

Cardiac Magnetic Resonance (CMR) Imaging: Transforming Cardiovascular Care in India

Authors:

Dr. Vimal Raj

Dr Vishnuvardhan

Sai Sangineni

Dr. Prem Kishore

Venkateswar Wunnava

Introduction

Cardiac Magnetic Resonance Imaging (CMR) is swiftly revolutionizing cardiovascular diagnostics in India, offering a safe, rapid, and non-invasive method for detailed cardiac assessment and risk stratification that is unparalleled in its precision and utility for both radiologists and cardiologists. Recent research and technology advances across leading Indian institutions demonstrate compelling evidence for CMR's transformative potential in patient care and clinical decision-making.[ehealth.eletsonline+2](#)

Latest Indian Research on Cardiac MRI

- A 2025 prospective study by the National Institute of Mental Health and Neurosciences and Sri Jayadeva Institute, Bengaluru, highlights multiparametric CMR mapping for detecting cardiac involvement in idiopathic inflammatory myopathies (IIM) in the Indian population, revealing strong correlations between CMR biomarkers and disease severity.[pubmed.ncbi.nlm.nih](#)
- A 2024 double-blind observational study from SKIMS, Srinagar, establishes the pivotal role of CMR with Late Gadolinium Enhancement (LGE) in identifying infarct-related arteries and distinguishing non-ischemic pathogenesis in Non-STEMI patients, leading to altered diagnosis in nearly a third of cases.[pubmed.ncbi.nlm.nih](#)
- Case series and research from multiple Indian hospitals have validated that advanced 3T MRI systems dramatically boost image signal-to-noise ratio, accelerating acquisition time and enabling more comprehensive cardiac evaluations.[journalgrid+1](#)

CMR as a Game-Changer in Indian Cardiology

- CMR facilitates early and accurate diagnosis of a vast spectrum of cardiac diseases including myocardial viability, cardiomyopathies, myocarditis, pericardial pathologies, cardiac masses, and complex congenital or valvular disease, all without exposing patients to ionizing radiation.[ijcdw+1](#)
- AI-powered acceleration techniques—such as those pioneered in new Delhi imaging centers—now complete complex cardiac MRI scans in as little as 30–40 minutes (down from over an hour), reducing compliance barriers and increasing throughput for patient success.[narayanahealth+1](#)

Impact on Patient Success

- CMR's unmatched diagnostic accuracy directly improves care for over **45% of Indian cardiac deaths in ages 40–69**, with 27% of the national mortality burden attributed to cardiovascular disease—highlighting the urgency of early intervention with CMR-based workflow.[ehealth.eletsonline](#)
- Key prospective data shows CMR markers like native T1 mapping detect subclinical cardiac involvement with **72.7% sensitivity** in high-risk populations, thus enabling prevention-oriented care.[pubmed.ncbi.nlm.nih](#)

- LGE-CMR identified new infarct-related arteries or non-ischemic diseases in 37% of non-STEMI patients, leading to altered management, safer therapies, and more personalized treatment.[pubmed.ncbi.nlm.nih](#)
- Faster, non-invasive scans increase accessibility and patient comfort, especially for elderly, pediatric, and anxious populations, supporting equitable and humane care.[siemens-healthineers+1](#)

CMR: Invaluable for Radiologists and Cardiologists

- Provides robust quantitation—ventricular volumes, ejection fraction, myocardial strain, scar tissue, and perfusion—that exceeds echocardiography and CT in reliability for disease staging and risk stratification.[gehealthcare+1](#)
- AI integration in CMR enhances image quality, reduces exam times, and improves diagnostic confidence; standardized protocols reduce operator-dependence, streamline training, and support wider adoption across India's diagnostic centers.[ocacademy+2](#)
- New CMR technology is now cleaner and more sustainable (helium-free innovations, eco-conscious MRI installations), positioning Indian healthcare for both clinical and operational excellence.[philips+1](#)

Compelling Narrative: Why CMR Is the Present and Future of Cardiac Diagnosis in India

Cardiac MRI stands as the **single most powerful non-invasive tool** for identifying, staging, and managing heart disease in the rapidly shifting epidemiological landscape of India, where cardiovascular disorders strike earlier and with greater severity than in the West. The convergence of Indian research, modern MRI technology, and AI-powered diagnostics is ushering in an era of earlier detection, faster treatment, and safer outcomes. A robust national case emerges from recent publications that CMR, when universally accessible and well-integrated into clinical pathways, empowers radiologists and cardiologists to deliver targeted therapies, prevent complications, and truly improve survival rates.[ijcdw+1](#)

Any institution or policymaker aiming for transformative change in Indian cardiac care must urgently invest in CMR infrastructure, training, and research, making this invaluable tool central to both radiology and cardiology practice.

Core References for the White Paper

- Samim MM et al. "Cardiac Magnetic Resonance Imaging Markers in Idiopathic Inflammatory Myopathy – Prospective Observational Study" (NIMHANS, Jayadeva), 2025.[pubmed.ncbi.nlm.nih](#)
- Masood I et al. "Role of CMR in Non-ST Elevation MI and Non-Ischemic Diagnosis" (SKIMS, Srinagar), 2024.[pubmed.ncbi.nlm.nih](#)
- Mahajan Imaging & Labs—AI-powered Cardiac MRI workflow and impact data, Delhi, 2025.[ehealth.eletsonline](#)

- Bhatia M, "Cardiac MRI in this Era", Indian perspective, 2020.[ijcdw](#)
- Bidarkar KA, "An Indian Experience of 3T Cardiac MRI", Jupiter Hospital, 80-case series, 2023.[journalgrid](#)
- Nature, Philips, Siemens, GE HealthCare, Indian Heart Journal, Indian Association of Cardiac Imaging—IACI, 2022–2025 landscape reviews.[iaciind+4](#)

CMR is the key to India's clinical excellence, patient safety, and world-class cardiac outcomes—now, not tomorrow.

1. <https://ehealth.eletsonline.com/2025/07/delhi-launches-indias-first-ai-powered-ultra-fast-mri-at-mahajan-imaging-labs-new-centre-in-dwarka/>
2. <https://pubmed.ncbi.nlm.nih.gov/40495348/>
3. <https://pubmed.ncbi.nlm.nih.gov/38408612/>
4. <https://journalgrid.com/view/article/rjms/819>
5. <https://ijcdw.org/cardiac-mri-in-this-era/>
6. <https://www.narayanahealth.org/blog/advancements-in-non-invasive-cardiac-imaging-technologies>
7. <https://www.siemens-healthineers.com/en-in/magnetic-resonance-imaging/clinical-specialities/cardiovascular-mri>
8. <https://www.gehealthcare.in/insights/article/advancing-cardiac-magnetic-resonance-imaging-with-deep-learning-image-reconstruction>
9. <https://www.ocacademy.in/blogs/top-cardiology-trends-in-2025-what-doctors-should-prepare-for/>
10. <https://pmc.ncbi.nlm.nih.gov/articles/PMC11772728/>
11. <https://www.philips.co.in/a-w/about/news/archive/standard/about/news/articles/2025/20250428-future-directions-in-mri-research-and-development-advancing-healthcare-innovation.html>
12. <https://www.iaciind.org>
13. <https://indianheartjournal.com>
14. <https://ismrmindiachapter2025.iith.ac.in/Proceedings.pdf>
15. <https://www.nature.com/articles/s41591-025-03654-2>
16. <https://continentalhospitals.com/blog/future-of-heart-imaging-latest-innovations-in-cardiology/>
17. <https://journals.sagepub.com/home/occ>
18. <https://www.thieme-connect.com/products/ejournals/journal/10.1055/s-00050590>
19. <https://openrespiratorymedicinejournal.com/VOLUME/18/ELOCATOR/e18743064288565/ABSTRACT/>