MINI CORSO
INTERVENTISTICA/CARDIOCHIRURGIA

Martedì, 28 Marzo 2017

COME RIVASCOLARIZZARE IL PAZIENTE MULTIVASALE DIABETICO

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Humanitas Research Hospital

- Diabetes mellitus is a powerful, independent risk factor for CVD and accounts for about 25% of all patients requiring myocardial revascularization

- Patients with diabetes have more extensive and diffuse coronary artery disease, have higher morbidity and mortality after revascularization procedures, including myocardial infarction and restenosis after balloon angioplasty

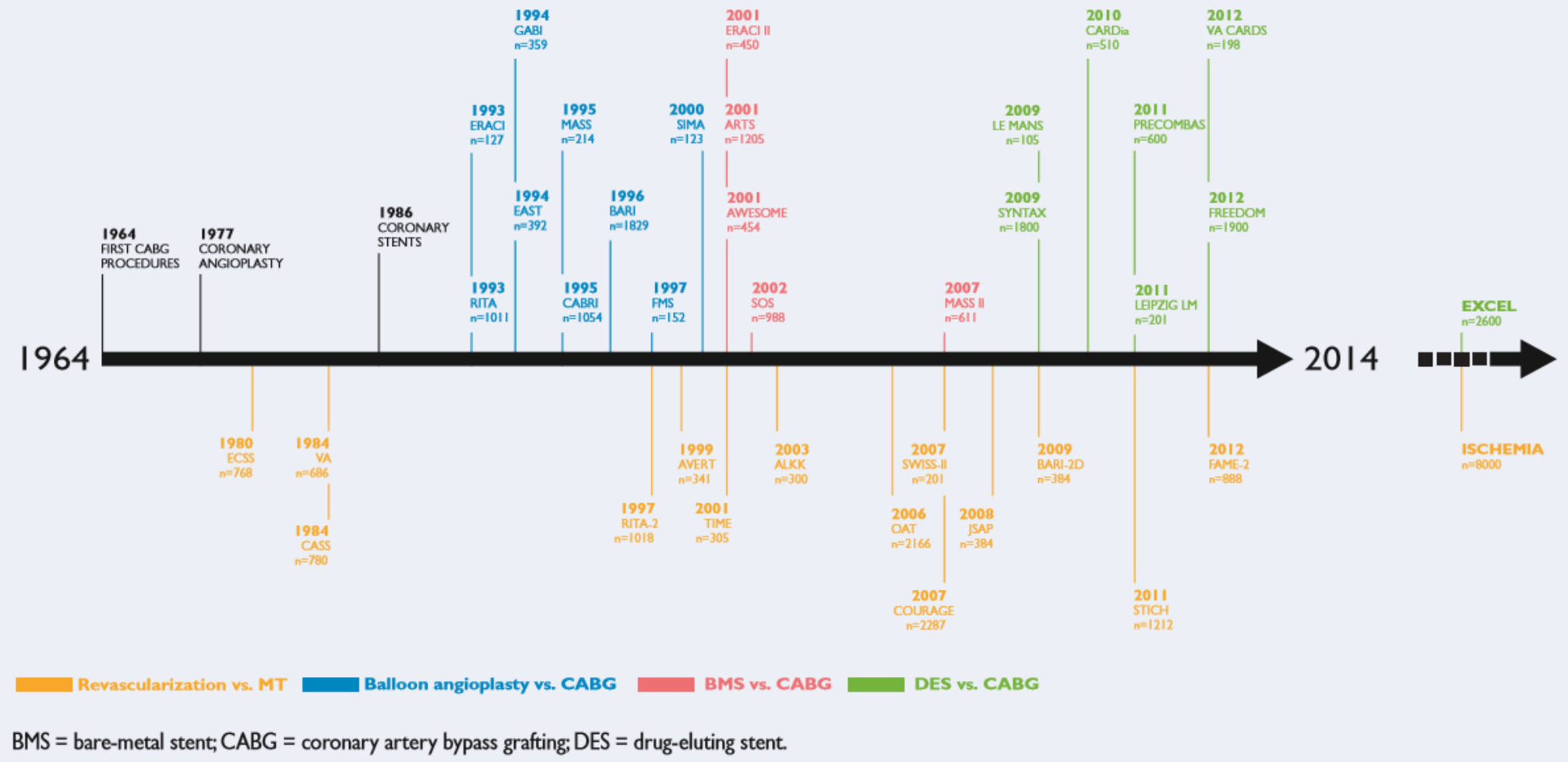
European Heart Journal (2014) **35**, 2541–2619
doi:10.1093/eurheartj/ehu278

2014 ESC/EACTS Guidelines on myocardial revascularization

The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

Myocardial revascularization has been subject to more randomized clinical trials (RCTs) than almost any other intervention (*Figure 1*). In order to inform the current Guidelines, this Task Force performed a systematic review of all RCTs performed since 1980, comparing head-to-head the different revascularization strategies—including CABG, balloon angioplasty, and PCI with bare-metal stents (BMS) or with various US Food and Drug Administration-approved drug-eluting stents (DES)—against medical treatment as well as different revascularization strategies, and retrieved 100 RCTs involving 93 553 patients with 262 090 patient-years of follow-up.[4]

“The optimal treatment approach for patients with multivessel coronary disease remains unclear despite a myriad of randomized clinical trials performed in the last several decades”



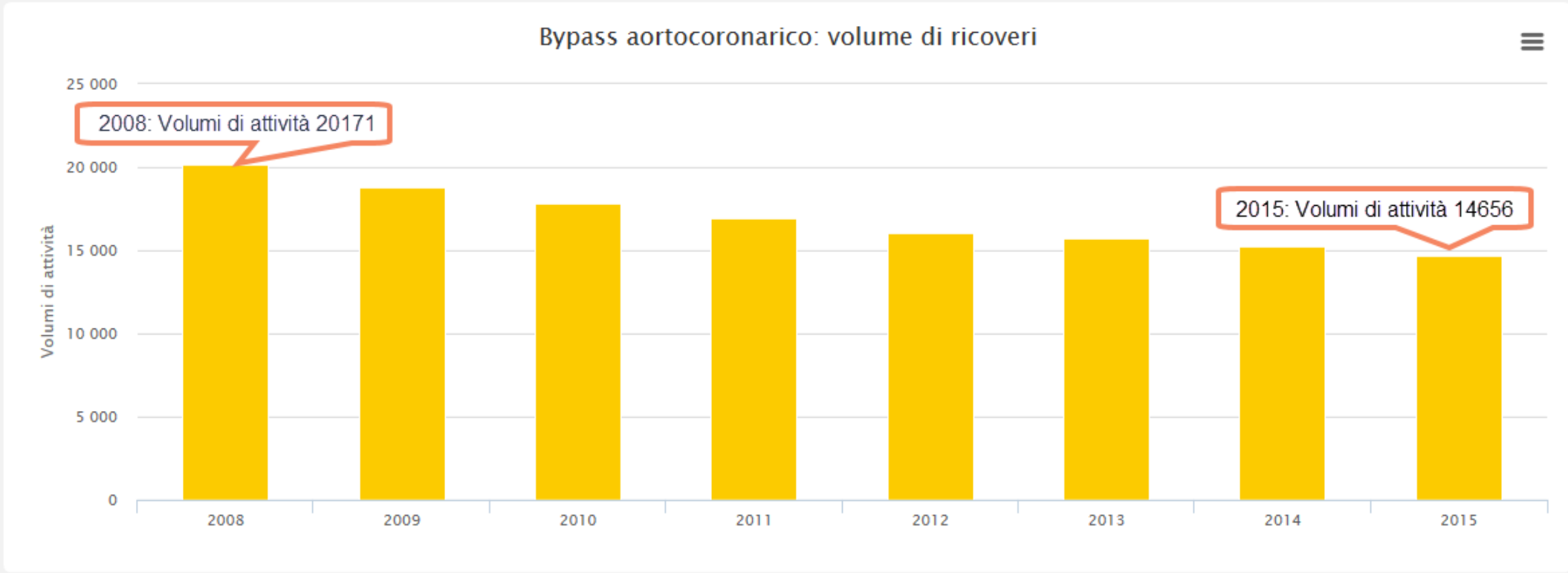
BMS = bare-metal stent; CABG = coronary artery bypass grafting; DES = drug-eluting stent.

1964 – 2014 Fifty years of coronary artery bypass with mammary artery

February 25, 1964 in the clinic of Pavlov Medical Institute Vasily Kolesov performed the world's first coronary bypass surgery for 44 -year-old patient with severe stenocardia. This successful operation was preceded by several experiments on dogs during which the surgeon managed to win a hard time limit using his own suture machine. Using this technological advantage in 1968 Vasily Kolesov performed the first surgery to restore blood flow in the arteries on open heart. Mammary coronary bypass is now worldwide known as "Kolesov's operation".

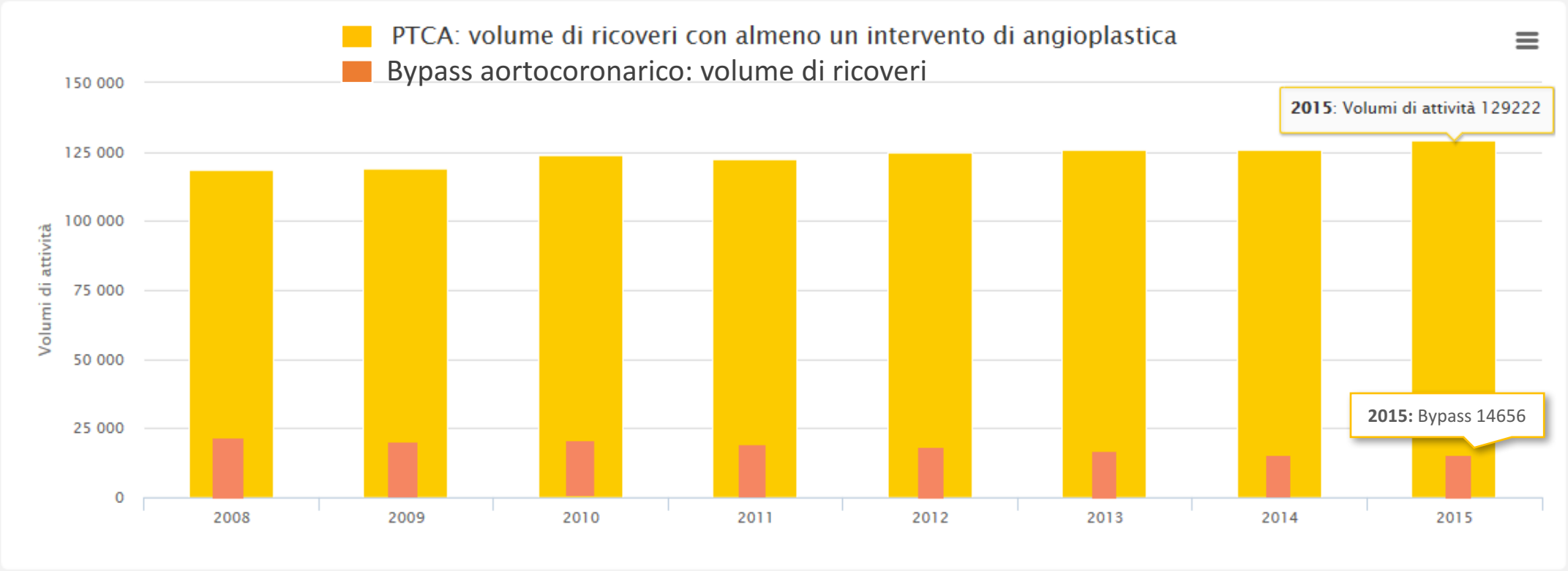
Razionale Protocollo Metodi Statistici **Documenti**

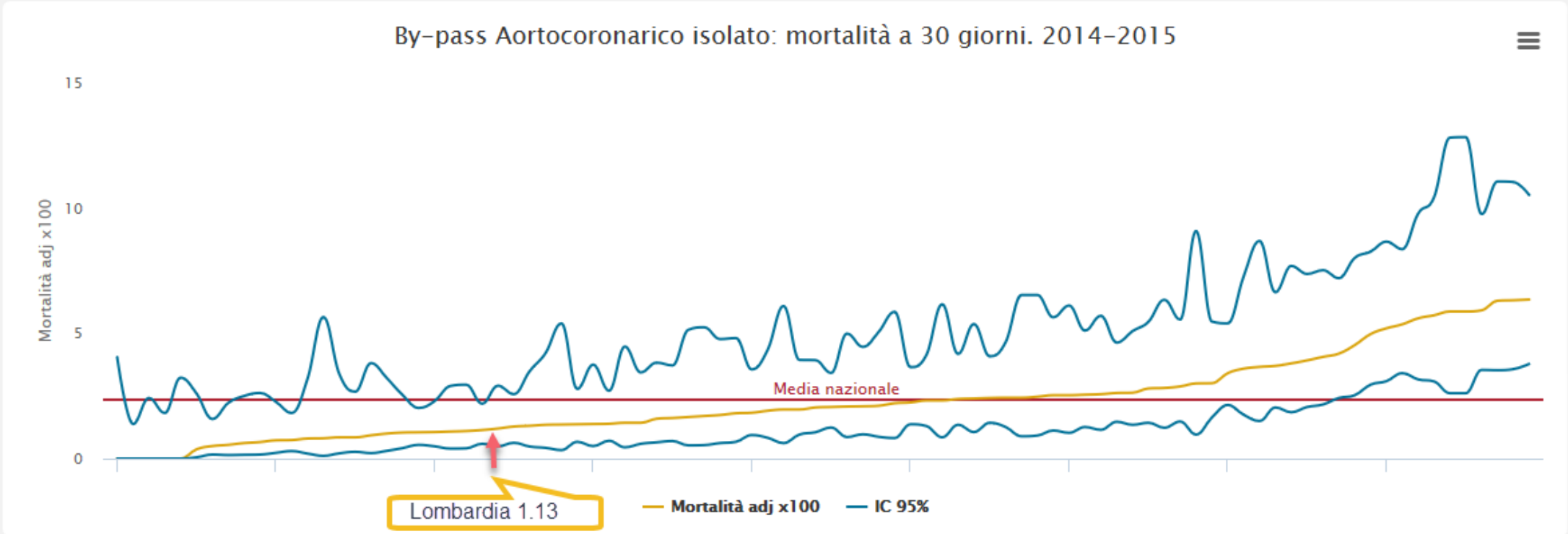
Cardiovascolare » By-pass Aortocoronarico isolato » volume di ricoveri Vai



Razionale Protocollo Metodi Statistici **Documenti**

Cardiovascolare » Angioplastica (PTCA) » volume di ricoveri con almeno una PTCA Vai

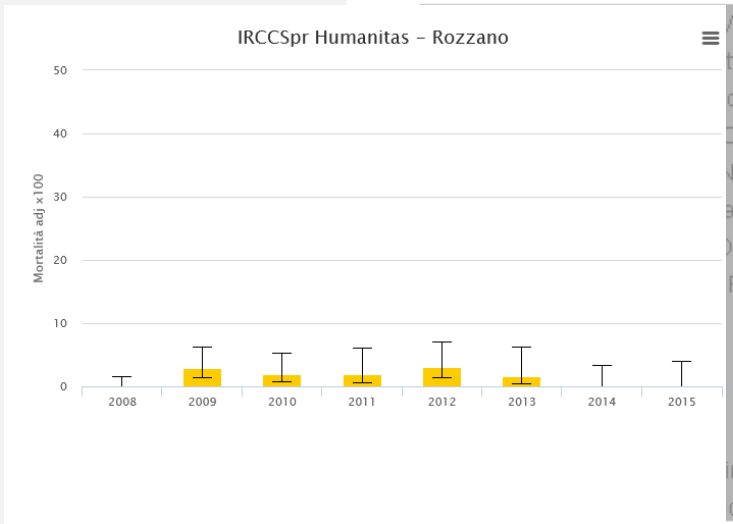


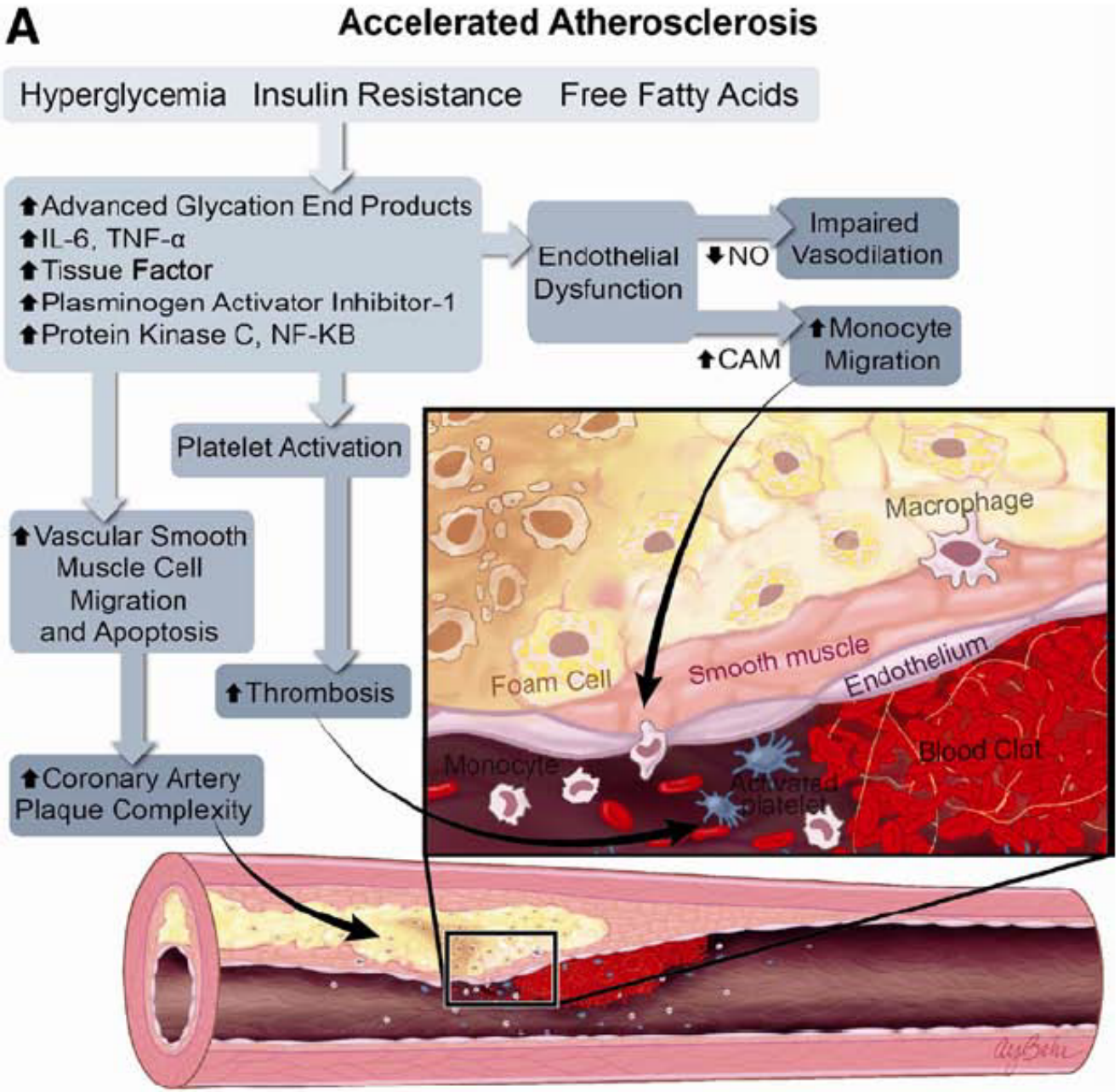

By-pass Aortocoronarico isolato: mortalità a 30 giorni. 2014-2015
Mortalità adj x100
15
10
5
0
Media nazionale
Lombardia 1.13
Mortalità adj x100
IC 95%

By-pass Aortocoronarico isolato: mortalità a 30 giorni - Italia 2014-2015

Ordina/filtra | vedi tabella | protocollo

Filtri attivi: → Tutte le strutture → Tutte le regioni → Confronto media nazionale Ordinato per Regione





Mechanisms of atherosclerosis and restenosis in DM

Hyperglycemia
Insulin resistance
Increase circulating free fatty acids

Activates multiple inflammatory pathways leading to,
endothelial dysfunction
increased monocyte activation
localization to sites of nascent plaque,
increased vascular smooth muscle cell migration and apoptosis

Increased platelet activation, leading to an increased risk of atherothrombosis and coronary artery plaque complexity

Coronary Artery Revascularization in Patients With Diabetes Mellitus

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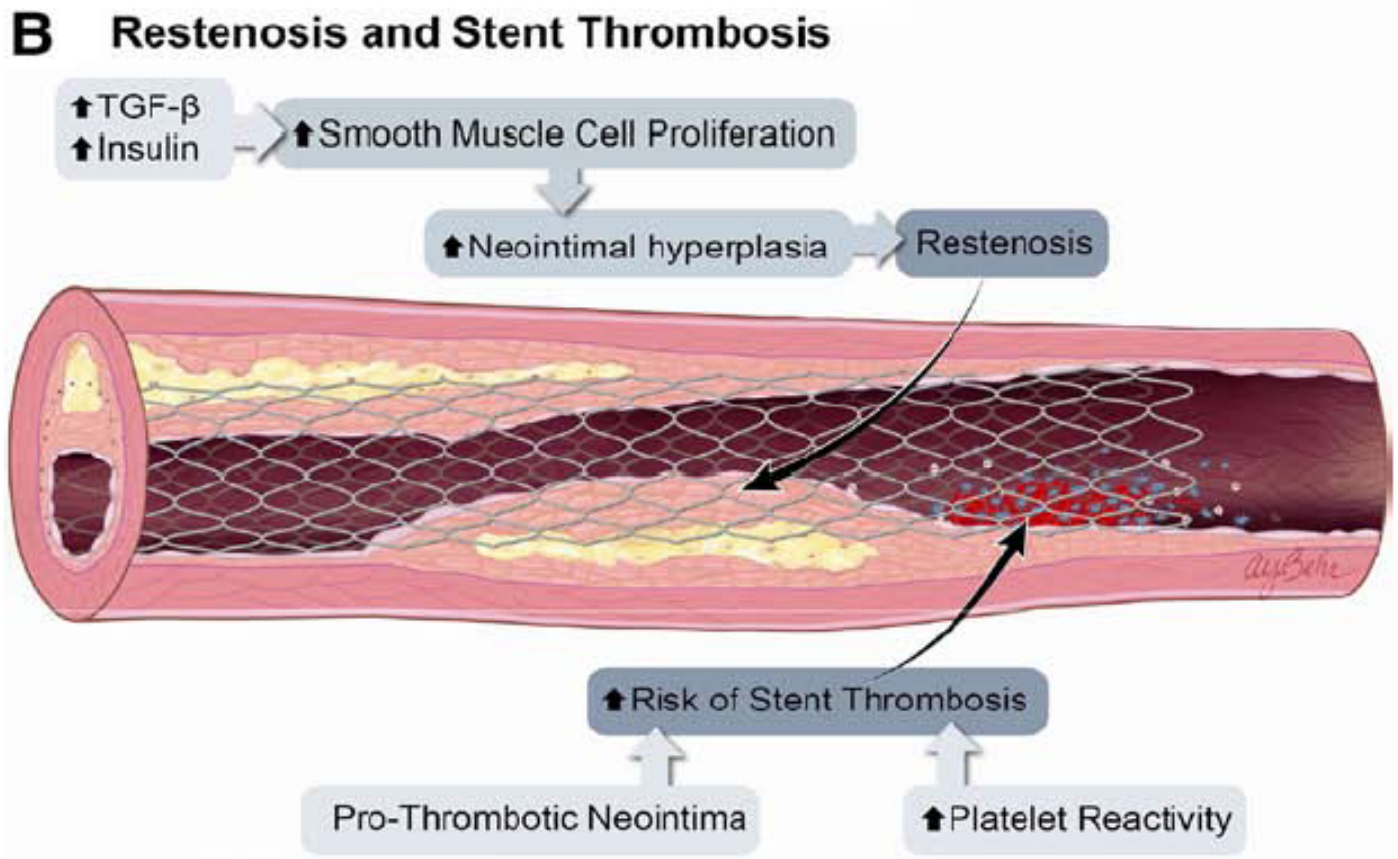
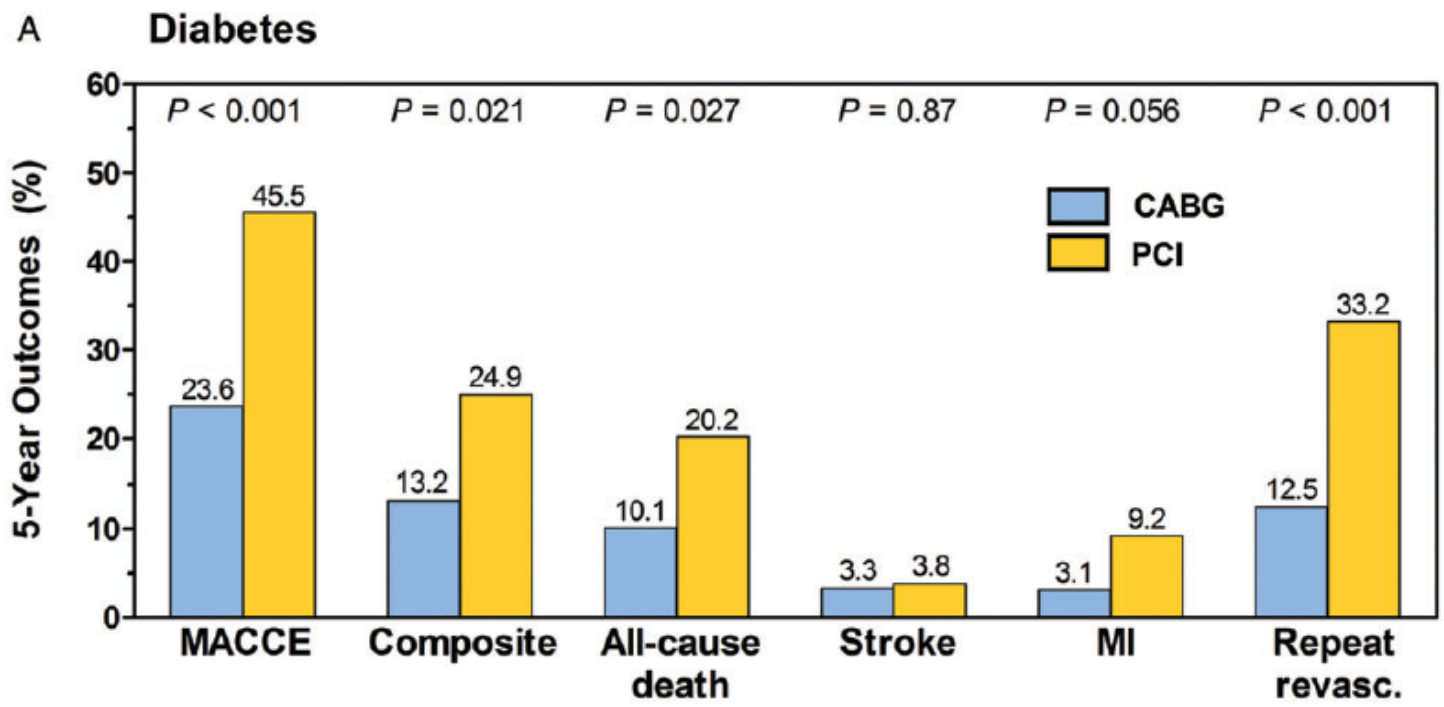
(*Circulation*. 2013;128:1675-1685.)

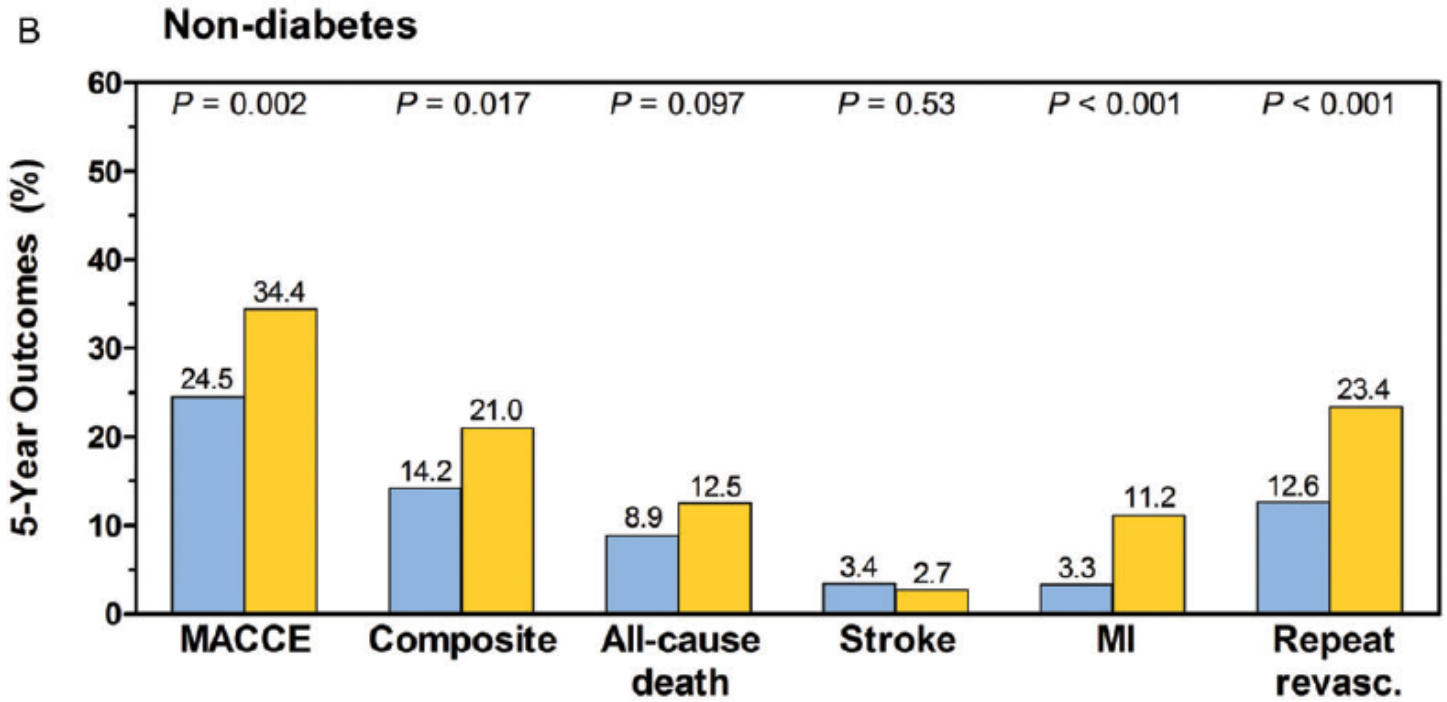
Circulation is available at http://circ.ahajournals.org
DOI: 10.1161/CIRCULATIONAHA.113.002114



After percutaneous coronary intervention, elevated levels of insulin and transforming growth factor-β (TGF-β) promote greater smooth muscle cell proliferation, neointimal hyperplasia, and restenosis. Patients with diabetes mellitus may also have prothrombotic neointima and increased platelet reactivity. The sum of these effects results in an increased risk of stent thrombosis.

DOI: 10.1161/CIRCULATIONAHA.113.002114





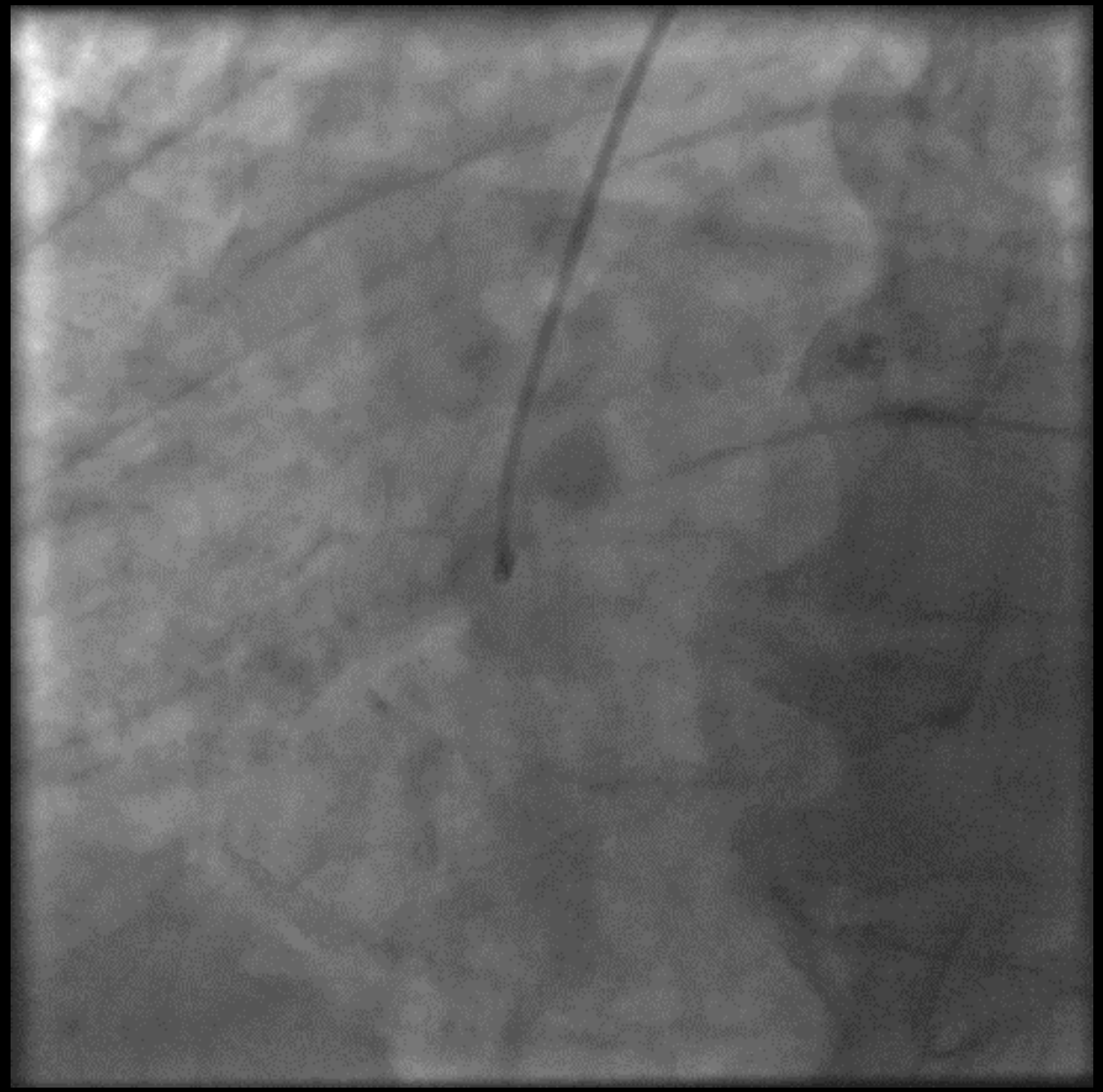
European Heart Journal (2014) **35**, 2821–2830
doi:10.1093/eurheartj/ehu213

Coronary artery bypass grafting vs. percutaneous coronary intervention for patients with three-vessel disease: final five-year follow-up of the SYNTAX trial

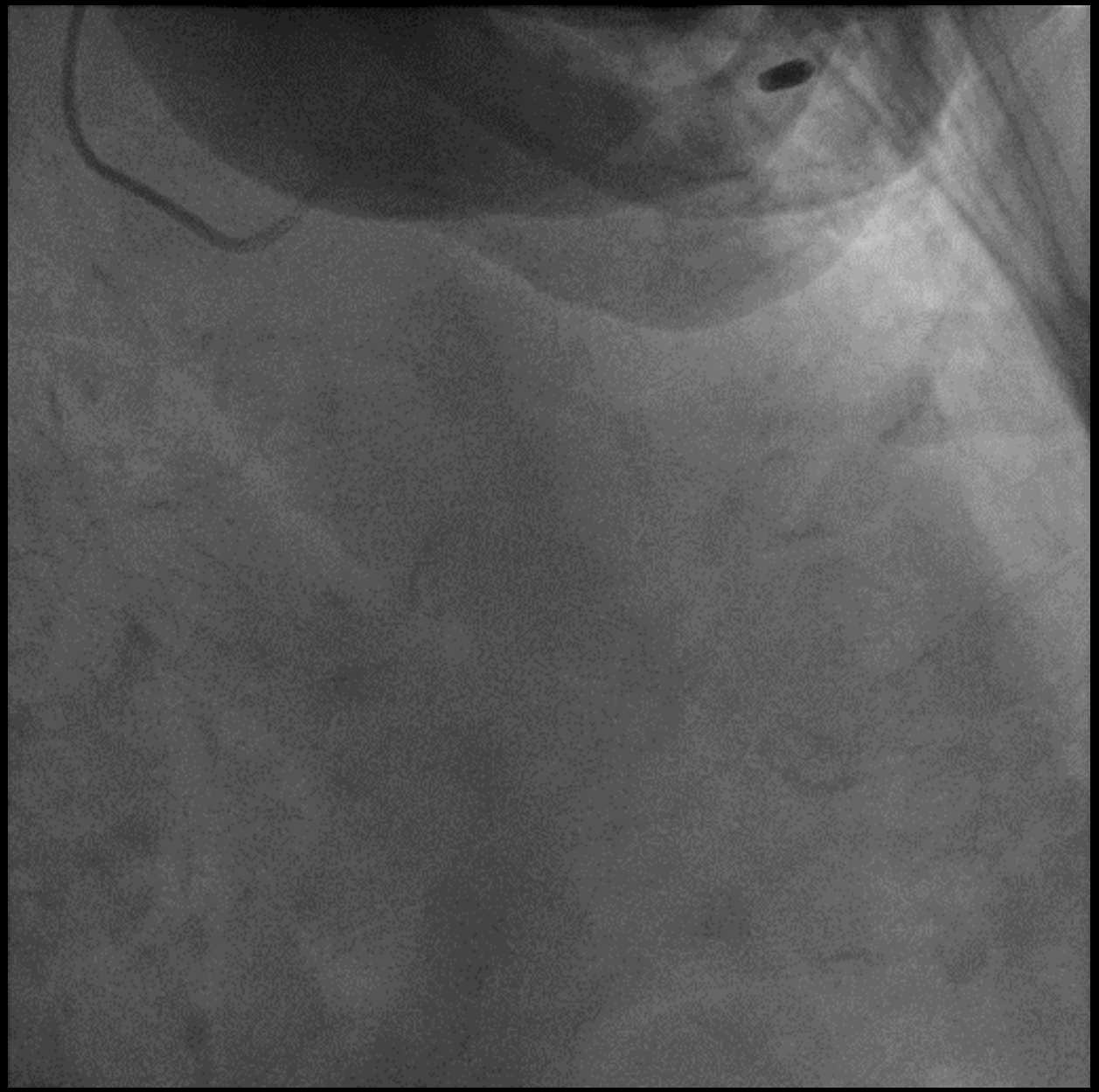
Stuart J. Head[1†], Piroze M. Davierwala[2†], Patrick W. Serruys[1], Simon R. Redwood[3], Antonio Colombo[4], Michael J. Mack[5], Marie-Claude Morice[6], David R. Holmes Jr[7], Ted E. Feldman[8], Elisabeth Ståhle[9], Paul Underwood[10], Keith D. Dawkins[10], A. Pieter Kappetein[1], and Friedrich W. Mohr[2*]

[1]Erasmus University Medical Center, Rotterdam, The Netherlands; [2]Herzzentrum Universität Leipzig, Strumpelstrasse 39, Leipzig 4289, Germany; [3]Guy's and St. Thomas' Hospital, London, UK; [4]San Raffaele Scientific Institute, Milan, Italy; [5]Medical City Hospital, Dallas, TX, USA; [6]Institut Hospitalier Jacques Cartier, Générale de santé, Massy, France; [7]May Clinic Rochester, Rochester, MN, USA; [8]Evanston Hospital, Evanston, IL, USA; [9]University Hospital Uppsala, Uppsala, Sweden; and [10]Boston Scientific Corporation, Natick, MA, USA

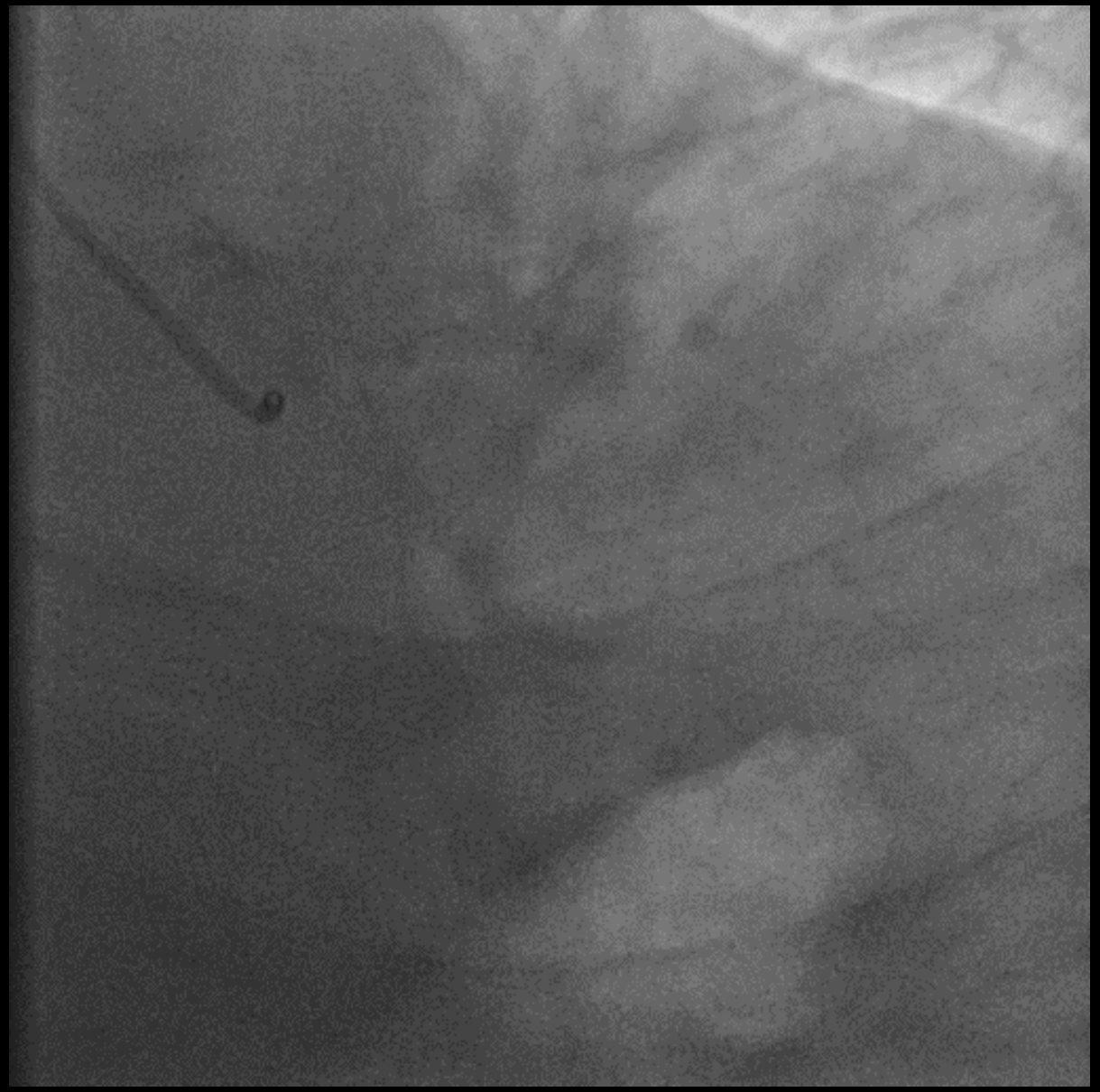
Received 16 April 2014; revised 27 April 2014; accepted 4 May 2014; online publish-ahead-of-print 21 May 2014



Lesione critica del TCCS e voluminoso aneurisma, lesioni critiche multiple della coronaria destra in paziente diabetico



Lesioni multiple di IVA prossimale



Lesioni multiple TCCS e IVA, occlusione di Cx

Repeated PCI procedures, it's not always like the first time

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Long-Term Outcomes of Coronary-Artery Bypass Grafting versus Stent Implantation

Edward L. Hannan, Ph.D., Michael J. Racz, Ph.D., Gary Walford, M.D., Robert H. Jones, M.D., Thomas J. Ryan, M.D., Edward Bennett, M.D., Alfred T. Culliford, M.D., O. Wayne Isom, M.D., Jeffrey P. Gold, M.D., and Eric A. Rose, M.D.

METHODS

We used New York's cardiac registries to identify 37,212 patients with multivessel disease who underwent CABG and 22,102 patients with multivessel disease who underwent PCI from January 1, 1997, to December 31, 2000. We determined the rates of death and subsequent revascularization within three years after the procedure in various groups of patients according to the number of diseased vessels and the presence or absence of involvement of the left anterior descending coronary artery. The rates of adverse outcomes were adjusted by means of proportional-hazards methods to account for differences in patients' severity of illness before revascularization.

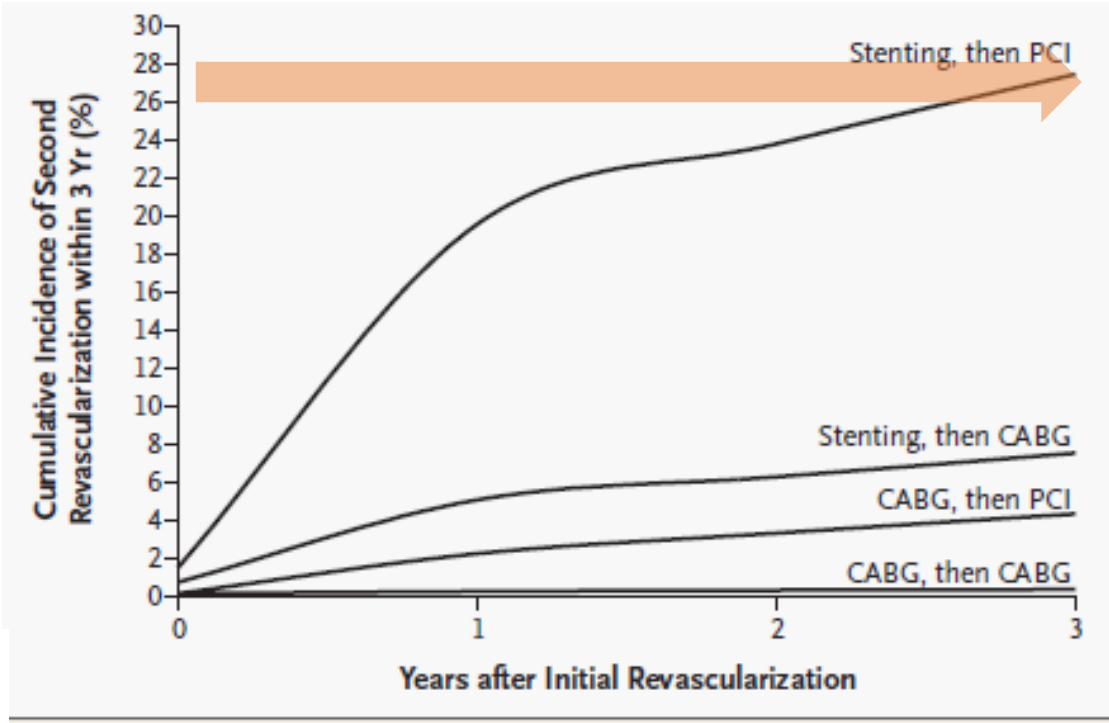
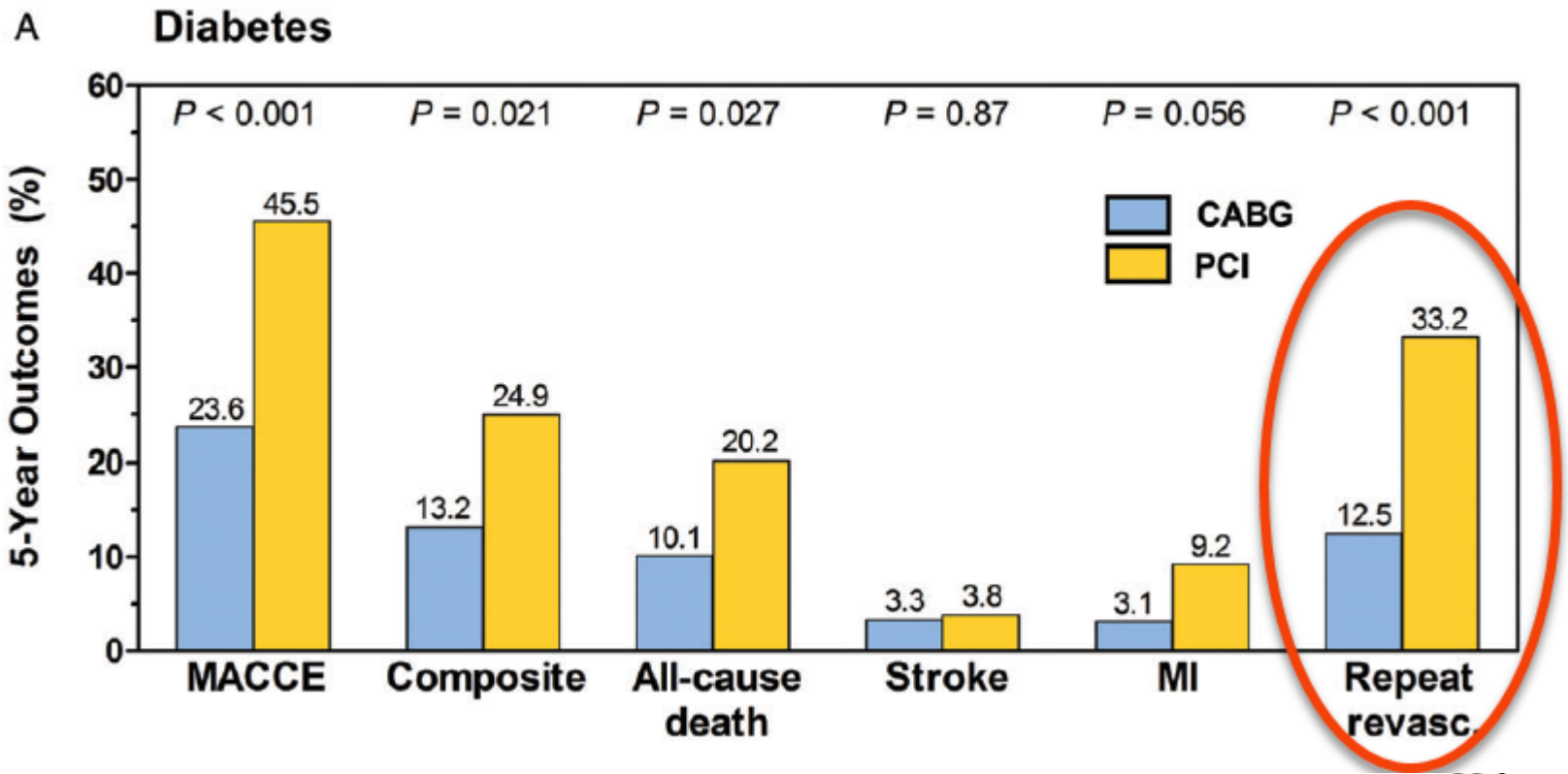
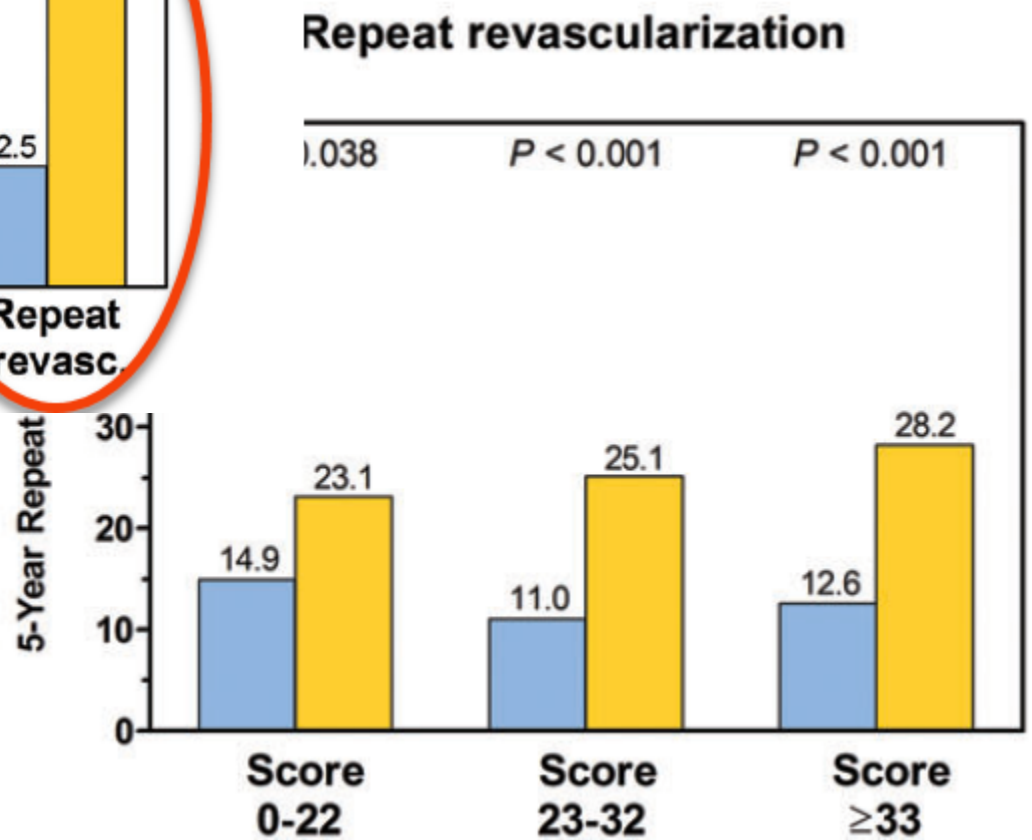


Figure 1. Percentage of Patients Undergoing a Second Revascularization Procedure within Three Years.





European Heart Journal (2014) **35**, 2821–2830
doi:10.1093/eurheartj/ehu213

FASTTRACK CLINICAL RESEARCH
Coronary artery disease

Coronary artery bypass grafting vs. percutaneous coronary intervention for patients with three-vessel disease: final five-year follow-up of the SYNTAX trial

Received 16 April 2014; revised 27 April 2014; accepted 4 May 2014; online publish-ahead-of-print 21 May 2014

FREEDOM Trial Main Results

AHA 2012
November 4, 2012
Los Angeles, CA

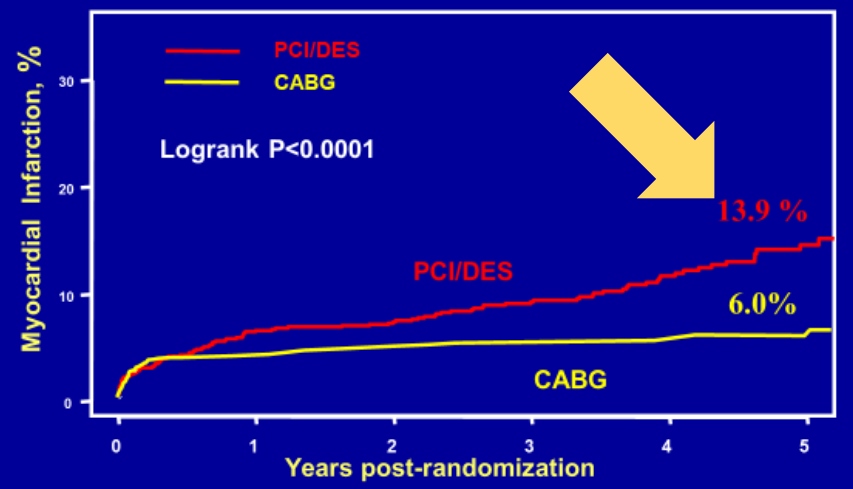
Valentin Fuster, MD PhD

Supported by NHLBI U01 grant #01HLO71988
This work is solely the responsibility of the authors

Conclusion

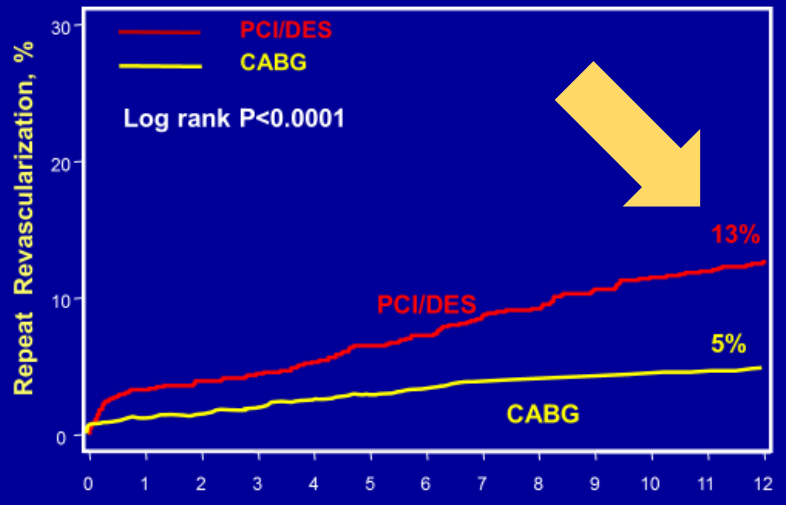
- In patients with diabetes and advanced coronary disease, **CABG was of significant benefit as compared to PCI.** MI & all cause mortality were independently decreased, while stroke was slightly increased
- There was **no significant interaction** between the treatment effect of CABG on the primary endpoint according to **SYNTAX score or any other prespecified subgroup.**
- **CABG surgery is the preferred method** of revascularization for patients with diabetes & multi-vessel CAD.

MYOCARDIAL INFARCTION



PCI/DES N	953	853	798	636	422	220
CABG N	947	824	772	629	432	229

REPEAT REVASCULARIZATION



PCI/DES N	944	887	856	818	792
CABG N	911	858	836	825	806

Prognostic impact of previous percutaneous coronary intervention in patients with diabetes mellitus and triple-vessel disease undergoing coronary artery bypass surgery

Matthias Thielmann, MD,[a] Markus Neuhäuser, PhD,[b] Stephan Knipp, MD,[a] Eva Kottenberg-Assenmacher, MD,[c] Anja Marr,[b] Nikolaus Pizanis, MD,[a] Matthias Hartmann, MD,[c] Markus Kamler, MD,[a] Parwis Massoudy, MD,[a] and Heinz Jakob, MD[a]

Between January 2000 and March 2006, 621 consecutive patients with diabetes mellitus and triple-vessel disease undergoing isolated first-time coronary artery bypass grafting as the primary revascularization procedure (group 1)

128 patients with diabetes mellitus and triple-vessel disease treated during the same time period with previous percutaneous coronary intervention before coronary artery bypass grafting (group 2).

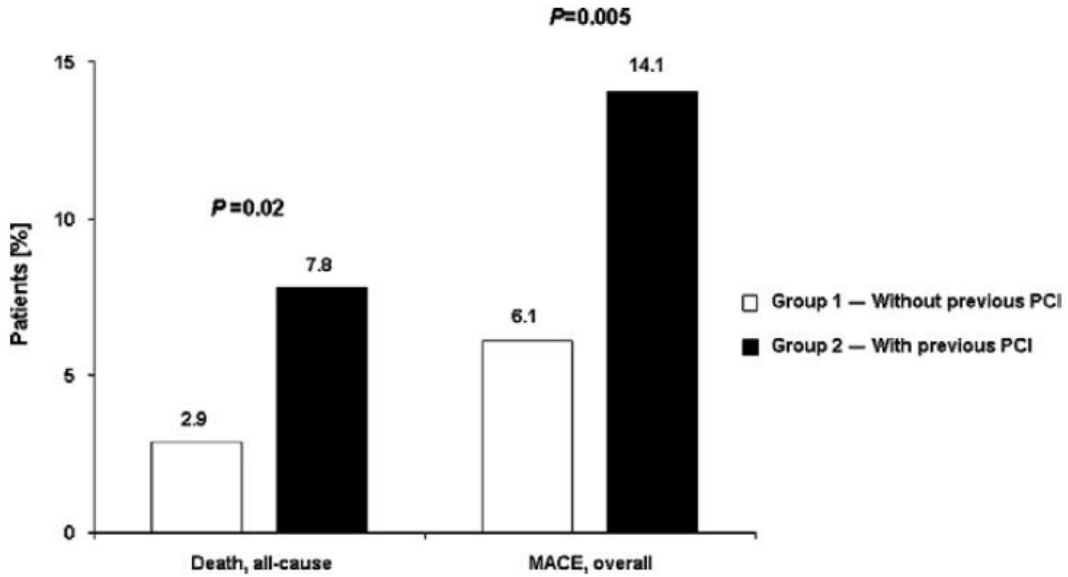


Figure 1. Incidence of death and major adverse cardiac events *(MACE)* during hospital stay. *P*, Overall significance between the groups.

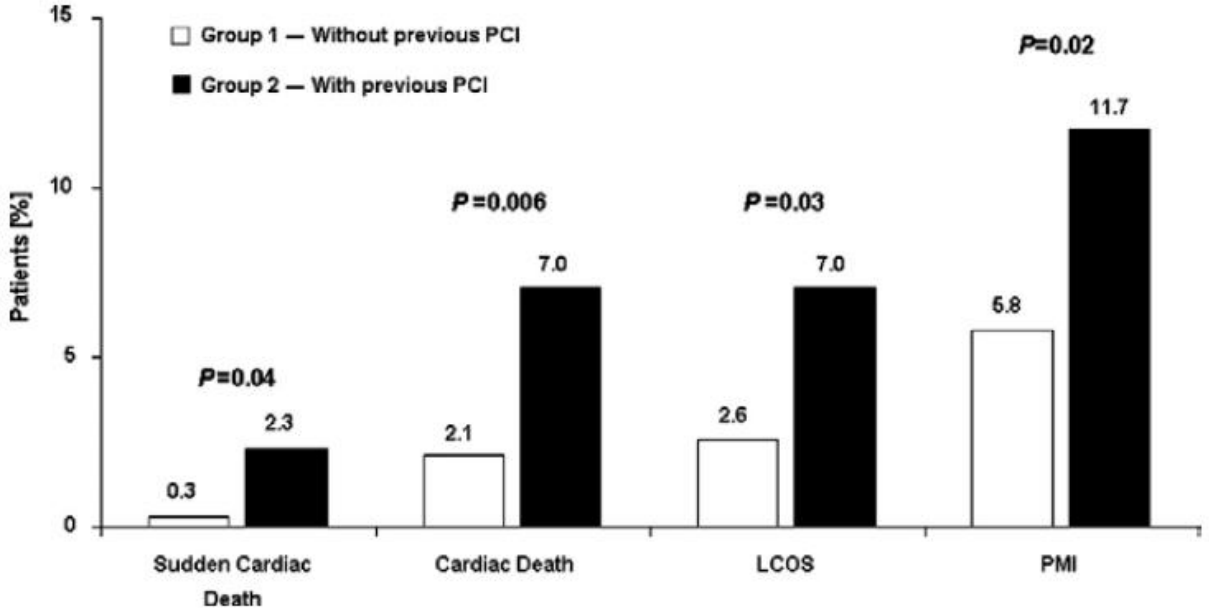
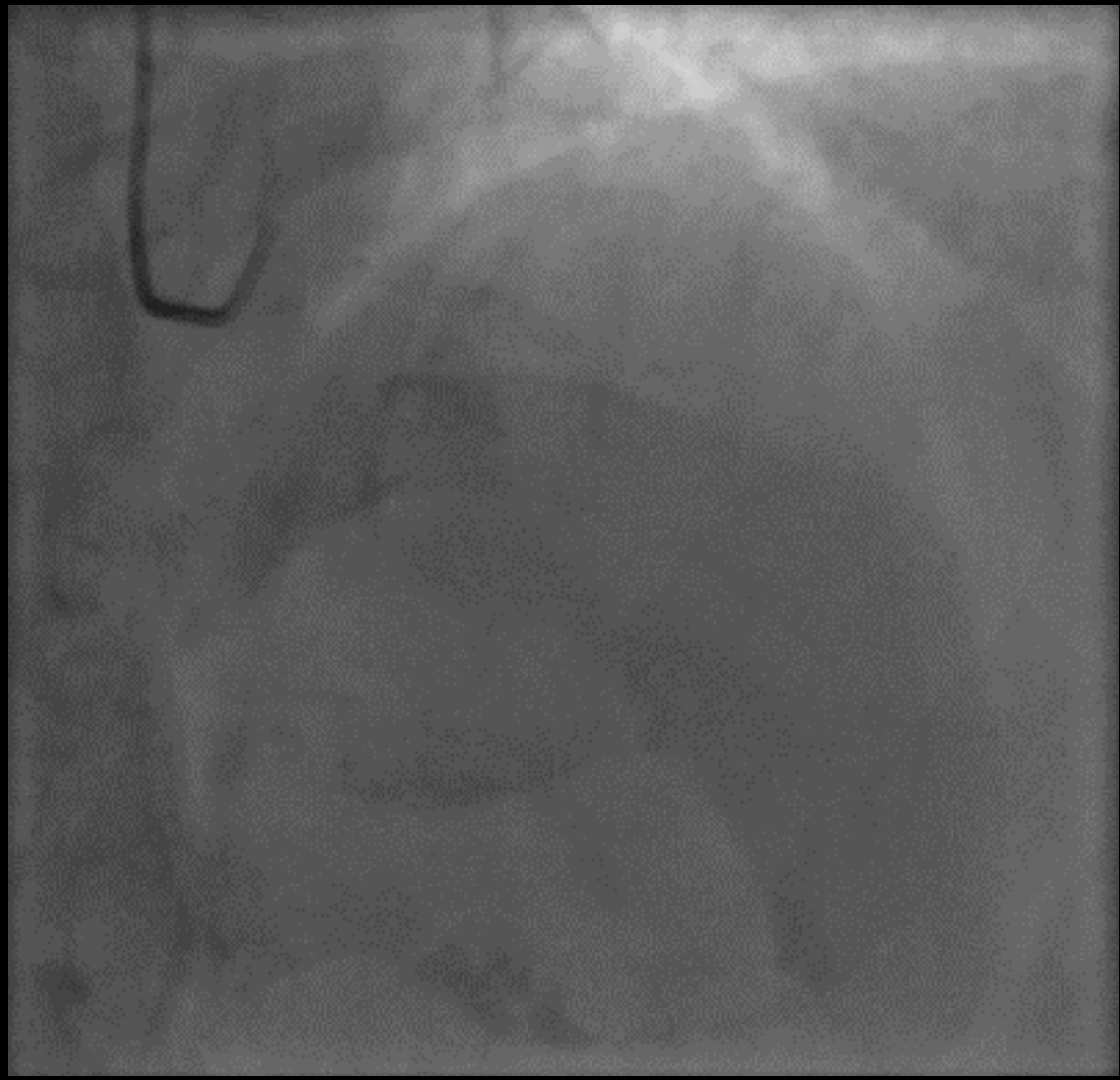
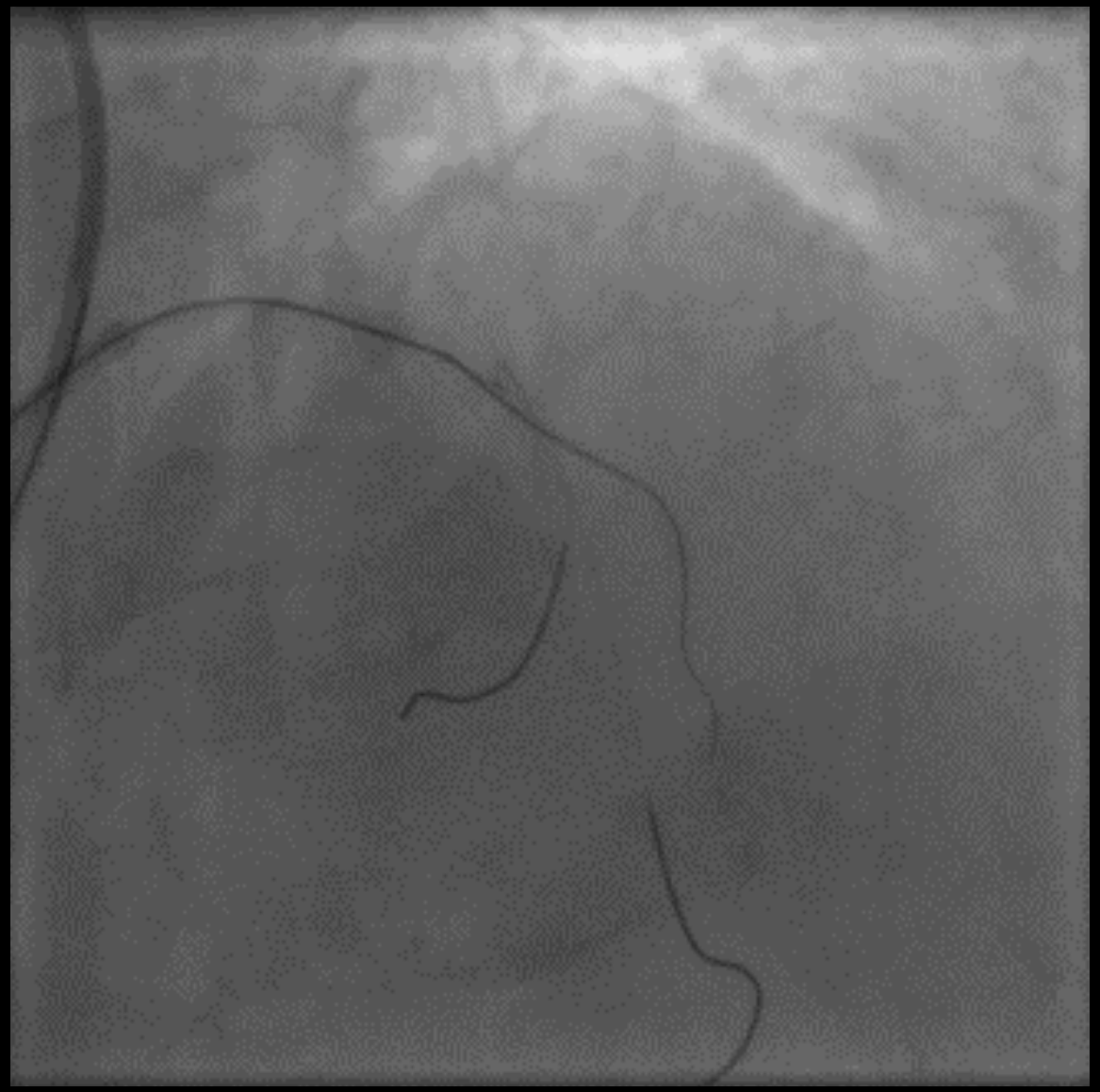


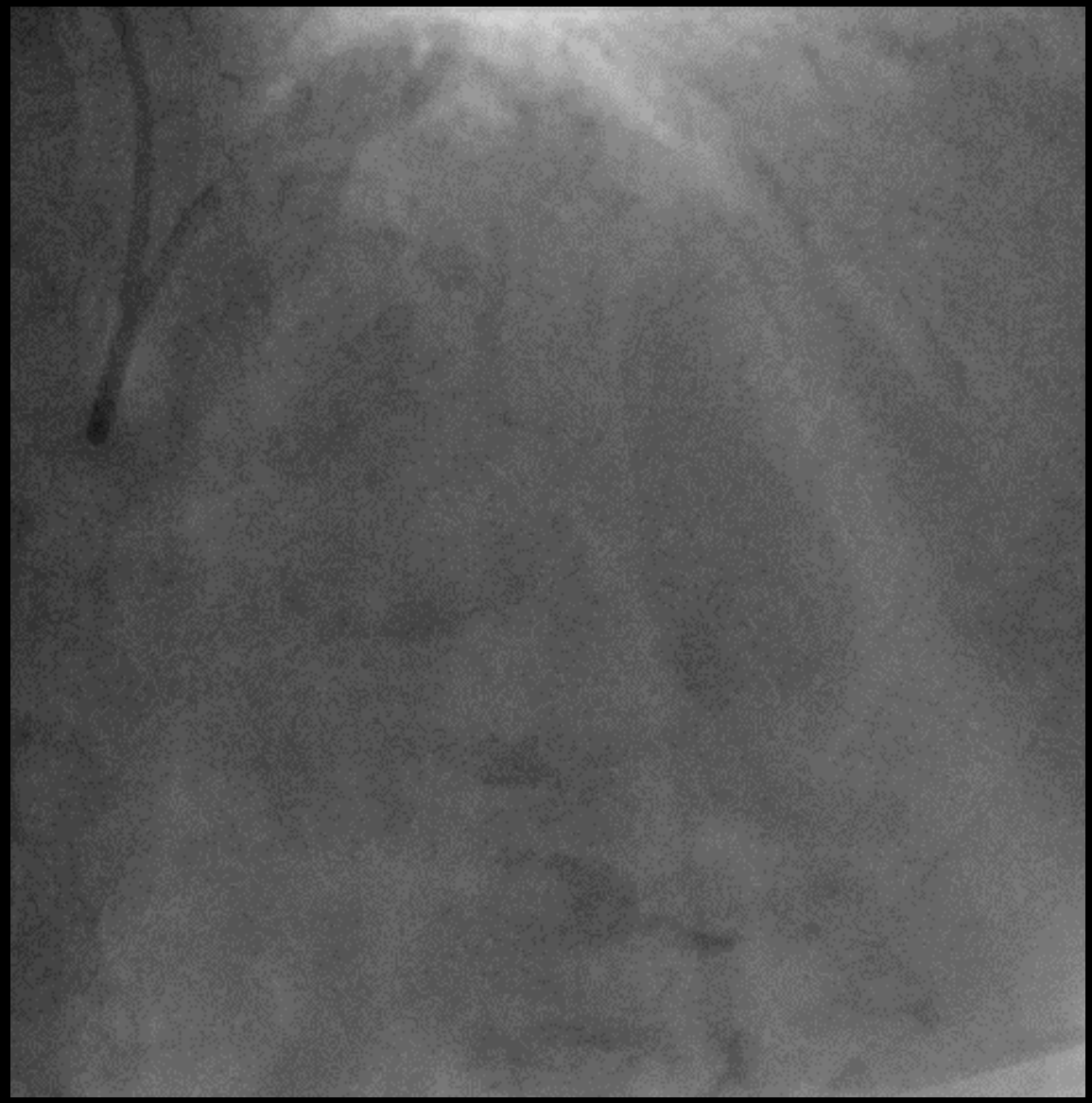
Figure 2. Incidence of secondary end points during hospital stay. *P*, Overall significance between the groups; *PCI*, percutaneous coronary intervention; *LCOS*, low cardiac output syndrome *PMI*, perioperative myocardial infarction.

Conclusion: Previous percutaneous coronary intervention before coronary artery bypass grafting in patients with diabetes mellitus and triple-vessel disease independently increases the risk for in-hospital mortality and major adverse cardiac events.



Lesioni multiple di IVA e ramo Diagonale





Tentativo PTCA su IVA

PRE

POST

- CABG: bypass grafts are placed in the mid-coronary vessel beyond the culprit lesion providing extra sources of blood flow to the myocardium and offering protection against the consequences of further proximal obstructive disease

- Coronary STENTS aim at restoring normal blood flow of the native coronary vasculature by local treatment of obstructive lesions without offering protection against new disease proximal to the stent

Percutaneous or surgical revascularization in multi-vessel coronary artery disease

CAD is a chronically progressive disease that predominantly affects the proximal coronary arteries. The most likely reason for the survival benefit of CABG over PCI is that the placement of bypass grafts to the mid coronary vessel not only makes the complexity of proximal CAD lesions irrelevant but over the longer term also offers prophylaxis against the development of new proximal disease

It has been recognized for almost three decades that **high rates of nitric oxide production** from the internal mammary artery (IMA) graft protects the native coronary circulation from further disease development

Consequently, **simply changing the nature of the stent** cannot offer the prophylactic benefit of bypass grafts.

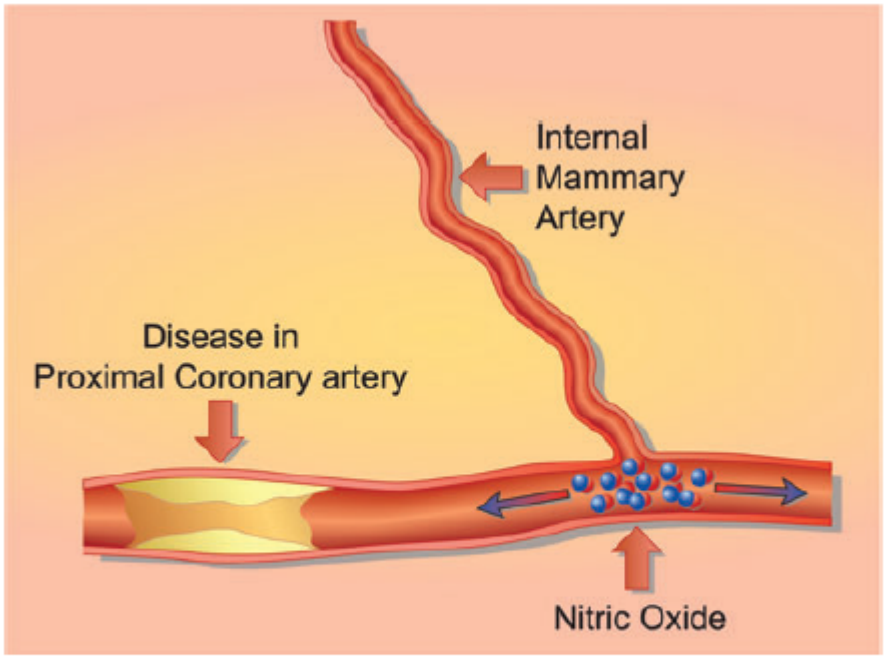
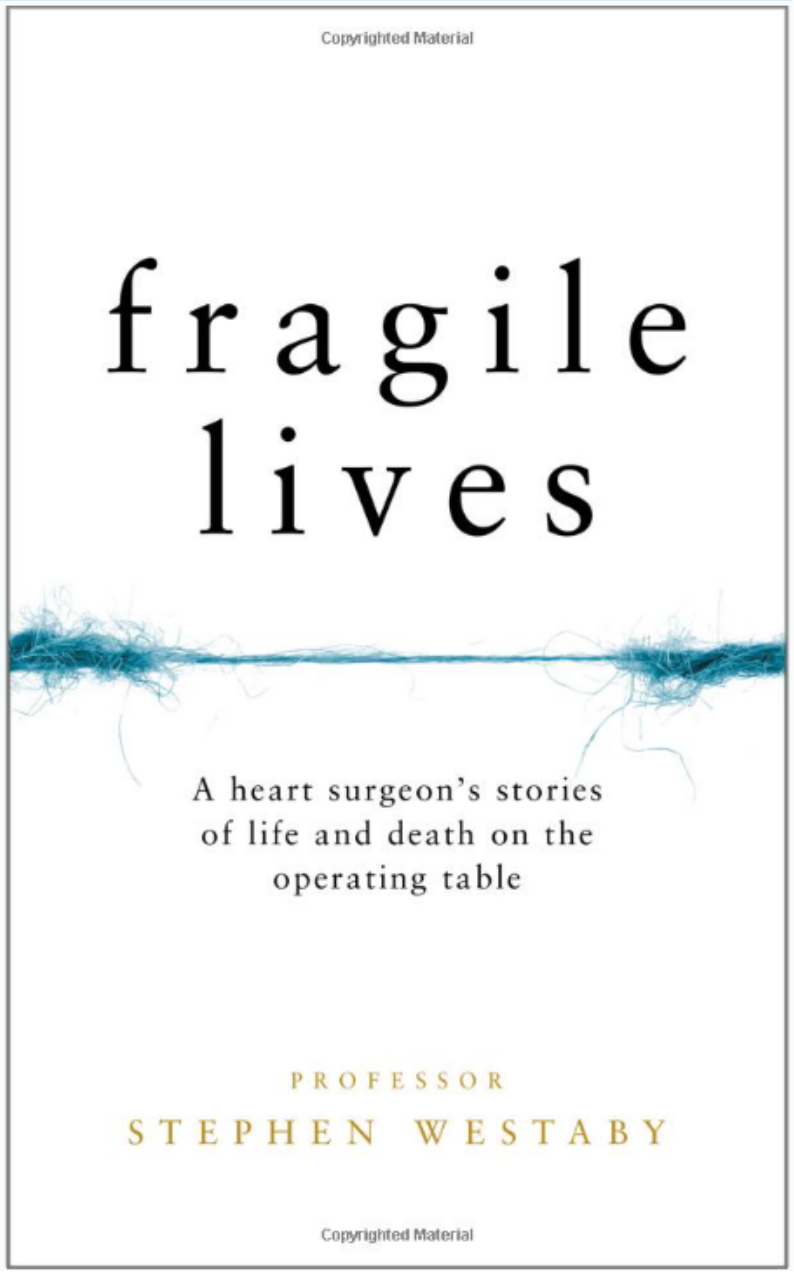


Figure 1 Internal Mammary Artery elutes nitric oxide into the coronary circulation.



J Am Coll Cardiol. 2014 March 4; 63(8): 747–762. doi:10.1016/j.jacc.2013.09.070.

Frailty Assessment in the Cardiovascular Care of Older Adults

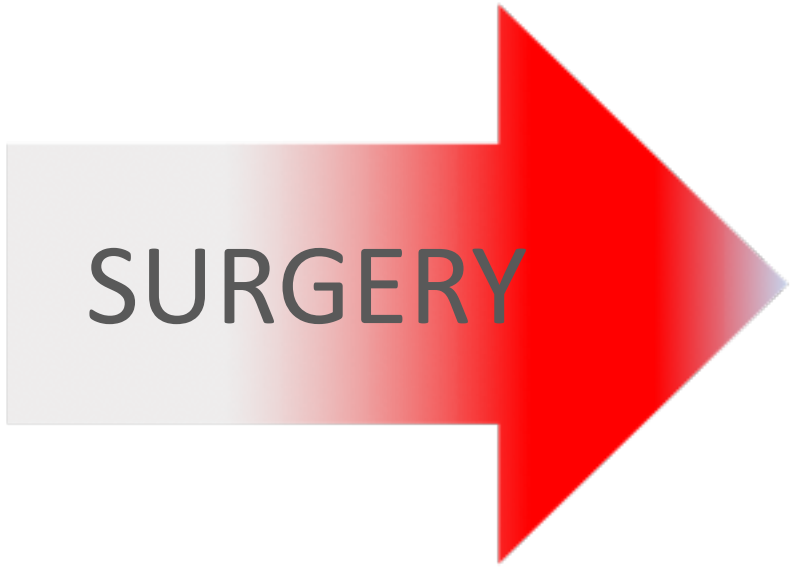
Jonathan Afilalo, MD, MSc[*], **Karen P. Alexander, MD**[†], **Michael J. Mack, MD**[‡], **Mathew S. Maurer, MD**[§], **Philip Green, MD**[§], **Larry A. Allen, MD, MPH**[‖], **Jeffrey J. Popma, MD**[¶], **Luigi Ferrucci, MD, PhD**[#], and **Daniel E. Forman, MD**[**]

[*]Divisions of Cardiology and Clinical Epidemiology, Jewish General Hospital, McGill University, Montreal, Quebec, Canada [†]Division of Cardiology, Duke University Medical Center, Durham, North Carolina [‡]Division of Cardiothoracic Surgery, Baylor Health Care System, The Heart Hospital Baylor Plano, Plano, Texas [§]Division of Cardiology, Columbia University Medical Center, New York, New York [‖]Division of Cardiology, University of Colorado School of Medicine, Aurora, Colorado [¶]Division of Cardiology, Beth Israel Deaconess Medical Center, Boston, Massachusetts [#]National Institute on Aging, National Institutes of Health, Baltimore, Maryland [**]Division of Cardiovascular Medicine, Brigham and Women's Hospital, VA Boston Healthcare Center, Boston, Massachusetts

There is a substantial body of evidence to support the utility of frailty assessment in patients with diverse forms of CVD. The value of frailty as a prognostic marker is well demonstrated (with risk ratios that often exceed 2 and dwarf juxtaposed predictors in multivariable models). The value of frailty in guiding cardiovascular care and as a therapeutic target is beginning to emerge and should be expanded in future applications to improve patient outcomes. The frailty assessment tools outlined should facilitate this task by promoting a validated tool set that will allow us to compare and synthesize the results of different studies and provide a frame of reference when evaluating novel frailty markers.

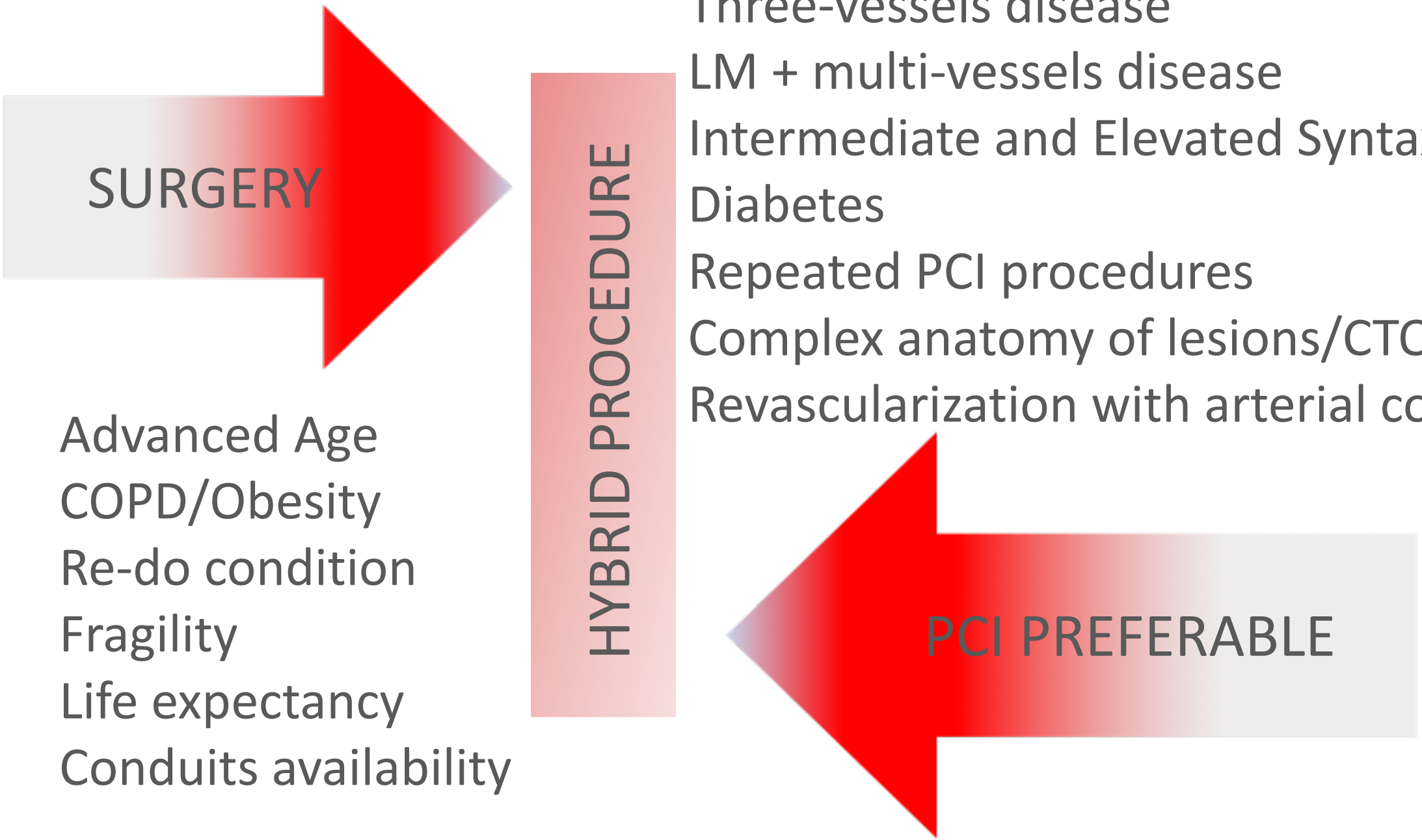
However, the most impressive question may not be what, but who. Who are the patients who may be too high risk for CABG, or who may not be anatomically suitable for PCI?

- If suitable, the overwhelming data for most multivessel disease, particularly if a left internal mammary artery graft can be utilized, is for CABG
- The question arises in those diabetic patients whose multivessel disease is less complex or those who are not good surgical candidates
- Thus, the decision for revascularization strategy is based on a continuum of factors and the heart team discussion is a vital component of the decision making process.



Not anatomically suitable for PCI

Too high risk for CABG


SURGERY
Advanced Age
COPD/Obesity
Re-do condition
Fragility
Life expectancy
Conduits availability
HYBRID PROCEDURE
Three-vessels disease
LM + multi-vessels disease
Intermediate and Elevated Syntax Score
Diabetes
Repeated PCI procedures
Complex anatomy of lesions/CTO
Revascularization with arterial conduits
PCI PREFERABLE

Summary Findings and Recommendations

Based on the major trials, in particular the FREEDOM study,[20] and in conjunction with the overall 5-year SYNTAX results, we agree that CABG surgery should be recommended in patients with diabetes and multivessel CAD, because it has been shown to have better survival and lower major adverse cardiac events. Based on the strong current evidence, we further recommend that both guidelines be urgently updated to a class I, level A indication.