

# Guidelines for Training in Cardiovascular Magnetic Resonance (CMR)

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## ABSTRACT

These “Guidelines for Training in Cardiovascular Magnetic Resonance” were developed by the Clinical Practice Committee of the Society for Cardiovascular Magnetic Resonance (SCMR) and approved by the SCMR Board of Trustees.

## BACKGROUND

In 2000, guidelines for training in Cardiovascular Magnetic Resonance (CMR) were published by the Society for Cardiovascular Magnetic Resonance (SCMR) (1). Since this first document was published, new CMR technologies have emerged and the clinical practice of CMR has further developed. This necessitated a revision to these recommendations. As with the initial document, the SCMR has developed these training guidelines to be broad-based and applicable to CMR practitioners from multiple medical backgrounds. This document was written by the Clinical Practice Committee of the SCMR which is comprised of cardiovascular radiologists and cardiologists. The objective of this report is to provide guidelines to credentialing committees of healthcare facilities and agencies internationally.

It is intended that these guidelines should be consistent with the following American Medical Association (AMA) statement: “The AMA believes that 1) Individual character, training, competence, experience and judgment should be the criteria for granting privileges in hospitals; and 2) Physicians representing several specialties can and should be permitted to perform the same procedures if they meet these criteria” (Res. 26, A-77; Reaffirmed CLRPD Rep. C, A-89) (2, 3).

This document is intended to be complementary to the clinical competence statement on cardiac imaging with magnetic resonance by the American College of Cardiology Foundation (ACCF) and American Heart Association (AHA) (4), the recommendations made by the American College of Radiology (ACR) (5) and the revised Cardiovascular Medicine Core Cardiology Training (COCATS 2) document on CMR (6).

## METHODOLOGY

It was maintained that these guidelines should be readily understandable. This final version was distributed and approved by the SCMR Executive Committee and Board of Trustees.

## RECOMMENDATIONS FOR BASIC TRAINING IN CMR FOR CARDIOVASCULAR MEDICINE, RADIOLOGY, AND NUCLEAR MEDICINE TRAINING PROGRAMS

### *Level 1-general training to provide a working knowledge of CMR methods and diagnostic utility*

It is recommended that all training programs (cardiovascular medicine, radiology and nuclear medicine) incorporate at least:

- One month of training in CMR to familiarize the trainee with the issues of CMR. However, this is insufficient to practice the specialty of CMR.

## CRITERIA FOR THE PRACTICE OF CMR

### *Level 2-specialized training designed to provide the skills necessary to independently interpret CMR imaging studies*

#### *General criteria*

- Board certification in cardiovascular medicine, radiology, or nuclear medicine or completion of an accredited cardiovascular medicine, radiology, or nuclear medicine training program and board eligible
- Basic knowledge, clinical training and experience in at least one other cardiovascular imaging modality
- Holding a valid unrestricted medical license

#### *Specific criteria*

For a physician to practice CMR and be reimbursed for CMR interpretation, the following are required:

#### Initial Training:

- At least 3 months training under the aegis of a Level 2 or Level 3 (preferred) qualified mentor including a minimum of 2 months full-time training in a CMR laboratory and up to 1 month of independent study. In-lab training time is defined as a minimum of 35 hours/week. Independent study can consist of coursework or case studies provided on-line or via CD/DVD, time at major medical meetings devoted to performance of CMR or other relevant educational training activities. The 3 months of training need not be continuous or at a single institution but must be completed within 2 years.
- At least 50 hours of CMR related coursework
- Supervised interpretation of at least 150 CMR studies representing the range of abnormalities observed in practice, but including substantial proportions (at least 25) of both cardiac and vascular studies. For at least 50 studies, the trainee must be present during the scan, ideally as the primary operator and should perform the analyses and make the initial interpretation.

#### Maintenance of Skills:

- Continuing Medical Education in CMR for at least 20 hours every 2 years
- Primary interpretation of at least 100 cases every 2 years

### **CRITERIA FOR ADVANCED COMPETENCY IN CMR**

*Level 3-advanced training for those who ultimately wish to be responsible for the operation of a CMR laboratory and participate in CMR teaching and research*

#### Initial Training:

##### In addition to level 2 training:

- A total of at least 12 months training in CMR under the aegis of a Level 3 qualified mentor to be completed within 2 years.
- Supervised interpretation of a total of at least 300 CMR studies representing the range of abnormalities observed in practice, but to include substantial proportions (at least 50) of both cardiac and vascular studies. For at least 100 studies, the trainee must be present during the scan, ideally as the primary operator and should perform the analyses and make the initial interpretation.
- Participation in an ongoing quality assurance or improvement program for the laboratory or facility in which he or she is associated

#### Maintenance of Skills:

- Continuing Medical Education in CMR for at least 40 hours every 2 years

- Primary interpretation of at least 200 cases every 2 years

### **PROOF OF TRAINING FOR LEVELS 2 AND 3**

The CMR training center and the trainee should maintain a logbook or other specific records to document the trainees case review and the didactic hours in which the trainee has participated.

Appropriate documentation of training are letters or certificates from the director of a fellowship training program or from individuals who are level 2/3 qualified in CMR.

### **“GRANDFATHER” CRITERIA FOR LEVELS 2 AND 3**

The original SCMR recommendations published in 2000 indicated that “grandfather” criteria be completed by July 1, 2003. Details are given in this earlier document.

\*To include CMR relevant areas of: physics, studies of biologic effects, instrumentation, contrast agent mechanisms and studies, cardiovascular anatomy, cardiovascular physiology and pathophysiology, magnetic resonance techniques and pulse sequences, clinical indications and appropriateness, methods for interpretation, use of stress agents, and quality control.

### **REFERENCES**

1. Pohost GM, Higgins CB, Grist T, et al. Guidelines for credentialing in cardiovascular magnetic resonance (CMR). *J Cardiovasc Magn Reson* 2000;2:233–4.
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4. Budoff MJ, Cohen MC, Garcia MJ, et al. ACCF/AHA clinical competence statement on cardiac imaging with computed tomography and magnetic resonance: a report of the American College of Cardiology Foundation/American Heart Association/American College of Physicians Task Force on Clinical Competence and Training. *J Am Coll Cardiol* 2005;46:383–402.
5. Weinreb JC, Larson PA, Woodard PK, et al. American College of Radiology Clinical Statement on Noninvasive Cardiac Imaging. *Radiology* 2005;235:723–7.
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