PROFESSIONALS in CARDIAC SCIENCES AUSTRALIA Inc.

PiCSA

Position Statement

Australian Guidelines for Entry and Practice in the Field of Cardiac Physiology (Adult and Paediatric)

ECG • Cath Lab • Echo • Cardiac Devices • EP

PROFESSIONALS in CARDIAC SCIENCES AUSTRALIA Inc.

PiCSA

Document Contributors

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Revision History

Version	Date	Pages Revised/Brief explanation
V1	2018	
V2	March 2024	Revised layout, updated for clarity, inclusion of career pathway and ACCP registration

For revision in March 2029 (or earlier if indicated)

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Abbreviations

ABPM – Ambulatory Blood Pressure Monitoring

ACCP – Australian Council for Clinical Physiologists

AHPRA – Australian Health Practitioner Regulation Agency

AP – Allied professional

ASAR – Australian Sonographer Accreditation Registry

AQF – Australian Qualifications Framework

BHRS – British Heart Rhythm Society

CCDS - Certified Cardiac Device Specialist

CDRMS- Allied Professionals Cardiac Device Remote Monitoring Specialist

CEPIA – Cardiac Electrophysiology Institute of Australia

CEPS - Certified Electrophysiology Specialist

CIED – Cardiac Implantable Electronic Device

CP – Cardiac Physiologist

CPD – Continuing Professional Development

CSANZ - The Cardiac Society of Australia and New Zealand

ECG – Electrocardiogram

EHRA – European Heart Rhythm Association

EST – Exercise Stress Testing

HRSNZ – Heart Rhythm Society of New Zealand

IBHRE – International Board of Heart Rhythm Examiners

PiCSA – Professionals in Cardiac Sciences Australia

SCT – Society of Cardiopulmonary Technology

TTT – Tilt Table Testing

Background

The Cardiac Physiology workforce comprises a diverse range of highly skilled healthcare professionals who specialise in the diagnosis and treatment of heart conditions. These professionals play a crucial role in the field of cardiology and work closely with cardiologists and other healthcare providers to assess, monitor, and treat patients with heart-related issues. Cardiac Physiologists work across public, private and industry settings.

Despite the critical role that Cardiac Physiologists play in the healthcare system, there is a lack of standardised recommendations for the qualification, certification, registration, accreditation, and remuneration of Cardiac Physiologists working with adult and/or paediatric patients.

These guidelines have been developed by Professionals in Cardiac Sciences Australia (PiCSA) to define the governance structure and career pathway in the Cardiac Physiology profession. They are designed to assist current Cardiac Physiologists and those aspiring to enter the profession. Additionally, this directive can serve as a guide for policymakers, employers, employees, and future professionals in the field.

The information presented in these guidelines represents an expert consensus view of Cardiac Physiologists and aligns with the standards established in healthcare professions that require registration and accreditation for practice.

This document will undergo periodic revisions, and we welcome constructive suggestions for its enhancement.

Professional Title and Modalities of Practice

Individual Cardiac Physiologists may work in one or more modality. The distinct cardiac science modalities for which the title 'Cardiac Physiologist' is relevant includes:

1. General non-invasive cardiac investigations i.e., ECG, EST, TTT, ambulatory ECG (Holter) monitoring, ABPM.
2. Cardiac Catheterisation Laboratory
3. Echocardiography*
4. Cardiac Implantable Electronic Devices (CIED)*
5. Cardiac Electrophysiology*

** Indicates the three modalities for which postgraduate (or de facto postgraduate) qualifications can be obtained, designating them as 'advanced' modalities of practice.*

In 2016, PiCSA recommended the establishment of a standardised national title, 'Cardiac Physiologist,' to address inconsistency in titles and recognition among professionals working within the same field across Australia's various States and Territories. This unified title more aptly reflects the comprehensive training, depth of expertise and complexity of responsibilities associated with practitioners in the profession. Moreover, it aligns more closely with international counterparts in New Zealand and the United Kingdom.

Despite the recommendation, workplace naming conventions continue to vary across the country. These titles include, but are not limited to: Cardiac Physiologist, Cardiac Scientist, Cardiac Technician, Cardiac Technologist, Clinical Specialist, and Clinical Measurement Scientist.

Additionally, Cardiac Physiologists may appropriately refer to themselves by their specialised modality, such as 'Cardiac *Device* Physiologist' or 'Cardiac *Echo* Physiologist,' which is equivalent to the alternative titles 'Cardiac Sonographer' or 'Echocardiographer'.

For further information, refer to the PiCSA National Title Position Statement available at https://picsa.org.au/about/#core-documents.

Remuneration and Career Progression

At present, the specific functions and responsibilities of Cardiac Physiologists in Australia are not universally consistent. Variations exist based on the health industry sector, clinical service capability framework, and specific modality of practice. Professional role classifications, regulatory requirements, and remuneration frameworks additionally exhibit diversity. This has created inequity within the profession in some jurisdictions.

Like most other allied health professions, becoming a Cardiac Physiologist starts with a relevant bachelor's degree, rather than a Vocational Education and Training (VET) type qualification. PiCSA therefore strongly recommends that:

> Health industry sectors classify Cardiac Physiologists as 'health **professional** employees' (alongside dieticians, radiographers, and physiotherapists) rather than 'technical/support service employees'.

As indicated in the previous section, only three of the five specialist modalities of practice currently have an applicable advanced postgraduate (or de facto postgraduate) qualification. PiCSA regards these three advanced modalities and their respective qualifications as hierarchically equivalent and recommends that:

> Health industry sectors should establish equivalency in the regulation and remuneration framework for the three advanced modalities of practice, so that there is not a disincentive to specialise in one advanced modality versus another.

Furthermore, it is recommended that Australia work towards a career progression framework that is transferrable across different employers, states, territories, and countries.

As there is no standardised structure for career progression in Australia the following list is to serve as a starting point for further discussion and eventual consensus. Note terms below are already in use across various sectors, but currently lack consistency in their application and definition.

Early Career Cardiac Physiologist:

Entry-level professionals with **foundational skills** in cardiac assessment, patient screening, testing, and equipment maintenance. These **relatively inexperienced** Cardiac Physiologists will be working to achieve and consolidate basic standards of knowledge, competency, and independence.

Cardiac Physiologist (with modality specialisation):

At this level, Cardiac Physiologists may work independently, continuously developing a broad range of skills through experience and ongoing professional growth. They possess high-level clinical knowledge and skills and may contribute to research, education, and training activities. Individuals at this level have accumulated **significant experience** in Cardiac Physiology and may have completed or be working towards an advanced modality qualification.

Senior Cardiac Physiologist (with advanced modality specialisation):

Senior Cardiac Physiologists exhibit advanced, high-level independent practice, often with qualifications in one or more advanced modality. They possess advanced clinical knowledge and skills, demonstrate leadership qualities, and may contribute to research, education, and training activities. Those at this level have **extensive experience** as Cardiac Physiologists.

Lead Cardiac Physiologist or Senior Specialist (Consultant Practitioner):

Refers to specific expert skills that are only undertaken by a more advanced senior Cardiac Physiologist. Core components of this level include leading, developing, implementing, and evaluating strategic and operational plans; providing expert clinical knowledge and skills to improve quality of patient care and managing all other Cardiac Physiology levels. This level will have **extensive experience** and **leadership responsibilities** as Cardiac Physiologists.

Note: PiCSA's most recent "Credentialing, Scope of Practice and Competency Framework" document can be found at https://picsa.org.au/about/#core-documents. More detailed 'scope of practice' documents for each of the five Cardiac Physiology modalities are in development and will be released by PiCSA in due course.

Minimum pre-entry qualifications

The Cardiac Physiology profession has seen remarkable expansion in scope, complexity, and nature, necessitating a significant change in pre-entry qualifications. As of January 2019, a relevant bachelor's degree from a recognised tertiary education provider is now a mandatory requirement.

However, prospective students may encounter a challenge in finding dedicated undergraduate programs exclusively tailored for Cardiac Physiology due to the profession's relatively low entrants per capita. To address this, students are encouraged to pursue locally available Science degrees and tailor their course selection to incorporate a major in Clinical/Human Physiology. Fields like Medical Sciences, Clinical Sciences, Biomedical Sciences, Exercise Sciences, or Health Sciences offer suitable options to equip aspiring Cardiac Physiologists with the foundational knowledge and skills they require.

Notably, the undergraduate educational prerequisites for Cardiac Physiology closely align with those of several other allied health professions, encompassing Perfusion, Vascular Science, Nuclear Medicine, Exercise Physiology, Respiratory Physiology, Sleep Physiology, and Neurophysiology, among others.

Universities are therefore encouraged to provide degree options that are designed to prepare students for a range of specialised healthcare science vocations. This approach may include offering two or three general years of shared curriculum with specialised modalities offered in a student's final undergraduate year or post-graduation.

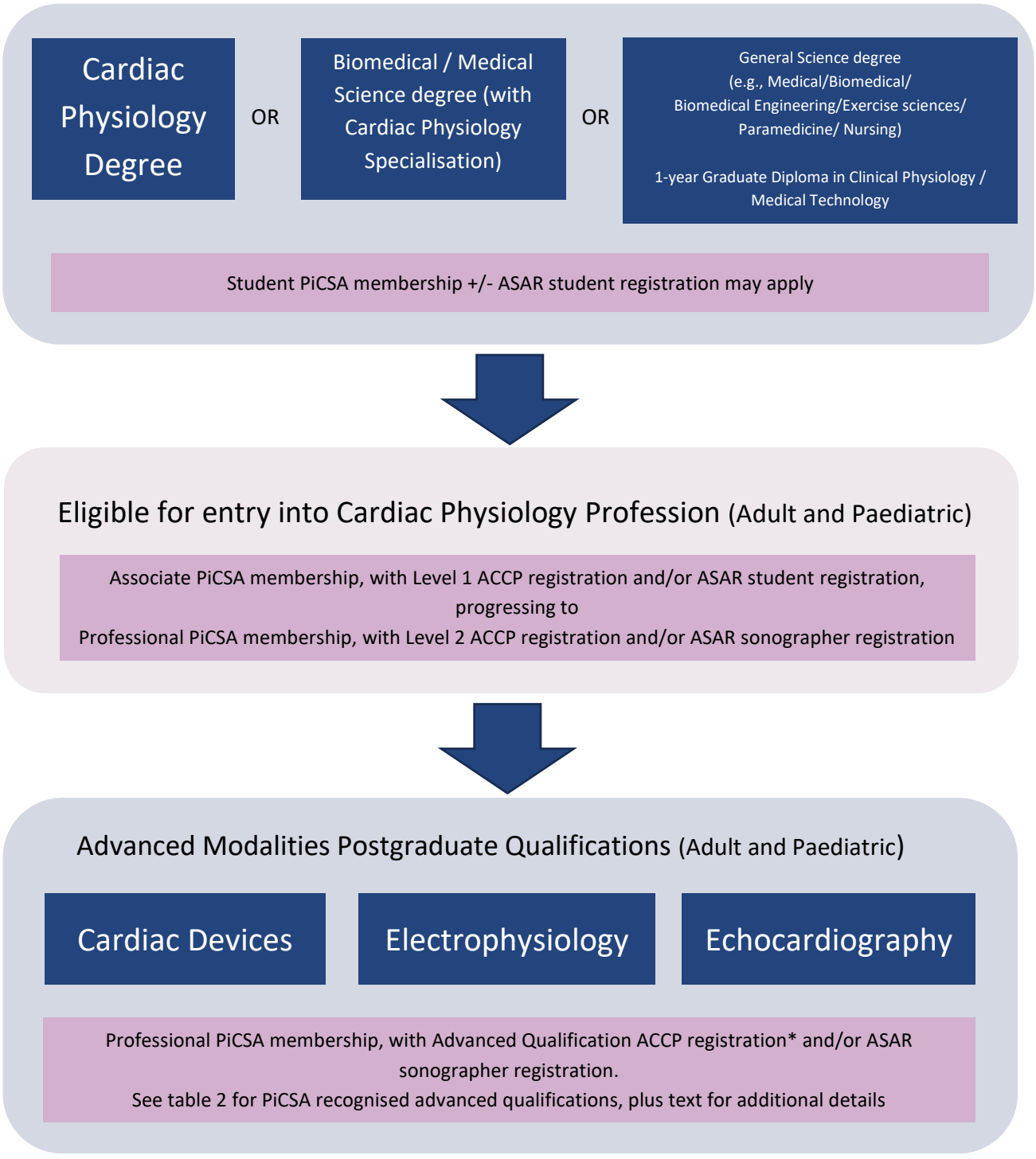
Furthermore, individuals who have completed vocational degrees in fields like Biomedical Engineering, Nursing, Medicine, and Paramedicine will have already gained significant exposure to highly relevant content and practical experience. This background makes these professionals suitable for career transition into Cardiac Physiology.

Recommended major/units of study:

- Human Physiology and Anatomy
- Human Pathophysiology
- Biochemistry/Pharmacology
- Biomedical Instrumentation
- Medical Physics
- Clinical Practicum Placement (240 hours or greater) in a Cardiac Physiology department

A Clinical Practicum Placement in a Cardiac Physiology department is highly recommended. Owing to the hands-on nature of the work, a placement or work experience term lasting at least 6 weeks or 240 hours is immensely advantageous for those pursuing a career in Cardiac Physiology. This may apply to undergraduate or postgraduate qualifications.

Figure 1: Cardiac Physiology Training Pathway in Australia: A Flowchart Guide



See www.picsa.org.au, www.asar.com.au and www.theaccp.org.au for details re membership and registration categories.

*Under review - currently still termed as ACCP level 2.

Formal training in Cardiac Physiology

The PiCSA career pathway outlines the endorsed process an individual should undertake to adequately prepare them for entry into the field, the post graduate qualifications and courses an individual can obtain to progress their career and finally the endorsed certification and accreditation requirements.

The level of on-the-job training required at each career level (see page 6) will vary greatly depending on the educational background of the individuals and the range and expertise of cardiac investigations offered by the facility/sector in which they are employed.

Regarding Adult versus Paediatric, it is acknowledged that while the undergraduate and postgraduate pathways are similar, on the job training differs significantly.

Experience

The duration of experience in Cardiac Physiology investigations that is required to achieve clinical competency will vary depending upon an individual's background, learning ability, departmental/organisational requirements and services provided (including Adult versus Paediatric patient populations).

It is the consensus of PiCSA that Senior and Lead/Director Cardiac Physiologists will obtain at least one of the certifications/qualifications in the field of Cardiac Physiology (Table 1) as well as experience or qualifications in management, in keeping with the broader operational and professional management, supervision, training, teaching and research components these roles may entail.

Postgraduate Qualifications and Certifications

There are three advanced modalities of practice: Echocardiography, Cardiac Implantable Electronic Devices (CIED), and Cardiac Electrophysiology.

Each of these modalities requires advanced training, and there are a range of qualifications, courses and certifications that are recognised by PiCSA and the wider cardiology community, as listed in Table 1.

CIED and Electrophysiology responsibilities and training requirements are non-inferior to those of Echocardiography. Table 1 includes several international certifications that the profession deems de facto post graduate qualification equivalent.

Cross-Modal Training in Cardiac Physiology

Vocational experience in the ECG and Cath Lab Physiology roles are considered desirable prerequisites for entry into each of the advanced Cardiac Physiology professions (as per PiCSA's 2015 Census data).

It is recognised that exposure to the different modalities, including opportunities for cross-training and working in multiple areas, can be advantageous. This not only strengthens an individual's knowledge, understanding and overall competency, but also enables certain risk management strategies. For instance, the risk of musculoskeletal injury is lower if an individual is not restricted to one role, and workers are able to switch between modalities to cover workforce shortages.

Cardiac Physiologists may choose to further develop their skill level beyond post-graduate qualification requirements by pursuing advanced competency, becoming educators, undertaking research, or transitioning into management roles. Such advancements are beneficial not only for the individuals themselves but also for the profession as a whole.

Employers and health departments are encouraged to develop employment models and award classifications that offer individual Cardiac Physiologists the flexibility to practice in multiple modalities, should they choose to do so.

Table 1: Recognised post graduate qualifications and courses for Cardiac Physiology in Australia

Specialist Modality	Qualification/Course
Cardiac Implanted Electronic Devices (CIEDs)	CIED Certification Course – Society of Cardiopulmonary Technology (SCT) New Zealand* Allied Professionals Certified Cardiac Device Specialist (CCDS), International Board of Heart Rhythm Examiners (IBHRE)† Allied Professionals Cardiac Device Remote Monitoring Specialist (CDRMS), IBHRE Devices Certification Exam, British Heart Rhythm Society (BHRS)† European Heart Rhythm Society Certification in Cardiac Pacing for Allied Professionals (EHRA CP/AP)†
Echocardiography	Graduate Diploma of Cardiac Ultrasound Central Queensland University (CQU) Graduate Diploma in Cardiac Ultrasound Queensland University of Technology (QUT) Graduate Diploma in Medical Sonography (Cardiac) University of South Australia (UniSA) Master of Medical Sonography (Cardiac) University of South Australia (UniSA) Graduate Diploma in Cardiac Sonography Western Sydney University (WSU) Master of Cardiac Sonography Western Sydney University (WSU)
Electrophysiology	Allied Professional Certified Electrophysiology Specialist (CEPS), International Board of Heart Rhythm Examiners (IBHRE)† EP Certification Exam, British Heart Rhythm Society (BHRS)† Graduate Diploma of Cardiac Electrophysiology, Cardiac Electrophysiology Institute of Australasia (CEPIA)

**The CIED Certification Course has been developed by the SCT with the endorsement of the Heart Rhythm Society of New Zealand (HRSNZ) and is recognised by the Cardiac Society of Australia and New Zealand (CSANZ) in their 2022 position statement on CIED follow-up. Nonetheless, it is important to note that the course does not yet serve as an alternative to the IBHRE CCDS exam: At the conclusion of the CIED Certification Course, graduates are currently expected to take the IBHRE exam.*

†Considered by the profession to be de facto postgraduate qualification(s) for the respective modality.

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Regulation of Practicing Cardiac Physiologists

Self-Regulation, certification, and accreditation to practice

Cardiac Physiology operates as a self-regulated profession and is presently ineligible for regulation under AHPRA.

Public recognition of Cardiac Physiologists as accredited health professionals (with associated education and CPD requirements) is available through the following two registries:

1. The Australian Sonographer Accreditation Registry (**ASAR**) – see www.asar.com.au for specifics on registration and CPD requirements
    - A register of accredited Sonographers and student Sonographers, including Cardiac **Echo** Physiologists/Cardiac Sonographers.
    - ASAR registration is a requirement to practice Echo in Australia, under Medicare rules.

2. The Australian Council for Clinical Physiologists (**ACCP**) – see www.theaccp.org.au for specifics on registration and CPD requirements
    - A register of accredited Clinical Physiologists, including Cardiac Physiologists who work in the modalities of **ECG**, **Cath Lab**, **Cardiac Devices** and/or **Electrophysiology.**
    - ACCP registration is currently voluntary (i.e., not mandated under Medicare rules).

PiCSA strongly advocates for the accreditation and registration of every Australian Cardiac Physiologist through the ACCP and/or ASAR, in accordance with their practice modalities. The intention of the profession is for registration to eventually become a federally mandated practice requirement across all five modalities.

State and territory health departments and employers are encouraged to proactively endorse and support formal accreditation and registration as a quality and safety initiative. For example, funding for guild membership and registration expenses could be included in award agreements, additional to salary.

Concerns about an individual's fitness to practice should be directed to the employer, the relevant registry, and to PiCSA. Please note that neither PiCSA, the ASAR, nor the ACCP have the authority to remove a Cardiac Physiologist from the Registry due to professional misconduct, nor the ability to prevent a Cardiac Physiologist from practicing.

Continuing Professional Development (CPD)

CPD requirements for ongoing ASAR or ACCP registration are detailed on their respective websites (see links on previous page).

To maintain the highest level on the registry, it is PiCSA's position that CPD must include formal **maintenance of certification** or **recertification** where applicable. As an example, IBHRE necessitates CCDS or CEPS certified Cardiac Physiologists to partake in their "IBHRE-C3" program (https://ibhre.org/IBHRE-C3). Failure to complete this C3 program biennially leads to a certification lapse.

State and territory health departments and employers are strongly encouraged to include funding for CPD activities in their award agreements.

Conclusion and Distribution Guidelines

This position statement, developed by Professionals in Cardiac Sciences Australia (PiCSA), has been formally endorsed by the PiCSA Board and Professional Standards Committee for adoption by the Association. It delineates the governance structure and career pathways within the Cardiac Physiology profession. Intended for both current practitioners and those aspiring to join the field, this directive also serves as a valuable resource for policymakers, employers, employees, and future professionals.

Feedback from PiCSA members and several other professional associations was solicited prior to publication, ensuring a comprehensive and inclusive approach. The invitation for feedback remains open: This document will undergo regular revision, and constructive suggestions for its improvement are welcome.

In anticipation of forthcoming revisions, we direct readers to the PiCSA website (https://picsa.org.au/about/#core-documents) for the most up-to-date version of this document.

To maximise its impact in advancing the Cardiac Physiology profession, we encourage widespread distribution to health workers' unions, universities, students, employers, government health departments, and other relevant professional associations.