



## Italian registry of cardiac magnetic resonance



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Abbreviations: CAD, coronary artery disease; CMP, cardiomyopathy; CMR, cardiac magnetic resonance; SIRM, Italian Society of Medical Radiology.

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## ABSTRACT

**Objectives:** Forty sites were involved in this multicenter and multivendor registry, which sought to evaluate indications, spectrum of protocols, impact on clinical decision making and safety profile of cardiac magnetic resonance (CMR).

**Materials and methods:** Data were prospectively collected on a 6-month period and included 3376 patients (47.2 ± 19 years; range 1–92 years). Recruited centers were asked to complete a preliminary general report followed by a single form/patient. Referral physicians were not required to exhibit any specific certificate of competency in CMR imaging.

**Results:** Exams were performed with 1.5T scanners in 96% of cases followed by 3T (3%) and 1T (1%) magnets and contrast was administered in 84% of cases. The majority of cases were performed for the workup of inflammatory heart disease/cardiomyopathies representing overall 55.7% of exams followed by the assessment of myocardial viability and acute infarction (respectively 6.9% and 5.9% of patients).

In 49% of cases the final diagnosis provided was considered relevant and with impact on patient's clinical/therapeutic management. Safety evaluation revealed 30 (0.88%) clinical events, most of which due to patient's preexisting conditions. Radiological reporting was recorded in 73% of exams.

**Conclusions:** CMR is performed in a large number of centers in Italy with relevant impact on clinical decision making and high safety profile.

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## 1. Introduction

CMR has evolved in recent years from an effective research tool into a clinically proven, safe and comprehensive imaging modality, with established guidelines and appropriateness criteria covering a wide spectrum of clinical indications and an increasing number of centers organizing fully dedicated scanning sessions being carried out either by radiologists and/or cardiologists [1,2]. Most information about its use and diagnostic performances however, is currently derived from very few large clinical trials or from selected populations enrolled in highly specialized centers with relatively limited knowledge of its day-to-day utilization.

The only available register is the EuroCMR, which was recently completed with 27,000 patients and was promoted and organized by the European Society of Cardiology Working Group of "Cardiovascular Magnetic Resonance", with obvious predominant involvement of CMR-dedicated cardiological centers [3–5]

EuroCMR results convincingly showed that the exam has evolved from the status of "a niche modality" [6] with limited number of cases performed by few tertiary/academic referral into a routine imaging modality, homogeneously diffused and representing an extremely valuable diagnostic support to solve common clinical problems [3,4].

The Italian registry of CMR is an open-access study (no restriction criteria or proof of specific competence were required to participating centers) which was set up to provide a national overview of its utilization, offering a more "radiological" point of view of its current clinical role in daily practice, and was promoted by the sub-society of cardiac radiology of SIRM (Società Italiana di Radiologia Medica), which has currently almost 700 members ([www.sirm.org/sottositi/cardio](http://www.sirm.org/sottositi/cardio)).

Forty different centers were involved in this multicenter and multivendor registry, which sought to evaluate clinical indications, spectrum of acquisition protocols, impact on clinical decision-making and safety profile of CMR.

## 2. Materials and methods

### 2.1. Data collection

The data were prospectively collected during a 6-month period (January–June 2011) and included a population of 3376 consecutive patients who underwent CMR in one of the 40 participating sites.

Centers were initially recruited via email from the mailing list of the SIRM members (approximately 8000 members) and each site, after acceptance, appointed a referral physician (radiologist or cardiologist) who was locally responsible for the data integrity, interpretation and collection and represented the direct contact for the steering committee of the study.

Referral physicians were not required to exhibit any specific sub-specialty based certificate of competency in CMR imaging as the aim of present registry was to provide a realistic "snapshot" of CMR utilization in Italy, without limiting patient's enrollment only to most-experienced national groups.

Similarly, acquisition protocols were individually defined and tailored by each center according to the main clinical request, without following any established, predefined standardized protocol.

### 2.2. Patients form

A preliminary general report and a case-report form (CRF) were completed in each center.

In each electronic form, the following sections had to be filled:

- (1) Patient's data, including demographics, patient's source (outpatient, day hospital or hospitalized) and clinical priority (defined as urgent vs. elective exam).
- (2) Clinical indications to the exam, which were listed and readapted following the ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging published

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