

# Coronary Artery Disease

Presented by



Society for  
Cardiovascular  
Magnetic  
Resonance

## 1 Background

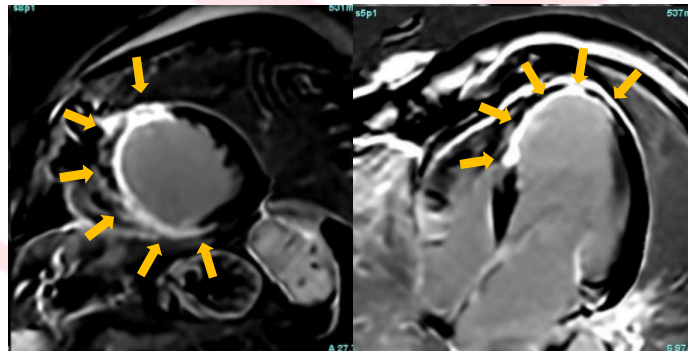
Cardiovascular magnetic resonance is an established non-invasive imaging technique to evaluate myocardial ischemia, myocardial infarction, viability, and arrhythmogenic scar burden.

## 2 Why CMR

- High diagnostic accuracy due to excellent image resolution.
- Good image quality independent of body habitus.
- One-stop shop:  
morphology, function, myocardial perfusion, and viability.
- Robust prognostic data.
- No ionizing radiation.

## 3 Images

### Viability

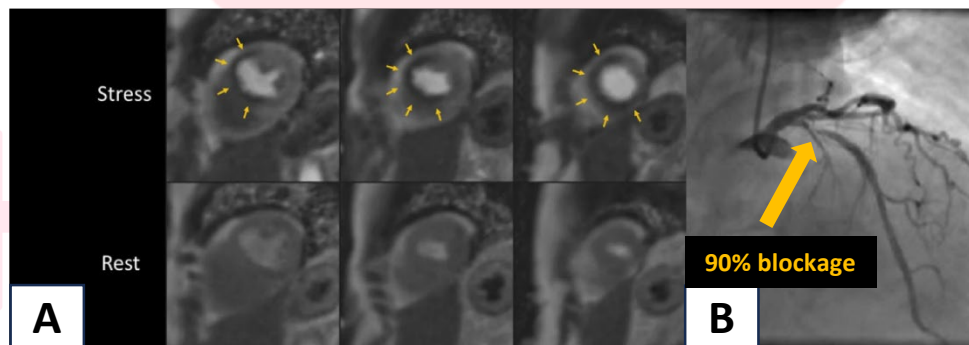


Myocardial infarction represented by subendocardial LGE (yellow arrows).

*Images provided courtesy of:* Vidya Nadig

<sup>1</sup>Hartford Hospital, CT, USA

### Stress CMR



An abnormal stress CMR (A) caused by 90% stenosis at proximal LAD (B).

*Images provided courtesy of:* Kana Fujikura

National Heart, Lung, and Blood Institute, NIH, MD, USA

## 4 Appropriate Use Criteria

### Acute Chest Pain

intermediate-risk patients

Stress CMR Class 1\* – no known CAD  
Class 2a\* – known CAD

intermediate-risk patients with no known CAD, with inconclusive CCTA

Viability Class 2a\*

high-risk patients and positive troponin who do not have obstructive CAD

Viability Class 2a\*

### Chronic Chest Pain

Patients with obstructive CAD on optimal GDMT

Stress CMR Class 2a\*

Patients with obstructive CAD or extensive nonobstructive CAD

Stress CMR Class 1\*

Patients with chronic coronary disease with change in symptoms or functional capacity despite GDMT

Stress CMR Class 1†

Intermediate-high risk patients with no known CAD

Stress CMR Class 1\*

### Coronary Artery Anomalies

Viability Class 1‡

\* 2021 AHA/ACC/ASE/CHEST/SAEM/SCCT/SCMR Guideline for the Evaluation and Diagnosis of Chest Pain. J Am Coll Cardiol. 2021;78:e187-e285.



† 2023 AHA/ACC/ACCP/ASPC/NLA/PCNA Guideline for the Management of Patients With Chronic Coronary Disease. J Am Coll Cardiol. 2023;82:833-955.

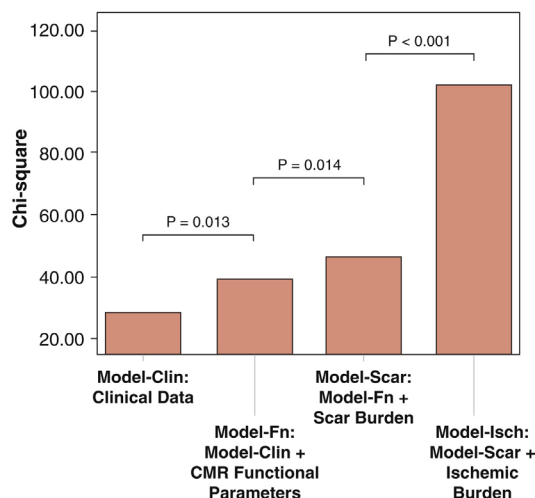


‡ Leiner T, et al. SCMR Position Paper (2020) on clinical indications for CMR. J Cardiovasc Magn Reson. 2020;22:76.



## 5 Reference

### Cardiac Death and Nonfatal MI

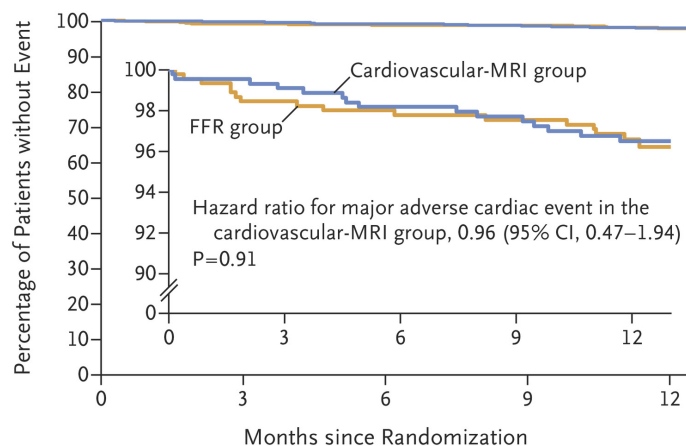


With follow-up of  $2.5 \pm 1.0$  years, ischemic burden of  $\geq 1.5$  segments strongly predicts the primary endpoint.

Vincenti G, et al. J Am Coll Cardiol Img. 2017;10:526–537.



### Composite outcome (death from any cause, nonfatal MI, or target-vessel revascularization)



In patients with stable angina and risk factors for CAD, the use of stress CMR in guiding initial management was noninferior to the use of invasive coronary angiography.

Nagel E, et al. N Engl J Med. 2019;380:2418-2428.

