Providing Information to Patients (<a href="http://www.nhmrc.gov.au/">www.nhmrc.gov.au/</a>)</li> <li>- workplace protocols for obtaining consent</li> </ul>   |
| 5. Identify likely communication barriers specific to individual patients/clients and/or carers, implement strategies to overcome these, and document resultant limitations of sonographic <b>examination</b> /procedure    | <ul style="list-style-type: none"> <li>- the patient's/client's health literacy, age, health status, cultural and socio-economic background, emotional state, religion, values, and awareness of the ways that personal culture and experience affect the sonographer's personal style</li> </ul>  |
| 6. Obtain and document informed consent, explaining the purpose, risks and benefits of the proposed sonographic <b>examination</b> /procedure, documenting as necessary   | <b>Requires skills to:</b> <ul style="list-style-type: none"> <li>- communicate using a patient/client-centred approach that encourages patient/client trust and autonomy and is empathic, respectful, compassionate, non-judgemental, and culturally safe, and in ways that recognise patient-client/professional boundaries and includes sonographer scope of practice</li> <li>- allow the patient/client the opportunity to ask any question that has not already been addressed in order to have a complete understanding</li> <li>- collaborate with other health professionals when needed; i.e., when there are barriers to consent, when explanations are outside of sonographer scope of practice</li> </ul> |

| PERFORMANCE CRITERIA | CUES  |
|----------------------|---|
|                      | - confirm that the patient/client and/or relevant other person(s) have understood; this may include signed consent forms where appropriate  |
|                      | - deliver relevant information to patients/clients in an appropriate, clear, accurate manner (information about the examination/procedure, methods, and timeframes for receiving formal results)  |
|                      | - explain and negotiate the examination/procedure strategy with the patient/client and make any appropriate modifications based on any values, biases, or perspectives of the patient/client. The patient/client should be consulted to assess physical capacity to ensure the examination/procedure is appropriate |
|                      | - respond to patient/client queries or issues appropriately and respond tactfully to requests for details that cannot be provided (i.e. outside scope of sonographers practice)   |
|                      | - manage and document disagreements and emotionally charged conversations   |
|                      | - gather information relevant to the examination/procedure using patient/client-centred interview skills, and seek and synthesise information from other sources such as family with patient's/client's consent   |
|                      | - disclose harmful patient/client safety incidents to patients/clients and their families accurately and appropriately (examples may include equipment failures, omission of important element of the examination/procedure) ◆  |
|                      | - break bad news within the scope of the role of sonographer  |
|                      | - be self-aware of when conflict between sonographers and patient/client's personal views impact on quality of examination/procedure  |



## ELEMENT 2: COLLABORATE WITH OTHER HEALTH PRACTITIONERS (UNIT 4)

| PERFORMANCE CRITERIA   | CUES  |
|--|---|
| 1. Establish and maintain effective and respectful working relationships with health team members  | <p><b>Requires knowledge that:</b></p> <ul style="list-style-type: none"> <li>- healthcare team members may include registered health practitioners, accredited health professionals, and licensed and unlicensed healthcare workers, managers, medical practitioners, and academics</li> <li>- teamwork among health team members is important to provide a high-quality healthcare service to patients/clients and to maintain a conducive working environment</li> </ul>   |
| 2. Understand, acknowledge and respect the roles and responsibilities of healthcare team members and other service providers, and work and communicate effectively and collaboratively with them | <p><b>Requires skills to:</b></p> <ul style="list-style-type: none"> <li>- engage in respectful shared decision-making with other colleagues in the healthcare professions, ensuring patient/client confidentiality</li> <li>- recognise and negotiate overlapping and shared responsibilities with other colleagues in the healthcare professions</li> <li>- negotiate conflicts</li> <li>- work with colleagues and implement strategies in the healthcare professions, to promote understanding, manage differences, and resolve conflicts in a manner that supports a collaborative culture ❖</li> <li>- determine when care should be transferred to another sonographer or healthcare professional</li> <li>- demonstrate safe handover of care, using both verbal and written communication, during a patient/client transition to a different sonographer or healthcare professional or setting</li> <li>- respect professional boundaries including sonographer's role in healthcare team and scope of practice</li> </ul> |
| 3. Follow accepted protocols and sonographic <b>examinations</b> /procedures to provide relevant and timely verbal and written communication   | <p><b>Requires skills to:</b></p> <ul style="list-style-type: none"> <li>- assess information in terms of its urgency, and communicate in a timely manner</li> <li>- use medical terminology appropriate to their scope of practice/roles and responsibilities, whilst applying knowledge of departmental/practice protocols</li> <li>- prepare organised written reports in the required format (e.g. worksheets), and meet legal and organisational requirements</li> </ul>   |

| PERFORMANCE CRITERIA   | CUES   |
|--|--|
| 4. Make recommendations to other members of the healthcare team about the suitability and application of the proposed sonographic <b>examination</b> / procedure, when appropriate | <b>Requires knowledge of:</b><br>- relative risks and benefits to patients/clients of the sonographic examination/procedure  |
|  | <b>Requires skills to:</b><br>- effectively collaborate and communicate with, and provide feedback to, other members of the healthcare team (this may include radiologists or medical officers responsible for care of patient/client) |
|  | - direct other members of the healthcare team when appropriate ◆   |
|  | - collaborate with sonographers and health professionals to improve quality of services and education. This may include audits and research ❖  |
|  | - work within responsibility boundaries of the sonographer and team, following workplace procedures  |

## Unit 5: Sonographic practitioner

### ELEMENT 1: APPLY KNOWLEDGE OF ANATOMY, PHYSIOLOGY AND PATHOLOGY TO SONOGRAPHIC PRACTICE

| PERFORMANCE CRITERIA   | CUES  |
|--|---|
| 1. Apply knowledge of anatomy (including sectional and dynamic), embryology, physiology, and haemodynamics of the human body to practice<br>2. Apply knowledge of the scientific explanations underpinning disease and injuries affecting the human body to enable delivery of safe, high-quality <b>examinations/procedures</b><br>3. Identify anatomical structures, and physiological processes, injuries, and diseases of the human body in sonographic images | <b>Requires knowledge of:</b><br>- underpinning knowledge of normal anatomy, anatomic variations, physiology, embryology, pathophysiology, and sonographic appearances of pathology relating to the sonographic examination/procedure |
|  | - sonographer scope of practice   |
|  | <b>Requires skills to:</b><br>- apply knowledge of normal anatomy, anatomic variations, physiology, embryology, pathophysiology, and sonographic appearances of pathology to enable safe, high-quality examinations/procedures        |
| 4. Apply knowledge of ultrasound imaging systems   | <b>Requires knowledge of:</b><br>- ultrasound physics (transducer design and operation, artefacts, biological effects of ultrasound instrumentation and image optimisation)   |
|  | - ultrasound imaging systems: 2D, Doppler, and may include contrast, elastography, 3D and emerging technologies where appropriate   |
|  | <b>Requires skills to:</b><br>- identify artefacts and distinguish them from actual structures  |
|  | - recognise the limitation of ultrasound imaging (patient/client habitus, nonoptimal scanning condition, etc)   |
| 5. Apply knowledge of the clinical context for ultrasound imaging and ultrasound <b>examinations/procedures</b> , including extending and modifying the <b>examination/procedure</b> to encompass all relevant areas   | <b>Requires knowledge of:</b><br>- patient/client preparation (pre-scanning)  |
|  | - correct positioning of patient/client to assist in optimal scanning condition   |
|  | - instructions to patient/client to optimise imaging (i.e., breathing instructions)   |

| PERFORMANCE CRITERIA   | CUES   |
|--|--|
|  | - the relationship of ultrasound to other diagnostic imaging examinations/procedures such as x-ray, CT, MRI and angiography, and other diagnostic tests (i.e., timing of ultrasound procedure after nuclear medicine examination/procedure due to radiation dose)                      |
|  | - when to extend and modify the examination/procedure (includes modifying the techniques, protocols, and the area being examined, according to sonographic findings and clinical presentation to ensure the sonographic examination/procedure provides optimal diagnostic information) |
|  | - study limitations and how to overcome them   |
| 6. Apply knowledge of the principles of workload prioritisation according to clinical urgency  | <b>Requires knowledge of:</b><br>- urgencies of clinical presentation and clinical situation to prioritise workload  |
|  | - assess clinical presentation and information   |
|  | - what situations are critical/time sensitive and how patients/clients present in these situations   |
|  | <b>Requires skills to:</b><br>- collaborate with other staff members to ensure the appropriate level and timing of response(s) and allocation of resources ❖   |
|  | - triage cases by clinical importance and urgency, to avoid adverse outcomes   |
| 7. Apply knowledge of the principles, applications, risk, precautions and contradictions of use of pharmaceuticals relevant to sonographic practice in procedures where drugs are administered | <b>Requires knowledge of:</b><br>- relevant state and territory legislation regarding pharmaceutical administration (at a basic level) ❖   |
|  | - sonographers scope of practice and role within healthcare team relating to pharmaceutical administration (examples; musculoskeletal therapeutic injections, contrast injections) ❖   |

## ELEMENT 2: DEVELOP THE MOST APPROPRIATE EXAMINATION/ PROCEDURE STRATEGY (UNIT 5)

| PERFORMANCE CRITERIA  | CUES   |
|---|--|
| 1. In collaboration with other members of the imaging team, review relevant information and records to determine sonographic <b>examination</b> /procedure requirements and to confirm the requested <b>examination</b> /procedure is appropriate | <b>Requires skills to:</b><br>- review referral, examination/procedure, available patient/client records, previous medical imaging and other diagnostic tests to understand the clinical history and clinical question |
|   | - question the patient/client to elicit and confirm information before and during the examination/procedure  |
|   | - determine if the requested examination/procedure is appropriate using a knowledge of other diagnostic tests and treatment pathways   |
|   | - refer case to other sonographer or health professional if clinical history is unclear or outside of understanding of sonographer   |
|   | - identify if requested examination/procedure is not appropriate, and then consult and discuss with other health professionals and the patient/client  |
| 2. Select the appropriate examination/ procedure method/s and settings to match clinical question, clinical indicators, and patient/client requirements   | <b>Requires skills to:</b><br>- consider patient/client preferences and mobility and preparation requirements to optimise the examination/ procedure   |
|   | - determine the most appropriate sonographic techniques for the examination/procedure and the patient/client   |
|   | - use clinical knowledge and sonographic findings to answer the clinical question  |
|   | - follow examination/procedural protocols, and amend when appropriate according to patient/client needs and the clinical question  |
|   | - collaborate with other health professionals when the decisions are beyond scope or understanding of the sonographer  |

| PERFORMANCE CRITERIA  | CUES   |
|---|--|
| 3. Develop the <b>examination</b> /procedure strategy, in accordance with guidelines or protocols.  | <b>Requires skills to:</b><br>- develop the examination/procedure strategy and, if appropriate, adapt the requested examination/procedure to an individual patient/client, considering the clinical question, available clinical information (patient/client records, history, and feedback from patient/client), and input from other sonographers or health practitioners (i.e., senior sonographer, radiologist or referring medical officer) |
|   | - comply with organisational and departmental procedures and protocols, professional standards, legislation and evidence-based guidelines  |
|   | - plan an optimal examination/procedure, which is compliant with minimum standards (standards prescribed by employer or industry guidelines)   |
|   | - plan to minimise potential distractors during the examination/procedure, while respecting needs of patient/client  |
| 4. Assess the patient's/client's capacity to receive care including factors or conditions that may affect the patient's/client's behaviour and/or capacity to undergo the <b>examination</b> /procedure | <b>Requires knowledge that:</b><br>- patient/client capacity or behaviour may be influenced by disclosed pre-existing medical conditions; physical, physiological, or psychological, age, pregnancy, culture, English language skills, or psychosocial and socio-economic factors  |
|   | <b>Requires skills to:</b><br>- perform patient/client assessment and examinations/procedures in accordance with the patient/client need and choice, legislation, registration standards, and codes and guidelines, including gaining informed consent   |
|   | - anticipate issues to be addressed in a patient/client encounter  |
|   | - identify patient/client preparation requirements   |
|   | - identify risks associated with presentation of patients/clients  |
|   | - identify contraindications and limitations of sonographic examinations/procedures, determine appropriate adjustments (consulting with other health professionals where necessary), and communicate these to the patient/client   |
|   | - select appropriate equipment   |
|   | - triage patients/clients according to their clinical presentation, national standards and other factors including the Principle of Justice to ensure the fairest distribution of care ❖   |
|   | - collaborate with other health professionals when the decisions are beyond scope or understanding of the sonographer  |

### ELEMENT 3: IMPLEMENT THE EXAMINATION/PROCEDURE STRATEGY WHILE DELIVERING SAFE PATIENT/CLIENT CARE (UNIT 5)

| PERFORMANCE CRITERIA  | CUES  |
|---|---|
| <p>1. With consent, undertake the sonographic <b>examination</b>/procedure according to the determined strategy; selecting, interpreting and recording appropriate images</p> <p>2. Extend or modify the sonographic <b>examination</b>/procedure according to sonographic findings and clinical presentation</p> <p>3. Review sonographic examination/ procedure findings to confirm: thoroughness; accurate and representative images are recorded; and annotations on images are accurate.</p> <p>4. Apply knowledge of limitations when making judgements, and seek expert advice where appropriate</p> | <p><b>Requires knowledge of:</b></p> <ul style="list-style-type: none"> <li>- anatomy, physiology, embryology, pathophysiology, haemodynamics, ultrasound physics, instrumentation, and examination/procedure technique relevant to the examination/procedure. Ultrasound physics includes transducer design and operation, identification of artefacts and understanding of the biological effects of ultrasound. Ultrasound imaging systems include 2D, Doppler, and may include contrast and 3D where appropriate</li> </ul> |
|   | <ul style="list-style-type: none"> <li>- the role and scope of practice of the sonographer within the healthcare team</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- relevant clinical guidelines for sonographic examinations/ procedures and any organisational/department protocols</li> </ul>   |
|   | <p><b>Requires skills to:</b></p> <ul style="list-style-type: none"> <li>- optimise image settings</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- use appropriate transducers</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- select and access appropriate sonographic windows</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- perform examinations/procedures in an efficient and timely manner whilst answering the clinical question and delivering qualitative outcomes safely and effectively</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- distinguish between technical artefacts and misleading appearances from pathology</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- undertake a thorough real time assessment to acquire all relevant sonographic information</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- to interpret images to recognise normal and abnormal findings and assess images for technical quality</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- assess the clinical significance of unexpected findings and revise the examination/procedure strategy, in response to sonographic appearances in consultation with patient/client</li> </ul>   |
|   | <ul style="list-style-type: none"> <li>- take appropriate and timely action, to ensure the immediate management of the patient/client when urgent and/or unexpected findings are identified</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- manage and manipulate 3D datasets when appropriate ❖</li> </ul>  |
|   | <ul style="list-style-type: none"> <li>- assess if the ultrasound system meets the requirements for an examination/procedure</li> </ul>   |

| PERFORMANCE CRITERIA   | CUES  |
|--|---|
| 5. Follow procedures within scope of practice and in collaboration with other health professionals to ensure delivery of correct pharmaceuticals to patients/clients | <b>Requires basic knowledge of:</b><br>- pharmacokinetics, pharmacodynamics, and the potential range of reactions relevant to pharmaceuticals which are administered in the sonographer's workplace ❖   |
|  | - state/territory and federal legislation regarding supply and administration of medicines. Includes National Safety and Quality Health Service (NSQHS) Standard on Medication safety ◆   |
|  | - pathological conditions which may impact upon the delivery of specific pharmaceuticals administered in the sonographer's workplace ❖  |
|  | - procedures for safe and effective delivery of correct pharmaceuticals, which may include double checking products (including use by date), confirming correct labelling, accurate calculations and measurements, and correct route ❖  |
|  | <b>Requires skills to:</b><br>- assist in administering of pharmaceuticals safely and effectively (depending on organisational protocols, and which may include intravenous cannulation) in collaboration with the healthcare team and within the sonographer's knowledge, skills, expertise, and scope of practice ❖ |
|  | - recognise the risks, precautions, and contraindications of the use of pharmaceuticals, informed by the patient's/client's current pathology status ❖  |
|  | - actively monitor the effects of pharmaceuticals and manage adverse reactions in accordance with protocols ❖   |
|  | - recognise when tasks are beyond sonographer's scope of practice and skill level   |
|  | - communicate with other health professionals if the sonographer has information about the patient's/client's risk of complication or contraindication to the administration of a particular pharmaceutical ◆   |



| PERFORMANCE CRITERIA   | CUES   |
|--|--|
| 6. Deliver appropriate and respectful patient/client care before, during and after the sonographic <b>examination</b> /procedure | <b>Requires skills to:</b><br>- recognise and respond with appropriate care, consideration, and respect, and in a timely way, to a patient's/client's deteriorating condition, or inability to undergo a sonographic examination/procedure |
|  | - act with a duty of care consistent with statutory requirements such as the National Consensus Statement: essential elements for recognising and responding to clinical deterioration   |
|  | - anticipate patient/client needs with regards to mobility in patient/client preparation e.g., undressing/dressing, assuming proper position for procedure or using a modified position  |
|  | - treat the patients/clients with dignity and respect  |
|  | - communicate continually with patient/client; includes listening and responding to their needs and concerns, and re-confirming their consent to proceed   |
|  | - understand consent may be removed at any time by the patient/client  |

#### ELEMENT 4: DOCUMENT EXAMINATION/PROCEDURE FINDINGS USING CLINICAL INFORMATION MANAGEMENT SYSTEMS APPROPRIATELY (UNIT 5)

| PERFORMANCE CRITERIA  | CUES   |
|---|--|
| 1. Document and critically evaluate the real-time sonographic <b>examination</b> /procedure in accordance with organisational protocols | <b>Requires knowledge of:</b><br>- normal and abnormal findings, and the clinical guidelines for grading of abnormal findings  |
|   | <b>Requires skills to:</b><br>- document the real-time examination/procedure following organisational protocols (may include images, reports, worksheets, provisional reports, oral summary) |
|   | - document still images/cine loops that accurately represent any pathology present, or the absence of  |
|   | - document the examination/procedure succinctly, but with sufficient information to state conclusions on the patient's/client's condition  |

| PERFORMANCE CRITERIA   | CUES  |
|--|---|
| 2. Communicate findings to reporting practitioner and ensure clinical information is made available to the appropriate persons involved in the care of the patient/client in accordance with local protocols   | <b>Requires skills to:</b> <ul style="list-style-type: none"> <li>- communicate clinical and imaging information verbally or in writing in clear English to reporting practitioner (the person responsible for overseeing the conduct of the examination/procedure)</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>- communicate clinical and imaging findings in line with relevant guidelines or department protocols (this may include communicating with the patient/client and their family/carers)</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>- communicate significant findings accurately, comprehensively and in a timely fashion in order for other health professionals to make informed decisions about care of the patient/client</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>- communicate any limitations of a scan to the reporting practitioner (or medical officer in charge of patient's/client's care)</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>- ensure clinical and imaging findings are understood by the appropriate persons who may include the requesting practitioner, the reporting practitioner or other practitioners, for the immediate and appropriate management of the patient/client. Communication between health practitioners about the clinical status of a patient/client should be recorded</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>- recognises that the communication of findings to referring practitioners and patients/clients are usually but not exclusively outside of the scope of practice for sonographers</li> </ul>   |
| 3. Use clinical patient information management systems to accurately record and store patient/client history and any sonographic <b>examination</b> /procedure provided to the patient/client, ensuring that the correct sonographic <b>examination</b> /procedure is associated (information and images) with the correct patient/client. | <b>Requires knowledge of:</b> <ul style="list-style-type: none"> <li>- legislation may include relevant state/territory and federal legislation regarding data privacy, ownership, storage, retention and destruction of client/patient records and other practice documentation, patient information management systems such as Picture and Archiving Communication System, Radiology Information System, electronic medical records, risk management systems and the legislative differences across states and territories</li> </ul> |
|  | <ul style="list-style-type: none"> <li>- the interaction between different systems, such as between RIS and PACS</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>- the use of clinical patient information management systems appropriately (i.e. compliant with legislation and using clinical information, both information and images, with consideration of the workflow between the different clinical information management systems)</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>- correct verification and management of information</li> </ul>  |
|  | <b>Requires skills to:</b> <ul style="list-style-type: none"> <li>- operate different software programs</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>- communicate and collaborate with other users and managers of patient information management systems</li> </ul>   |

| PERFORMANCE CRITERIA  | CUES  |
|---|---|
| 4. Apply knowledge of responsibilities for conveying information when significant findings are identified   | <b>Requires knowledge of:</b>   |
|   | - normal and abnormal imaging appearances and how they relate to the patient's/client's clinical history and relevant protocols or instructions about verbal or written communication and record keeping  |
|   | - organisational and/or departmental protocols and pathways for conveying significant, unexpected or critical findings  |
|   | <b>Requires skills to:</b>  |
| 5. Identify and respond appropriately to data errors and/or system failures and when clinical information is incorrectly associated with the identity of a patient/client and sonographic <b>examination</b> /procedure | - identify or recognise issues or imaging findings requiring urgent attention and reporting in a timely manner  |
|   | - communicate to the patient/client that urgent medical attention maybe required  |
|   | <b>Requires skills to:</b>  |
|   | - manage clinical information in a logical and chronological order when applicable; follow patient/client and examination/procedure workflows (enter, begin, complete), search correctly (e.g., by examination/procedure, patient/client, modality, location and/or date etc.), follow the folder directory structures in relevant software |
|   | - respond to data errors and/or system failures; includes troubleshooting and fixing errors where possible or reporting errors/failures to the systems administrator in a timely manner   |





# Sonographer Knowledge

## S E C T I O N 2

This section outlines the knowledge required to enable effective practice in different areas of sonographic practice, and can be used as a guide for pre- and post-accreditation curriculum developers. Core knowledge is the minimum expected knowledge for an entry-level accredited sonographer. Other areas of knowledge are also provided, but are not regarded as core; i.e., they can be considered as 'advanced' or specialised. For example, they might be areas of practice which would require additional training (beyond entry-level), or supervision by a specialist.

This key explains notations made in the following tables of knowledge for different areas of sonographic practice which relate to a Delphi survey process used to develop this knowledge section of the competency model. Consensus agreement was achieved in the Delphi survey when there was agreement of 70% or greater.

# did not reach consensus agreement that the item was 'core' but reached consensus agreement that the item was not 'specialised or advanced'

\* did not reach consensus for 'specialised or advanced' but did reach consensus agreement that it was not 'core'

^ did not reach consensus agreement for either 'core' or 'advanced or specialised'

▲ the knowledge element was tested in only one round (other non-consensus knowledge items were tested in up to 3 rounds)

# Abdominal

| Core  | Advanced/Specialised   |
|---|--|
| <ul style="list-style-type: none"> <li>- relevant anatomy</li> <li>- relevant physiology</li> <li>- relevant pathophysiology</li> <li>- haemodynamics of abdominal organs and glands</li> <li>- male pelvis and prostate</li> <li>- major vessels</li> <li>- retroperitoneum</li> <li>- urinary tract</li> <li>- gastrointestinal tract</li> <li>- paediatric abdomen</li> <li>- normal and abnormal sonographic appearances</li> <li>- examination/procedure techniques</li> <li>- transducer and patient/client manoeuvres to optimise imaging</li> <li>- indicators for extending the examination/procedure, and how it should be extended</li> <li>- clinical indicators for abdominal pathology, including clinical and laboratory tests for common pathologies</li> <li>- basic female pelvis</li> <li>- anatomic variants</li> <li>- embryology relating to the abdomen</li> <li>- haemodynamics of abdominal vessels (i.e. aorta, renal, mesenteric, splenic, portal)</li> <li>- patient/client preparation protocols</li> <li>- general paediatric abdomen</li> <li>- appendix</li> <li>- lymphatic</li> <li>- common surgical techniques</li> <li>- renal artery</li> <li>- renal vein</li> <li>- splenic vein</li> <li>- portal vein</li> <li>- liver screening</li> <li>- FAST imaging for POCUS is#</li> </ul> | <ul style="list-style-type: none"> <li>- elastography</li> <li>- transplant sonography (renal, liver, pancreas)</li> <li>- contrast imaging</li> <li>- interventional procedures</li> <li>- TIPSS shunts</li> <li>- stomach</li> <li>- hepatic artery</li> <li>- pyloric stenosis^</li> <li>- neonatal abdomen^</li> <li>- small bowel^</li> <li>- mesenteric artery and vein^</li> <li>- splenic artery^</li> </ul> |

# Obstetrics and Gynaecology

| Core  | Advanced/Specialised   |
|---|--|
| <ul style="list-style-type: none"> <li>- anatomy of female pelvis (gravid and non-gravid)</li> <li>- fetal and paediatric anatomy, physiology, embryology</li> <li>- fetal development</li> <li>- pathophysiology</li> <li>- sonographic appearances of pathology</li> <li>- examination/procedure techniques</li> <li>- maternal physiology and pathology related to fertility, pregnancy and gynaecology</li> <li>- menstrual cycle</li> <li>- clinical indicators for gynaecologic ultrasound scans</li> <li>- haemodynamics specific to pregnancy</li> <li>- safe practice of ultrasound in pregnancy (includes Doppler)</li> <li>- physiologic and laboratory tests related to gynaecologic conditions and pregnancy</li> <li>- nasal bone (in first trimester screening)</li> <li>- scanning for polycystic ovaries</li> <li>- cervical incompetence</li> <li>- fetal heart</li> <li>- multiple gestation surveillance</li> </ul> | <ul style="list-style-type: none"> <li>- tertiary level scanning</li> <li>- interventional procedures</li> <li>- sonohysterography</li> <li>- pelvic vein incompetence</li> <li>- pelvic floor imaging</li> <li>- advanced assessment of fetal anomalies (beyond routine screening)</li> <li>- advanced cardiac scanning due to cardiac anomalies</li> <li>- 3D/4D gynaecologic imaging^</li> <li>- nuchal Translucency^</li> <li>- deeply infiltrating endometriosis^</li> <li>- obstetric 3D/4D^</li> <li>- third trimester high risk pregnancy^</li> <li>- high risk for pre-term birth^</li> <li>- pre-eclampsia screening^</li> </ul> |

# Superficial Parts

| Core  | Advanced/Specialised   |
|---|--|
| <ul style="list-style-type: none"> <li>- anatomy relating to the breast, scrotum, eye, thyroid and anterior neck</li> <li>- physiology relating to the breast, scrotum, eye, thyroid and anterior neck</li> <li>- pathophysiology relating to the breast, scrotum, eye, thyroid and anterior neck</li> <li>- normal and abnormal sonographic appearances relating to the breast, scrotum, eye, thyroid and anterior neck</li> <li>- relevant International Classifications Systems e.g., BiRADS, TiRADS</li> <li>- lumps and bumps</li> </ul> | <ul style="list-style-type: none"> <li>- penile (including erectile dysfunction)</li> <li>- elastography</li> <li>- dermatologic studies</li> <li>- eye^</li> <li>- interventional studies^</li> </ul> |



## Breast

| Core   | Advanced/Specialised   |
|--|--|
| <ul style="list-style-type: none"> <li>- female and male breast anatomy</li> <li>- breast physiology</li> <li>- breast embryology</li> <li>- breast pathophysiology</li> <li>- normal and abnormal sonographic appearances of the breast</li> <li>- sonographic examination/procedure techniques of the breast</li> <li>- mammographic/ultrasound image correlation</li> <li>- correlation of imaging findings with pathologic findings</li> <li>- breast Implants</li> <li>- breast anatomy, physiology, pathology across different ages and gender</li> <li>- post-treatment consideration (chemo, radiation therapy, surgery, including augmentation)</li> <li>- correlation with other imaging modalities; MRI, mammography</li> </ul> | <ul style="list-style-type: none"> <li>- 3-D imaging</li> <li>- breast surgery techniques^</li> <li>- hook-wire procedures^</li> <li>- interventional procedures^</li> <li>- elastography^^</li> </ul> |

## Paediatric

| Core  | Advanced/Specialised  |
|---|---|
| <ul style="list-style-type: none"> <li>- paediatric anatomy</li> <li>- paediatric physiology</li> <li>- pathophysiology</li> <li>- paediatric embryology</li> <li>- normal and abnormal sonographic appearance</li> <li>- examination/procedure techniques</li> <li>- hip effusion</li> <li>- basic paediatric embryology</li> <li>- intussusception</li> <li>- variations in causes and presentations of pathology of children compared to adults</li> <li>- patient/client care strategies specific to paediatrics</li> <li>- neonatal spine and brain</li> <li>- chest (thymus)</li> </ul> | <ul style="list-style-type: none"> <li>- transplant (renal, liver, pancreas)</li> <li>- elastography</li> <li>- transcranial dopplers for sickle cell disease</li> <li>- rheumatology (joint/tendon pathology)</li> <li>- post congenital cardiac</li> <li>- contrast sonography</li> <li>- pylorus^</li> <li>- thyroid agenesis/dysgenesis^</li> <li>- cystic fibrosis liver screening^</li> <li>- interventional procedures^</li> </ul> |

## Cardiac

| Core   | Advanced/Specialised  |
|--|---|
| <ul style="list-style-type: none"> <li>- cardiac and thoracic anatomy</li> <li>- cardiac physiology</li> <li>- cardiac embryology</li> <li>- cardiac pathophysiology</li> <li>- cardiac haemodynamics</li> <li>- normal and abnormal sonographic appearances</li> <li>- duplex (Doppler) instrumentation and waveforms</li> <li>- ultrasound physics and instrumentation</li> <li>- ECG interpretation (cardiac, electrophysiology)</li> <li>- interpretation of Doppler waveforms</li> <li>- scan protocols, imaging planes and acoustic windows</li> <li>- radiation safety when doing hybrid examination/procedures in catheter lab</li> <li>- upper abdominal anatomy; for subcostal imaging</li> <li>- foundation vascular anatomy and pathophysiology</li> </ul> | <ul style="list-style-type: none"> <li>- paediatric</li> <li>- paediatric congenital heart disease</li> <li>- 3D</li> <li>- fetal cardiac</li> <li>- how to incorporate multi-modality imaging information into sonographic imaging protocol*</li> <li>- pharmacology for chemical stress echo^</li> <li>- understanding of Pacemakers^</li> <li>- cardiac strain imaging^</li> <li>- stress echocardiography^</li> <li>- contrast imaging^</li> <li>- adult congenital heart disease^</li> <li>- mechanical support devices^</li> <li>- speckle tracking^</li> </ul> |

## Musculoskeletal

| Core   | Advanced/Specialised   |
|--|--|
| <ul style="list-style-type: none"> <li>- musculoskeletal anatomy</li> <li>- musculoskeletal physiology</li> <li>- musculoskeletal pathophysiology</li> <li>- normal and abnormal sonographic appearances which includes, but is not limited to, muscles, joints, tendons, nerves and other musculoskeletal structures</li> <li>- examination/procedure techniques</li> <li>- relevant movements to be captured using dynamic imaging</li> <li>- comparison with asymptomatic side</li> <li>- relevant clinical tests</li> <li>- functional anatomy</li> <li>- patho-mechanics of injury</li> <li>- neurovascular anatomy</li> <li>- diagnostic information required by the referrer</li> </ul> | <ul style="list-style-type: none"> <li>- elastography</li> <li>- 3D</li> <li>- elite athlete injury</li> <li>- sonographer guided MSK injections^</li> <li>- interventional procedures^</li> <li>- paediatric hip^</li> <li>- podiatry referrals^</li> </ul> |

# Vascular

| Core   | Advanced/Specialised   |
|--|--|
| <ul style="list-style-type: none"> <li>- vascular anatomy</li> <li>- vascular physiology</li> <li>- vascular embryology</li> <li>- vascular pathophysiology</li> <li>- haemodynamics and sonographic appearances of pathology</li> <li>- duplex (Doppler) instrumentation and waveforms examination/procedural techniques</li> <li>- understand the clinical indicators for a vascular sonographic examination/procedure</li> <li>- standardised nomenclature to describe sonographic findings, terminology for describing thrombus</li> <li>- normal variations of vascular anatomy</li> <li>- clinical consequences of sonographic findings</li> <li>- DVT scan</li> <li>- carotid scan</li> <li>- measurement techniques to assess haemodynamics</li> <li>- common surgical techniques</li> <li>- AAA initial assessment</li> </ul> | <ul style="list-style-type: none"> <li>- embryo-sonographic appearances of vascular pathology (includes arterial and venous systems of upper and lower limb, cerebrovascular and visceral)</li> <li>- transplant studies</li> <li>- transcranial doppler</li> <li>- ECMO cannulation planning/evaluation</li> <li>- acute transplant assessment</li> <li>- AV fistula planning and assessment</li> <li>- post organ transplant</li> <li>- penile Doppler</li> <li>- pelvic vein</li> <li>- interventional venous and arterial procedures</li> <li>- visceral vascular study</li> <li>- venous incompetence studies</li> <li>- vein mapping, thoracic outlet</li> <li>- vascular entrapment syndromes</li> <li>- AVM formations^</li> <li>- vascular graft and stent assessment^</li> <li>- renal artery^</li> <li>- post- surgical^</li> </ul> |





# Sonographer Attitudes

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This section outlines the set of attitudes expected to be displayed by sonographers across all levels of practice. These attitudes are encompassed amongst all the competency standards and are a minimum expectation of an entry-level sonographer and above.

## List of desired attitudes for sonographers.

|   |                   |
|---|-------------------|
| - sense of responsibility   | - patience        |
| - accountability  | - humility        |
| - valuing professionalism   | - open-mindedness |
| - respect for self  | - resilience      |
| - respect for others; to respect patient's/client's decision without prejudice  |                   |
| - a commitment to high-quality care and excellence in all aspects of practice   |                   |
| - open to learning, teaching and guiding peers, and advancing skills of the profession  |                   |
| - being self-aware of personal level of expertise, which means having an appropriate level of confidence in capabilities/knowledge/experience, and being prepared to seek advice when needed                        |                   |
| - mindfulness of patient/client well-being before, during and after the examination/procedure   |                   |
| - can identify and understand other people's emotions and emotional requirements, and act to put them at ease   |                   |
| - recognise the time commitment of the patient/client and support personnel in attending for an examination/procedure. This refers to not rushing an examination/procedure, but also not extending it unnecessarily |                   |
| - willingness to develop personal communication skills, appreciating that effective, respectful and sensitive communication is influenced beyond words (i.e. body language, tone of voice, eye contact)             |                   |







# Holistic Competency Matrix

## S E C T I O N 4

The “Holistic Matrix” component of the framework describes 8 universal competencies that are not specific to the performance of sonography but are fundamental for sonographic practice across all levels of sonographic experience. It describes the knowledge, skills and attitudes required by sonographers to perform at different levels based on the Dreyfus model of skill acquisition<sup>3</sup> (novice student, advanced beginner student, competent sonographer, proficient sonographer, and advanced sonographer). It also contains a list of attitudes which are desirable for sonographers to demonstrate.

This framework differs from the Performance Criteria framework in that the competencies presented are universal and not specific to the performance of sonographic practice tasks. However, they are fundamental for the performance of such tasks. The ‘Performance Criteria’ and the ‘General Competencies’ are presented as two distinct framework components to recognise their distinct contributions to sonographic practice. However, they are both closely related to each other.

## Notes about General Competencies:

1. Each proficiency level is cumulative, which means that indicators from lower levels are not repeated at higher levels although they still apply.
2. Sonographers may demonstrate different levels for different areas of clinical practice (i.e. abdominal, cardiac, vascular, MSK, Superficial Parts, Breast, Obstetrics and Gynaecology, Paediatric). The matrix may be applied across all clinical practice areas, or to specific clinical practice areas.

<sup>3</sup> Dreyfus SE. The five-stage model of adult skill acquisition. Bulletin of science, technology & society. 2004 Jun;24(3):177-81.

| Sonographer Level   | Competency: Applied Knowledge   |
|---|---|
| <b>Novice (student):</b> at the first level of skill acquisition, who requires constant supervision, clear instruction, and defined protocols due to lack of any developed intuitive response                             | <ul style="list-style-type: none"> <li>- has minimal, or 'textbook' knowledge, without connecting it to clinical context, practice, or patient/client outcomes.</li> <li>- remembers, recalls, and understands knowledge</li> </ul>   |
| <b>Advanced Beginner (student):</b> performs uncomplicated sonographic examinations/ procedures to an acceptable standard, but who needs assistance to meet acceptable standards for more complex examinations/procedures | <ul style="list-style-type: none"> <li>- has working knowledge of basic aspects of practice.</li> <li>- some learned material is integrated into clinical practice and relied upon to carry out examinations/procedures or act within situations</li> </ul>   |
| <b>Competent Sonographer:</b> meets entry level requirements to perform a range of sonographic examinations/ procedures to an acceptable standard   | <ul style="list-style-type: none"> <li>- has good working and background knowledge of area of practice.</li> <li>- can adapt examinations/procedures, or act within situations by breaking concepts into parts, determining how the parts relate to one another or how they interrelate, or how the parts relate to an overall structure or purpose.</li> <li>- demonstrates lifelong learning and reflective practice to expand core knowledge and experience</li> <li>- has knowledge of how the sonographic examination/procedure fits within the patient/client journey and health outcomes</li> <li>- builds on knowledge using best available evidence</li> </ul>   |
| <b>Proficient Sonographer:</b> performs a range of sonographic examinations/ procedures to a consistently high standard and assists sonographers at lower levels to also meet those standards                             | <ul style="list-style-type: none"> <li>- has a depth of understanding of discipline and area of practice expanded due to broad exposure to different case mixes</li> <li>- can make judgments based on best evidence, criteria and standards through checking and critiquing.</li> <li>- can produce recommendations and reports, suggest protocol amendments and provide constructive feedback to others</li> <li>- shares knowledge with peers (includes oral presentations and written publications)</li> </ul>  |
| <b>Expert Sonographer:</b> leads and acts at local and at least at a national level to ensure sonographic practices meet acceptable standards   | <ul style="list-style-type: none"> <li>- has authoritative and impartial knowledge of discipline and deep tacit understanding across area(s) of practice that is based on broad knowledge and experience.</li> <li>- uses this knowledge to influence best practice in the profession. This is not restricted to presenting at conferences or participating with governing bodies; i.e., it could be that the sonographer is consulted widely for their authoritative knowledge</li> <li>- knowledge can be recalled with ease, leading to intuitive practice</li> <li>- has ability to use and synthesise knowledge to create new techniques, protocols, examinations/procedures, and act within situations</li> <li>- is committed to and shares knowledge effectively with others; shared knowledge is based on critical assessment of data, methods used, implications and limitations in application to clinical practice</li> </ul> |

| Sonographer Level   | Competency: Psychomotor Skills (scanning skills)   |
|---|--|
| <b>Novice (student):</b> at the first level of skill acquisition, who requires constant supervision, clear instruction, and defined protocols due to lack of any developed intuitive response                             | <ul style="list-style-type: none"> <li>- practice is still needed to achieve adequate performance.</li> <li>- the student consciously considers probe orientation, and actively considers how to optimise the images</li> <li>- cannot perform other tasks simultaneously (i.e. talk to and reassure the patient/client and observe for signs of discomfort or pain).</li> </ul>                                       |
| <b>Advanced Beginner (student):</b> performs uncomplicated sonographic examinations/ procedures to an acceptable standard, but who needs assistance to meet acceptable standards for more complex examinations/procedures | <ul style="list-style-type: none"> <li>- the student can achieve optimal diagnostic images with some effort, and sometimes with assistance.</li> <li>- the student can modify movement patterns to fit special requirements</li> </ul>   |
| <b>Competent Sonographer:</b> meets entry level requirements to perform a range of sonographic examinations/ procedures to an acceptable standard   | <ul style="list-style-type: none"> <li>- the sonographer scans efficiently and in a highly coordinated manner to achieve optimal diagnostic images, with ease.</li> <li>- performance is natural, with much of the performance intuitive, and can be performed simultaneously with other tasks</li> </ul>  |
| <b>Proficient Sonographer:</b> performs a range of sonographic examinations/procedures to a consistently high standard and assists sonographers at lower levels to also meet those standards                              | <ul style="list-style-type: none"> <li>- most examinations/procedures are performed efficiently, without extending the examination/procedure time beyond what is reasonable for the case</li> <li>- intuitively overcomes barriers to optimal imaging with ease</li> <li>- maintains acceptable standard of work when overseeing student(s)</li> </ul>   |
| <b>Expert Sonographer:</b> leads and acts at local and at least at a national level to ensure sonographic practices meet acceptable standards   | <ul style="list-style-type: none"> <li>- has highly developed and intuitive scanning ability with adept integration of visual cues and motor skills resulting from extensive experience</li> <li>- finds innovative solutions to improve image quality</li> <li>- can mentor other sonographers to modify and adapt examinations/ procedures to achieve optimal diagnostic images even in challenging cases</li> </ul> |

| Sonographer Level  | Competency: Standard of Work   |
|--|--|
| <p><b>Novice (student):</b> at the first level of skill acquisition, who requires constant supervision, clear instruction, and defined protocols due to lack of any developed intuitive response</p>                             | <ul style="list-style-type: none"> <li>- is unlikely to be satisfactory unless directly supervised</li> <li>- most examinations/procedures are performed using an extended timeframe.</li> <li>- often needs assistance to answer the clinical question</li> <li>- measurements are unlikely to be reproducible, and need to be checked for accuracy</li> <li>- often needs assistance to meet protocol requirements</li> </ul>  |
| <p><b>Advanced Beginner (student):</b> performs uncomplicated sonographic examinations/ procedures to an acceptable standard, but who needs assistance to meet acceptable standards for more complex examinations/procedures</p> | <ul style="list-style-type: none"> <li>- straightforward tasks likely to be completed to an acceptable standard</li> <li>- simple cases/examinations/procedures are performed efficiently, in a reasonable time frame to collect most relevant diagnostic information while providing appropriate patient/client care, while more complex cases often require extended scanning times</li> <li>- for simple cases/examinations/procedures does not need assistance to answer the clinical question</li> <li>- measurements are usually reproducible, and accurate</li> <li>- often meets scanning protocol requirements</li> </ul> |
| <p><b>Competent Sonographer:</b> meets entry level requirements to perform a range of sonographic examinations/ procedures to an acceptable standard</p>   | <ul style="list-style-type: none"> <li>- fit for purpose, though may lack refinement in complex situations</li> <li>- most examinations/procedures are performed efficiently, without extending the examination/procedure time, some more complex examinations/procedures may require additional training and extended scan times</li> <li>- only needs assistance to answer the clinical question in complex cases</li> <li>- measurements are reproducible, and accurate</li> <li>- meets scanning protocol requirements and extends or amends the examination/procedure when necessary</li> </ul>                               |
| <p><b>Proficient Sonographer:</b> performs a range of sonographic examinations/ procedures to a consistently high standard and assists sonographers at lower levels to also meet those standards</p>                             | <ul style="list-style-type: none"> <li>- fully acceptable standard achieved routinely</li> <li>- performs all examinations/procedures efficiently, in a reasonable time frame to collect all relevant diagnostic information while providing a high degree of patient/client care</li> <li>- identifies when finding the answer to the clinical question is not straightforward, and collaborates with others to problem solve if necessary</li> </ul>   |
| <p><b>Expert Sonographer:</b> leads and acts at local and at least at a national level to ensure sonographic practices meet acceptable standards</p>   | <ul style="list-style-type: none"> <li>- excellence with high levels of accuracy achieved with relative ease</li> <li>- demonstrates management skills that include advocating for the department, including staff and patients/clients.</li> <li>- consistently seeks and sets new best evidence-based practice standards and protocols in line with emerging technologies</li> <li>- is consulted by others in complex cases, and where it is difficult to answer the clinical question</li> </ul>   |

| Sonographer Level   | Competency: Autonomy   |
|---|--|
| <b>Novice (student):</b> at the first level of skill acquisition, who requires constant supervision, clear instruction, and defined protocols due to lack of any developed intuitive response                             | <ul style="list-style-type: none"> <li>- needs direct supervision and instruction from senior sonography staff, clinical supervisors or sonologists</li> <li>- is unaware or unsure of own limitations</li> </ul>  |
| <b>Advanced Beginner (student):</b> performs uncomplicated sonographic examinations/ procedures to an acceptable standard, but who needs assistance to meet acceptable standards for more complex examinations/procedures | <ul style="list-style-type: none"> <li>- able to achieve some steps using own judgement, but indirect supervision still needed for overall tasks, with direct supervision needed for more complex tasks</li> <li>- becoming aware of own limitations</li> </ul>  |
| <b>Competent Sonographer:</b> meets entry level requirements to perform a range of sonographic examinations/ procedures to an acceptable standard   | <ul style="list-style-type: none"> <li>- able to achieve most tasks accurately using own judgement, and seeks assistance or supervision by a more experienced sonographer when they recognise an examination/procedure is beyond their ability</li> </ul>  |
| <b>Proficient Sonographer:</b> performs a range of sonographic examinations/ procedures to a consistently high standard and assists sonographers at lower levels to also meet those standards                             | <ul style="list-style-type: none"> <li>- able to take full responsibility for own work, and for the work of others undergoing supervision</li> <li>- can work in environments where supervision or assistance from other sonographers or health professionals is limited</li> <li>- can work independently with minimal or no supervision by a more experienced sonographer</li> <li>- has (in areas of proficiency) the ability to interpret scans</li> </ul> |
| <b>Expert Sonographer:</b> leads and acts at local and at least at a national level to ensure sonographic practices meet acceptable standards   | <ul style="list-style-type: none"> <li>- able to take responsibility for going beyond existing standards and creating own interpretations</li> </ul>   |



| Sonographer Level  | Competency: Coping with Complexity   |
|--|--|
| <b>Novice (student):</b> at the first level of skill acquisition, who requires constant supervision, clear instruction, and defined protocols due to lack of any developed intuitive response                            | <ul style="list-style-type: none"> <li>- has little or no conception of dealing with complexity</li> <li>- can only perform a limited range of supervised examinations/procedures</li> </ul>   |
| <b>Advanced Beginner (student):</b> performs uncomplicated sonographic examinations/procedures to an acceptable standard, but who needs assistance to meet acceptable standards for more complex examinations/procedures | <ul style="list-style-type: none"> <li>- appreciates complex situations but needs assistance to deal with the situation</li> <li>- can perform simple examinations/procedures, with additional training required for complex patient/client presentations or uncommon examinations/procedures</li> </ul>   |
| <b>Competent Sonographer:</b> meets entry level requirements to perform a range of sonographic examinations/procedures to an acceptable standard   | <ul style="list-style-type: none"> <li>- copes with complex situations through deliberate analysis and planning</li> <li>- performs almost all examinations/procedures, but extended examination/procedure times or additional supervision may be required in some cases</li> <li>- recognises the limits of their own performances and when to seek help</li> </ul>                   |
| <b>Proficient Sonographer:</b> performs a range of sonographic examinations/procedures to a consistently high standard and assists sonographers at lower levels to also meet those standards                             | <ul style="list-style-type: none"> <li>- deals with complex situations holistically</li> <li>- confident decision-making</li> <li>- performs all examinations/procedures</li> <li>- the sonographer will collaborate with colleagues rather than require supervision</li> <li>- performs all commonly performed examinations and examinations/procedures in their workplace</li> </ul> |
| <b>Expert Sonographer:</b> leads and acts at local and at least at a national level to ensure sonographic practices meet acceptable standards  | <ul style="list-style-type: none"> <li>- holistic grasp of complex situations, moves between intuitive and analytical approaches with ease</li> <li>- identifies emerging changes in departmental case mix (or wider) and leads evidence-based education and upskilling to meet those changes.</li> </ul>  |

| Sonographer Level  | Competency: Perception of Content  |
|--|--|
| <p><b>Novice (student):</b> at the first level of skill acquisition, who requires constant supervision, clear instruction, and defined protocols due to lack of any developed intuitive response</p>                             | <ul style="list-style-type: none"> <li>- sees different aspects of an examination/procedure or situation in isolation, with limited flexibility to recognise and adapt to different patient/client presentations, approaching each procedure in the same way</li> <li>- ultrasound findings can be described in simple terms but not integrated with clinical information</li> <li>- assistance is required to communicate findings</li> </ul>   |
| <p><b>Advanced Beginner (student):</b> performs uncomplicated sonographic examinations/ procedures to an acceptable standard, but who needs assistance to meet acceptable standards for more complex examinations/procedures</p> | <ul style="list-style-type: none"> <li>- sees different aspects of an examination/procedure or situation as a series of steps</li> <li>- recognises different patient/client presentations and demonstrates some flexibility to adapt to these</li> <li>- some basic integration of the ultrasound findings with clinical information</li> <li>- relies mostly on pattern recognition to interpret images</li> <li>- each examination/procedure is approached in the same way in order, using protocols, 'not to miss anything'</li> </ul> |
| <p><b>Competent Sonographer:</b> meets entry level requirements to perform a range of sonographic examinations/ procedures to an acceptable standard</p>   | <ul style="list-style-type: none"> <li>- sees each examination/procedure or situation as an integrated series of steps to reach clinical outcome</li> <li>- is able to interpret images in terms of the patient/client presentation and the clinical question using of protocols, pattern recognition and analytical reasoning</li> <li>- each examination/procedure is approached methodically, using protocols. Amendment and extensions to protocols may occur so as 'not to miss anything'</li> </ul>                                  |
| <p><b>Proficient Sonographer:</b> performs a range of sonographic examinations/ procedures to a consistently high standard and assists sonographers at lower levels to also meet those standards</p>                             | <ul style="list-style-type: none"> <li>- sees overall 'picture' of patient/client journey and how the sonographic examination/procedure fits within it</li> <li>- new and complicated problems are approached analytically</li> <li>- adaptation to different patient/client presentations is more intuitive than in lower levels and can change the order of scanning or adapt protocols if required</li> </ul>   |
| <p><b>Expert Sonographer:</b> leads and acts at local and at least at a national level to ensure sonographic practices meet acceptable standards</p>   | <ul style="list-style-type: none"> <li>- demonstrates an ability to recognise and adapt to new and complicated presentations with ease</li> <li>- able to train and supervise others for new and complicated presentations</li> <li>- ensures communication of results through and to third parties is accurate and interpreted in line with ultrasound findings</li> </ul>  |



| Sonographer Level   | Competency: Attitudes* to self, professional colleagues and patient/clients   |
|---|---|
| <b>Novice (student):</b> at the first level of skill acquisition, who requires constant supervision, clear instruction, and defined protocols due to lack of any developed intuitive response                             | <ul style="list-style-type: none"> <li>- begins to recognise the importance of how behaviour and attitude affect personal performance and the experience of the patient/client</li> <li>- responds positively to constructive feedback and has resilience to respond appropriately to negative feedback</li> <li>- is beginning to develop self-reflection skills and uses this to assist self-development</li> </ul> |
| <b>Advanced Beginner (student):</b> performs uncomplicated sonographic examinations/ procedures to an acceptable standard, but who needs assistance to meet acceptable standards for more complex examinations/procedures | <ul style="list-style-type: none"> <li>- responds to experiences and adapts behaviour to improve personal performance and the experience of the patient/client</li> <li>- consolidating self-reflection skills to use for self-development</li> <li>- beginning to extend self-reflective skills from development of theoretical learning to practical learning</li> </ul>  |
| <b>Competent Sonographer:</b> meets entry level requirements to perform a range of sonographic examinations/ procedures to an acceptable standard   | <ul style="list-style-type: none"> <li>- demonstrates involvement and commitment in developing personal values and their associated behaviours to improve personal performance and the experience of the patient/client</li> <li>- has developed basic self-reflective skills that are practically applied in self-development</li> <li>- collaborates well with colleagues</li> </ul>                                |
| <b>Proficient Sonographer:</b> performs a range of sonographic examinations/ procedures to a consistently high standard and assists sonographers at lower levels to also meet those standards                             | <ul style="list-style-type: none"> <li>- during sonographic examinations/procedures uses personal value system to identify quality-related issues and then raise them with their team to improve service delivery</li> <li>- high emotional intelligence and self-reflective capabilities</li> </ul>  |
| <b>Expert Sonographer:</b> leads and acts at local and at least at a national level to ensure sonographic practices meet acceptable standards   | <ul style="list-style-type: none"> <li>- consistently exhibits positive behaviour, high emotional intelligence and self-reflective capabilities</li> <li>- routinely promotes quality services locally and more broadly</li> </ul>  |

| Sonographer Level   | Competency: Attitudes* to Learning   |
|---|--|
| <b>Novice (student):</b> at the first level of skill acquisition, who requires constant supervision, clear instruction, and defined protocols due to lack of any developed intuitive response                             | <ul style="list-style-type: none"> <li>- listens to discussions of complex issues with an open mind</li> <li>- respectful of the learning rights and needs of others</li> <li>- is a self-motivated, proactive and enquiring learner who seeks to build knowledge from basic concepts towards deeper understanding</li> <li>- actively seeks out a range of resources to enhance knowledge</li> </ul>  |
| <b>Advanced Beginner (student):</b> performs uncomplicated sonographic examinations/ procedures to an acceptable standard, but who needs assistance to meet acceptable standards for more complex examinations/procedures | <ul style="list-style-type: none"> <li>- attempts new examinations/procedures</li> <li>- participates in team problem-solving activities</li> <li>- questions new ideals, concepts, models, etc. in order to fully understand them</li> <li>- realises and appreciates that continuous or lifelong learning is required throughout their professional life</li> <li>- collaborates with others to share learning and deepen knowledge</li> </ul>   |
| <b>Competent Sonographer:</b> meets entry level requirements to perform a range of sonographic examinations/ procedures to an acceptable standard   | <ul style="list-style-type: none"> <li>- accepts that learning is an ongoing process</li> <li>- participates in departmental and professional activities</li> <li>- shows the ability to solve problems, often using systematic planning</li> <li>- informs management on matters relating to learning needs that one feels strongly about, so support can be provided</li> <li>- recognises own abilities, limitations and values, and develops realistic aspirations</li> <li>- accepts professional ethical standards</li> <li>- prioritises time effectively</li> <li>- accepts responsibility for one's behaviour</li> <li>- links learning with a need to review best practices</li> </ul> |
| <b>Proficient Sonographer:</b> performs a range of sonographic examinations/ procedures to a consistently high standard and assists sonographers at lower levels to also meet those standards                             | <ul style="list-style-type: none"> <li>- shows self-reliance when working independently</li> <li>- identifies problems and limitations and uses an objective problem-solving approach to overcome them</li> <li>- drives and motivates departmental learning and implements departmental and professional activities</li> <li>- recognises abilities, limitations and values of others, and assists them to develop realistic aspirations</li> <li>- open to learning from and with colleagues at any level, including students</li> </ul>   |
| <b>Expert Sonographer:</b> leads and acts at local and at least at a national level to ensure sonographic practices meet acceptable standards   | <ul style="list-style-type: none"> <li>- revises judgments and changes behaviour based on evidence acquired by actively following research updates or participating in research projects</li> <li>- develops departmental and professional activities</li> <li>- motivates others through example and assistance to aspire to higher levels of performance</li> <li>- revises judgments and changes behaviour</li> </ul>   |

\*A list of desired sonographer attitudes is presented at the end of this section

## Abbreviations

|       |  |
|-------|--|
| ALARA | ALARA is an acronym for “as low as is reasonably achievable”. In the context of sonography this refers to the acoustic output used in sonographic examinations |
| APHRA | Australian Health Practitioner Regulation Agency   |
| ASA   | Australasian Sonographers Association  |
| ASUM  | Australasian Society for Ultrasound in Medicine  |
| CPD   | Continuing Professional Development  |
| WFUMB | World Federation for Ultrasound in Medicine and Biology  |
| 2D    | Two dimensional  |
| 3D    | Three dimensional  |

