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POSITION STATEMENT

CSANZ and RANZCR Position Statement on Initial Certification and Maintenance of Recognition for Cardiac Magnetic Resonance Imaging (CMRI)

Christian Hamilton-Craig, MBBS, PhD, FRACP, FCSANZ, FSCMR [a,b,*], Stuart M. Grieve, DPhil, FRANZCR [c], Richard Slaughter, FRANZCR [d], Sylvia Chen, MBBS, FRANZCR [d], Ross Keenan, FRANZCR [e], Daniel Moses, FRANZCR [f], John F. Younger, MBBS, FCSANZ [g], Joseph B. Selvanayagam, DPhil, FCSANZ [h], Andrew J. Taylor, MBBS, PhD, FCSANZ [i]

[a]Faculty of Medicine, The University of Queensland, Brisbane, Qld, Australia
[b]Griffith University, Sunshine Coast, Qld, Australia
[c]School of Medicine, The University of Sydney, Sydney, NSW, Australia
[d]Department of Medical Imaging, The Prince Charles Hospital, Brisbane, Qld, Australia
[e]School of Medicine, The University of Otago, Christchurch, New Zealand
[f]Department of Radiology, Prince of Wales Hospital and Community Health Services, Sydney, NSW, Australia
[g]Department of Cardiology, Royal Brisbane and Women's Hospital, Brisbane, Qld, Australia
[h]Department of Cardiology, Flinders Medical Centre, Adelaide, SA, Australia
[i]Department of Cardiology, The Royal Melbourne Hospital, and University of Melbourne, Melbourne, Vic, Australia

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The CSANZ/RANZCR Position Statement on Cardiac Magnetic Resonance Imaging (CMRI) is intended to support and foster the provision of quality, safe CMRI services in Australia and New Zealand. This document specifically pertains to CMRI in adults, as distinct from general vascular MRI or paediatric imaging, and provides certification and recertification requirements.

Keywords MRI • CMRI • Cardiac imaging

1. Introduction

1.1. Purpose

This Position Statement is intended to support and foster the provision of quality, safe cardiac magnetic resonance imaging (CMRI) services in Australia and New Zealand. This document specifically pertains to CMRI in adults, as distinct from general vascular MRI or paediatric imaging.

In conjunction with the Royal Australian and New Zealand College of Radiology (RANZCR) and the Cardiac Society of Australia and New New Zealand (CSANZ) Imaging Council, this document was formulated with reference to the various global guidelines, including the American College of Radiology (ACR), the Society for Cardiovascular Magnetic Resonance (SCMR) and the European Association of Cardiovascular Imaging (EACVI) expert consensus statements

*Corresponding author: Christian Hamilton-Craig, The University of Queensland, Brisbane, Qld, Australia; Email: c.hamiltoncraig@uq.edu.au

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on the training and appropriate use of CMRI, as applied to Australia and New Zealand.

1.2. Background

CMRI is an increasingly utilised technology, offering unparalleled image quality and diagnostic performance. The acquisition, analysis, and interpretation of CMRI datasets require substantial training and expertise for both the provider and for the overall CMRI service (including radiographers/technologists, nursing staff, and allied health and associated professionals). This document outlines the training requirements for adult CMRI in Australia and New Zealand, including initial certification as well as maintenance of recognition. Key components of both processes are continuing involvement in medical education and maintenance of professional standards, with a strong emphasis placed on collaboration with specialists who use CMRI data for clinical decision making, and engagement in CMRI-specific education.

In 2014, the EACVI published the Core Syllabus [1], which is a jointly produced radiology—cardiology position statement by respected leaders in the field developed for candidates seeking to sit the EuroCMR exam. This syllabus is a recommended structured learning framework for those training to perform CMRI in Australia and New Zealand. This present document provides a rationale for single level training across both groups; and, incorporates such training into both general radiology and cardiology training.

In 2007, the SCMR published the first Guidelines for Training in Cardiovascular Magnetic Resonance [2], followed by the Guidelines for Reporting Cardiovascular Magnetic Resonance Examinations in 2009 [3], and subsequently the Task Force 12 statement on training in CMRI [4]. These documents together outline a framework of training requirements for performance and reporting of CMRI studies.

Subsequently, a multi-partite consensus document—*ACCF/ACR/AHA/NASCI/SCMR 2010 expert consensus document on cardiovascular magnetic resonance: a report of the American College of Cardiology Foundation Task Force on Expert Consensus Documents* [5]—provided information regarding basic instrumentation, physics, and scan techniques; the clinical uses of CMRI for assessing patients with cardiovascular cardiac disease processes; and, gives recommendations on the appropriate use of this technology.

The ACR's MRI Accreditation Program recognises the changes to patterns of practice, and their program requirements evaluate the qualifications of individuals, and quality and safety specific to MRI. The MRI Accreditation Program Requirements document provides a mandate for those supervising and reporting CMRI [6].

All the above documents should be familiar to providers of CMRI services, in reference to global requirements for training and maintenance of standards.

2. Terminology

Live case
A primary operator Live Case is one in which the applicant is present during the acquisition, with active involvement in the scan technique and selection of pulse sequences, direct involvement in the technical analysis of datasets using dedicated CMRI software, and supervised reporting by a Supervisor (as defined below).

All these aspects must be fulfilled in order to claim a live case; if any one aspect is incomplete, the case may be counted as a library case (as defined below). A maximum of 25 live cases undertaken as part of a course is allowed.

Certified providers performing live cases for maintenance of recognition do not require supervision.

Co-reports by certified radiologists or cardiologists allow both to claim a live case (limited to **2** primary signatories plus **1** trainee/fellow per live case).

Library case
A Library Case is a previously acquired CMRI dataset, which is reviewed using dedicated CMRI software, including full technical analysis of datasets under the direct supervision of a Senior Supervisor (as defined below).

Note: cases reviewed or presented at a multi-disciplinary meeting, or case presentation sessions, do not count as a library case, and instead would count towards the *Continuing Professional Developmen*t (CPD) points of the relevant parent body.

Supervisor
A Supervisor is a person who is certified by the Conjoint Committee for Certification in CMRI and is maintaining ongoing competency or an international equivalent, e.g., an SCMR or EACVI Level 3 certified provider.

Senior supervisor
A Senior Supervisor is a person who is certified by the Conjoint Committee for Certification in CMRI and is maintaining ongoing competency AND over a period of 2 consecutive 3-year certification cycles has reported a minimum of 450 live cases post training (although it is recognised that annual case numbers may fluctuate), or has been certified through the Established Provider Pathway. This provider is then able to sign off a trainee's library cases and their participation in a core training syllabus such as the EACVI Syllabus or equivalent. Following attainment, this Senior Supervisor status will be reviewed in 9 years (i.e., in 3 certification cycles).

CMR-specific CPD
This CPD may include a variety of activities such as a CMR-specific meeting or a dedicated CMR intensive session at a local, national or international meeting, journal reading, publications, clinical meetings and MDTs etc. Time spent on additional CMR activities as stipulated in accordance with the CPD program of RANZCR [7] or CSANZ/RACP are also appropriate. These requirements cannot be met exclusively

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by inhouse meetings or within any one CPD category. Evidence of CPD participation must be auditable.

3. Core Principles

3.1. Staff

Staff providing CMRI services should be adequately trained and supported, and actively engage in ensuring quality, safe services are provided:

- Those undertaking CMRI must be adequately trained and be working within their scope of practice and meet any requirements of their College, licensing authority or an equivalent body. CMRI should be included in the clinician's ongoing CPD activities along with quality assurance and audit activities.
- It is recommended that those providing CMRI services do so as part of a multidisciplinary team approach that includes review of CMRI imaging in conjunction with other clinical information, and a quality assurance process.
- Staff in training must be supervised by a qualified individual.

3.2. Minimum Standards

An example of the expected minimum standards for performance of CMRI are outlined in the ***Standardised cardiovascular magnetic resonance imaging (CMR) protocols: 2020 update*** [7]. It is expected that these standards will be updated in the future.

4. Training Requirements

It is recognised that current and future providers of CMRI services come from professional groups with significantly different primary scopes of practice, background training, ongoing clinical experience, and CPD programs. Requirements should encompass specific training in CMRI physics, sequences, acquisition protocols, data analysis, interpretation and reporting, along with any ongoing experience and CPD requirements. Requirements for Specialists Supervising and Reporting CMRI are presented in the Table.

5. Established Providers

It was recognised that established specialists actively reporting CMRI studies with a significant body of experience and caseload should be able to continue to perform and report CMRI. Established provider[1] certification may be granted for established CMRI providers who provide a declaration accompanied by ongoing evidence of CPD. Applicants who have attained formal certification or have equivalent fellowship experience may supply this as evidence of certification to support their application for recognition as an established provider.

Individual cases will be considered on a case-by-case basis.

Table Requirements for Specialists Supervising and Reporting CMRI.

Qualifications	Radiologists and Cardiologists
Initial	• Fellowship of the Royal Australian and New Zealand College of Radiologists or a Fellowship of the Royal Australasian College of Physicians (SAC Cardiology), or equivalent; *AND* • Have performed and interpreted 150 live CMRI cases in the past 5 years (including those during the curriculum of training under appropriate supervision) under supervision by a credentialed Supervisor. Those cases must include a broad exposure of CMR cases covering all aspects of adult CMR, as stipulated in the logbook and which must be signed by a Supervisor;[a] *AND* • Having undertaken a core training syllabus, such as the EACVI Syllabus (with a Senior Supervisor signing off in a modular fashion for each unit) *OR* an external exam that is satisfactory to the Committee and broadly equivalent to a core syllabus e.g., the EUROCMR or CBCMR Exam, *AND* • Completion of at least 30 hours of CMRI-specific CPD within the last three years.
Maintenance of Recognition	• Ongoing competency requirement of **90** live cases over 3 years • Co-reports by certified radiologists or cardiologists allow both to claim a live case (limited to **2** primary signatories plus **1** trainee/fellow). *AND* • Completion of at least 30 hours of CMR-specific CPD in a three- year period (in a variety of activities) recorded in a CPD program.
Lapsed Certification	Requests for recertification from those who are lapsed will be considered on a case-by-case basis.

[a]Any library cases included in the logbook must be signed-off by a senior supervisor.

[1] An Established Provider was defined as a specialist who has been performing Cardiac MRI as part of their ongoing role and practice and who has met all the required criteria identified in the relevant certification pathway prior to 1 May 2018.

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Certification was provided by the Conjoint Committee for Certification in CMRI. Established provider certification began in April 2018 and closed in December 2019. Some providers had extensive training and clinical experience, ongoing case load (Currency) and CPD, and were recognised. Other providers were granted 12 months to meet those requirements.

The Conjoint Committee recognises that this was a retrospective activity and specialists have a varied range of training and/or experience and will provide evidence to substantiate their applications in different ways. Evidence of training and experience was assessed against the domains of **Training**, **Currency**, and **CPD**.

6. Specific CMRI Indications With Additional Training Recommendations

6.1. Paediatric and Congenital Heart Disease (CHD)

Paediatric and adult patients with "non- simple" CHD lesions (defined as per ACC/AHA 2008 Guidelines for the Management of Adults with Congenital Heart Disease [8]) require specialised expertise for all scanning as well as accurate and meaningful interpretation of the images and information obtained.

The Committee endorses the EACVI CMR Core Syllabus in congenital and paediatric heart disease [9,10] and practitioners are recommended to have sufficient training and experience to meet this syllabus[2]. It is recommended that subspecialist ACHD CMR practitioners consider the EACVI CMR CHD Certification exam as a formative option for ensuring adequacy of core knowledge.

6.2. Stress CMR

CMR with myocardial stress perfusion imaging has no radiation exposure and has high diagnostic performance in the identification of significant coronary ischaemia [11,12].

EACVI guidelines [13] require supervised stress testing with either vasodilator or staged inotropic stress of at least 50 cases for Level 3 certification (i.e., sufficient to function as an independent operator).

Recommended training for stress perfusion

- Adenosine vasodilator stress perfusion must be supervised by a medical practitioner with advanced life support/resuscitation skills (certified ALS provider) and have the appropriate staff training and equipment.
- It is recommended that providers undergo supervised performance of at least **25 LIVE** stress perfusion scans under a mentor with significant expertise in stress perfusion imaging, prior to providing stress perfusion services.
- Recommended to have at least **12 hours** of dedicated Stress-CMR-Specific CPD (such as SCMR/EACVI online courses, with the appropriate evidence).

[2] https://www.escardio.org/Education/CMR-Core-Syllabus-for-Certification

7. Changes to this Position Statement

The Conjoint Committee for certification in CMRI will review this Position Statement and other related documents every three years. The Conjoint Committee may amend this Position Statement at any time, with approval by the RANZCR and the CSANZ, and ensure that future amendments comply with applicable law.

Acknowledgements

The Position Statement was commissioned after consultation with the Cardiac Society of Australia and New Zealand (CSANZ) Imaging Council and the Royal Australia and New Zealand College of Radiologists (RANZCR), with members appointed by both groups. The Chair was appointed by the working group.

Multiple teleconference and face-to-face working group meetings were held, and the document developed in light of other international standards, as well as the training and workforce requirements particular to Australia and New Zealand.

The final document underwent external review via membership consultation, was reviewed by the RANZCR Professional Practice Committee and Faculty Council of Radiology (FCR) and the CSANZ Quality Standards Committee; and was finally approved by both CSANZ Board and RANZCR FCR.

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