



La CMR: a chi, quando e quali informazioni aggiuntive

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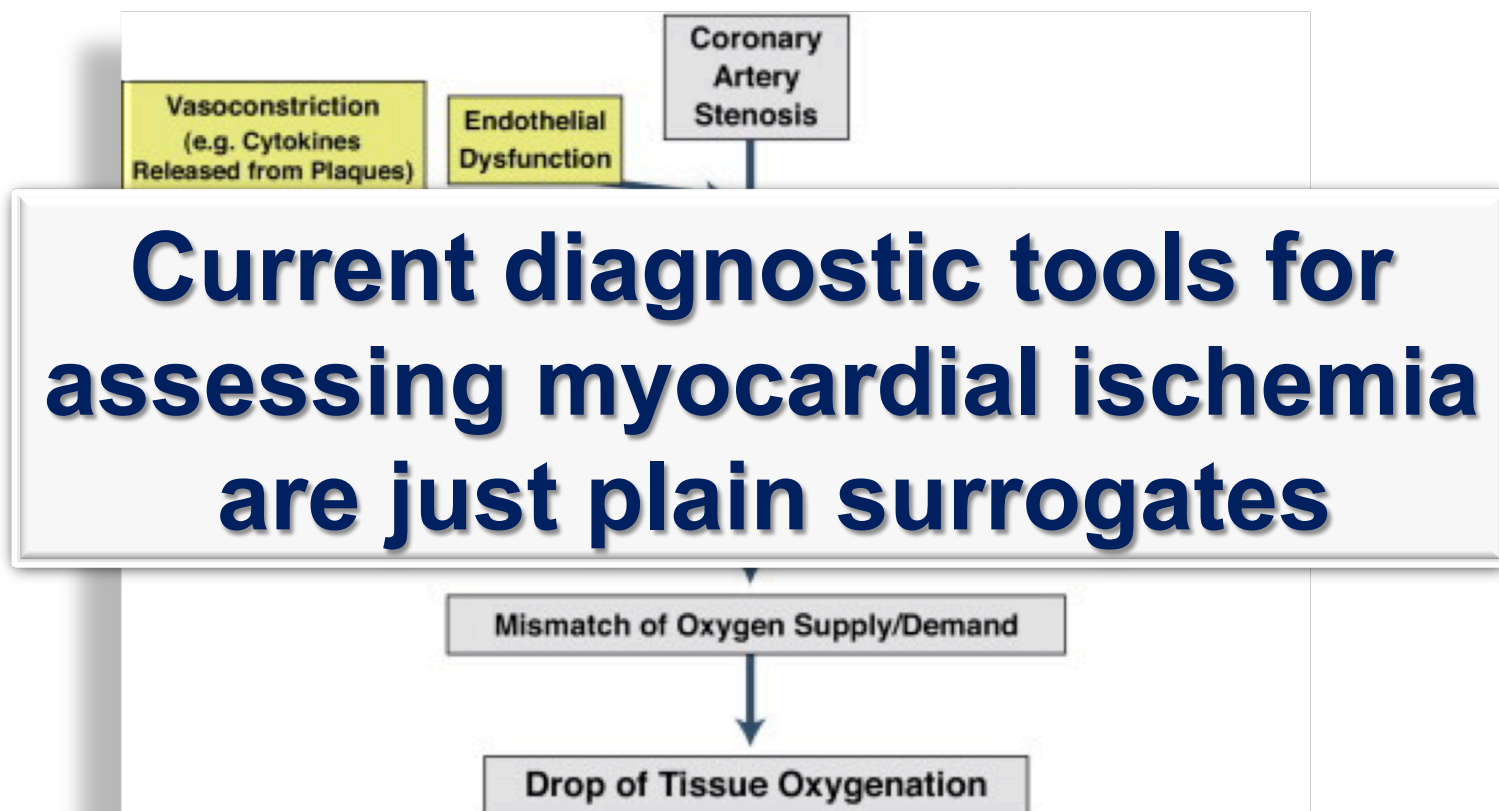


DISCLOSURE

NONE



Confounders of Test for Myocardial Ischemia



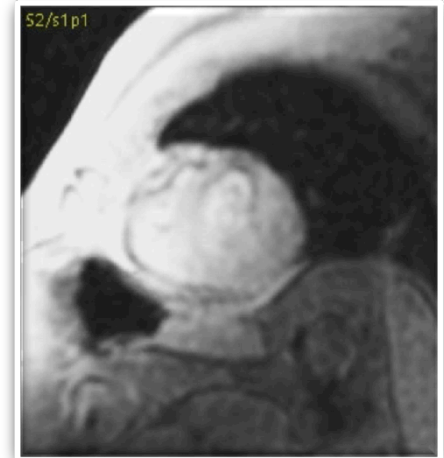
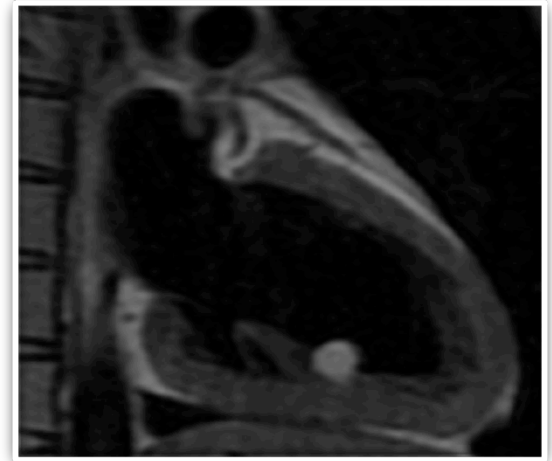
In vivo modifiers of coronary blood flow and tissue oxygenation, which act as confounders for diagnostic tests targeting coronary artery stenosis and blood flow. LV = left ventricular.

CMR: ADVANTAGES

- 
- Three-dimensional tomographic images
 - Excellent spatial resolution
 - Intrinsic high contrast
 - No interference from lung or bone
 - Unparalleled versatility of diagnostic parameters
 - Multiple imaging techniques in a single system
 - Radiation-free imaging
-

CMR: CLINICAL INDICATION

- ▶ **Morfology**
- ▶ **Function**
- ▶ **Myocardial texture**
- ▶ **Vascular flow**

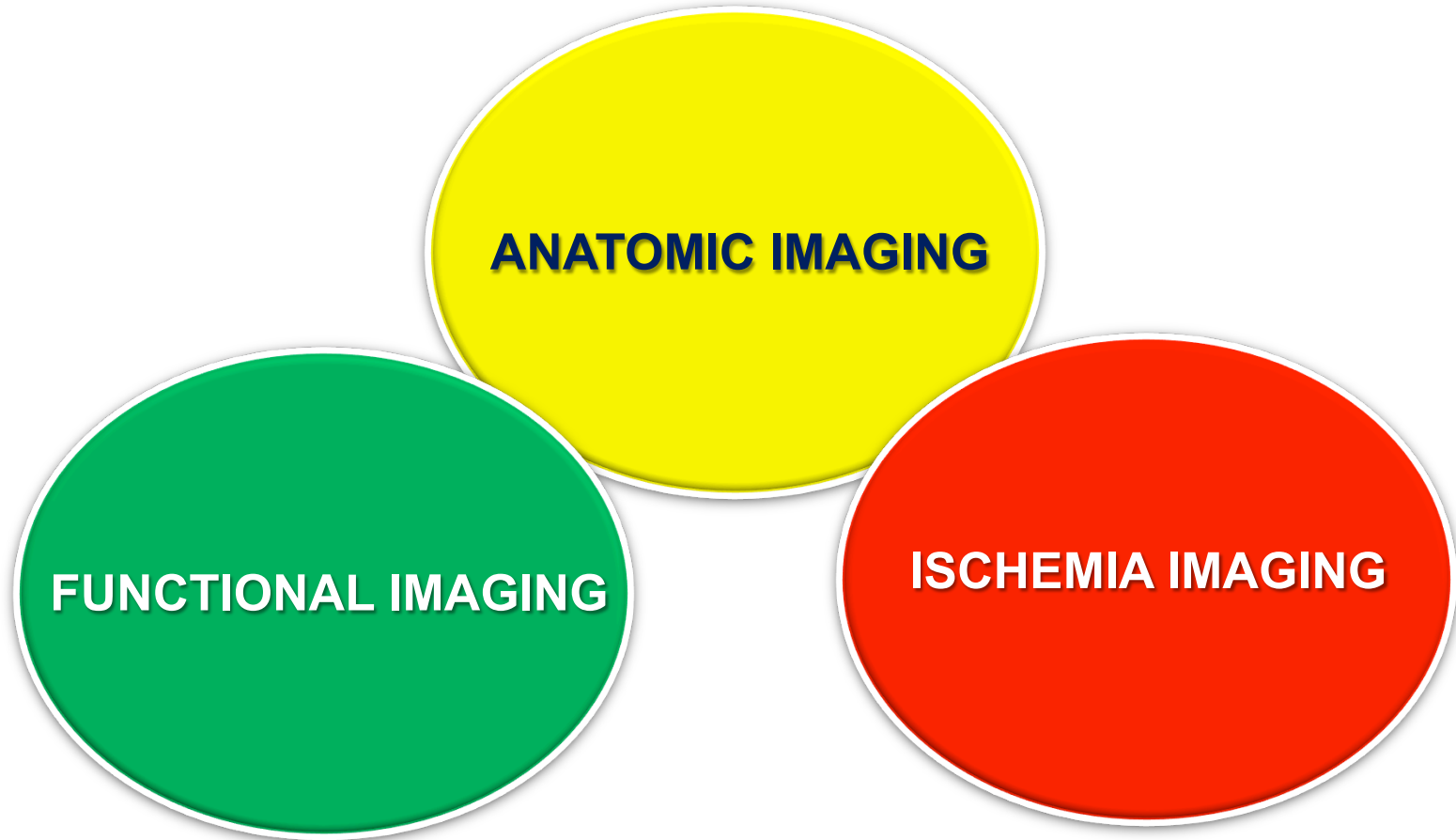


CMR: CLINICAL APPLICATIONS in IHD

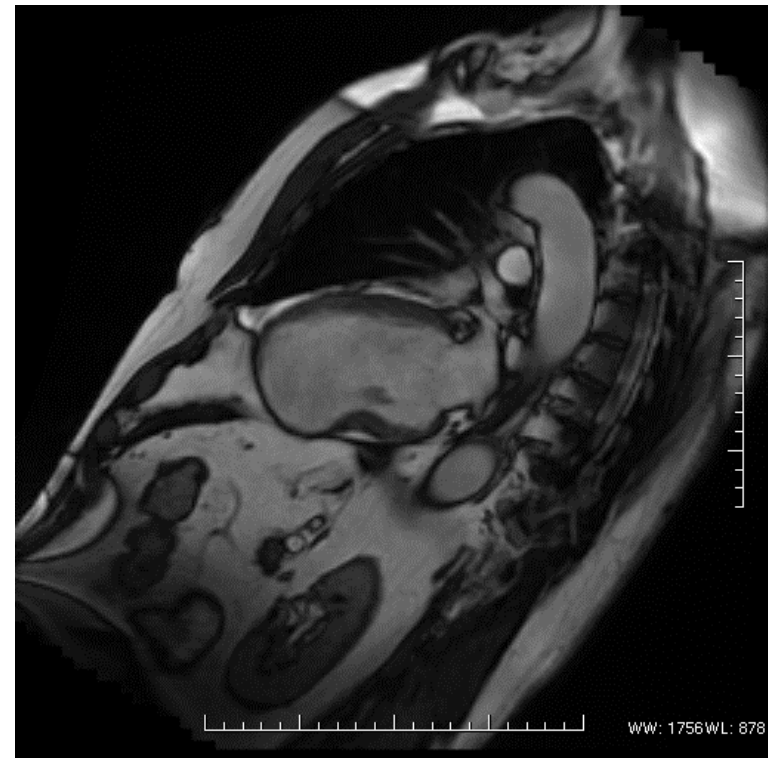
- **MRA of coronary arteries**
- **Myocardial perfusion**
- **Flow quantification**
- **FFR study**
- **Detection of myocardial ischemia**
- **Definition of ventricular volumes**
- **Tissue characterization**
- **Detection of infarct size**
- **Oxygenation – sensitive CMR**



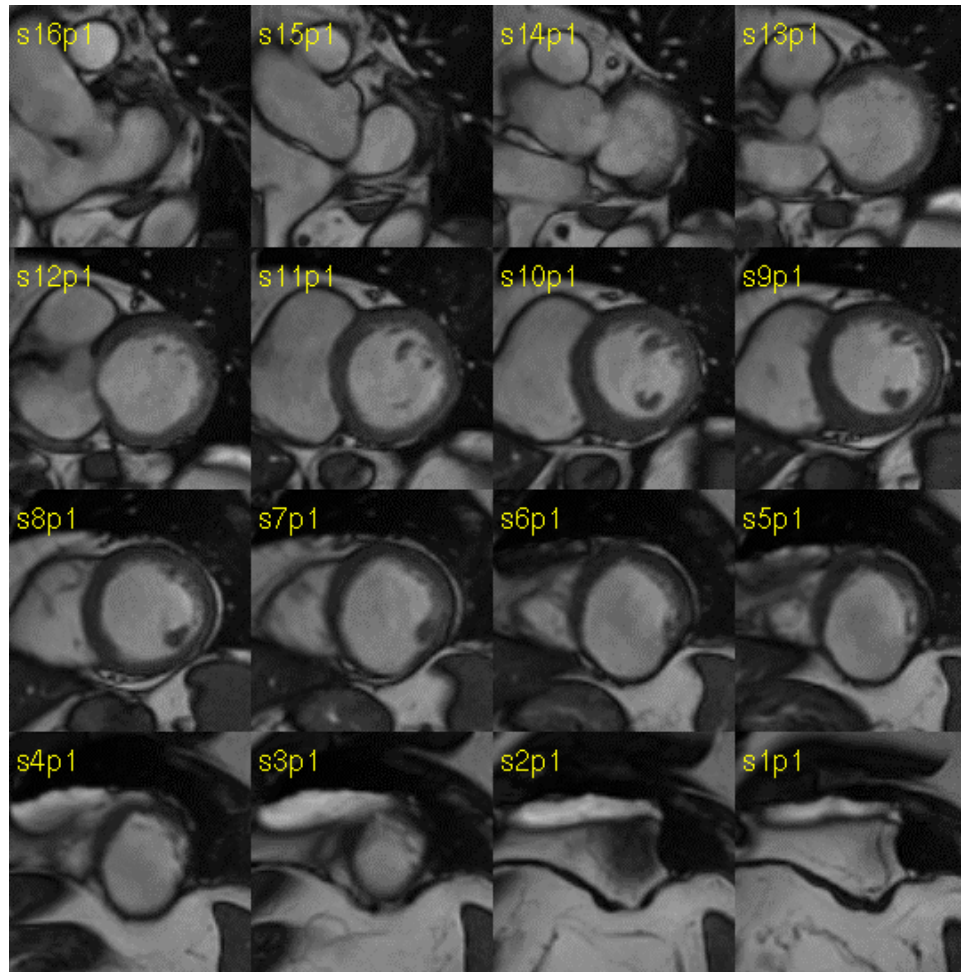
CMR: IMAGING STRATEGY in IHD



CMR in IHD



CMR: study of volumes and contractility



LV volumes

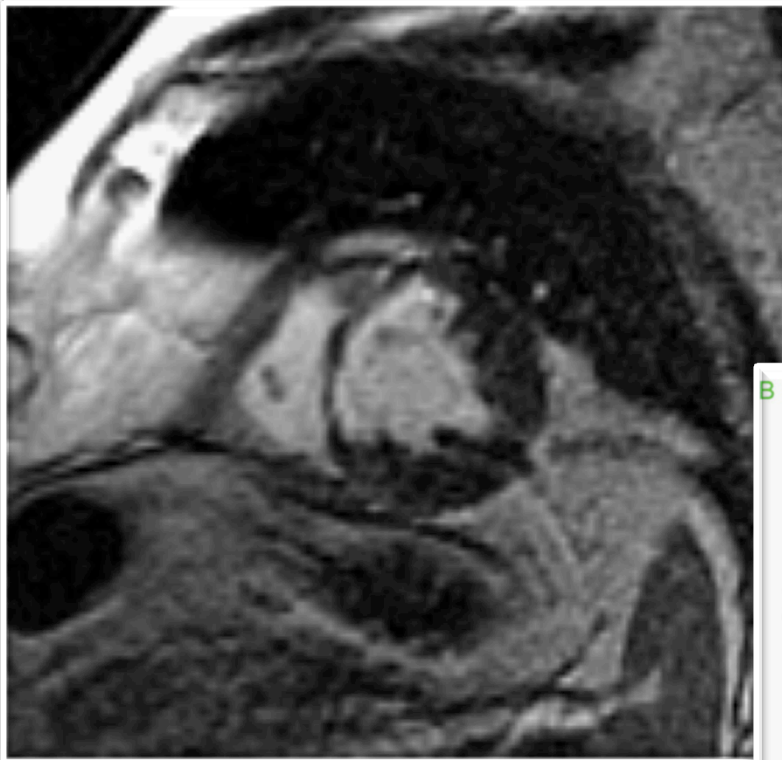
LV function

LV ejection fraction

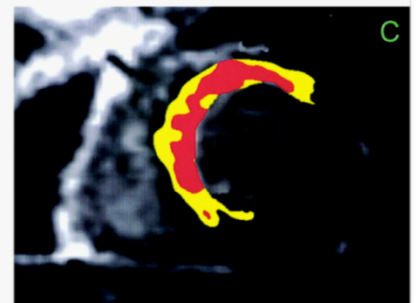
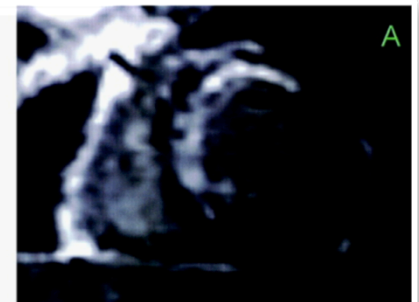
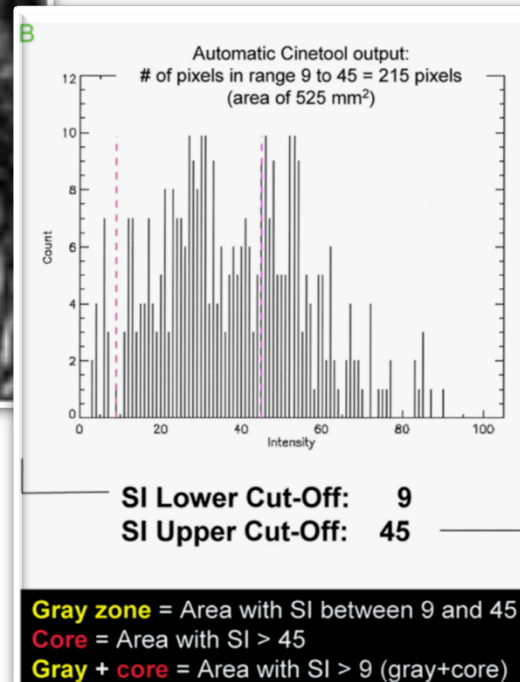
Regional wall motion



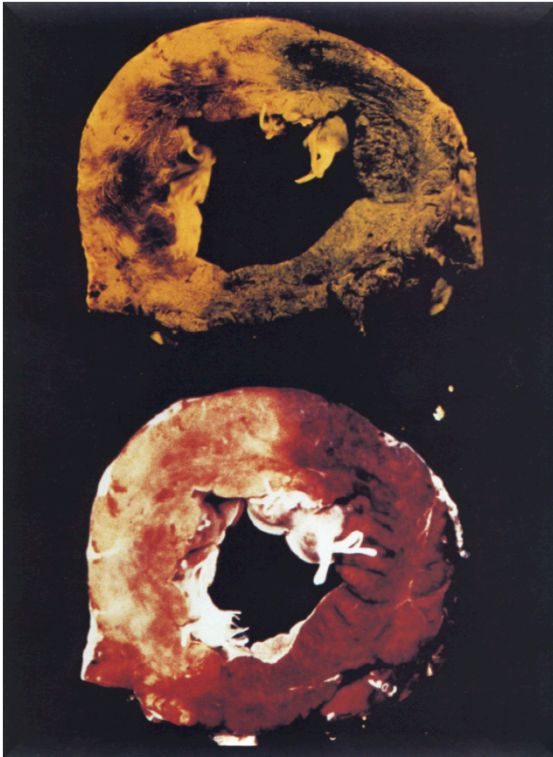
CMR: Infarct size



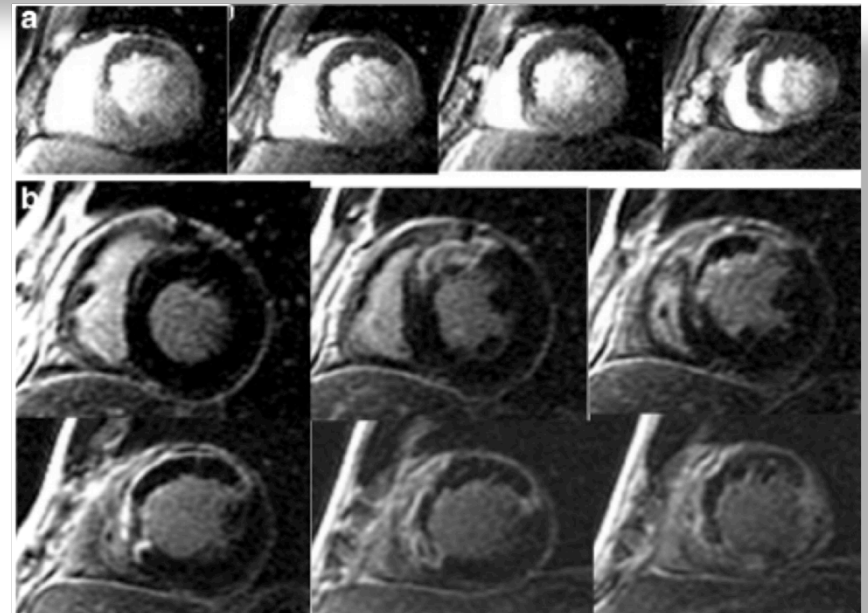
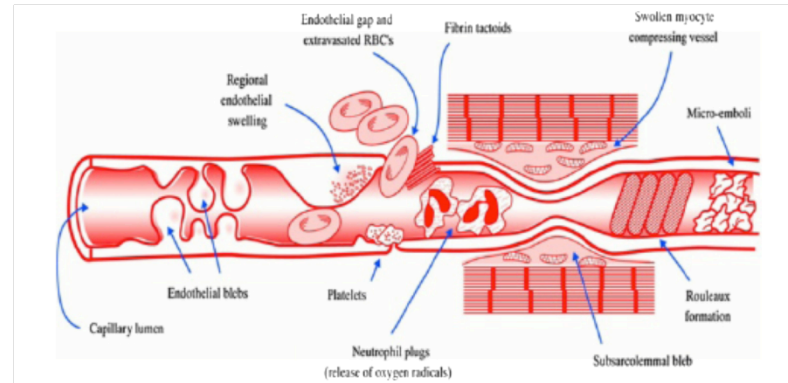
Gray zone measurement



CMR: study of MO and IMH



Ambrosio G: Circulation 1989



Effect of EMVO and LMVO on LV remodeling

Mean Difference (IV and 95% CI) From Studies of Impact of EMVO and LMVO on Baseline and Follow-Up (4 Months to 1 Year) LVEF, LVEDV, LVESV, and IS		
	Mean Difference (IV, Random, 95% CI) From Pooled Analysis (EMVO)	Mean Difference (IV, Random, 95% CI) From Pooled Analysis (LMVO)
Baseline		
EF (%)	-5.21 (-7.13 to -3.30)*	-5.82 (-8.21 to -3.43)*
IS (% LV)	10.71 (8.49 to 12.92)*	13.01 (9.95 to 16.07)*
LVEDVi (ml/m ²)	6.73 (3.32 to 10.14)†	5.26 (-1.08 to 11.60)‡
LVESVi (ml/m ²)	6.73 (6.10 to 7.37)*	9.06 (1.76 to 16.3)§
Follow-Up (4 Months to 1 Yr)		
EF (%)	-7.44 (-9.07 to -5.80)*	-7.76 (-9.63 to -5.90)*
IS (% LV)	6.85 (3.65 to 10.06)†	6.91 (0.35 to 13.47)
LVEDVi (ml/m ²)	16.44 (13.10 to 19.77)*	17.14 (7.20 to 27.08)*¶
LVESVi (ml/m ²)	13.08 (10.26 to 15.90)*	19.59 (6.76 to 32.42)#
*p < 0.00001. †p < 0.0001. ‡p = 0.10. §p = 0.02. p = 0.04. ¶p = 0.0007. #p = 0.003. CI = confidence interval; EDV = end-diastolic volume; EF = ejection fraction; EMVO = early microvascular obstruction; ESV = end-systolic volume; IS = infarct size; IV = inverse variance; LMVO = late microvascular obstruction; LV = left ventricular; LVEDVi = left ventricular end-diastolic volume index; LVESVi = left ventricular end-systolic volume index; MVO = microvascular obstruction.		

Effect of IMH on LV remodeling

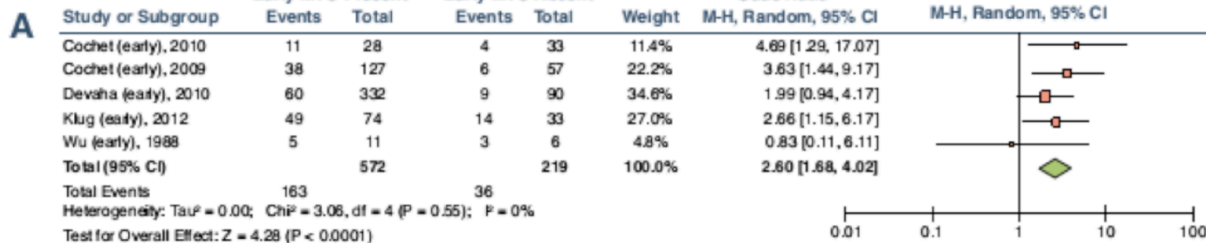
Mean Difference (IV and 95% CI) From Studies Assessing the Impact of IMH on Baseline LVEF, LVEDV, LVESV, and IS

	Mean Difference (IV, Random, 95% CI) From Pooled Analysis (Baseline)	Mean Difference (IV, Random, 95% CI) From Pooled Analysis (11 Days to 6 Months Follow-Up)
EF (%)	−8.81 (−11.13 to −6.49)*	−10.86 (−13.08 to −8.64)*
IS (% LV)	14.96 (11.54 to 18.37)*	11.55 (8.25 to 14.85)*
LVEDVi (ml/m ²)	13.24 (9.32 to 17.16)*	17.44 (10.91 to 23.97)*
LVESVi (ml/m ²)	14.62 (11.80 to 17.43)*	17.33 (13.67 to 20.99)*

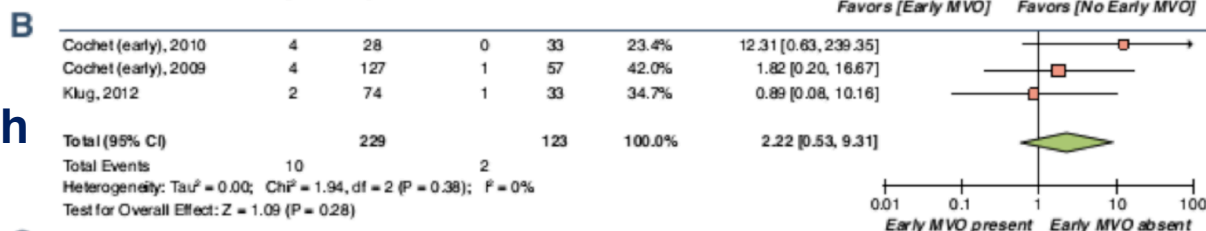
* P < 0.00001

Effect of EMVO on MACE

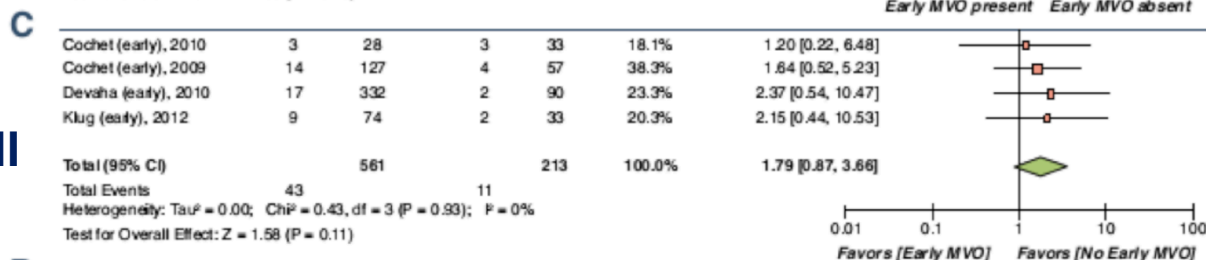
MACE



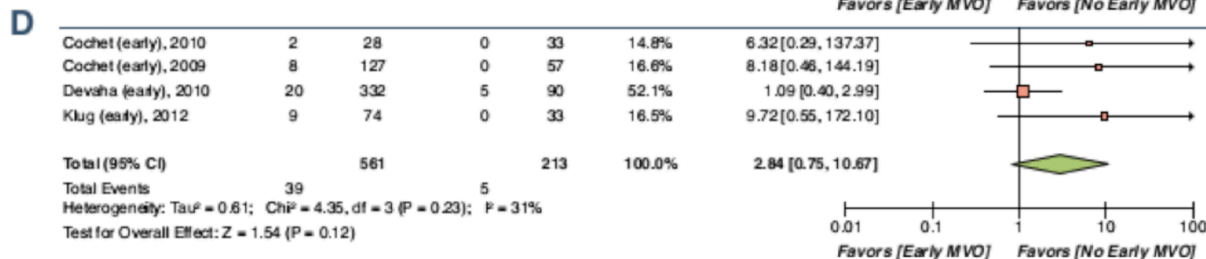
Cardiac death



Recurrent MI

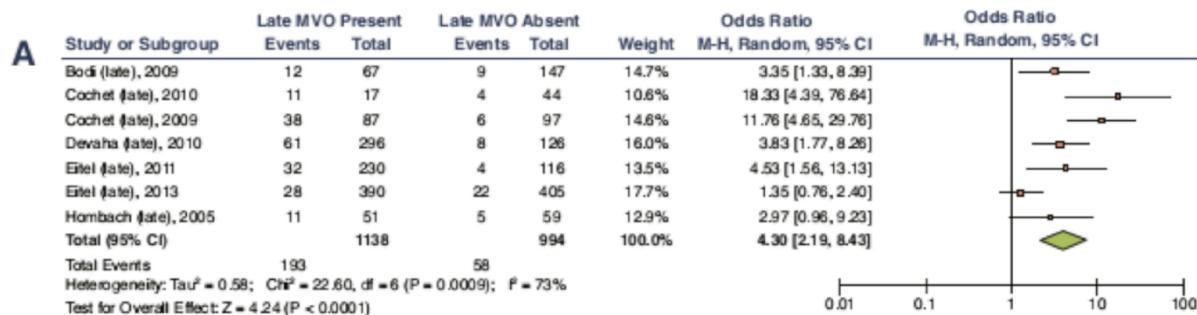


CHF

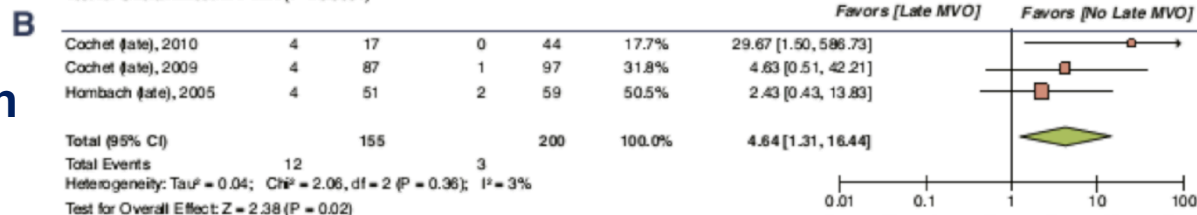


Effect of LMVO on MACE

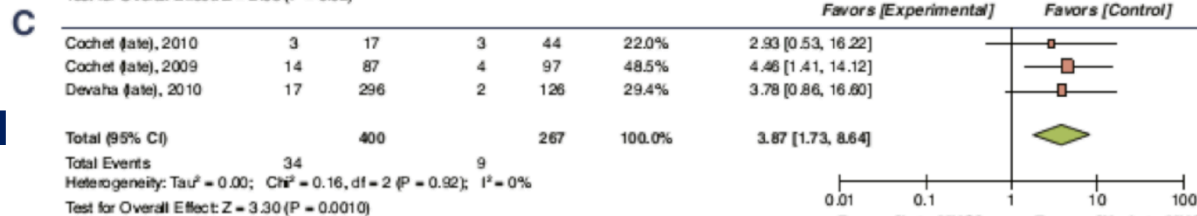
MACE



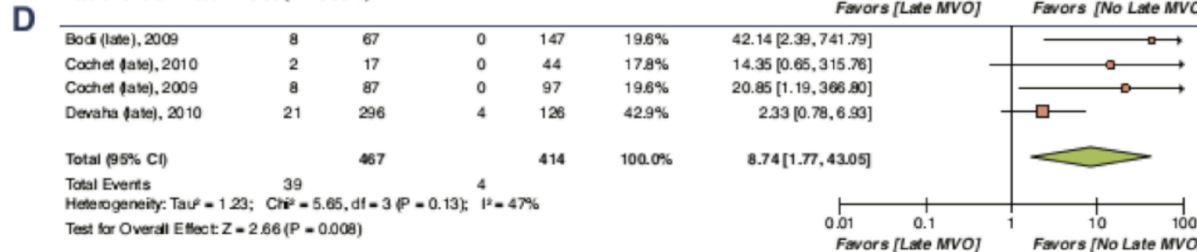
Cardiac death



Recurrent MI



CHF



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EDITORIAL COMMENT

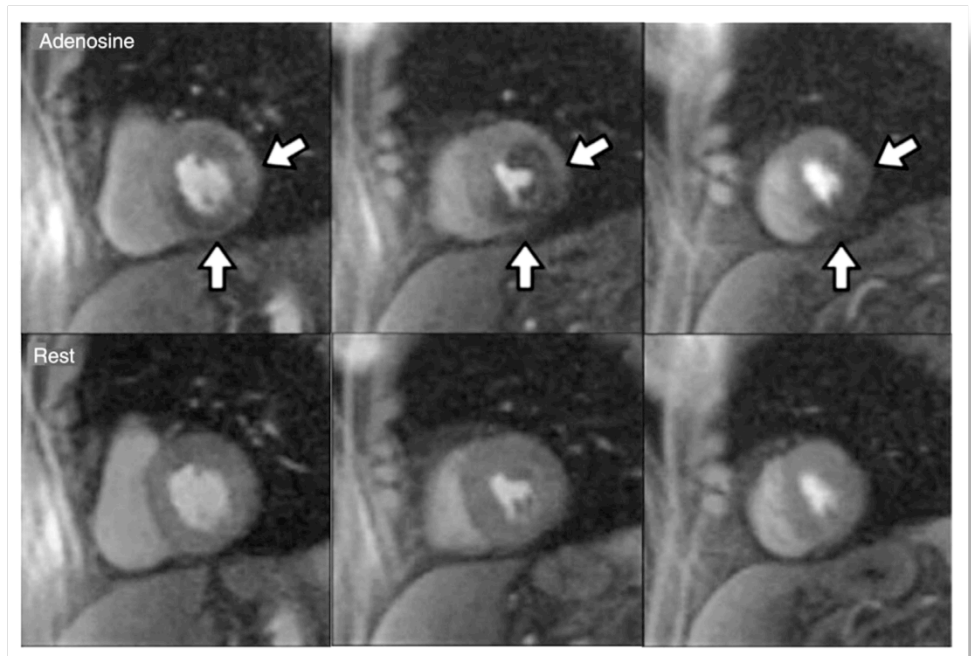
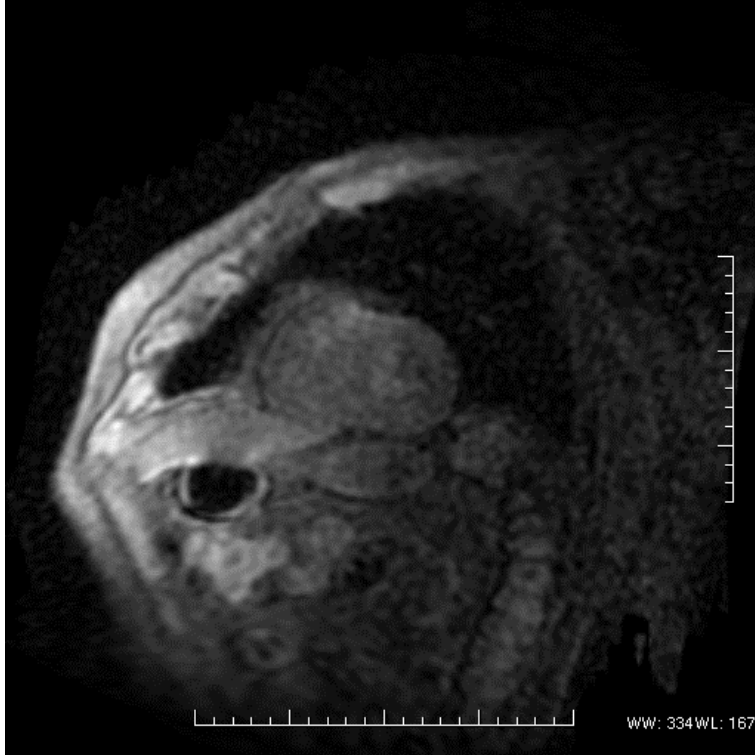
CMR Assessment of Microvascular Obstruction in STEMI

Ready for Prime Time?*

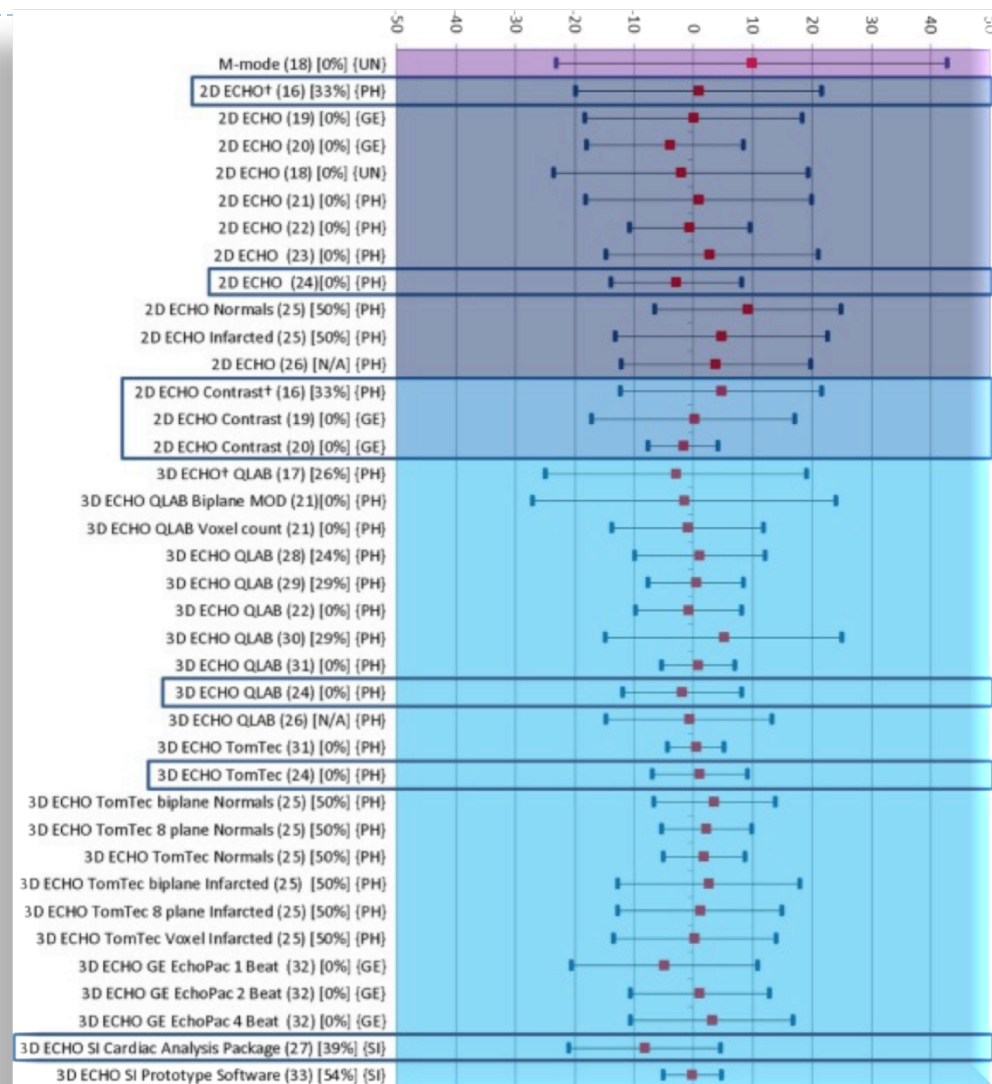
Giuseppe Ambrosio, MD, PhD, Ketty Savino, MD



CMR: ISCHEMIA IMAGING



IHD and stress CMR



IHD and stress CMR

Current diagnostic tools for assessment of myocardial ischemia

EDITORIAL COMMENT

Testing for Myocardial Ischemia The End of Surrogates?*

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