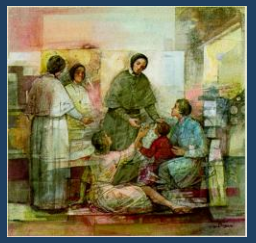
ECOCARDIOCHIRURGIA 2014

Milano 5-7 maggio 2014

La terapia della CAD nel 2014.

G Corrado, FANMCO, FESC
Unità Operativa di Cardiologia
Ospedale Valduce – Como (IT)

H. Valduce 1879



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La terapia della CAD nel 2014.
CONFLITTI D'INTERESSI: NESSUNO

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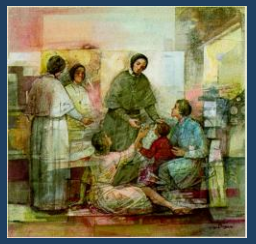


DIMENSIONI DEL PROBLEMA

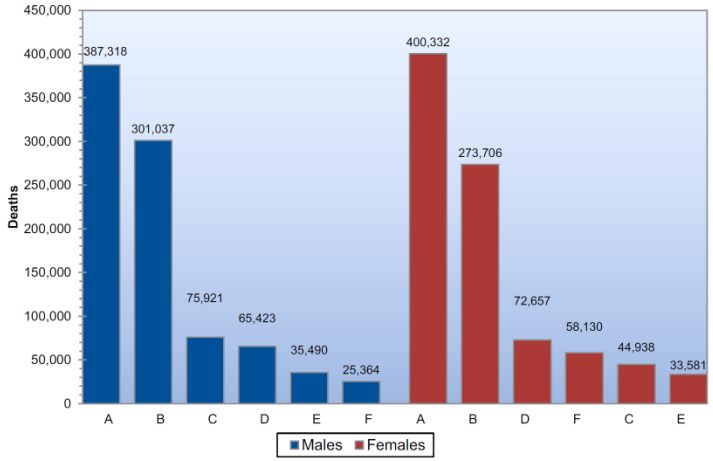


Chart 13-10. Cardiovascular disease and other major causes of death for all males and females (United States: 2010). A indicates cardiovascular disease plus congenital cardiovascular disease (*International Classification of Diseases, 10th Revision* codes I00–I99 and Q20–Q28); B, cancer (C00–C97); C, accidents (V01–X59 and Y85–Y86); D, chronic lower respiratory disease (J40–J47); E, diabetes mellitus (E10–E14); and F, Alzheimer disease (G30). Source: National Center for Health Statistics and National Heart, Lung, and Blood Institute.

AHA Statistical Update

Heart Disease and Stroke Statistics—2014 Update
A Report From the American Heart Association

American Heart Association®

Circulation. 2014;129:e28-e292

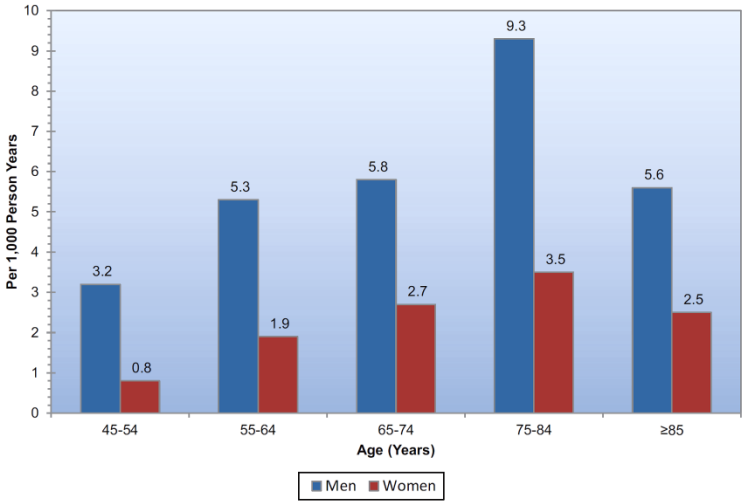


Chart 18-10. Incidence of angina pectoris (deemed uncomplicated on the basis of physician interview of patient) by age and sex (Framingham Heart Study 1986–2009). Data derived from National Heart, Lung, and Blood Institute.

ESC GUIDELINES

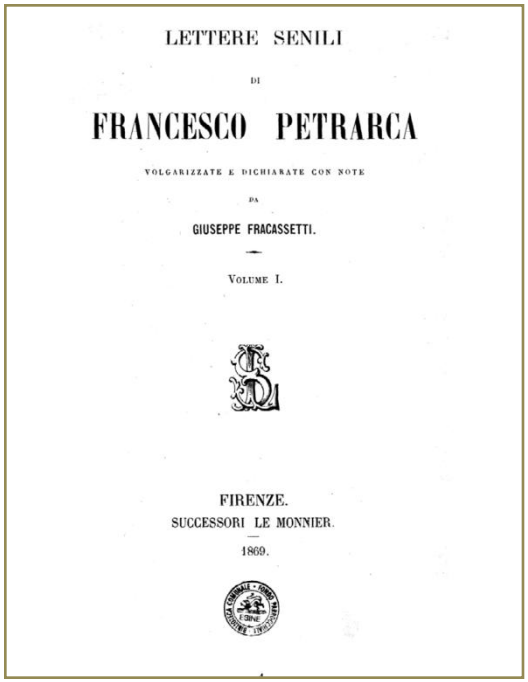
Table I Classes of recommendations

Classes of recommendations	Definition	Suggested wording to use
Class I	Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, effective.	Is recommended/is indicated
Class II	Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure.	
Class IIa	*Weight of evidence/opinion is in favour of usefulness/efficacy.*	Should be considered
Class IIb	*Usefulness/efficacy is less well established by evidence/opinion.*	May be considered
Class III	Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases may be harmful.	Is not recommended

Table 2 Levels of evidence

Level of evidence A	Data derived from multiple randomized clinical trials or meta-analyses.
Level of evidence B	Data derived from a single randomized clinical trial or large non-randomized studies.
Level of evidence C	Consensus of opinion of the experts and/or small studies, retrospective studies, registries.

STUDI RANDOMIZZATI NELLA STORIA DELLA MEDICINA



LETTERE SENILI

DI

FRANCESCO PETRARCA

VOLGARIZZATE E DICHIARATE CON NOTE

DA

GIUSEPPE FRACASSETTI.

VOLUME I.

FIRENZE.
SUCCESSORI LE MONNIER.

1869.

LIBRO QUINTO

LETTERA III

A GIOVANNI BOCCACCIO

Meum tibi consilium

Io penso adunque, e francamente dico e sostengo che, se cento o mille uomini, tutti d'una età, di una tempra, di un costume cadessero a un tratto in una medesima malattia, e una metà di loro si desse in cura a medici, quali son questi de' tempi nostri, l'altra metà si lasciasse in balìa della natura e della propria discrezione, io non mi lascio punto aver dubbio che il numero de' morti sarebbe maggiore fra i primi, e maggiore fra i secondi quello dei risanati.

DEFINIZIONI

Stable coronary artery disease is generally characterized by episodes of reversible myocardial demand/supply mismatch, related to ischaemia or hypoxia, which are usually inducible by exercise, emotion or other stress and reproducible—but, which may also be occurring spontaneously.

Table 5 Classification of angina severity according to the Canadian Cardiovascular Society

Class I	Ordinary activity does not cause angina such as walking and climbing stairs. Angina with strenuous or rapid or prolonged exertion at work or recreation.
Class II	Slight limitation of ordinary activity. Angina on walking or climbing stairs rapidly, walking or stair climbing after meals, or in cold, wind or under emotional stress, or only during the first few hours after awakening. Walking more than two blocks on the level and climbing more than one flight of ordinary stairs at a normal pace and in normal conditions.
Class III	Marked limitation of ordinary physical activity. Angina on walking one to two blocks[a] on the level or one flight of stairs in normal conditions and at a normal pace.
Class IV	Inability to carry on any physical activity without discomfort' – angina syndrome may be present at rest'.

[a]Equivalent to 100–200 m.

Table 4 Traditional clinical classification of chest pain

Typical angina (definite)	Meets all three of the following characteristics: • substernal chest discomfort of characteristic quality and duration; • provoked by exertion or emotional stress; • relieved by rest and/or nitrates within minutes.
Atypical angina (probable)	Meets two of these characteristics.
Non-anginal chest pain	Lacks or meets only one or none of the characteristics.

European Heart Journal (2013) 34, 2949–3003
doi:10.1093/eurheartj/eht296

ESC GUIDELINES

2013 ESC guidelines on the management of stable coronary artery disease

The Task Force on the management of stable coronary artery disease of the European Society of Cardiology

DEFINIZIONI

The various clinical presentations of SCAD are associated with different underlying mechanisms that mainly include:

1. plaque-related obstruction of epicardial arteries
2. focal or diffuse spasm of normal or plaque-diseased arteries
3. microvascular dysfunction
4. left ventricular dysfunction caused by prior acute myocardial necrosis and/or hibernation (ischaemic cardiomyopathy)

These mechanisms may act singly or in combination

DEFINIZIONI

Table 3 **Main features of stable coronary artery disease**

Pathogenesis
Stable anatomical atherosclerotic and/or functional alterations of epicardial vessels and/or microcirculation
Natural history
Stable symptomatic or asymptomatic phases which may be interrupted by ACS
Mechanisms of myocardial ischaemia
Fixed or dynamic stenoses of epicardial coronary arteries;
Microvascular dysfunction;
Focal or diffuse epicardial coronary spasm;
The above mechanisms may overlap in the same patient and change over time.
Clinical presentations
Effort induced angina caused by: • epicardial stenoses; • microvascular dysfunction; • vasoconstriction at the site of dynamic stenosis; • combination of the above.
Rest angina caused by: • Vasospasm (focal or diffuse) • epicardial focal; • epicardial diffuse; • microvascular; • combination of the above.
Asymptomatic: • because of lack of ischaemia and/or of LV dysfunction; • despite ischaemia and/or LV dysfunction.
Ischaemic cardiomyopathy

ACS = acute coronary syndrome; LV = left ventricular; SCAD = stable coronary artery disease.

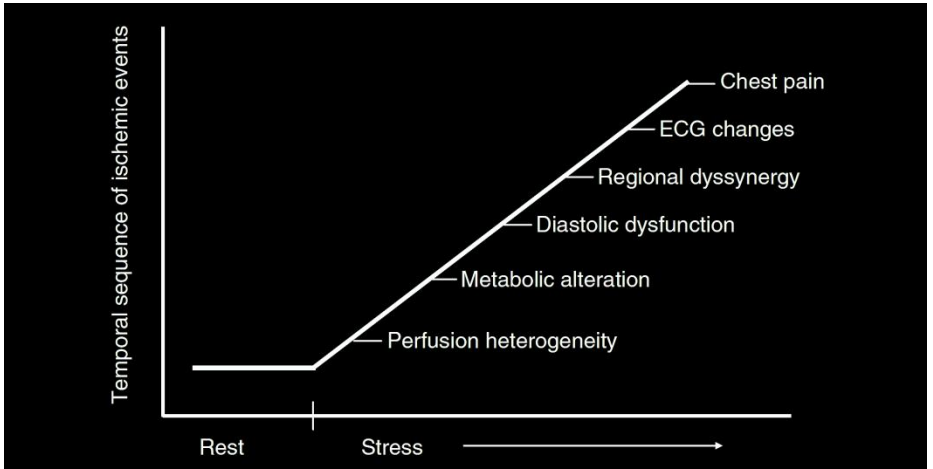
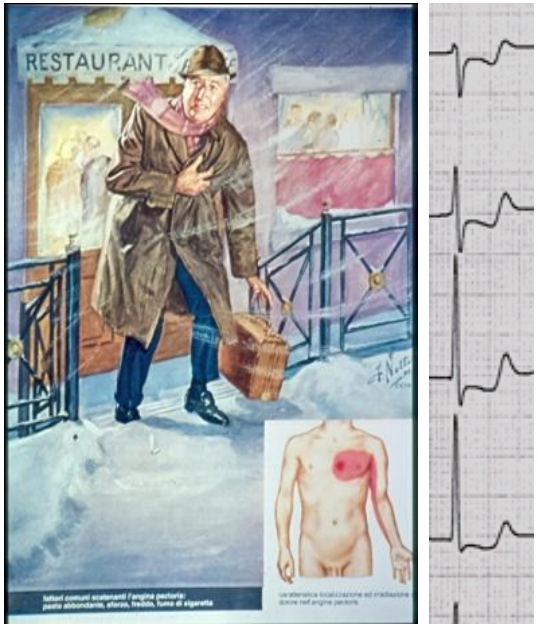


Fig. 3.1 The classical ischemic cascade, triggered by coronary vasospasm and/or epicardial stenosis. The various markers are usually ranked according to a well-defined time sequence



DIAGNOSI

PROBABILITA' PRE-TEST

- Patients in whom anginal pain may be possible but who have a very low probability of significant CAD < 15% should have other cardiac causes of chest pain excluded and their CV risk factors adjusted based on risk score assessment. No specific non-invasive stress testing should be performed.
- Patients with an intermediate PTP of 15–85% should undergo further non-invasive testing.
- In patients with a clinical PTP > 85%, the diagnosis of CAD should be made clinically and further testing will not improve accuracy. Further testing may, however, be indicated for stratification of risk of events, especially if no satisfactory control of symptoms is possible with initial medical therapy

DIAGNOSI

Table 12 Characteristics of tests commonly used to diagnose the presence of coronary artery disease

	Diagnosis of CAD	
	Sensitivity (%)	Specificity (%)
Exercise ECG [a, 91, 94, 95]	45–50	85–90
Exercise stress echocardiography[96]	80–85	80–88
Exercise stress SPECT[96-99]	73–92	63–87
Dobutamine stress echocardiography[96]	79–83	82–86
Dobutamine stress MRI[b,100]	79–88	81–91
Vasodilator stress echocardiography[96]	72–79	92–95
Vasodilator stress SPECT[96, 99]	90–91	75–84
Vasodilator stress MRI[b,98, 100-102]	67–94	61–85
Coronary CTA[c,103-105]	95–99	64–83
Vasodilator stress PET[97, 99, 106]	81–97	74–91

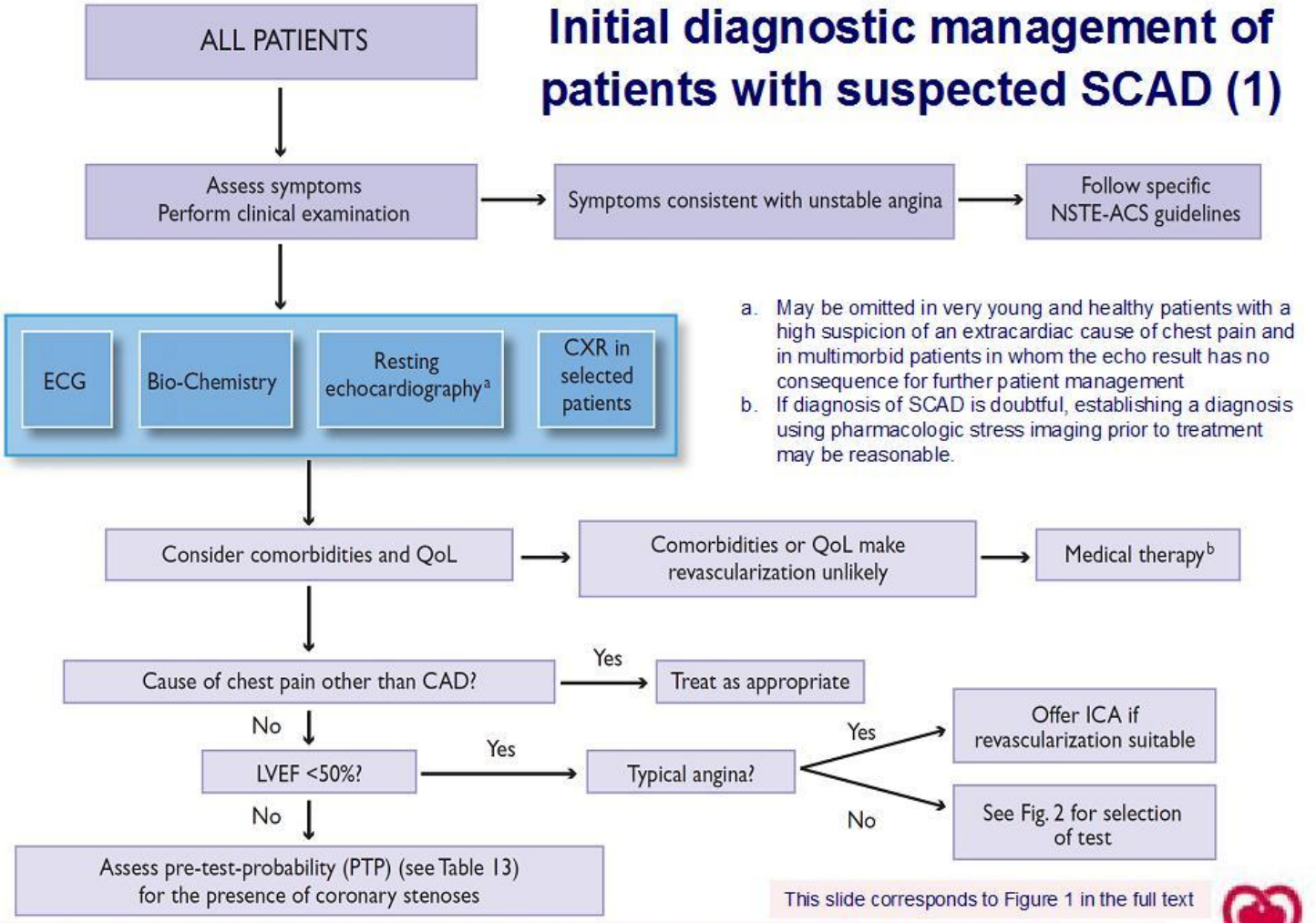
CAD = coronary artery disease; CTA = computed tomography angiography; ECG = electrocardiogram; MRI = magnetic resonance imaging; PET = positron emission tomography; SPECT = single photon emission computed tomography.
[a] Results without/with minimal referral bias.
[b] Results obtained in populations with medium-to-high prevalence of disease without compensation for referral bias.
[c] Results obtained in populations with low-to-medium prevalence of disease.

Table 13 Clinical pre-test probabilities[a] in patients with stable chest pain symptoms[108]

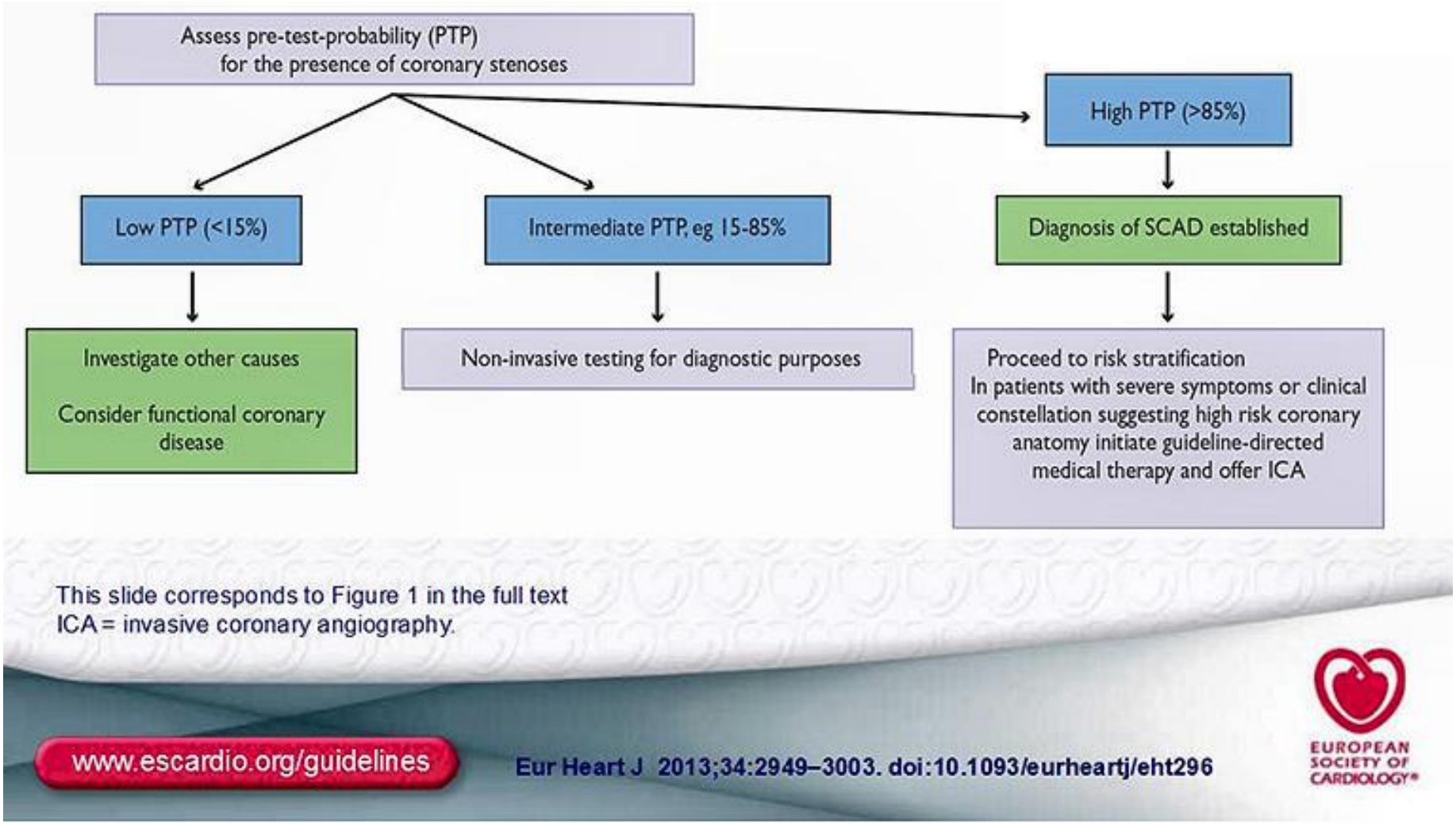
	Typical angina		Atypical angina		Non-anginal pain	
Age	Men	Women	Men	Women	Men	Women
30–39	59	28	29	10	18	5
40–49	69	37	38	14	25	8
50–59	77	47	49	20	34	12
60–69	84	58	59	28	44	17
70–79	89	68	69	37	54	24
>80	93	76	78	47	65	32

ECG = electrocardiogram; PTP = pre-test probability; SCAD = stable coronary artery disease.
[a] Probabilities of obstructive coronary disease shown reflect the estimates for patients aged 35, 45, 55, 65, 75 and 85 years.
- Groups in white boxes have a PTP <15% and hence can be managed without further testing.
- Groups in blue boxes have a PTP of 15–65%. They could have an exercise ECG if feasible as the initial test. However, if local expertise and availability permit a non-invasive imaging based test for ischaemia this would be preferable given the superior diagnostic capabilities of such tests. In young patients radiation issues should be considered.
- Groups in light red boxes have PTPs between 66–85% and hence should have a non-invasive imaging functional test for making a diagnosis of SCAD.
- In groups in dark red boxes the PTP is >85% and one can assume that SCAD is present. They need risk stratification only.

GESTIONE DIAGNOSTICA INIZIALE



GESTIONE DIAGNOSTICA INIZIALE



RISCHIO DI IM/MORTE CV

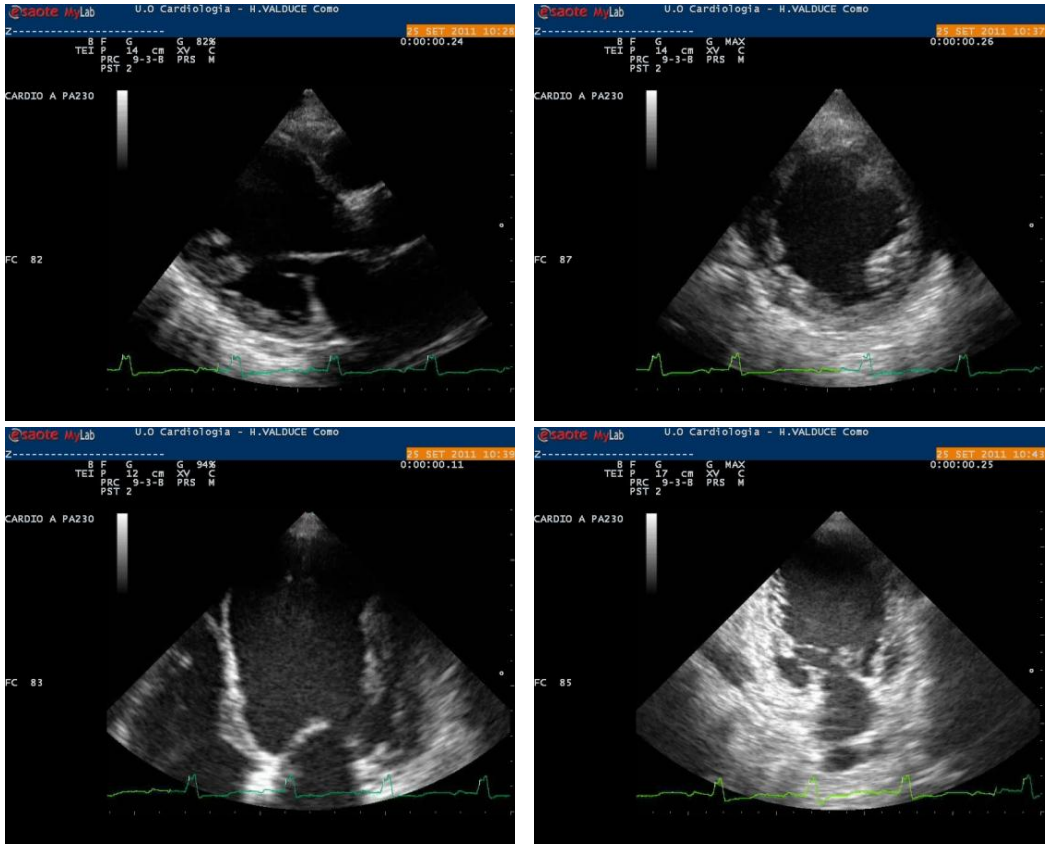
- The process of risk stratification serves to identify patients at high event risk who will benefit from revascularization beyond the amelioration of symptoms.
- Patients with an annual mortality >3% are defined as high event risk patients. Low event risk patients are those with an annual mortality < 1% per year. The intermediate event risk group has an annual mortality of ≥1% but ≤3% per year

RISCHIO DI IM/MORTE CV

- Event risk stratification generally follows a pyramidal structure, with all patients having event risk stratification by clinical evaluation as the most basic requirement, proceeding to assessment of ventricular function by resting echocardiography and, in the majority, to noninvasive assessment of ischaemia/coronary anatomy.
- An ICA for risk stratification will only be required in a selected subgroup of patients.

LV FUNCTION

- The strongest predictor of long-term survival is LV function
- A patient with an LVEF<50% is already at high risk for CV death (annual mortality > 3%), even without accounting for additional event risk factors



Recommendation	Class	Level
Resting echocardiography is recommended to quantify LV function in all patients with suspected SCAD.	I	C

NONINVASIVE ASSESSMENT OF ISCHEMIA/CORONARY ANATOMY

Table 17 Definitions of risk for various test modalities[a]

Exercise stress ECG[b]	High risk Intermediate risk Low risk	CV mortality >3%/year. CV mortality between 1 and 3%/year. CV mortality <1%/year.
Ischaemia imaging	High risk Intermediate risk Low risk	Area of ischaemia >10% (>10% for SPECT; limited quantitative data for CMR – probably ≥2/16 segments with new perfusion defects or ≥3 dobutamine-induced dysfunctional segments; ≥ 3 segments of LV by stress echo). Area of ischaemia between 1 to 10% or any ischaemia less than high risk by CMR or stress echo. No ischaemia.
Coronary CTA[c]	High risk Intermediate rick Low risk	Significant lesions of high risk category (three-vessel disease with proximal stenoses, LM, and proximal anterior descending CAD). Significant lesion(s) in large and proximal coronary artery(ies) but not high risk category. Normal coronary artery or plaques only.

CAD = coronary artery disease; CMR = cardiac magnetic resonance; CTA = computed tomography angiography; CV = cardiovascular; ECG = electrocardiogram; ICA = invasive coronary angiography; LM = left main; PTP = pre-test probability; SPECT = single photon emission computed tomography.

[a] For detailed explanation on rationale for risk stratification scheme see web addenda.

[b] From nomogram (see web addenda, Figure W1) or http://www.cardiology.org/tools/medcalc/duke/

[c] See Fig 2 consider possible overestimation of presence of significant multivessel disease by coronary CTA in patients with high intermediate PTP (≥50%) and/or severe diffuse or focal coronary calcifications and consider performing additional stress testing in patients without severe symptoms before ICA.

ICA

- The simplest and most widely used prognostic index is the classification of disease into one-vessel, two vessel, three-vessel, or LM stem CAD
- Patients with severe stenosis of the LM coronary artery have a poor prognosis when treated medically. The presence of severe proximal LAD disease also significantly reduces the survival rate
- However, it should be appreciated that, in these ‘older’ studies, preventive therapy was not at the level of current recommendations regarding both lifestyle and drug therapy. Accordingly, absolute estimates of event risk derived from these studies probably overestimate the risk of future events

STRATIFICAZIONE "ANATOMICA" DEL RISCHIO

Table 20 **Risk stratification by invasive or non-invasive coronary arteriography in patients with stable coronary artery disease**

Recommendations	Class [a]	Level [b]
ICA (with FFR when necessary) is recommended for risk stratification in patients with severe stable angina (CCS 3) or with a clinical profile suggesting a high event risk, particularly if the symptoms are inadequately responding to medical treatment.	I	C
ICA (with FFR when necessary) is recommended for patients with mild or no symptoms with medical treatment in whom non-invasive risk stratification indicates a high event risk and revascularisation is considered for improvement of prognosis.	I	C
ICA (with FFR when necessary) should be considered for event risk stratification in patients with an inconclusive diagnosis on non-invasive testing, or conflicting results from different non-invasive modalities.	IIa	C
If coronary CTA is available for event risk stratification, possible overestimation of stenosis severity should be considered in segments with severe calcification, especially in patients at high intermediate PTP. Additional stress imaging may be necessary before referring a patient with few/no symptoms to ICA.	IIa	C

CCS = Canadian Cardiovascular Society; CTA = computed tomography angiography; FFR = fractional flow reserve; ICA = invasive coronary angiography; PTP = pre-test probability; SCAD = stable coronary artery disease.

[a] Class of recommendation.

[b] Level of evidence.

INTEGRAZIONE DEI DATI

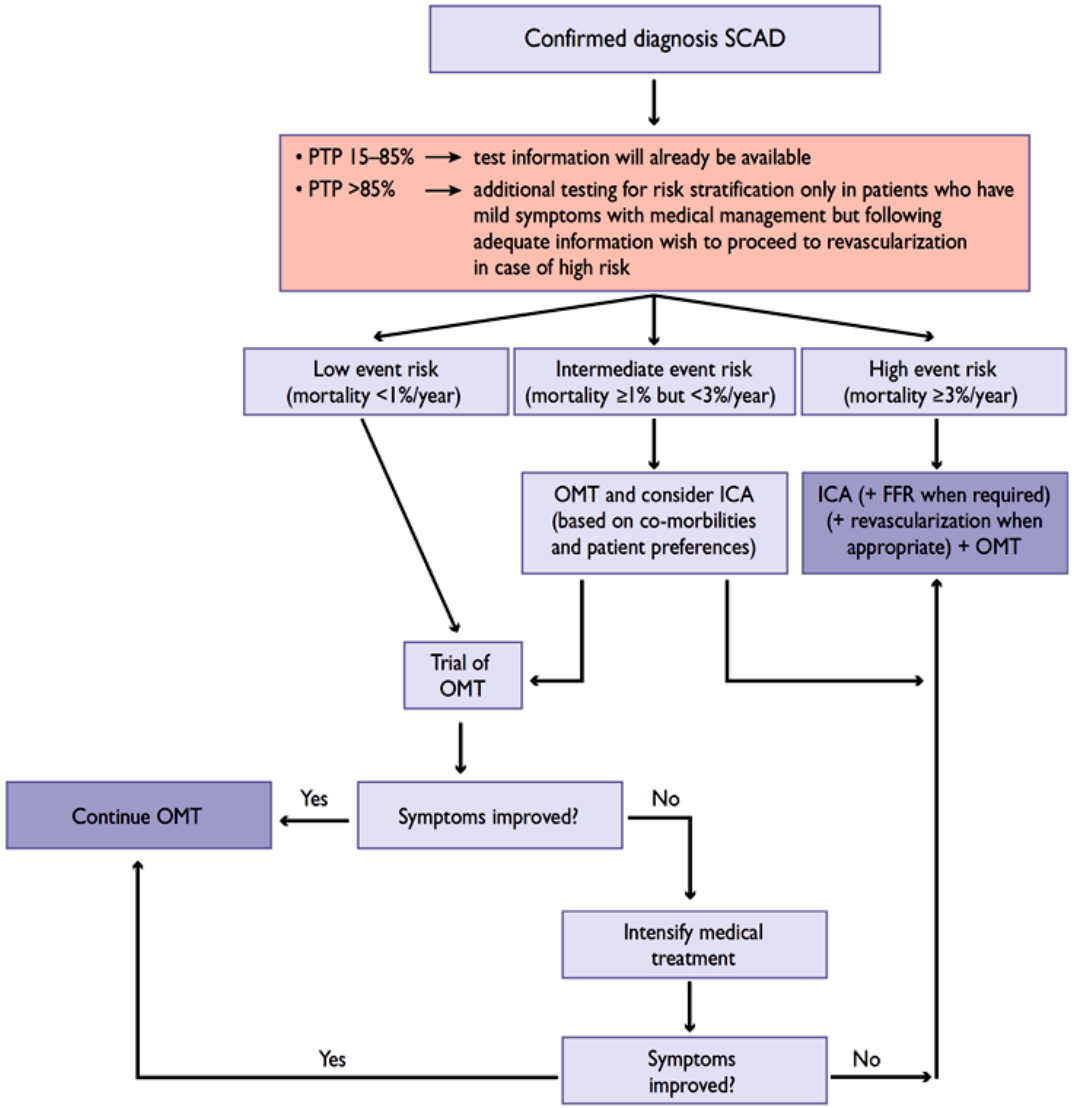


Figure 3 Management based on risk determination for prognosis in patients with chest pain and suspected SCAD (for choice of test see Fig. 2, for definitions of event risk see Table 17). ICA = invasive coronary angiography; OMT = optimal medical therapy; PTP = pre-test probability; SCAD = stable coronary artery disease.

LA VITA REALE

Frequency of Stress Testing to Document Ischemia Prior to Elective Percutaneous Coronary Intervention

Grace A. Lin, MD, MAS
R. Adams Dudley, MD, MBA
F. L. Lucas, PhD
David J. Malenka, MD
Eric Vittinghoff, PhD
Rita F. Redberg, MD, MSc

Context Guidelines call for documenting ischemia in patients with stable coronary artery disease prior to elective percutaneous coronary intervention (PCI).

Objective To determine the frequency and predictors of stress testing prior to elective PCI in a Medicare population.

Design, Setting, and Patients Retrospective, observational cohort study using claims data from a 20% random sample of 2004 Medicare fee-for-service beneficiaries aged 65 years or older who had an elective PCI (N=23 887).

Main Outcome Measures Percentage of patients who underwent stress testing within 90 days prior to elective PCI; variation in stress testing prior to PCI across 306 hospital referral regions; patient, physician, and hospital characteristics that predicted the appropriate use of stress testing prior to elective PCI.

Results In the United States, 44.5% (n=10 629) of patients underwent stress testing within the 90 days prior to elective PCI. There was wide regional variation among the hospital referral regions with stress test rates ranging from 22.1% to 70.6% (national mean, 44.5%; interquartile range, 39.0%-50.9%). Female sex (adjusted odds ratio [AOR], 0.91; 95% confidence interval [CI], 0.86-0.97), age of 85 years or older (AOR, 0.83; 95% CI, 0.72-0.95), a history of congestive heart failure (AOR, 0.85; 95% CI, 0.79-0.92), and prior cardiac catheterization (AOR, 0.45; 95% CI, 0.38-0.54) were associated with a decreased likelihood of prior stress testing. A history of chest pain (AOR, 1.28; 95% CI, 1.09-1.54) and black race (AOR, 1.26; 95% CI, 1.09-1.46) increased the likelihood of stress testing prior to PCI. Patients treated by physicians performing 150 or more PCIs per year were less likely to have stress testing prior to PCI (AOR, 0.84; 95% CI, 0.77-0.93). No hospital characteristics were associated with receipt of stress testing.

Conclusion The majority of Medicare patients with stable coronary artery disease do not have documentation of ischemia by noninvasive testing prior to elective PCI.

JAMA. 2008;300(15):1765-1773 www.jama.com

In the United States, percutaneous coronary intervention (PCI) has become a common treatment strategy for patients with stable coronary artery disease (CAD) and such patients now account for the majority of PCIs performed.[1,2] However, multiple studies have established that some important outcomes for patients with stable CAD (death and risk of future myocardial infarction) do not differ between patients treated with PCI plus optimal medical therapy and patients treated with optimal medical therapy alone.[3-10] The addition of PCI does offer quicker relief of angina than medical therapy alone but also carries an increased risk of repeat revascularization, late-stent thrombosis, and a decreased

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evidence of ischemia (not just visualization of anatomy) is crucial in determining if the use of PCI is appropriate.

TERAPIA

FINALITA’

- Migliorare i sintomi
- Migliorare la mortalita’

APPROCCI

- Modificazione degli stili di vita
- OMT
- OMT + rivascolarizzazione

STILI DI VITA

- **Quitting smoking** is potentially the most effective of all preventive measures, being associated with a reduction in mortality of 36% after MI
- **Diet**
- Regular **physical activity** is associated with a decrease in CV morbidity and mortality in patients with established CAD
- **Weight reduction** in overweight and obese people is recommended in order to achieve favourable effects on BP, dyslipidaemia and glucose metabolism
- **Dyslipidemia , hypertension and diabetes** should be managed according to lipid guidelines with pharmacological and lifestyle intervention

STILI DI VITA

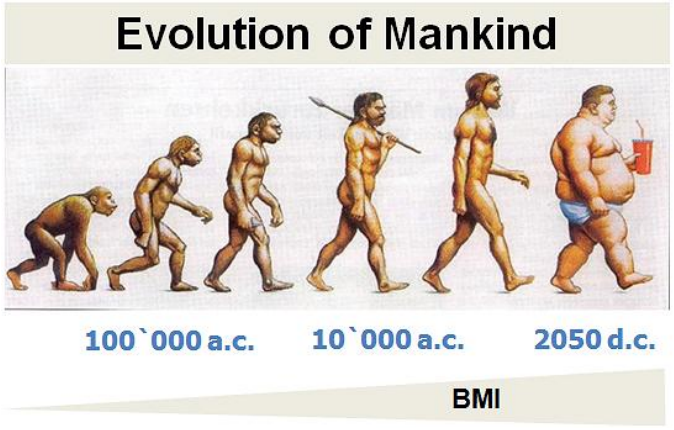
Table 26 **Blood pressure thresholds for definition of hypertension with different types of blood pressure measurement (adapted from Umpierrez *et al.* 2012 [273]).**

	SBP (mmHg)	D BP (mmHg)
Office BP	140	90
Home BP	135	85
Ambulatory BP		
24-h	130	80
Daytime (or awake)	135	85
Nighttime (or asleep)	120	70

BP= blood pressure; DPB= diastolic blood pressure; SBP= systolic blood pressure.

Table 25 **Recommended diet intakes**

- Saturated fatty acids to account for <10% of total energy intake, through replacement by polyunsaturated fatty acids.
- Trans unsaturated fatty acids <1% of total energy intake.
- <5 g of salt per day.
- 30–45 g of fibre per day, from wholegrain products, fruits and vegetables.
- 200 g of fruit per day (2–3 servings).
- 200 g of vegetables per day (2–3 servings).
- Fish at least twice a week, one being oily fish.
- Consumption of alcoholic beverages should be limited to 2 glasses per day (20 g/day of alcohol) for men and 1 glass per day (10 g/day of alcohol) for non-pregnant women.



PCI VS EXERCISE IN NONACUTE CAD

Percutaneous Coronary Angioplasty Compared With Exercise Training in Patients With Stable Coronary Artery Disease

A Randomized Trial

Rainer Hambrecht, MD; Claudia Walther, MD; Sven Möbius-Winkler, MD; Stephan Gielen, MD; Axel Linke, MD; Katrin Conradi, MD; Sandra Erbs, MD; Regine Kluge, MD; Kai Kendziorra, MD; Osama Sabri, MD; Peter Sick, MD; Gerhard Schuler, MD

Background—Regular exercise in patients with stable coronary artery disease has been shown to improve myocardial perfusion and to retard disease progression. We therefore conducted a randomized study to compare the effects of exercise training versus standard percutaneous coronary intervention (PCI) with stenting on clinical symptoms, angina-free exercise capacity, myocardial perfusion, cost-effectiveness, and frequency of a combined clinical end point (death of cardiac cause, stroke, CABG, angioplasty, acute myocardial infarction, and worsening angina with objective evidence resulting in hospitalization).

Methods and Results—A total of 101 male patients aged ≤70 years were recruited after routine coronary angiography and randomized to 12 months of exercise training (20 minutes of bicycle ergometry per day) or to PCI. Cost efficiency was calculated as the average expense (in US dollars) needed to improve the Canadian Cardiovascular Society class by 1 class. Exercise training was associated with a higher event-free survival (88% versus 70% in the PCI group, $P=0.023$) and increased maximal oxygen uptake (+16%, from 22.7±0.7 to 26.2±0.8 mL O_2/kg, $P<0.001$ versus baseline, $P<0.001$ versus PCI group after 12 months). To gain 1 Canadian Cardiovascular Society class, $6956 was spent in the PCI group versus $3429 in the training group ($P<0.001$).

Conclusions—Compared with PCI, a 12-month program of regular physical exercise in selected patients with stable coronary artery disease resulted in superior event-free survival and exercise capacity at lower costs, notably owing to reduced rehospitalizations and repeat revascularizations. **(*Circulation*. 2004;109:1371-1378.)**

Key Words: coronary disease ■ exercise ■ angina ■ angioplasty ■ cost-benefit analysis

Circulation
JOURNAL OF THE AMERICAN HEART ASSOCIATION
American Heart Association. Learn and Live.

Percutaneous Coronary Angioplasty Compared With Exercise Training in Patients With Stable Coronary Artery Disease: A Randomized Trial
Rainer Hambrecht, Claudia Walther, Sven Möbius-Winkler, Stephan Gielen, Axel Linke, Katrin Conradi, Sandra Erbs, Regine Kluge, Kai Kendziorra, Osama Sabri, Peter Sick and Gerhard Schuler
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 Print ISSN: 0009-7322. Online ISSN: 1524-4539

2004

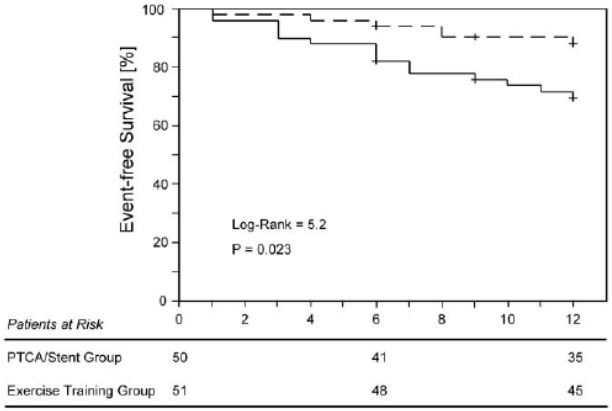

Table 28 **Pharmacological treatments in stable coronary artery disease patients**

Indication	Class [a]	Level [b]	Ref. [c]
General considerations			
Optimal medical treatment indicates at least one drug for angina/ischaemia relief plus drugs for event prevention.	I	C	-
It is recommended to educate patients about the disease, risk factors and treatment strategy.	I	C	-
It is indicated to review the patient's response soon after starting therapy.	I	C	-
Angina/ischaemia[d] relief			
Short-acting nitrates are recommended.	I	B	3, 329
First-line treatment is indicated with ß-blockers and/or calcium channel blockers to control heart rate and symptoms.	I	A	3, 331
For second-line treatment it is recommended to add long-acting nitrates or ivabradine or nicorandil or ranolazine, according to heart rate, blood pressure and tolerance.	IIa	B	177, 307, 3, 199, 284, 286, 308, 319-321, 328
For second-line treatment, trimetazidine may be considered.	IIb	B	313, 315
According to comorbidities/tolerance it is indicated to use second-line therapies as first-line treatment in selected patients.	I	C	-
In asymptomatic patients with large areas of ischaemia (>10%) ß-blockers should be considered.	IIa	C	-
In patients with vasospastic angina, calcium channel blockers and nitrates should be considered and beta-blockers avoided.	IIa	B	3, 365
Event prevention			
Low-dose aspirin daily is recommended in all SCAD patients.	I	A	333, 334, 366
Clopidogrel is indicated as an alternative in case of aspirin intolerance.	I	B	335
Statins are recommended in all SCAD patients.	I	A	62
It is recommended to use ACE inhibitors (or ARBs) if presence of other conditions (e.g. heart failure, hypertension or diabetes).	I	A	348, 349, 351, 352

ACE = angiotensin converting enzyme; SCAD = stable coronary artery disease.
[a] Class of recommendation.
[b] Level of evidence.
[c] Reference(s) supporting levels of evidence.
[d] No demonstration of benefit on prognosis

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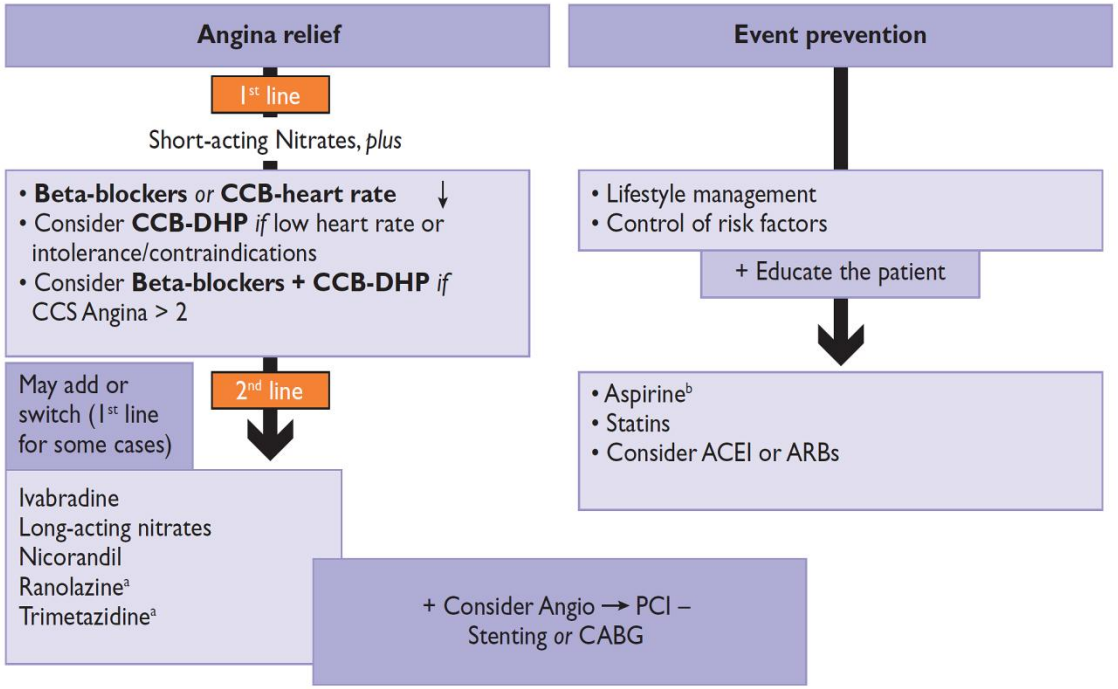

Figure 4 Medical management of patients with stable coronary artery disease. ACEI = angiotensin converting enzyme inhibitor; CABG = coronary artery bypass graft; CCB = calcium channel blockers; CCS = Canadian Cardiovascular Society; DHP = dihydropyridine; PCI = percutaneous coronary intervention.

[a]Data for diabetics.

[b]if intolerance, consider clopidogrel

THE REAL WORLD


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Lancet 2009; 373: 929–40
See Editorial page 867
See Comment page 873
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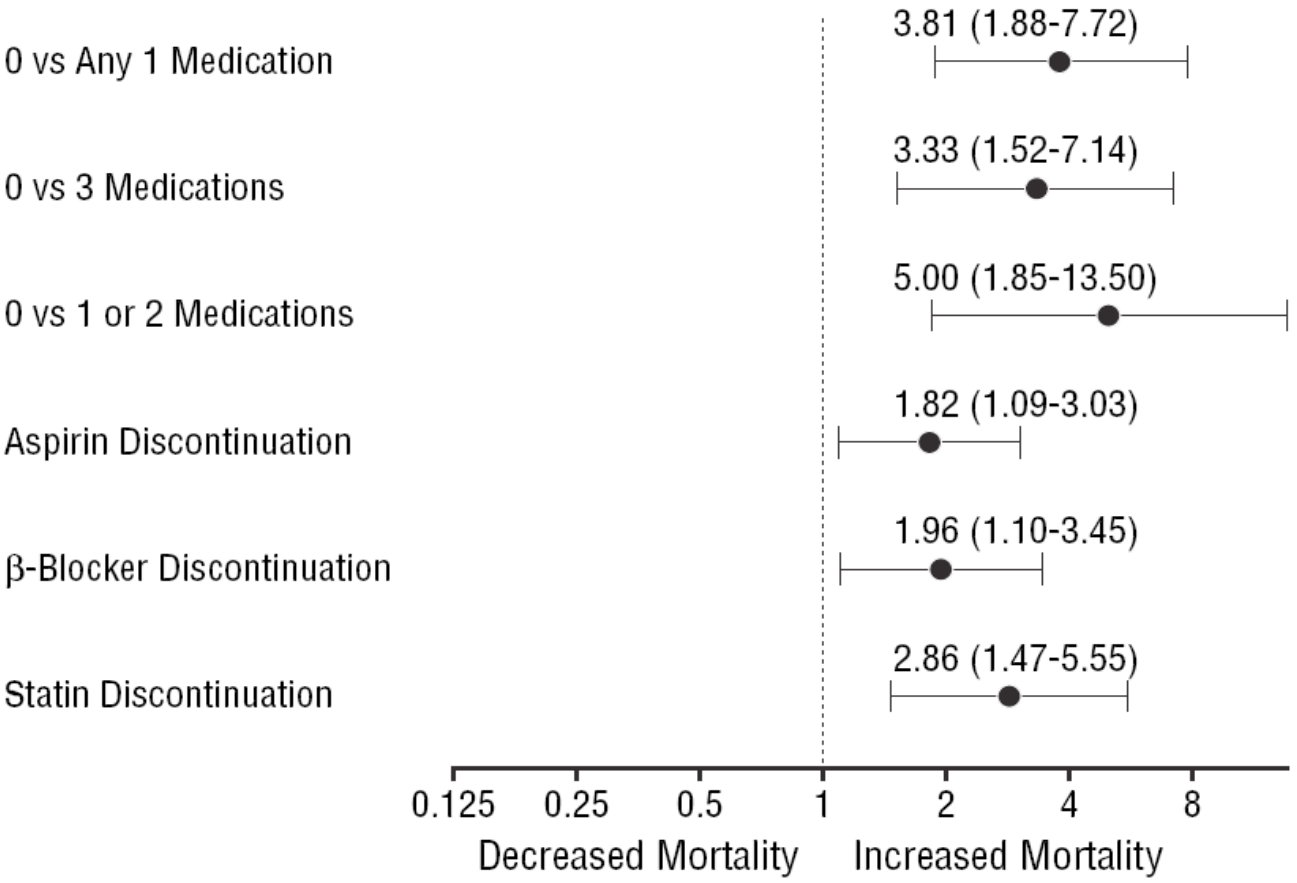
ADERENZA A LUNGO TERMINE

Long-term adherence to EB secondary prevention therapies after ACS (Duke Databank n=31750 pts)

Adherence to pharmacological therapy after 6 months	
Aspirin	76.6%
B-blockers	50.9%
Statins	40.5%
ACE-i/ATII	31.0%
CC blockers	29.4%

Newby et al, Circulation 2006; 113: 203-12

DISCONTINUATION OF EB THERAPIES AFTER ACS AND CLINICAL OUTCOME



Ho PM, et al Arch. Int. Med. 2006; 166:1842-1846

ADHERENCE TO MEDICATION

Drugs don't work in patients

who don't take them

The NEW ENGLAND JOURNAL of MEDICINE

Orsterberg L and Blaschke T, *N Engl J Med* 2005;353:487-97

REVASCULARIZATION vs OMT

The decision to revascularize a patient should be based on the presence of significant obstructive coronary artery stenosis, the amount of related ischaemia and the expected benefit to prognosis and/or symptoms

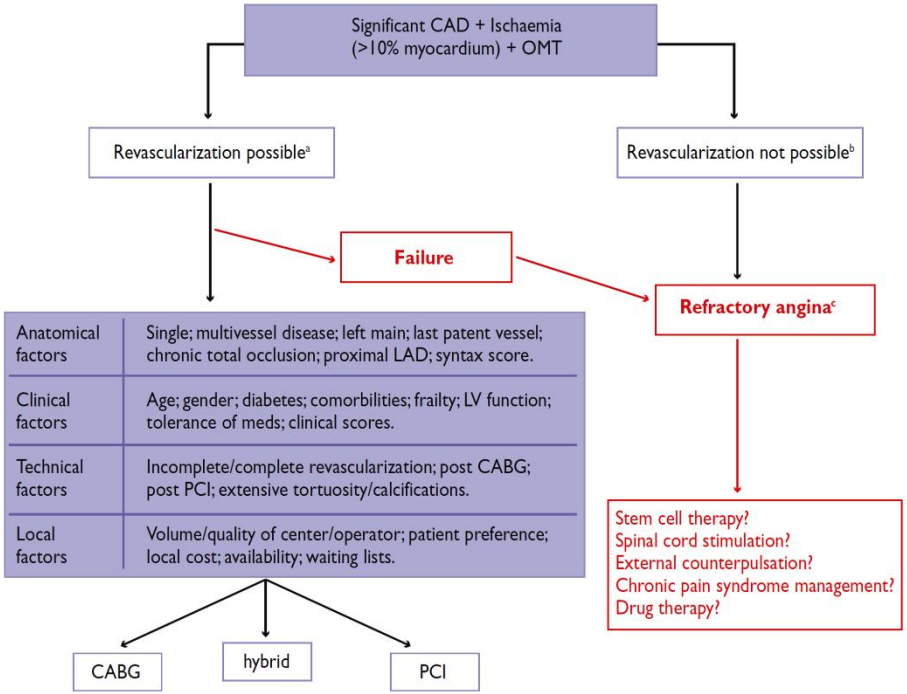


Figure 5 Global strategy of intervention in stable coronary artery disease (SCAD) patients with demonstrated ischaemia. CABG = coronary artery bypass graft; CAD= coronary artery disease; LAD = left anterior descending; LV = left ventricular; OMT = optimal medical treatment; PCI = percutaneous coronary intervention.
[a]Indication of revascularization for prognosis or symptoms (see *Table* 32).
[b]Not suitable for revascularization due to anatomy or clinical conditions.
[c]See section 9.

In general, revascularization improves survival in 'sicker' patients, especially in the presence of LV dysfunction

REVASCULARIZATION + OMT

Table 32 **Indications for revascularization of stable coronary artery disease patients on optimal medical therapy (adapted from ESC/EACTS 2010 Guidelines)[172]**

Indication [a]	To improve prognosis:		To improve symptoms persistent on OMT:		
	Class [d]	Level [e]	Class [d]	Level [e]	Ref. [f]
A Heart Team approach to revascularization is recommended in patients with unprotected left main, 2–3 vessel disease, diabetes or comorbidities.	I	C	I	C	172, 426–428
Left main >50% diameter stenosis[b].	I	A	I	A	172
Any proximal LAD >50% diameter stenosis[b].	I	A	I	A	172
2–3 vessel disease with impaired LV function / CHF.	I	B	IIa	B	172
Single remaining vessel (>50% diameter stenosis[b]).	I	C	I	A	172
Proven large area of ischaemia (>10% LV[c])	I	B	I	B	172
Any significant stenosis with limiting symptoms or symptoms non responsive/intolerant to OMT.	NA	NA	I	A	172
Dyspnoea/cardiac heart failure with >10% ischaemia/viability[c] supplied by stenosis >50%.	IIb	B [429, 430]	IIa	B	172
No limiting symptoms with OMT in vessel other than left main or proximal LAD or single remaining vessel or vessel subtending area of ischaemia <10% of myocardium or with FFR ≥0.80.	III	A	III	C	23, 25, 172, 400

References attached to these recommendations can be found in Table 8 of the original ESC guidelines for myocardial revascularization.[172]
CCS = Canadian Cardiovascular Society; CHF: congestive heart failure; FFR = fractional fow reserve; LAD = left anterior descending; LV = left ventricle; NA: not available; OMT = optimal medical treatment; SCAD = stable coronary artery disease.
[a] In asymptomatic patients, the decision will be guided by the extent of ischaemia on stress testing.
[b] With documented ischaemia or FFR < 0.80 for angiographic diameter stenoses 50–90%.
[c] As assessed by non-invasive test (SPECT, MRI, stress echocardiography).
[d] Class of recommendation.
[e] Level of evidence.
[f] Reference(s) supporting levels of evidence.

REVASCULARIZATION IN LOWER RISK POPULATION

REVIEW ARTICLE

LESS IS MORE

Initial Coronary Stent Implantation With Medical Therapy vs Medical Therapy Alone for Stable Coronary Artery Disease

Meta-analysis of Randomized Controlled Trials

Kathleen Stergiopoulos, MD, PhD; David L. Brown, MD

Background: Prior meta-analyses have yielded conflicting results regarding the outcomes of treatment of stable coronary artery disease (CAD) with initial percutaneous coronary intervention (PCI) vs medical therapy. However, most of the studies in prior systematic reviews used balloon angioplasty as well as medical therapies that do not reflect current interventional or medical practices. We therefore performed a meta-analysis of all randomized clinical trials comparing initial coronary stent implantation with medical therapy to determine the effect on death, nonfatal myocardial infarction (MI), unplanned revascularization, and persistent angina.

Methods: Prospective randomized trials were identified by searches of the MEDLINE database from 1970 to September 2011. Trials in which stents were used in less than 50% of PCI procedures were excluded. Data were extracted from each study, and summary odds ratios (ORs) were obtained using a random effects model.

Results: Eight trials enrolling 7229 patients were identified. Three trials enrolled stable patients after MI, whereas 5 studies enrolled patients with stable angina and/or ischemia on stress testing. Mean weighted follow-up was 4.3 years. The respective event rates for death with stent implantation and medical therapy were 8.9% and 9.1% (OR, 0.98; 95% CI, 0.84-1.16); for nonfatal MI, 8.9% and 8.1% (OR, 1.12; 95% CI, 0.93-1.34); for unplanned revascularization, 21.4% and 30.7% (OR, 0.78; 95% CI, 0.57-1.06); and for persistent angina, 29% and 33% (OR, 0.80; 95% CI, 0.60-1.05).

Conclusion: Initial stent implantation for stable CAD shows no evidence of benefit compared with initial medical therapy for prevention of death, nonfatal MI, unplanned revascularization, or angina.

Arch Intern Med. 2012;172(4):312-319

The significant finding of this analysis is that compared with a strategy of initial medical therapy alone, coronary stent implantation in combination with medical therapy for stable CAD is not associated with a significant reduction in mortality, nonfatal MI, unplanned revascularization, or angina after a mean follow-up of 4.3 years.

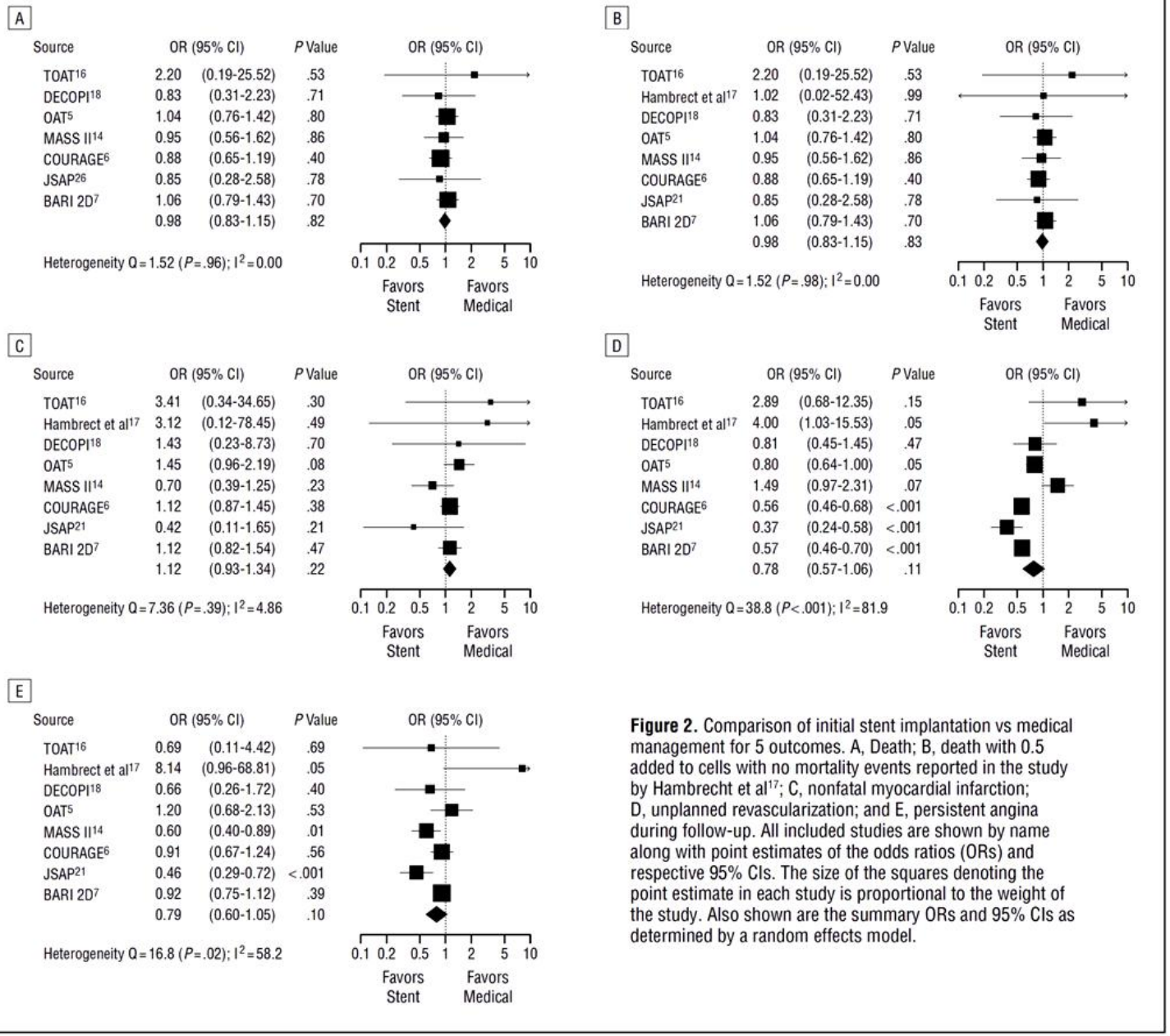


Figure 2. Comparison of initial stent implantation vs medical management for 5 outcomes. A, Death; B, death with 0.5 added to cells with no mortality events reported in the study by Hambrecht et al[17]; C, nonfatal myocardial infarction; D, unplanned revascularization; and E, persistent angina during follow-up. All included studies are shown by name along with point estimates of the odds ratios (ORs) and respective 95% CIs. The size of the squares denoting the point estimate in each study is proportional to the weight of the study. Also shown are the summary ORs and 95% CIs as determined by a random effects model.

2012

REVIEW ARTICLE

LESS IS MORE

Initial Coronary Stent Implantation With Medical Therapy vs Medical Therapy Alone for Stable Coronary Artery Disease

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PCI vs OMT IN SCAD


REVIEW ARTICLE

LESS IS MORE

Initial Coronary Stent Implantation With Medical Therapy vs Medical Therapy Alone for Stable Coronary Artery Disease

Meta-analysis of Randomized Controlled Trials

Kathleen Stergiopoulos, MD, PhD; David L. Brown, MD

- **Over 400.000 PCI procedures are performed for the treatment of stable CAD in the USA each year.**
- **Despite publication of clinical trials and guidelines supporting the initial use of optimal medical therapy prior to PCI, only 44% of patients are treated with optimal medical therapy prior to PCI, and approximately 50% of patients with an occluded infarct-related artery after an MI undergo PCI of that artery.**
- **The existing data do not demonstrate the clear superiority of medical therapy for any clinical outcome.**
- **Financial rewards for physicians and hospitals to perform PCI in the fee-for-service health care environment of the United States may contribute to the persistent use of PCI in settings where it has been shown to offer no clinical benefit.**

RESISTANCE TO ADHERENCE TO RECOMMENDATIONS

While physicians outwardly worship at the altar of evidence-based medicine, in reality, we more often tend to practice selective evidence-based medicine by adopting and embracing those trials and studies with results that reinforce our existing clinical practice preferences or biases, while we ignore or disdain the results of studies with results that are unpopular, conflict with our existing clinical practice beliefs, or collide with the conventional wisdom.

Boden WE
Mounting Evidence for Lack of PCI Benefit in Stable Ischemic Heart Disease
What More Will It Take to Turn the Tide of Treatment?
***Arch Int Med* 2012;172:320-21**

CONCLUSIONI

Unfortunately, we're paid for what we do and not for what we think.

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Indianapolis, IN