STS/EACTS Latin America Cardiovascular Surgery Conference

September 21-22, 2017 | Cartagena, Colombia

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www.CardiovascularSurgeryConference.org

Management of CAD in Low-EF Patients

The Society of Thoracic Surgeons

EACTS
European Association For Cardio-Thoracic Surgery

DISCLOSURES

- NONE

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Heart & Vascular Center

Management of CAD in Low-EF Patients

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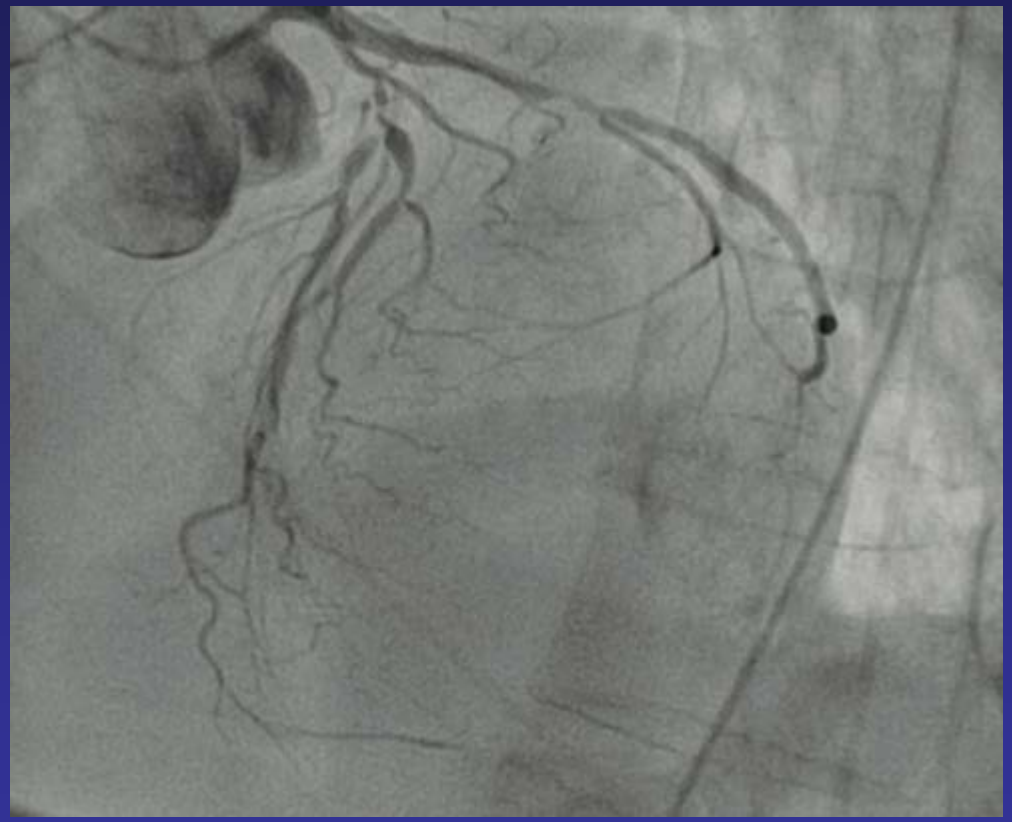
Management of CAD in Low-EF Patients



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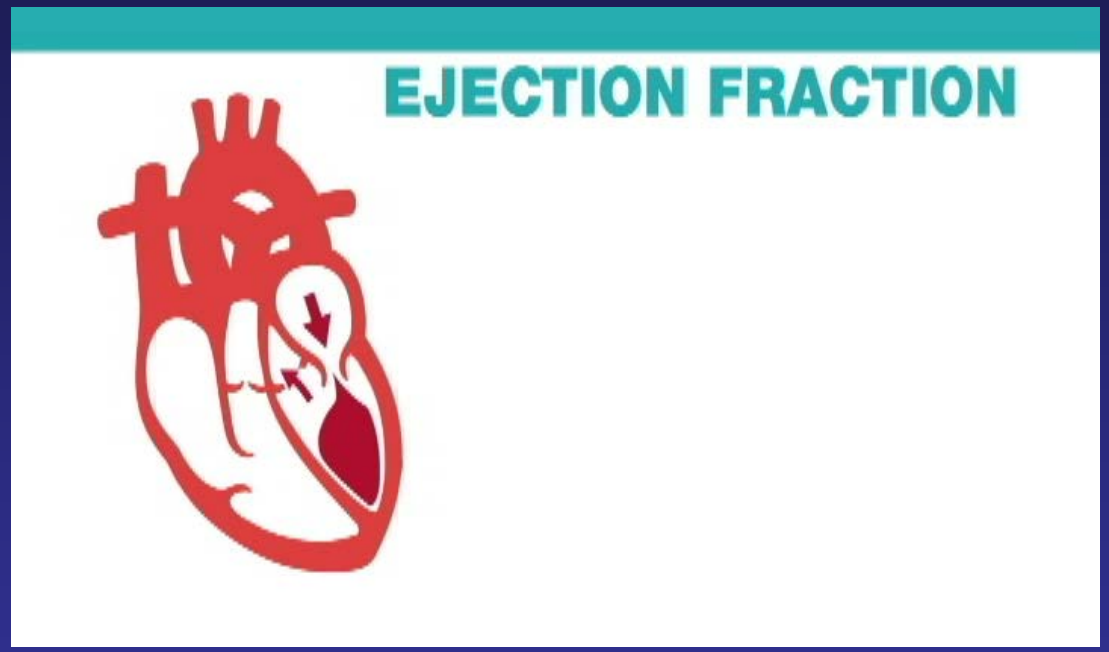
Management of CAD in Low-EF Patients



Ejection Fraction (EF) %	Pumping Ability of the Heart	Level of Heart Failure/Effect on Pumping
55% to 70%	Normal	Heart function may be normal or ou may have heart failure with preserved EF (HF-pEF)
40% to 54%	Slightly below normal	Less blood is available so less blood is ejected from the ventricles. There is a lower-than-normal amount of oxygen-rich blood available to the rest of the body. You may not have symptoms.
35% to 39%	Moderately below normal	Mild heart failure with reduced EF (HF-rEF)
<35%>	Severely below normal	Moderate-to-severe HF-rEF. Severe HF-rEF increases risk of life-threatening heartbeats and cardiac dysynchrony/desynchronization (right and left ventricles do not pump in unison)

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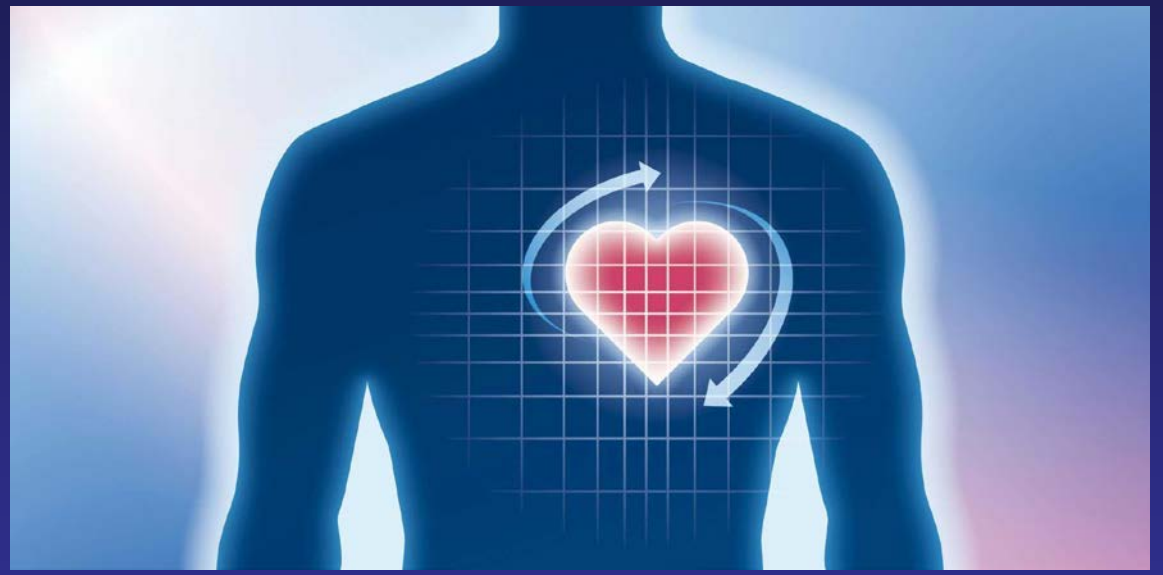
Management of CAD in Low-EF Patients

- Corrective Therapy
  - Medical Therapy
  - Device Therapy
  - Surgery
- Irreversible loss of myocardium
  - Transplant



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Management of CAD in Low-EF Patients

- Medical Therapy
  - ACE inhibitor
  - Beta Blocker
  - Statin
  - Aspirin
  - Diuretics

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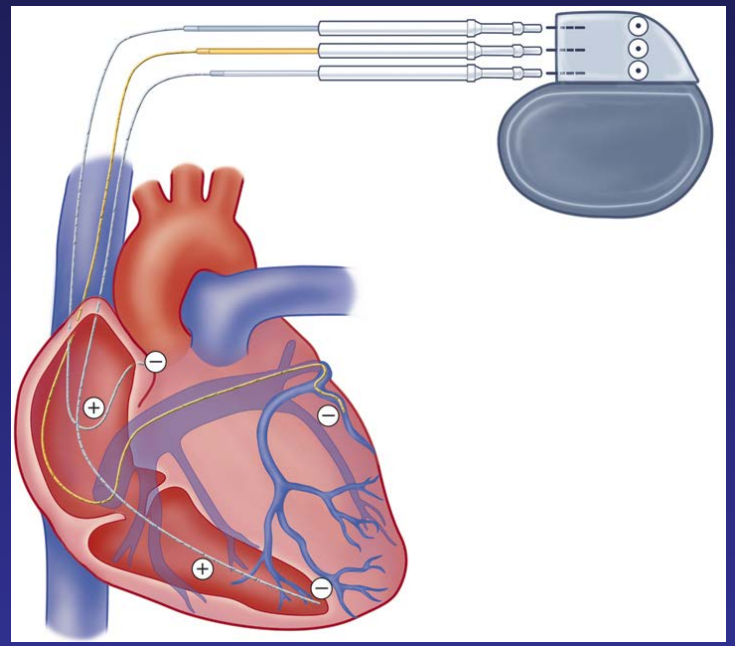
Management of CAD in Low-EF Patients

- Device Therapy
  - ICD
    - Prevention of sudden cardiac death
  - CRT
    - Cardiac dyssynchrony
    - Prolonged QRS duration (≥120msec)
    - NYHA class II,III, or IV



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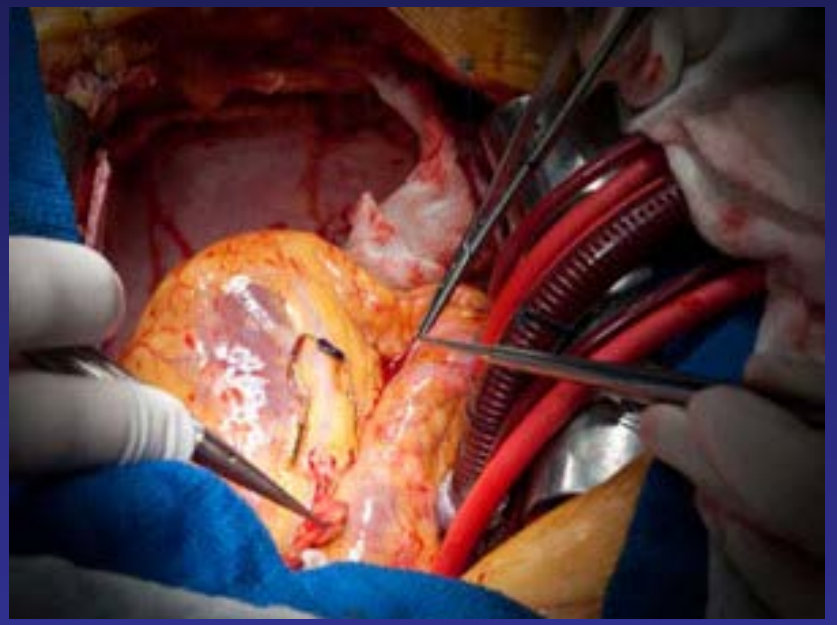
Management of CAD in Low-EF Patients

- Surgery
  - Historical perspective
    - Mortality rates >50%
    - “Prohibitive risk”
    - “Inoperable”
    - Large multicenter trials excluded patients with (EF <40%)



CASS Principal Investigators. Circulation 1983;68:939-950
European Coronary Surgery Study Group. Lancet 1982;2:1173-1180

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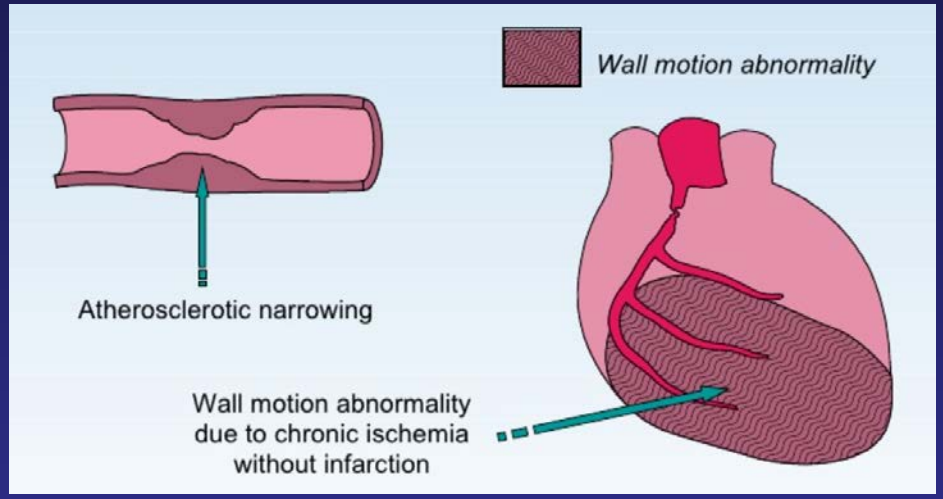
Management of CAD in Low-EF Patients

- Reversible loss of contractility
  - Hibernating myocardium
    - Down-regulated myocardial contractility
    - Long-standing partial reduction in blood flow
    - Potential to recover after revascularization



Rahimtoola. Am Heart J 1989;117:211-21

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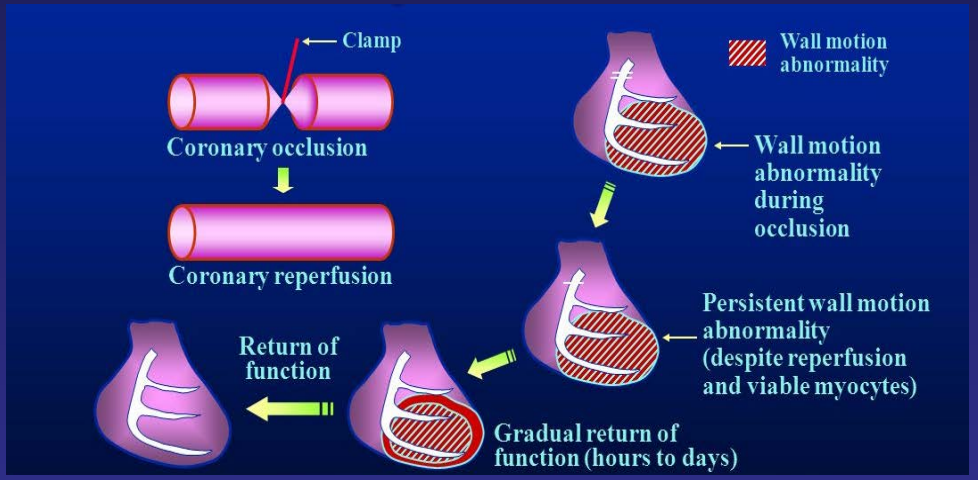
Management of CAD in Low-EF Patients

- Reversible loss of contractility
  - Stunned myocardium
    - A state of a prolonged regional wall motion abnormality
    - Occurs after an episode of sublethal ischemia



Braunwald E. Circulation 1982; 66:1146

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Management of CAD in Low-EF Patients

- Surgery
  - Columbia University
    - 1997-1999
      - 55,515 patients
      - CABG

Coronary Artery Bypass Grafting in Patients With Low Ejection Fraction

Veli K. Topkara, MD; Faisal H. Cheema, MD; Satish Kesavaramanujam, MD; Michelle L. Mercando, BA; Ayesha F. Cheema, MD; Pearila B. Namerow, PhD; Michael Argenziano, MD; Yoshifumi Naka, MD; Mehmet C. Oz, MD; Barry C. Esrig, MD

Groups	Ejection Fraction
I	≤ 20%
II	21-30%
III	31-40%
IV	>40%

Conclusions—Patients with low EF are sicker at baseline and have >4 times higher mortality than patients with high EF.

Veli K. Topkara. Circulation. 2005;112[suppl I]:I-344-I-350

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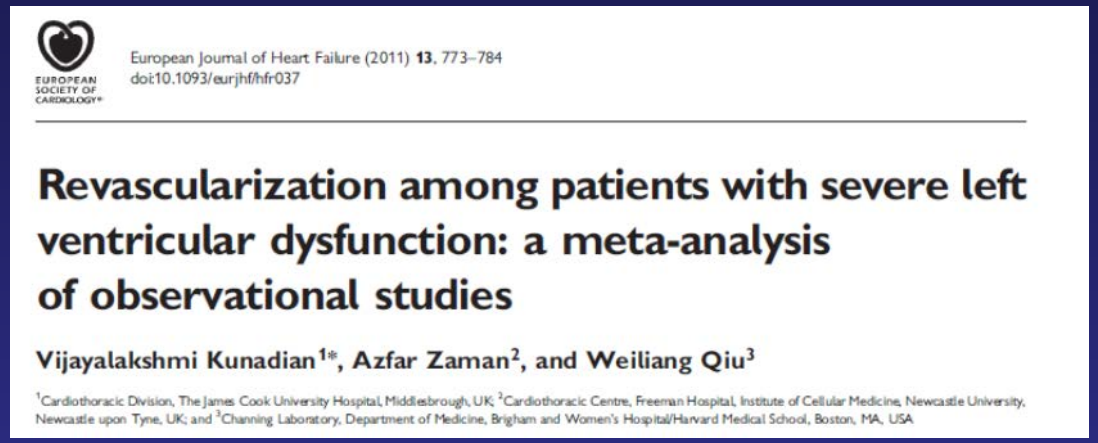
Management of CAD in Low-EF Patients

- Surgery
  - 1981-2006
  - 26-studies, (4,119 patients)
  - CABG
  - Low EF ≤ 35%



European Journal of Heart Failure (2011) **13**, 773–784
doi:10.1093/eurjhf/hfr037

Revascularization among patients with severe left ventricular dysfunction: a meta-analysis of observational studies

Vijayalakshmi Kunadian[1]*, Azfar Zaman[2], and Weiliang Qiu[3]

[1]Cardiothoracic Division, The James Cook University Hospital, Middlesbrough, UK; [2]Cardiothoracic Centre, Freeman Hospital, Institute of Cellular Medicine, Newcastle University, Newcastle upon Tyne, UK; and [3]Channing Laboratory, Department of Medicine, Brigham and Women's Hospital/Harvard Medical School, Boston, MA, USA

Conclusion The present meta-analysis demonstrates that based on data from available observational clinical studies, CABG can be performed with acceptable operative mortality and 5-year actuarial survival in patients with severe LV dysfunction.

- Operative mortality: 5.4%
- 5-year survival: 73.4%

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Management of CAD in Low-EF Patients

- Surgery
  - The STICH TRIAL
    - Randomized controlled trial
      - Ischemic left ventricular dysfunction, (Low EF)
      - CAD amenable to surgical revascularization
        - **COMPARED**
        - CABG + MEDS vs. MEDS

JACC: Heart Failure
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http://dx.doi.org/10.1016/j.jchf.2013.04.012

CLINICAL RESEARCH

The STICH Trial (Surgical Treatment for Ischemic Heart Failure)

Mode-of-Death Results

Peter Carson, MD,* John Wertheimer, MD,† Alan Miller, MD,‡ Christopher M. O'Connor, MD,§ Ileana L. Pina, MD,‖ Craig Selzman, MD,¶ Carla Sueta, MD,# Lilin She, PHD,§ Deborah Greene, RN,§ Kerry L. Lee, PHD,§ Robert H. Jones, MD,§ Eric J. Velazquez, MD,§ for the STICH Investigators

Washington DC; Philadelphia, Pennsylvania; Jacksonville, Florida; Durham and Chapel Hill, North Carolina; Bronx, New York; and Salt Lake City, Utah

Carson P. JACC Heart Fail. 2013 Oct; 1(5): 10.1016

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STICH

Primary Endpoint

- All-cause mortality

Major Secondary Endpoints

- Cardiovascular mortality
- Death (all-cause) + cardiovascular hospitalization

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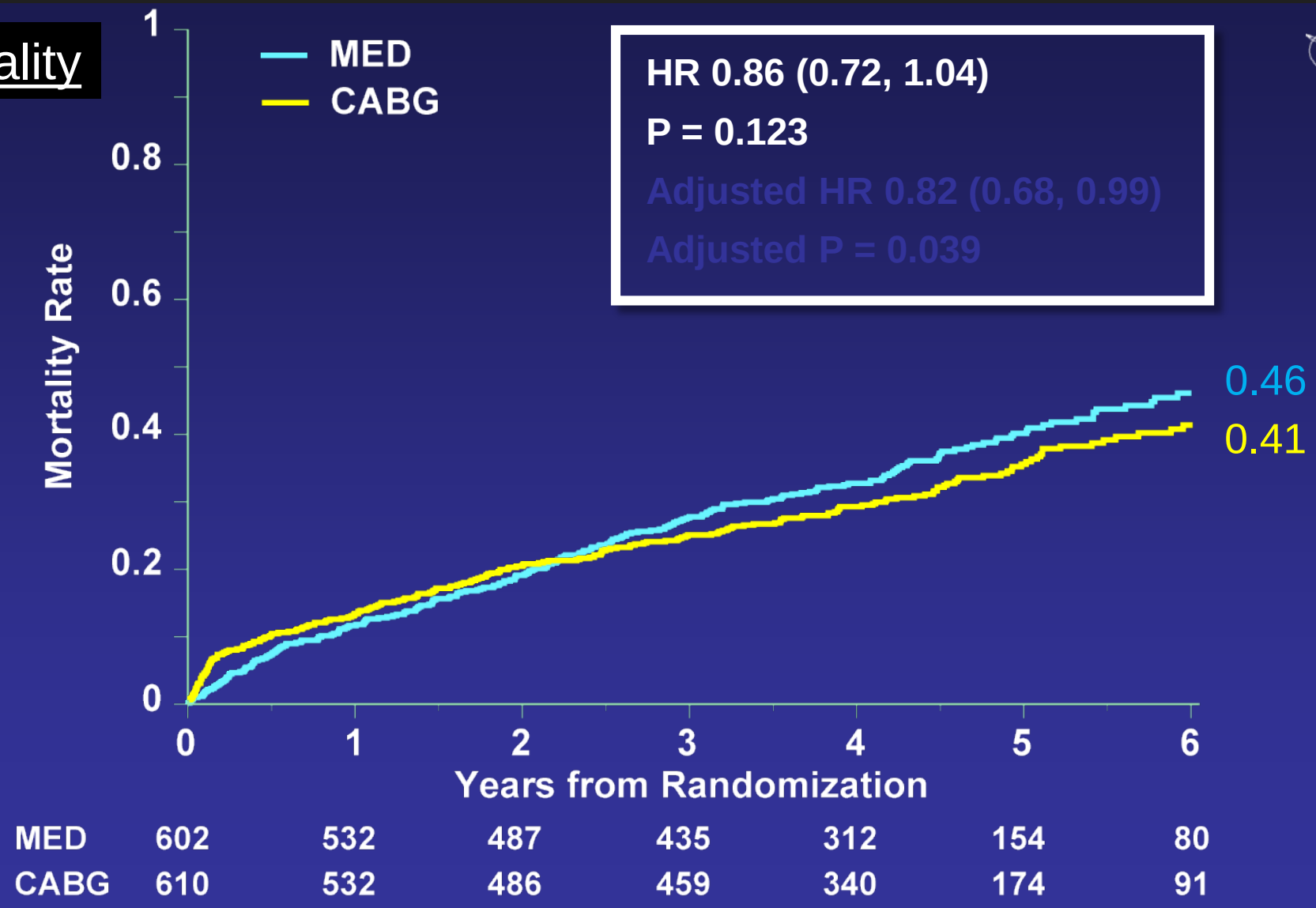
All Cause Mortality



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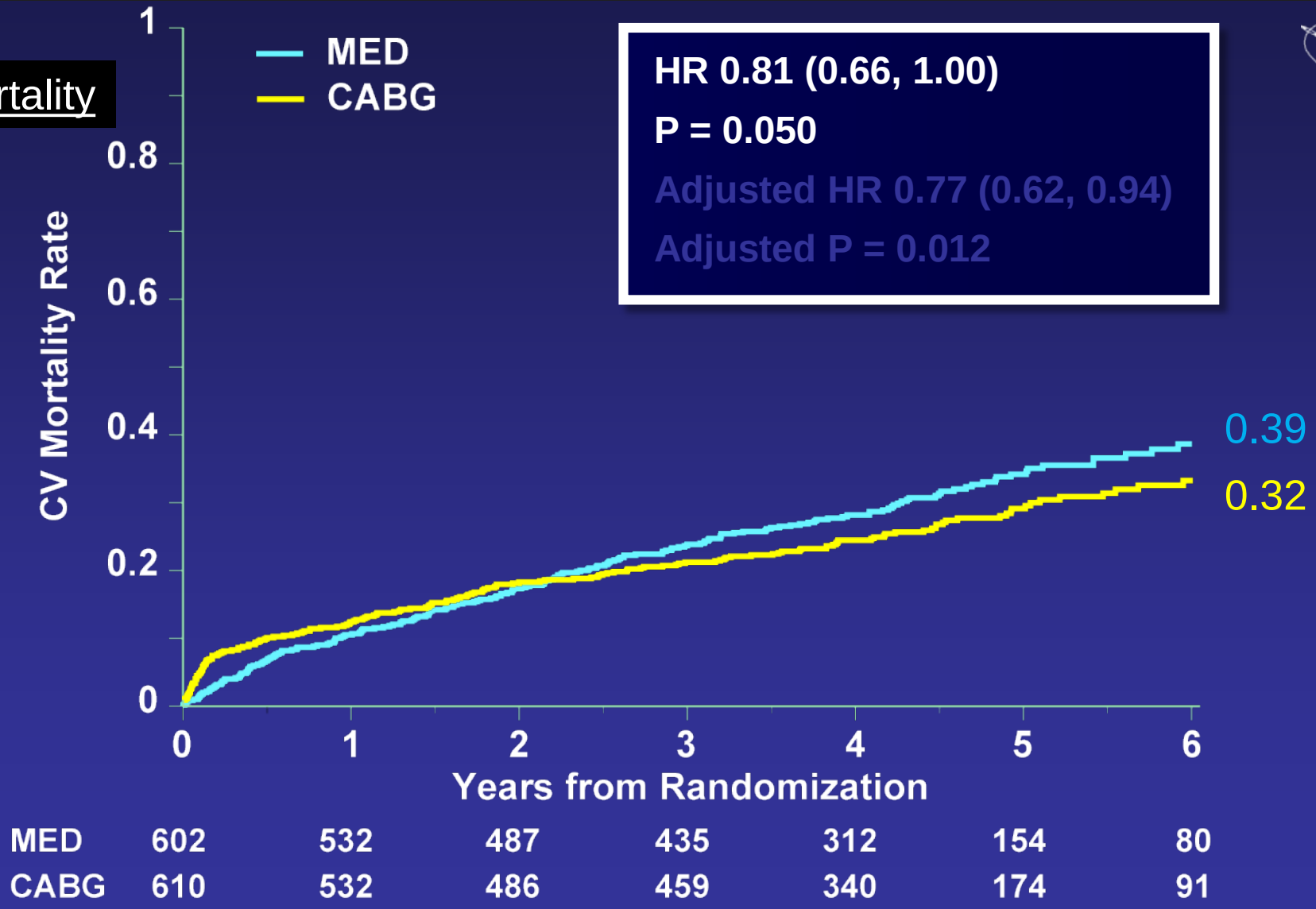
Cardiovascular Mortality



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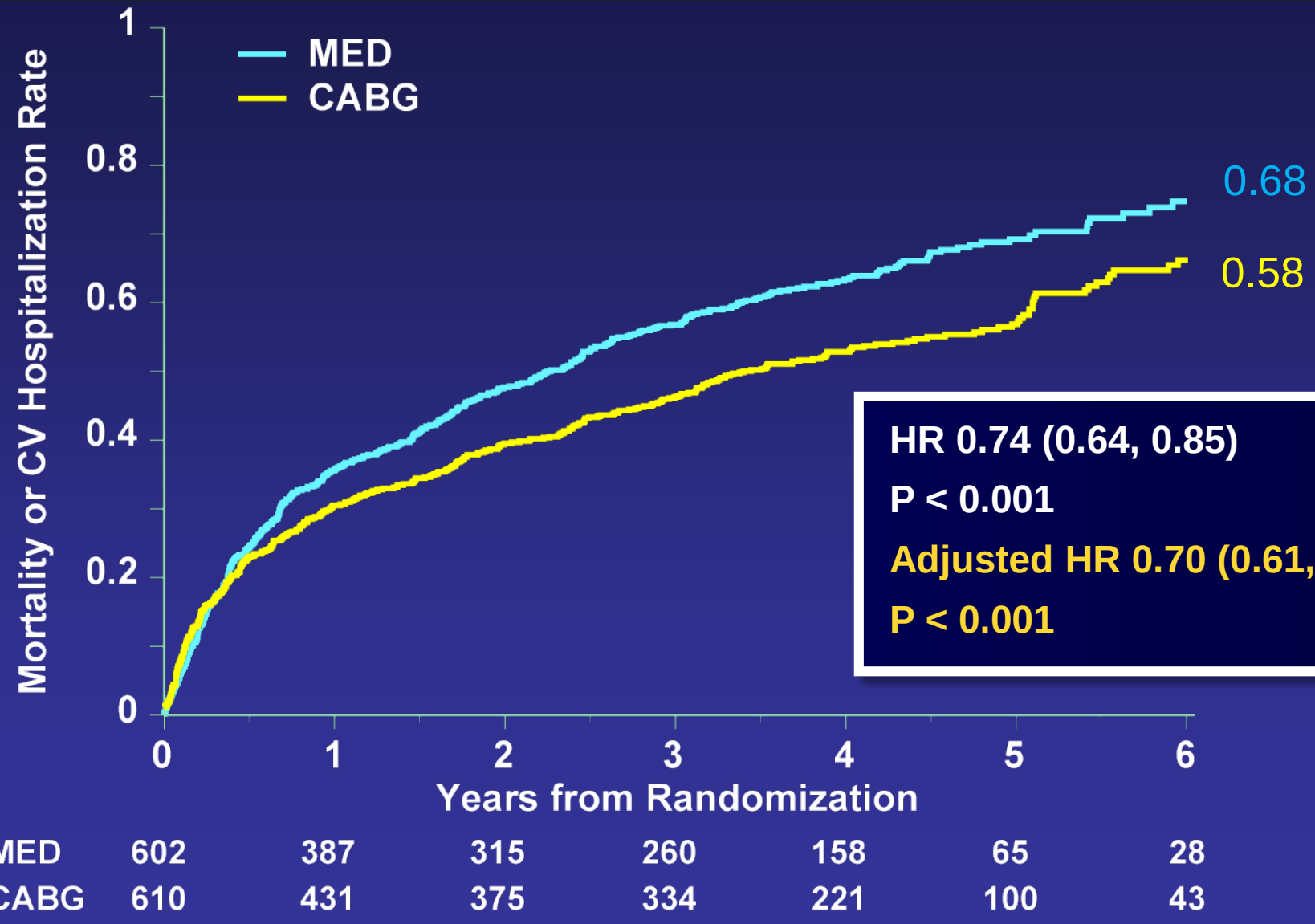
Death or Cardiovascular Hospitalization



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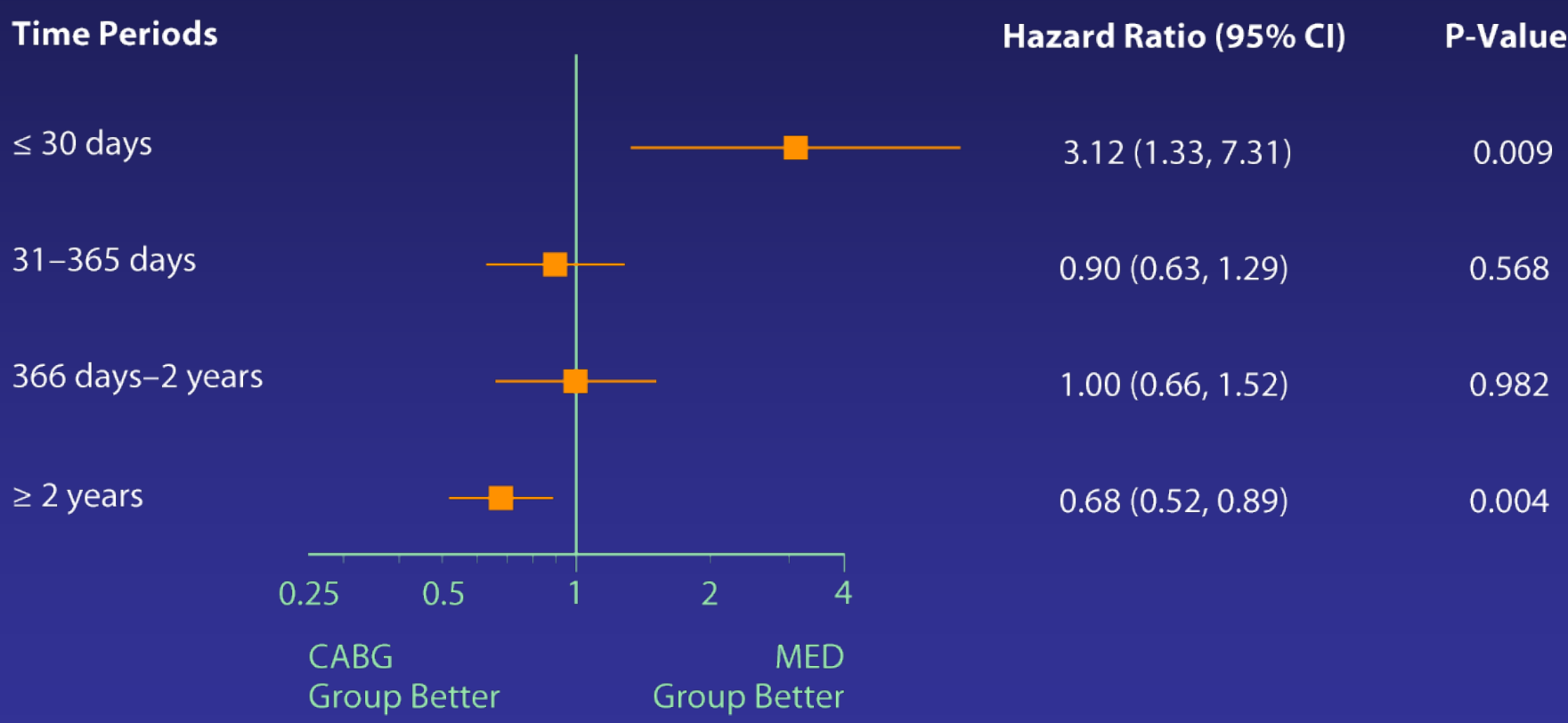
Time-varying Hazard Ratios



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Conclusions

- There was no statistically significant difference in all-cause mortality between medical therapy alone and CABG

- When randomized to CABG patients are exposed to an early risk

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- STICHES

10-Year Outcomes, CABG Group vs Medical Therapy

Outcome	CABG group (%)	Medical-therapy group (%)	HR (95%CI)	*P*
Death from any cause	58.9	66.1	0.84 (0.73–0.97)	0.02
Death from cardiovascular causes	40.5	49.3	0.79 (0.66–0.93)	0.006
Death from any cause or hospitalization for heart failure	76.6	87.0	0.72 (0.64–0.82)	<0.001

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Coronary-Artery Bypass Surgery in Patients with Ischemic Cardiomyopathy

Eric J. Velazquez, M.D., Kerry L. Lee, Ph.D., Robert H. Jones, M.D., Hussein R. Al-Khalidi, Ph.D., James A. Hill, M.D., Julio A. Panza, M.D., Robert E. Michler, M.D., Robert O. Bonow, M.D., Torsten Doenst, M.D., Mark C. Petrie, M.D., Jae K. Oh, M.D., Lilin She, Ph.D., Vanessa L. Moore, A.A.S., Patrice Desvigne-Nickens, M.D., George Sopko, M.D., M.P.H., and Jean L. Rouleau, M.D., for the STICHES Investigators*

CONCLUSIONS

In a cohort of patients with ischemic cardiomyopathy, the rates of death from any cause, death from cardiovascular causes, and death from any cause or hospitalization for cardiovascular causes were significantly lower over 10 years among patients who underwent CABG in addition to receiving medical therapy than among those who received medical therapy alone. (Funded by the National Institutes of Health; STICH [and STICHES] ClinicalTrials.gov number, NCT00023595.)

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Management of CAD in Low-EF Patients

- Summary
  - Revascularization can improve outcomes in patients with a reduced ejection fraction
  - In patients with CAD and a low-EF CABG should be strongly considered, to improve long-term survival

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