

Role of CABG in Multivessel Coronary Artery Disease

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CLINICAL STATEMENTS AND GUIDELINES

Methodological Standards for Meta-Analyses and Qualitative Systematic Reviews of Cardiac Prevention and Treatment Studies: A Scientific Statement From the American Heart Association

Goutham Rao, MD, FAHA, Chair, Francisco Lopez-Jimenez, MD, MSc, FAHA, Vice Chair, Jack Boyd, MD, Frank D'Amico, PhD, Nefertiti H. Durant, MD, MPH, Mark A. Hlatky, MD, FAHA, George Howard, DrPH, FAHA, Katherine Kirley, MD, MS, Christopher Masi, MD, PhD, Tiffany M. Powell-Wiley, MD, MPH, FAHA, Anthony E. Solomonides, DPhil, MMath, Colin P. West, MD, PhD, Jennifer Wessel, PhD, and On behalf of the American Heart Association Council on Lifestyle and Cardiometabolic Health; Council on Cardiovascular and Stroke Nursing; Council on Cardiovascular Surgery and Anesthesia; Council on Clinical Cardiology; Council on Functional Genomics and Translational Biology; and Stroke Council

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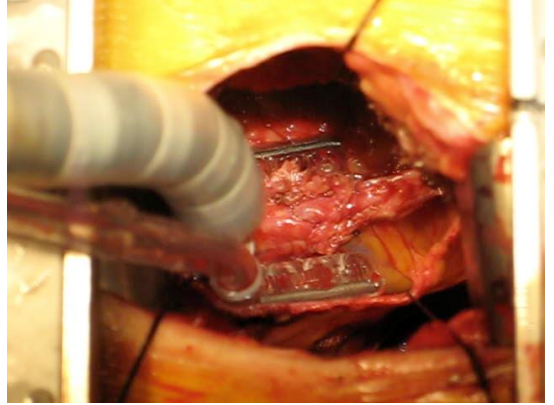
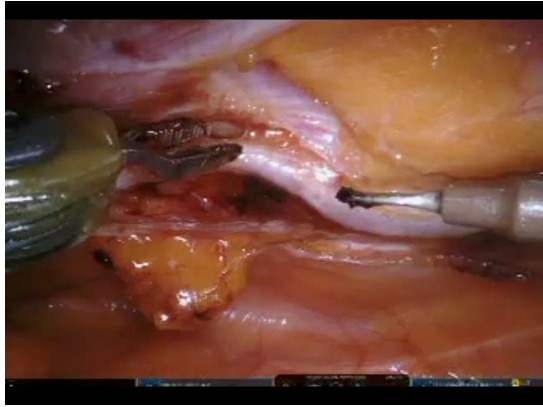
2021 AHA/ACC/ASE/CHEST/SAEM/SCCT/SCMR Guideline for the Evaluation and Diagnosis of Chest Pain: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines

[Clinical Practice Guideline: Full Text](#)

Writing Committee Members, Martha Gulati, Phillip D. Levy, Debabrata Mukherjee, Ezra Amsterdam, Deepak L. Bhatt, Kim K. Birtcher, Ron Blankstein, Jack Boyd, Renee P. Bullock-Palmer, Theresa Conejo, Deborah B. Diercks, Federico Gentile, John P. Greenwood, Erik P. Hess, Steven M. Hollenberg, Wael A. Jaber, Hani Jneid, José A. Joglar, David A. Morrow, Robert E. O'Connor, Michael A. Ross, and Leslee J. Shaw [SEE FEWER AUTHORS](#) ^

J Am Coll Cardiol. 2021 Nov, 78 (22) e187–e285

[Clinical Practice Guideline: Executive Summary](#): 2021 AHA/ACC/ASE/CHEST/SAEM/SCCT/SCMR Guideline for the Evaluation and Diagnosis of Chest Pain: Executive Summary: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines



Hasn't
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Alleviate
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Improve
Prognosis

Treatments of Coronary Artery Disease (Some Things Have Changed in the Past Half Century)

Medical

- Everyone who has CAD should receive it
- Risk factor modification

Percutaneous Coronary Intervention

- Directed towards 'suitable' culprit lesions
- Frequently results in incomplete revascularization
- Has never been found to be superior to CABG in cardiac outcomes

Surgery

- Complexity of lesion irrelevant
- Prophylactic benefit
- Considered 'riskier', much longer recovery.

Objections from Major Surgical Organizations

1. Downgrading of COR for CABG from 1 to 2b
 - a. Primarily based on the ISCHEMIA Trial?
 - b. Not designed or powered to determine a survival benefit from CABG
 - c. Regardless, there was a trend towards survival in the early invasive group
2. Apparent equivalence of PCI and CABG for decreasing ischemic events
3. COR 1 recommendation for radial artery usage with out qualifications



2021 ACC/AHA/SCAI Guideline for Coronary Artery Revascularization: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines

Jennifer S. Lawton, Jacqueline E. Tamis-Holland, Sripal Bangalore, Eric R. Bates, Theresa M. Beckie, James M. Bischoff, John A. Bittl, Mauricio G. Cohen, J. Michael DiMaio, Creighton W. Don, Stephen E. Fremes, Mario F. Gaudino, Zachary D. Goldberger, Michael C. Grant, Jang B. Jaswal, Paul A. Kurlansky, Roxana Mehran, Thomas S. Metkus Jr, Lorraine C. Nnacheta, Sunil V. Rao, Frank W. Sellke, Garima Sharma, Celina M. Yong and Brittany A. Zwischenberger **See fewer authors** ^

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The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Percutaneous Coronary Intervention versus Coronary-Artery Bypass Grafting for Severe Coronary Artery Disease

Patrick W. Serruys, M.D., Ph.D., Marie-Claude Morice, M.D., A. Pieter Kappetein, M.D., Ph.D., Antonio Colombo, M.D., David R. Holmes, M.D., Michael J. Mack, M.D., Elisabeth Stähle, M.D., Ted E. Feldman, M.D., Marcel van den Brand, M.D., Eric J. Bass, B.A., Nic Van Dyck, R.N., Katrin Leadley, M.D., et al., for the SYNTAX Investigators*

CONCLUSIONS

CABG remains the standard of care for patients with three-vessel or left main coronary artery disease, since the use of CABG, as compared with PCI, resulted in lower rates of the combined end point of major adverse cardiac or cerebrovascular events at 1 year. (ClinicalTrials.gov number, [NCT00114972](#).)

Syntax 2009



The NEW ENGLAND
JOURNAL of MEDICINE

ORIGINAL ARTICLE

Coronary-Artery Bypass Surgery in Patients with Left Ventricular Dysfunction

Eric J. Velazquez, M.D., Kerry L. Lee, Ph.D., Marek A. Deja, M.D., Ph.D., Anil Jain, M.D., George Sopko, M.D., M.P.H., Andrey Marchenko, M.D., Ph.D., Imtiaz S. Ali, M.D., Gerald Pohost, M.D., Sinisa Gradinac, M.D., Ph.D., William T. Abraham, M.D., Michael Yui, M.S., F.R.C.S., F.R.A.C.S., Dorairaj Prabhakaran, M.D., D.M., Hanna Szwed, M.D., Paolo Ferrazzi, M.D., Mark C. Petrie, M.D., Christopher M. O'Connor, M.D., Pradit Panchavinnin, M.D., Lilin She, Ph.D., Robert O. Bonow, M.D., Gena Roush Rankin, M.P.H., R.D., Robert H. Jones, M.D., and Jean-Lucien Rouleau, M.D., for the STICH Investigators*

CONCLUSIONS

In this randomized trial, there was no significant difference between medical therapy alone and medical therapy plus CABG with respect to the primary end point of death from any cause. Patients assigned to CABG, as compared with those assigned to medical therapy alone, had lower rates of death from cardiovascular causes and of death from any cause or hospitalization for cardiovascular causes. (Funded by the National Heart, Lung, and Blood Institute and Abbott Laboratories; STICH ClinicalTrials.gov number, NCT00023595.)

STICH 2011



The NEW ENGLAND
JOURNAL of MEDICINE

ORIGINAL ARTICLE

Strategies for Multivessel Revascularization in Patients with Diabetes

Michael E. Farkouh, M.D., Michael Domanski, M.D., Lynn A. Sleeper, Sc.D., Flora S. Siami, M.P.H., George Dangas, M.D., Ph.D., Michael Mack, M.D., May Yang, M.P.H., David J. Cohen, M.D., Yves Rosenberg, M.D., M.P.H., Scott D. Solomon, M.D., Akshay S. Desai, M.D., M.P.H., Bernard J. Gersh, M.B., Ch.B., D.Phil., et al., for the FREEDOM Trial Investigators*

CONCLUSIONS

For patients with diabetes and advanced coronary artery disease, CABG was superior to PCI in that it significantly reduced rates of death and myocardial infarction, with a higher rate of stroke. (Funded by the National Heart, Lung, and Blood Institute and others; FREEDOM ClinicalTrials.gov number, [NCT00086450](https://clinicaltrials.gov/ct2/show/study/NCT00086450).)

FREEDOM 2012



Trial of Everolimus-Eluting Stents or Bypass Surgery for Coronary Disease

Seung-Jung Park, M.D., Ph.D., Jung-Min Ahn, M.D., Young-Hak Kim, M.D., Duk-Woo Park, M.D., Sung-Cheol Yun, Ph.D., Jong-Young Lee, M.D., Soo-Jin Kang, M.D., Seung-Whan Lee, M.D., Cheol Whan Lee, M.D., Seong-Wook Park, M.D., Suk Jung Choo, M.D., Cheol Hyun Chung, M.D., *et al.*, for the BEST Trial Investigators*

CONCLUSIONS

Among patients with multivessel coronary artery disease, the rate of major adverse cardiovascular events was higher among those who had undergone PCI with the use of everolimus-eluting stents than among those who had undergone CABG. (Funded by CardioVascular Research Foundation and others; BEST ClinicalTrials.gov number, [NCT00997828](https://clinicaltrials.gov/ct2/show/study/NCT00997828).)



The NEW ENGLAND
JOURNAL of MEDICINE

ORIGINAL ARTICLE

Initial Invasive or Conservative Strategy for Stable Coronary Disease

David J. Maron, M.D., Judith S. Hochman, M.D., Harmony R. Reynolds, M.D., Sripal Bangalore, M.D., M.H.A., Sean M. O'Brien, Ph.D., William E. Boden, M.D., Bernard R. Chaitman, M.D., Roxy Senior, M.D., D.M., Jose López-Sendón, M.D., Karen P. Alexander, M.D., Renato D. Lopes, M.D., Ph.D., Leslee J. Shaw, Ph.D., *et al.*, for the ISCHEMIA Research Group*

CONCLUSIONS

Among patients with stable coronary disease and moderate or severe ischemia, we did not find evidence that an initial invasive strategy, as compared with an initial conservative strategy, reduced the risk of ischemic cardiovascular events or death from any cause over a median of 3.2 years. The trial findings were sensitive to the definition of myocardial infarction that was used. (Funded by the National Heart, Lung, and Blood Institute and others; ISCHEMIA ClinicalTrials.gov number, [NCT01471522](https://clinicaltrials.gov/ct2/show/study/NCT01471522).)

ISCHEMIA 2020



The NEW ENGLAND
JOURNAL of MEDICINE

ORIGINAL ARTICLE

Fractional Flow Reserve–Guided PCI as Compared with Coronary Bypass Surgery

William F. Fearon, M.D., Frederik M. Zimmermann, M.D., Bernard De Bruyne, M.D., Ph.D., Zsolt Piroth, M.D., Ph.D., Albert H.M. van Straten, M.D., Ph.D., Laszlo Szekely, M.D., Giedrius Davidavičius, M.D., Ph.D., Gintaras Kalinauskas, M.D., Ph.D., Samer Mansour, M.D., Rajesh Kharbanda, Ph.D., Nikolaos Östlund-Papadogeorgos, M.D., Adel Aminian, M.D., et al., for the FAME 3 Investigators*

CONCLUSIONS

In patients with three-vessel coronary artery disease, FFR-guided PCI was not found to be noninferior to CABG with respect to the incidence of a composite of death, myocardial infarction, stroke, or repeat revascularization at 1 year. (Funded by Medtronic and Abbott Vascular; FAME 3 ClinicalTrials.gov number, [NCT02100722](https://clinicaltrials.gov/ct2/show/study/NCT02100722).)

FAME 3 2022

Summary of Findings for Role of CABG in MVD

1. 13 years ago, CABG was the standard of care for MVD.
2. 12 years ago, CABG had potential benefits to those with LV dysfunction.
3. 11 years ago, CABG was better than PCI for those with diabetes.
4. 7 years ago, CABG had fewer MACE than PCI with everolimus eluting stents.
5. 2 years ago, no benefit was detected with an initial invasive strategy to investigating stable CAD with moderate to severe ischemia.
6. This year, FFR-guided PCI was not noninferior to CABG.

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