
Comparative Analysis of Cardiac MRI Recommendations in ESC & ACC/AHA Guidelines



Cardiac MRI has become a valuable tool in diagnosing and managing various cardiovascular conditions due to its noninvasive nature and ability to provide detailed anatomical and functional information. Standardised protocols are available, and its versatility allows for the investigation of a wide range of cardiac diseases. However, guidelines from professional societies such as the European Society of Cardiology (ESC) and the American College of Cardiology/American Heart Association (ACC/AHA) may differ in their recommendations for its use due to various factors, including available evidence and regional considerations. A growing body of literature supports the diagnostic and prognostic value of cardiac MRI, necessitating a careful evaluation of its incorporation into these guidelines. [This systematic review and meta-analysis](#) aims to compare and analyse the indications for cardiac MRI within the ESC and ACC/AHA guidelines, identifying areas of consensus and discrepancy, exploring underlying rationale, and assessing supporting evidence to ensure appropriate clinical decision-making and patient care.

Methodology And Literature Search

Literature search and selection involved collecting guidelines from ESC and ACC websites up to May 2023 and searching primary databases for relevant studies. Guidelines unrelated to cardiac MRI or lacking recommendations were excluded. Data extraction utilised a standardised form, with discrepancies resolved by experienced authors. Statistical analysis included cross-sectional and temporal comparisons, grouping data into diagnostic subgroups for direct comparisons between guideline versions. Recommendations were standardised across guidelines, and redundant recommendations were accounted for.

Discrepancies in Distribution, COR, and LOE Between ESC and ACC/AHA Guidelines

Firstly, regarding the distribution of recommendations, the ESC guidelines encompassed a higher number of recommendations overall compared to the ACC/AHA guidelines. However, there were differences in the distribution of classes of recommendation (COR) and levels of evidence (LOE). While the ESC guidelines had a higher proportion of COR IIb recommendations, indicating conditions where the usefulness or efficacy of the procedure or treatment is less well established, the ACC/AHA guidelines had a greater proportion of COR I recommendations, denoting conditions for which there is evidence and/or general agreement that a given procedure or treatment is beneficial, useful, and effective. Furthermore, there were discrepancies in the levels of evidence supporting the recommendations, with ACC/AHA guidelines having more recommendations supported by LOE B compared to the ESC guidelines.

Similarities, Differences, and Temporal Trends in ESC and ACC/AHA Guidelines

When examining specific diagnostic subgroups, both sets of guidelines showed similarities and differences. For instance, recommendations for acute coronary syndrome (ACS) and chronic coronary syndrome (CCS) were similar in proportion between the two guidelines, but ESC guidelines had a significantly higher proportion of COR IIb recommendations, indicating a more cautious approach in certain scenarios. On the other hand, recommendations for valvular heart disease were more abundant in ACC/AHA guidelines, whereas ESC guidelines had more recommendations for heart failure and arrhythmias.

The analysis also revealed interesting temporal trends. Over time, there has been a notable increase in the number of recommendations for cardiac MRI in both ESC and ACC/AHA guidelines. However, this increase was more pronounced in ESC guidelines. Changes over time included a decrease in recommendations for ACS and CCS in ESC guidelines, possibly indicating a refinement or consolidation of recommendations, while ACC/AHA guidelines saw an increase in recommendations for valvular heart disease and arrhythmias.

Overall, while there were areas of consensus between the ESC and ACC/AHA guidelines regarding the use of cardiac MRI, there were also notable divergences, particularly in emphasis and specific recommendations within certain diagnostic subgroups. These differences underscore the complexity of clinical decision-making and the importance of continued dialogue and collaboration between professional societies to ensure consistency and appropriateness in the utilisation of cardiac MRI in clinical practice.

Temporal Evolution and Consensus Analysis of Cardiac MRI Recommendations

Additionally, both sets of guidelines demonstrated an increase in the total number of recommendations related to cardiac MRI over time. However, the magnitude of increase was more pronounced in ESC guidelines, reflecting an evolving recognition of cardiac MRI's importance in managing various cardiovascular conditions. Lastly, areas of consensus and divergence were observed within the guidelines. Consensus was particularly evident in heart failure and hypertrophic cardiomyopathy, while divergence was notable in valvular heart disease, arrhythmias, and aortic disease.

These findings underscore the need for ongoing research and consensus-building efforts to establish standardised approaches and evidence-based recommendations for the use of cardiac MRI in clinical practice. Future guideline updates should incorporate emerging evidence and address variations in available evidence and regional perspectives to ensure optimal utilisation of cardiac MRI in cardiovascular medicine.

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