SIMPOSIO “EAC ACTUALIDADES”

INTERVENCIONISMO EN ANGINA ESTABLE

XVIII JORNADAS SOLACI GUAYAQUIL 2012

SOLACI
SOCIEDAD LATINOAMERICANA DE CARDIOLOGIA INTERVENCIONISTA

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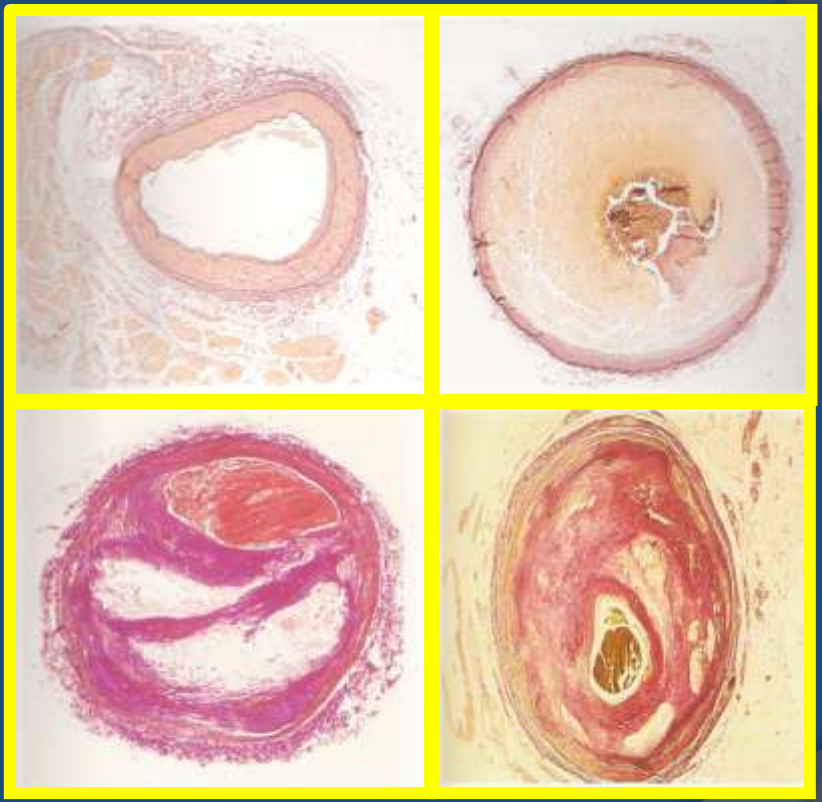
ANGINA ESTABLE

DEFINICION CLINICA

"SINDROME CLINICO CARACTERIZADO POR DOLOR, OPRESION O MALESTAR, GENERALMENTE TORACICO ATRIBUIBLE A ISQUEMIA MIOCARDICA TRANSITORIA CON ALTERACIONES DE LA FUNCION DE VENTRICULAR, SIN NECROSIS, SIN CAMBIOS EN SU PRESENTACION EN ULTIMO MES "

CLASIFICACION

CLASES I – IV (CCS, 1976; NYHA, 1994)



Definition, diagnosis and assessment

- Stable angina: clinical syndrome characterized by discomfort in the chest, jaw, shoulder, back or arms
  - Elicited by exertion or emotional stress
  - Relieved by rest or nitroglycerin
- Term is usually confined to cases in which the syndrome can be attributed to myocardial ischaemia
- Purpose of diagnosis and assessment:
  - Confirmation of the presence of ischaemia in patients with suspected stable angina
  - Identification or exclusion of associated conditions or precipitating factors
  - Risk stratification
  - To plan treatment options
  - Evaluation of the efficacy of treatment

U.S. prevalence of cardiovascular disease

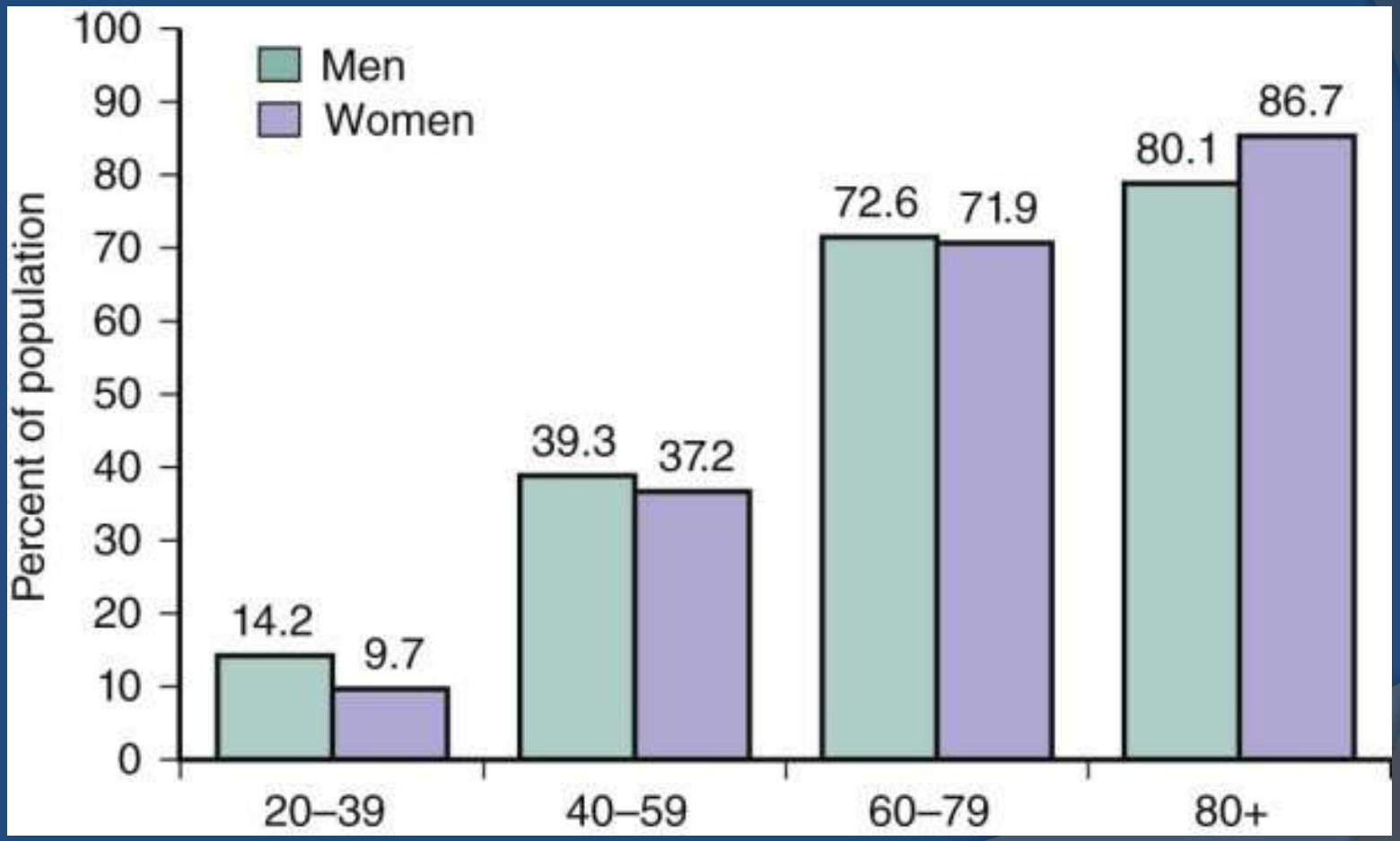
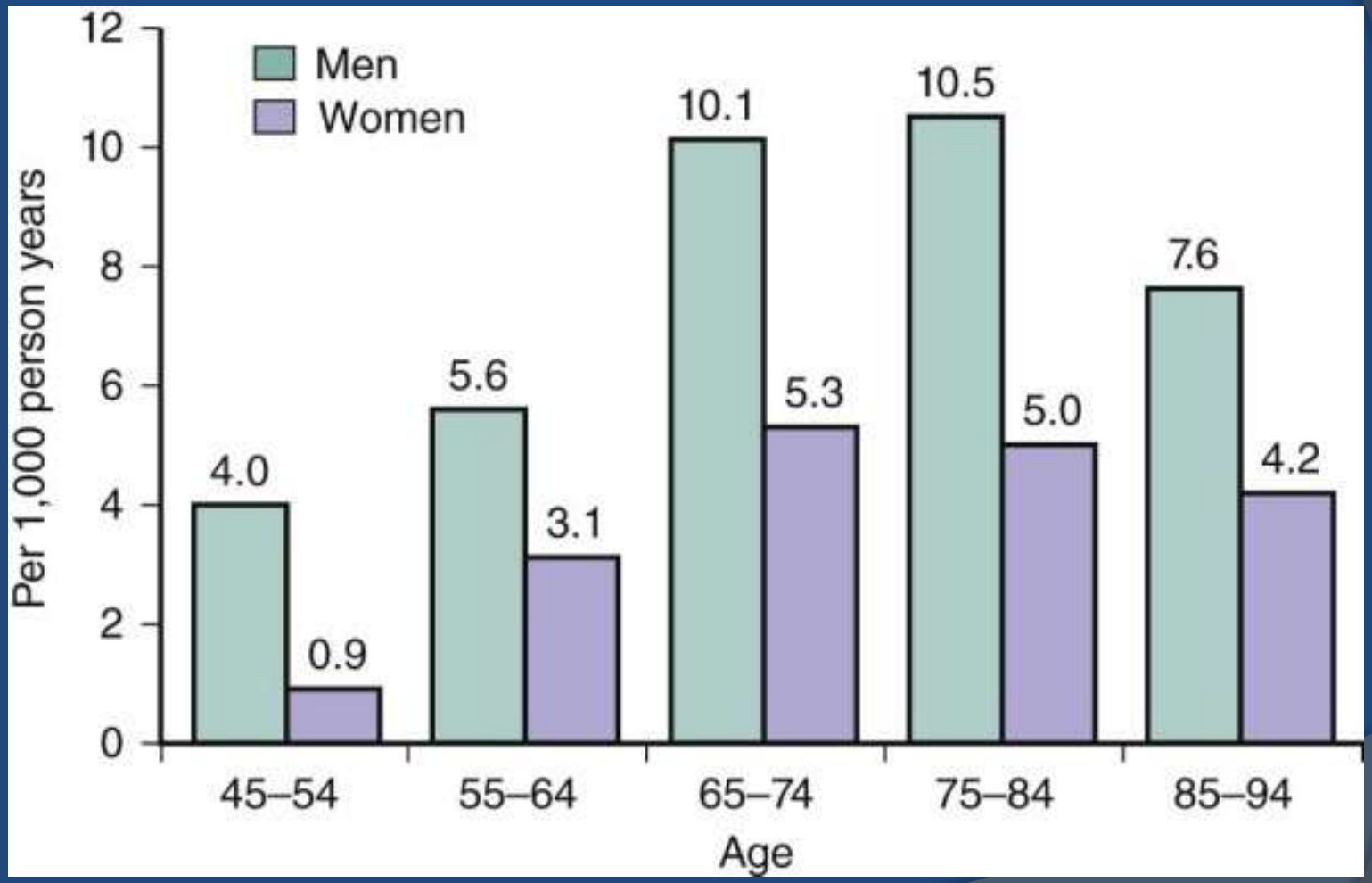


Figure 16-1 U.S. prevalence of cardiovascular disease (including coronary disease, heart failure, stroke, and hypertension) by age and sex.

INCIDENCE OF STABLE ANGINA PECTORIS FROM THE FRAMINGHAM HEART STUDY



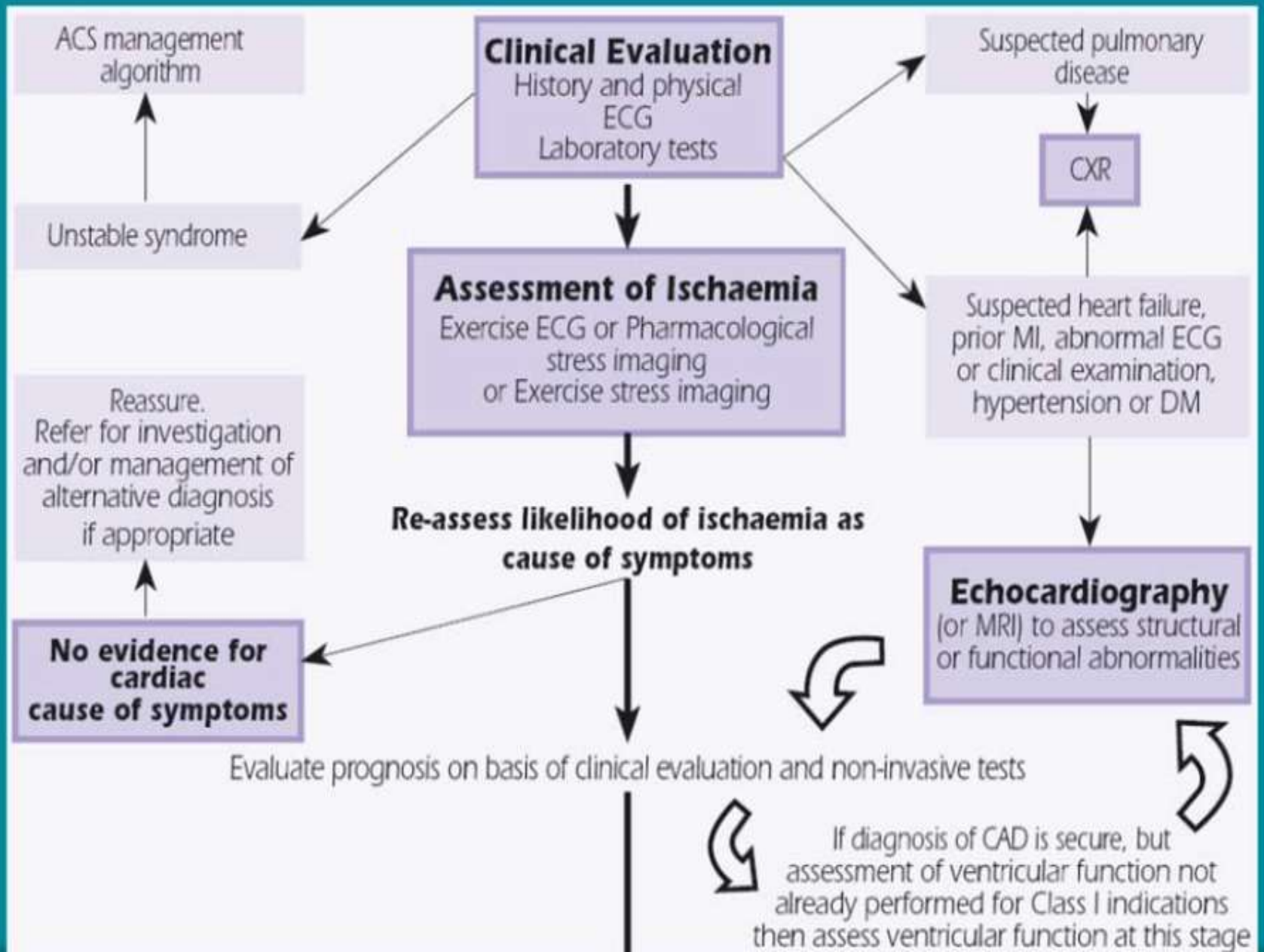
Incidence of stable angina pectoris from the Framingham Heart Study (1980–2002/2003) stratified by age and sex.

ENFERMEDAD CORONARIA
MAGNITUD DEL PROBLEMA

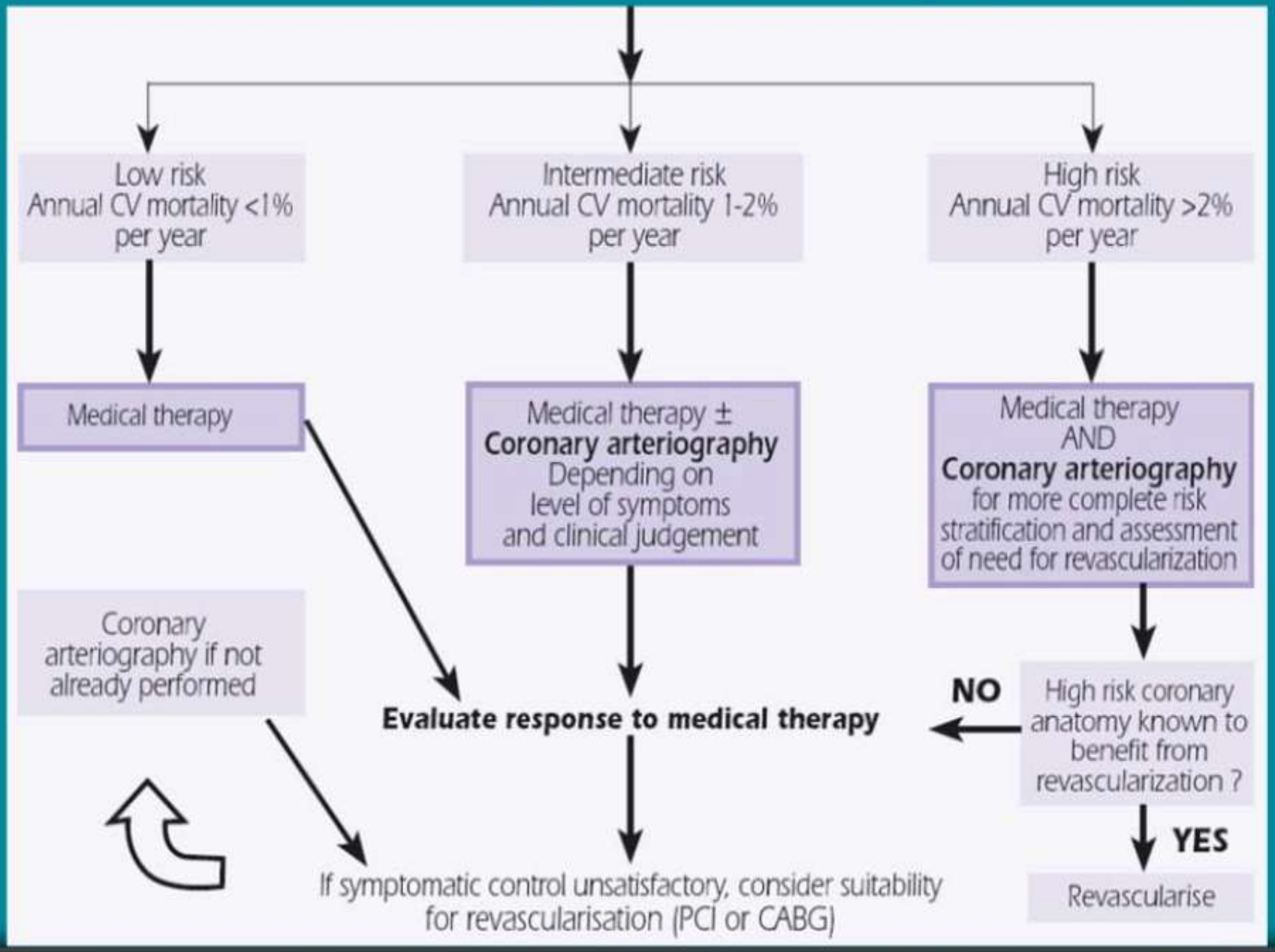
- USA: 17’600.000 TIENEN EAC.
- ANGINA PECTORIS EN 10’200.000
- IAM EN 8’500.000
- SE REALIZAN 622.000 INTERVENCIONES CORONARIAS PERCUTANEAS.
- COSTOS ECONOMICOS EN 2010 DE $177 BILLONES.
- OMS: ELEVACION DE MORTALIDAD POR EAC DE 7,6 MILLONES EN 2005 A 11.1 MILLONES

REF: AHA 2009

Algorithm for initial evaluation of patients with clinical symptoms of angina (1)



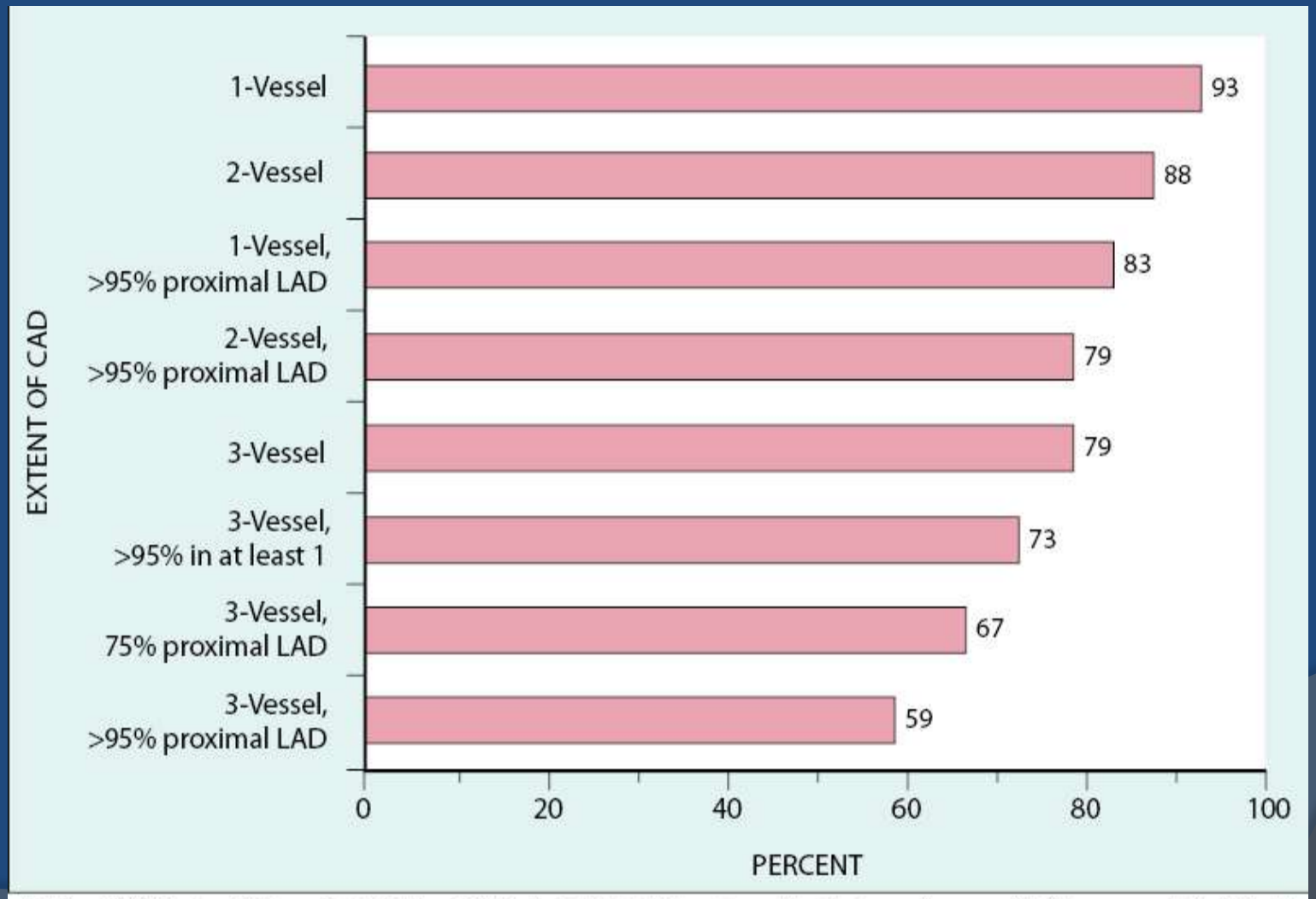
Algorithm for initial evaluation of patients with clinical symptoms of angina (2)



Aims of treatment

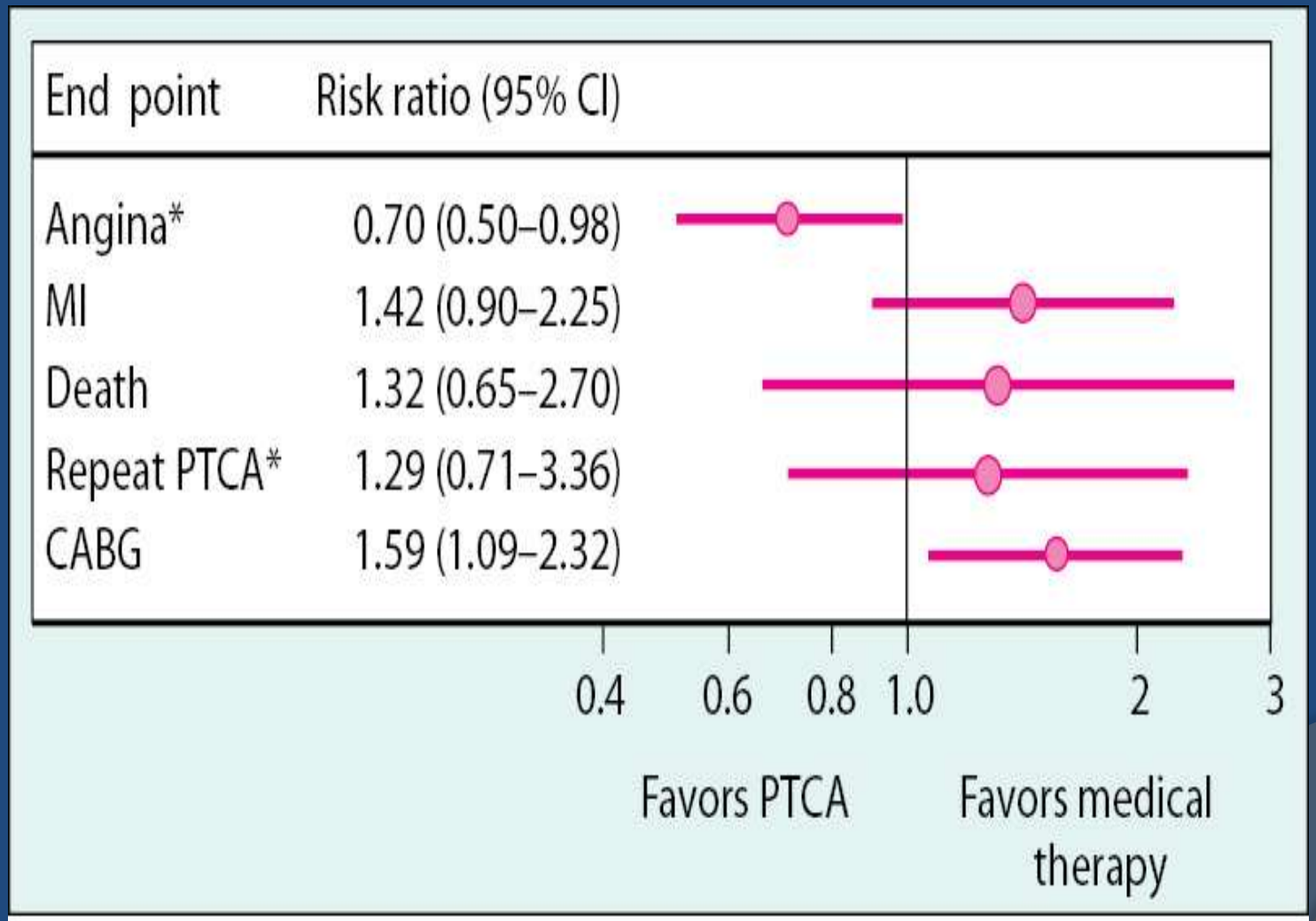
- To improve prognosis by preventing myocardial infarction and death
  - Reduce plaque progression
  - Stabilize plaque
  - Prevent thrombosis if endothelial dysfunction or plaque rupture occur
- To minimize or abolish symptoms

5-YEAR SURVIVAL WITH MEDICAL THERAPY



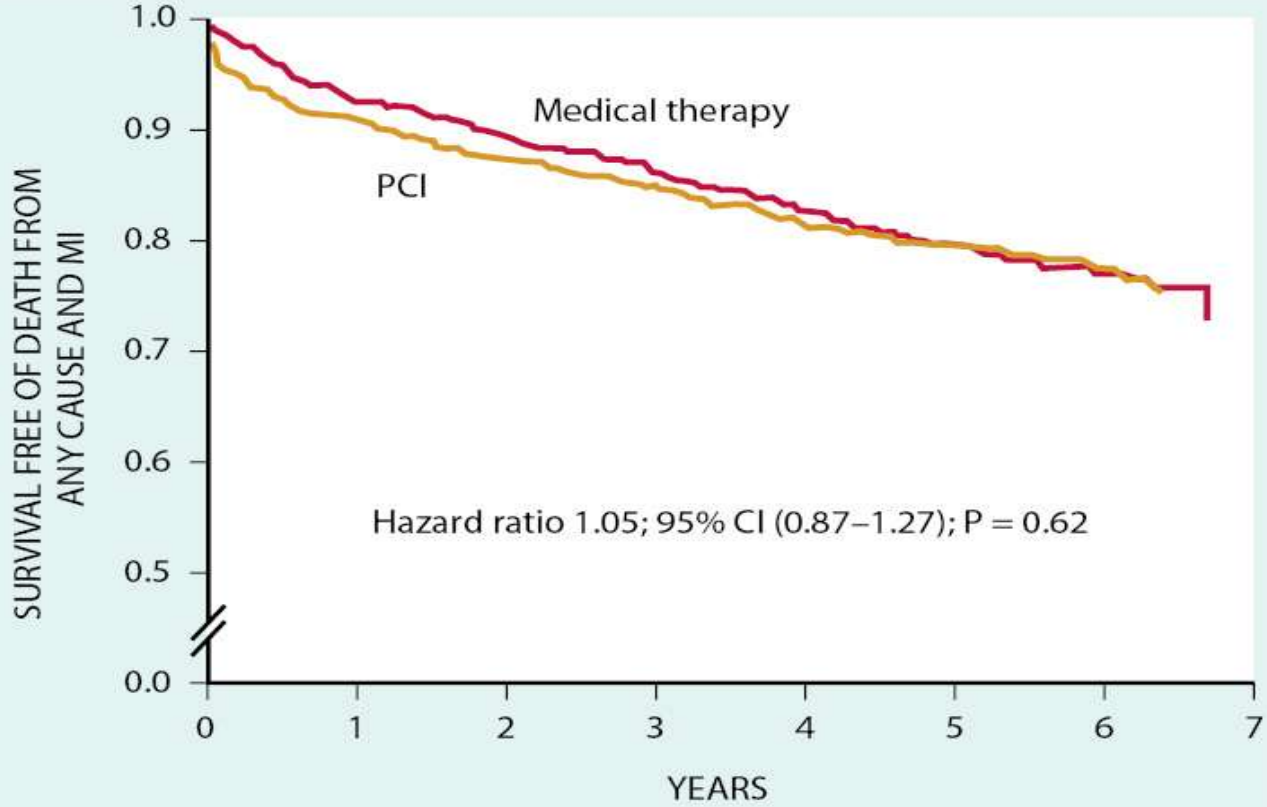
(Data from Califf RM, Armstrong PW, Carver JR, et al: Task Force 5: Stratification of patients into high-, medium-, and low-risk subgroups for purposes of risk factor management. J Am Coll Cardiol 27:964, 1996.)

PTCA VS. MEDICAL THERAPY



(From Bucher HC, Hengstler P, Schindler C, et al: Percutaneous transluminal coronary angioplasty versus medical therapy for treatment of non-acute coronary heart disease: A meta-analysis of randomised controlled trials. BMJ 321:73, 2000.)

PCI VS. MEDICAL THERAPY



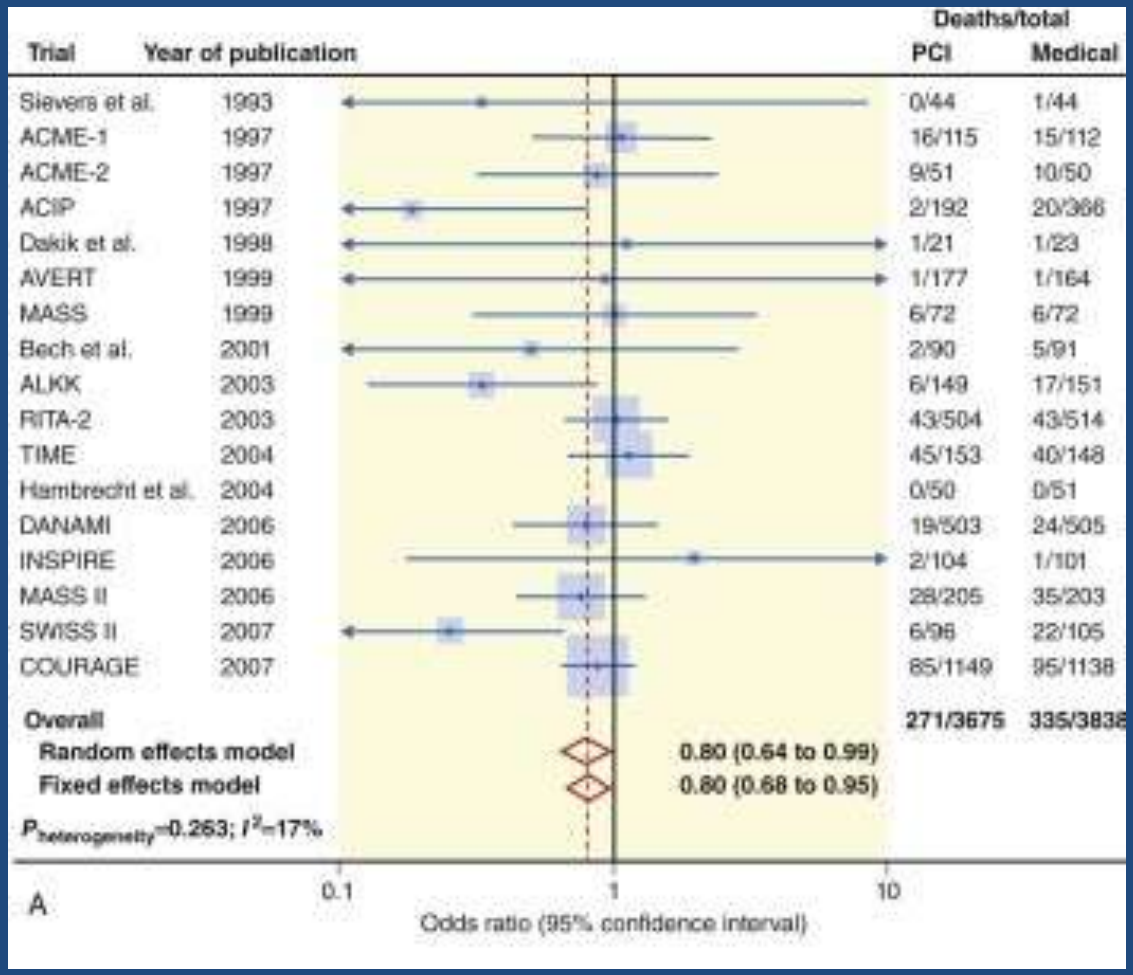
No. at risk

Medical therapy	1138	1017	959	834	638	408	192	30
PCI	1149	1013	952	833	637	417	200	35

A

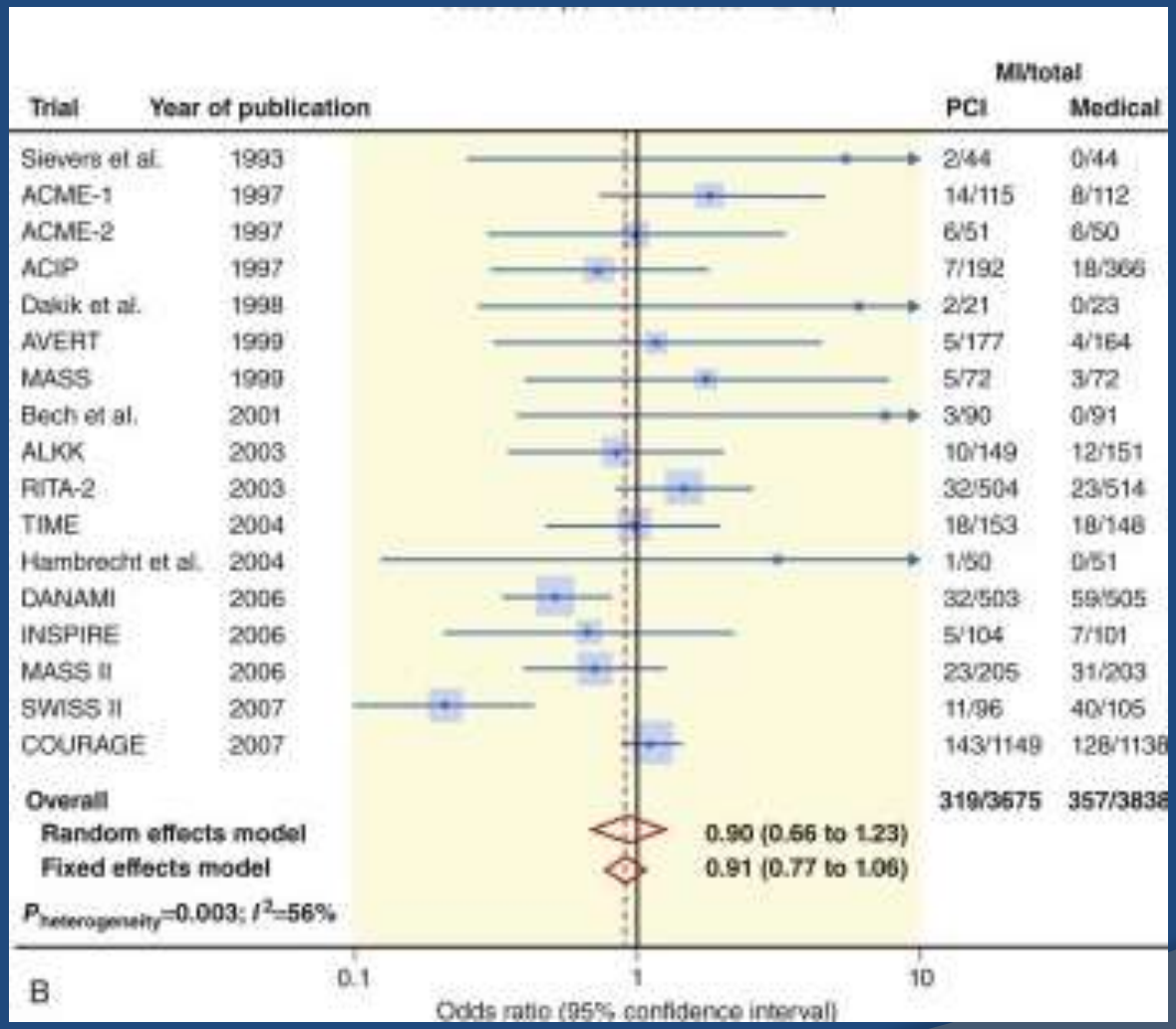
(From Boden WE, O'Rourke RA, Teo KK, et al: Optimal medical therapy with or without PCI for stable coronary disease. N Engl J Med 356:1503, 2007.)

PCI VS. MEDICAL THERAPY



Schomig A, Mehilli J, de Waha A, et al. A meta-analysis of 17 randomized trials of a percutaneous coronary intervention-based strategy in patients with stable coronary artery disease. J Am Coll Cardiol 2008;52(11):894–90413.

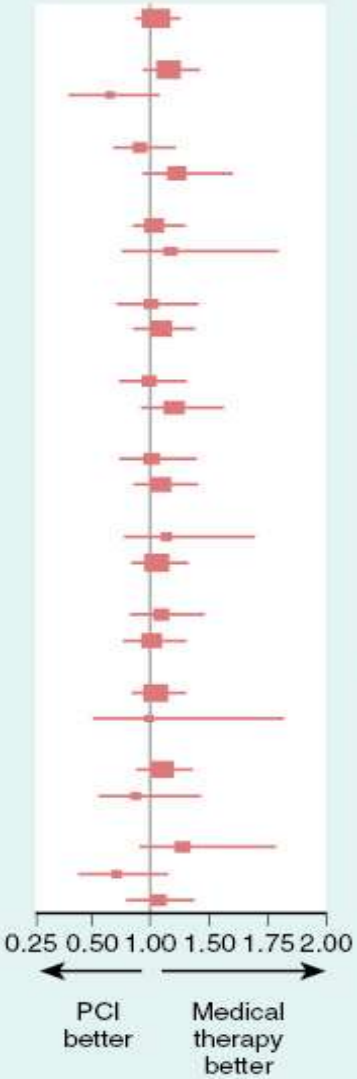
PCI VS. MEDICAL THERAPY



Reproduced with permission: Schomig A, Mehilli J, de Waha A, et al. A meta-analysis of 17 randomized trials of a percutaneous coronary intervention-based strategy in patients with stable coronary artery disease. J Am Coll Cardiol 2008;52(11):894–90413.)

COURAGE TRIAL

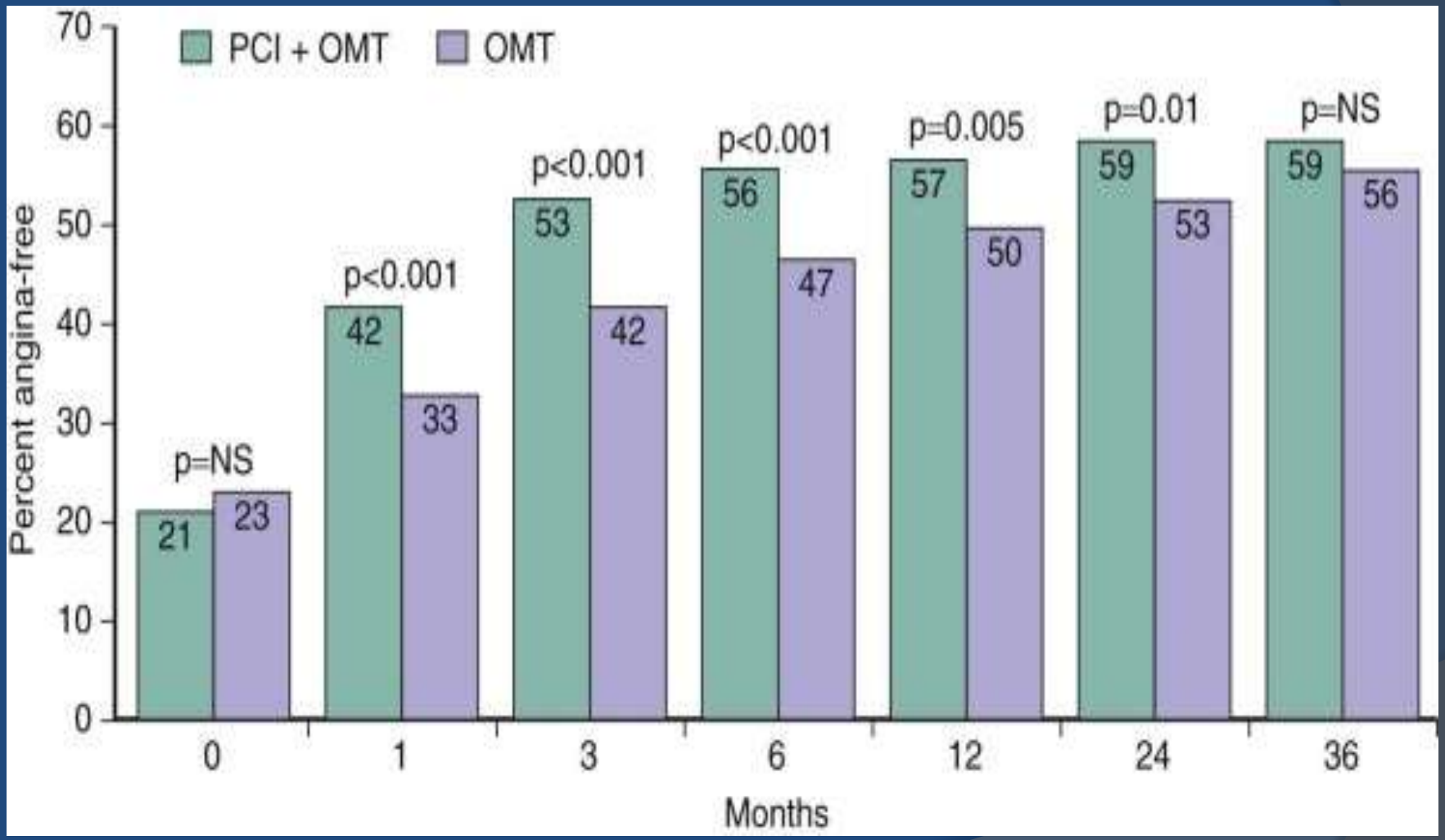
Baseline characteristics	No. of patients	Hazard ratio (95% CI)	Event rate for the primary outcome: PCI	Medical therapy	P value*
Overall	2287	1.05 (0.87-1.27)	0.19	0.19	
Sex					
Male	1947	1.15 (0.93-1.42)	0.19	0.18	0.03
Female	338	0.65 (0.40-1.06)	0.18	0.26	
Myocardial infarction					
Yes	876	0.91 (0.69-1.21)	0.23	0.25	0.15
No	1371	1.22 (0.93-1.60)	0.17	0.14	
Extent of CAD					
Multi-vessel disease	1581	1.04 (0.84-1.30)	0.21	0.21	0.65
Single-vessel disease	700	1.17 (0.76-1.80)	0.15	0.12	
Smoking					
Current	653	1.00 (0.71-1.41)	0.20	0.21	0.71
Not current	1631	1.06 (0.86-1.36)	0.19	0.18	
Diabetes					
Yes	766	0.99 (0.73-1.32)	0.25	0.24	0.33
No	1468	1.20 (0.92-1.56)	0.17	0.15	
CCS angina class					
0 or I	964	1.01 (0.75-1.38)	0.17	0.20	0.73
II or III	1371	1.09 (0.85-1.40)	0.20	0.18	
Ejection fraction					
≤50%	406	1.14 (0.77-1.70)	0.28	0.26	0.72
>50%	1848	1.05 (0.84-1.32)	0.17	0.16	
Age					
>65yr	904	1.10 (0.83-1.46)	0.24	0.22	0.62
≤65 yr	1381	1.00 (0.77-1.32)	0.16	0.16	
Previous CABG					
Yes	2039	1.04 (0.84-1.29)	0.17	0.17	0.81
No	248	0.98 (0.52-1.82)	0.34	0.29	
Race					
White	1963	1.08 (0.87-1.34)	0.19	0.18	0.43
Nonwhite	322	0.87 (0.54-1.42)	0.19	0.24	
Health care system					
Canadian	932	1.27 (0.90-1.78)	0.17	0.34	0.17
U.S. non-VA	387	0.71 (0.44-1.14)	0.15	0.21	
U.S. VA	968	1.06 (0.80-1.38)	0.22	0.22	



B

(From Boden WE, O'Rourke RA, Teo KK, et al: Optimal medical therapy with or without PCI for stable coronary disease. N Engl J Med 356:1503, 2007.)

COURAGE TRIAL



Weintraub WS, Spertus JA, Kolm P, et al. Effect of PCI on quality of life in patients with stable coronary disease. N Engl J Med 2008;359(7):677–687.)

Revascularization versus medical therapy

- Initial pharmacological approach to symptom control may be taken in patients not at high risk
- Revascularization may be recommended for patients with suitable anatomy who do not respond adequately to medical therapy, or for the patient who wishes to remain physically active
- Optimal secondary preventative medical therapy (e.g., antiplatelet therapy, statins) should be continued in patients after revascularization irrespective of the need for anti-anginal therapy

Method of revascularization

- Selection should be based on:
  - Risk of periprocedural morbidity and mortality
  - Likelihood of success, including factors such as technical suitability of lesions for angioplasty or surgical bypass
  - Risk of restenosis or graft occlusion
  - Completeness of revascularization
  - Diabetic status
  - Local hospital experience in cardiac surgery and interventional cardiology
  - Patient's preference

Percutaneous coronary intervention (PCI)

- Single or multivessel PCI can be performed with high likelihood of success using stents, drug-eluting stents and adequate adjuvant therapy
  - Risk of death is 0.3–1%
- Either PCI or surgery may be considered as an effective option for the treatment of symptoms in the population without high-risk indicators
- Compared with medical therapy:
  - PCI does not provide survival benefit in stable angina
  - PCI is more effective at reducing events that impair quality of life

Coronary artery bypass surgery

- Main indications: prognostic and symptomatic
- Prognostic benefit mainly due to reduction in cardiac mortality
- Anatomical groups shown to have better prognosis compared with medical treatment:
  - Significant stenosis of the left main stem
  - Significant proximal stenosis of the 3 major coronary arteries
  - Significant stenosis of 2 major coronary arteries, including high grade stenosis of the proximal left anterior descending coronary artery
  - 3 vessel disease with impaired ventricular function
- Reduces symptoms of angina and ischaemia in patients with coronary disease
- Overall operative mortality is 1–4%

Levels of recommendation

Strength of recommendation	Definition
Class I	Evidence and/or general agreement that a given diagnostic procedure/treatment is beneficial, useful and effective
Class II	Conflicting evidence and/or divergence of opinions about the usefulness/efficacy of a treatment or procedure
IIa	Weight of evidence/opinion is in favour of usefulness/efficacy
IIb	Usefulness/efficacy is less well established by evidence/opinion
Class III	Evidence or general agreement that the treatment or procedure is not useful/effective and in some cases may be harmful

Levels of evidence

Level of evidence	Available evidence
A	Multiple randomized clinical trials or meta-analyses
B	Single randomized clinical trial or large non-randomized studies
C	Consensus opinion of experts and/or small studies, retrospective studies, registries

Recommendations for revascularization in stable angina (1)

Indication	For Prognosis*	For Symptoms**
PCI (assuming anatomy suitable for PCI, appropriate risk stratification and discussion with the patient)		
Angina CCS Class I to IV despite medical therapy with single vessel disease		I A
Angina CCS Class I to IV despite medical therapy with multi-vessel disease (non-diabetic)		I A
Stable angina with minimal (CCS Class II) symptoms on medication and 1, 2 or 3 vessel disease but objective evidence of large ischaemia	IIb C	
CABG (assuming suitable anatomy for surgery, appropriate risk stratification and discussion with the patient)		
Angina and left main stem disease	I A	I A
Angina and 3 vessel disease with objective large ischaemia	I A	I A

Recommendations for revascularization in stable angina (2)

Indication	For Prognosis*	For Symptoms**
CABG (assuming suitable anatomy for surgery, appropriate risk stratification and discussion with the patient)		
Angina and 3 vessel disease with poor ventricular function	I A	I A
Angina with 2 or 3 vessel disease including severe disease of the proximal LAD	I A	I A
Angina CCS Class I to IV with multi-vessel disease (diabetic)	IIa B	I B
Angina CCS Class I to IV with multi-vessel disease (non-diabetic)		I A
Angina CCS Class I to IV despite medical therapy and single vessel disease including severe disease of the proximal LAD		I B
Angina CCS Class I to IV despite medical therapy and single vessel disease not including severe disease of the proximal LAD		IIb B
Angina with minimal (Class II) symptoms on medication and 1, 2 or 3 vessel disease but objective evidence of large ischaemia	IIb C	

Specific patient and lesion subsets

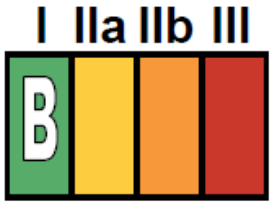
- Patients in whom surgical risk is prohibitively high may benefit from revascularization by PCI, particularly when residual viability can be demonstrated in the dysfunctioning myocardium perfused by the target vessel(s)
- PCI in left main stem disease is feasible, and good results have been achieved in registries comparing drug-eluting and bare metal stents. However, surgery should remain the preferred approach until the outcome of further trials are known
- Subgroup analyses of randomized trials have shown reduced mortality with bypass surgery compared to PCI in diabetic patients with multivessel disease
  - PCI should be used with reservation in diabetics with multivessel disease until the results of clinical trials currently comparing these techniques are available
- There are no randomized controlled trials comparing treatment options in patients with previous bypass surgery
  - Re-do surgery may be undertaken on symptomatic grounds where the anatomy is suitable
  - Operative risks are high
  - In such cases PCI provides a useful alternative to re-do surgery for symptomatic relief

2011 ACCF/AHA/SCAI Guideline for Percutaneous Coronary Intervention

A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines and the Society for Cardiovascular Angiography and Interventions

Revascularization to Improve Survival

Revascularization to Improve Survival: Left Main CAD Revascularization



CABG to improve survival is recommended for patients with significant (≥50% diameter stenosis) left main CAD.

PCI to improve survival is reasonable as an alternative to CABG in selected stable patients with significant (≥50% diameter stenosis) unprotected left main CAD with: 1) anatomic conditions associated with a low risk of PCI procedural complications and a high likelihood of a good long-term outcome (e.g., a low SYNTAX score [≤22], ostial or trunk left main CAD); and 2) clinical characteristics that predict a significantly increased risk of adverse surgical outcomes (e.g., STS-predicted risk of operative mortality ≥5%).

Revascularization to Improve Survival: Left Main CAD Revascularization (cont.)

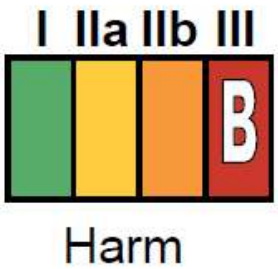
PCI to improve survival is reasonable in patients with UA/NSTEMI when an unprotected left main coronary artery is the culprit lesion and the patient is not a candidate for CABG.

PCI to improve survival is reasonable in patients with acute STEMI when an unprotected left main coronary artery is the culprit lesion, distal coronary flow is TIMI (Thrombolysis In Myocardial Infarction) grade <3, and PCI can be performed more rapidly and safely than CABG.

Revascularization to Improve Survival: Left Main CAD Revascularization (cont.)

PCI to improve survival may be reasonable as an alternative to CABG in selected stable patients with significant (≥50% diameter stenosis) unprotected left main CAD with: 1) anatomic conditions associated with a low to intermediate risk of PCI procedural complications and an intermediate to high likelihood of good long-term outcome (e.g., low-intermediate SYNTAX score of <33, bifurcation left main CAD); and 2) clinical characteristics that predict an increased risk of adverse surgical outcomes (e.g., moderate-severe chronic obstructive pulmonary disease, disability from previous stroke, or previous cardiac surgery; STS-predicted risk of operative mortality >2%).

Revascularization to Improve Survival: Left Main CAD Revascularization (cont.)



PCI to improve survival should not be performed in stable patients with significant (≥50% diameter stenosis) unprotected left main CAD who have unfavorable anatomy for PCI and who are good candidates for CABG.

Revascularization to Improve Survival: Non-Left Main CAD Revascularization

CABG to improve survival is beneficial in patients with significant (≥70% diameter) stenoses in 3 major coronary arteries (with or without involvement of the proximal LAD artery) or in the proximal LAD plus 1 other major coronary artery.

Revascularization to Improve Survival: Non-Left Main CAD Revascularization (cont.)

CABG

I IIa IIb III

B

PCI

I IIa IIb III

C

CABG or PCI to improve survival is beneficial in survivors of sudden cardiac death with presumed ischemia-mediated ventricular tachycardia caused by a significant (≥70% diameter) stenosis in a major coronary artery.

Revascularization to Improve Survival: Non-Left Main CAD Revascularization (cont.)

CABG to improve survival is reasonable in patients with significant (≥70% diameter) stenoses in 2 major coronary arteries with severe or extensive myocardial ischemia (e.g., high-risk criteria on stress testing, abnormal intracoronary hemodynamic evaluation, or >20% perfusion defect by myocardial perfusion stress imaging) or target vessels supplying a large area of viable myocardium.

CABG to improve survival is reasonable in patients with mild-moderate left ventricular systolic dysfunction (ejection fraction 35% to 50%) and significant (≥70% diameter stenosis) multivessel CAD or proximal LAD coronary artery stenosis, when viable myocardium is present in the region of intended revascularization.

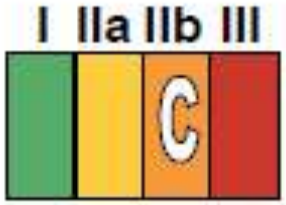
Revascularization to Improve Survival: Non-Left Main CAD Revascularization (cont.)

CABG with a LIMA graft to improve survival is reasonable in patients with a significant (≥70% diameter) stenosis in the proximal LAD artery and evidence of extensive ischemia.

It is reasonable to choose CABG over PCI to improve survival in patients with complex 3-vessel CAD (e.g., SYNTAX score >22) with or without involvement of the proximal LAD artery who are good candidates for CABG.

Revascularization to Improve Survival: Non-Left Main CAD Revascularization (cont.)

CABG is probably recommended in preference to PCI to improve survival in patients with multivessel CAD and diabetes mellitus, particularly if a LIMA graft can be anastomosed to the LAD artery.



The usefulness of CABG to improve survival is uncertain in patients with significant (≥70%) stenoses in 2 major coronary arteries not involving the proximal LAD artery and without extensive ischemia.

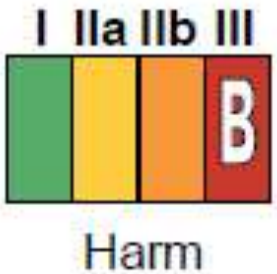
Revascularization to Improve Survival: Non-Left Main CAD Revascularization (cont.)

The usefulness of PCI to improve survival is uncertain in patients with 2- or 3-vessel CAD (with or without involvement of the proximal LAD artery) or 1-vessel proximal LAD disease.

CABG might be considered with the primary or sole intent of improving survival in patients with SIHD with severe LV systolic dysfunction (EF<35%) whether or not viable myocardium is present.

The usefulness of CABG or PCI to improve survival is uncertain in patients with previous CABG and extensive anterior wall ischemia on noninvasive testing.

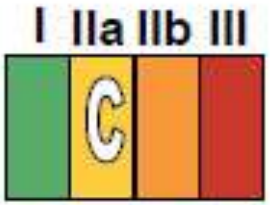
Revascularization to Improve Survival: Non-Left Main CAD Revascularization (cont.)



CABG or PCI should not be performed with the primary or sole intent to improve survival in patients with SIHD with 1 or more coronary stenoses that are not anatomically or functionally significant (e.g., <70% diameter non–left main coronary artery stenosis, fractional flow reserve >0.80, no or only mild ischemia on noninvasive testing), involve only the left circumflex or right coronary artery, or subtend only a small area of viable myocardium.

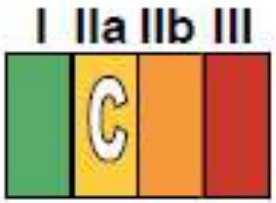
Revascularization to Improve Symptoms

CABG or PCI to improve symptoms is beneficial in patients with 1 or more significant (≥70% diameter) coronary artery stenoses amenable to revascularization and unacceptable angina despite GDMT.



CABG or PCI to improve symptoms is reasonable in patients with 1 or more significant (≥70% diameter) coronary artery stenoses and unacceptable angina for whom GDMT cannot be implemented because of medication contraindications, adverse effects, or patient preferences.

Revascularization to Improve Symptoms (cont.)



PCI to improve symptoms is reasonable in patients with previous CABG, 1 or more significant (≥70% diameter) coronary artery stenoses associated with ischemia, and unacceptable angina despite GDMT.

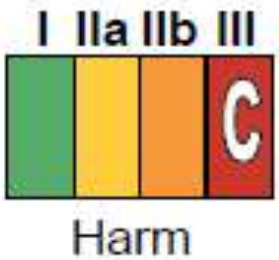
It is reasonable to choose CABG over PCI to improve symptoms in patients with complex 3-vessel CAD (e.g., SYNTAX score >22), with or without involvement of the proximal LAD artery who are good candidates for CABG.

Revascularization to Improve Symptoms (cont.)

CABG to improve symptoms might be reasonable for patients with previous CABG, 1 or more significant (≥70% diameter) coronary artery stenoses not amenable to PCI, and unacceptable angina despite GDMT.

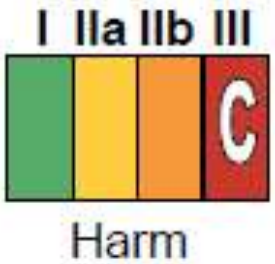
Transmyocardial laser revascularization performed as an adjunct to CABG to improve symptoms may be reasonable in patients with viable ischemic myocardium that is perfused by arteries that are not amenable to grafting.

Revascularization to Improve Symptoms (cont.)



CABG or PCI to improve symptoms should not be performed in patients who do not meet anatomic (≥50% left main or ≥70% non–left main stenosis) or physiologic (e.g., abnormal fractional flow reserve) criteria for revascularization.

Revascularization to Improve Symptoms (cont.)



CABG or PCI to improve symptoms should not be performed in patients who do not meet anatomic (≥50% left main or ≥70% non–left main stenosis) or physiologic (e.g., abnormal fractional flow reserve) criteria for revascularization.

Hybrid Coronary Revascularization

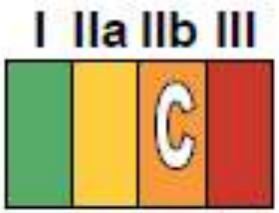
Hybrid coronary revascularization (defined as the planned combination of LIMA-to-LAD artery grafting and PCI of ≥1 non-LAD coronary arteries) is reasonable in patients with 1 or more of the following:

a. Limitations to traditional CABG, such as a heavily calcified proximal aorta or poor target vessels for CABG (but amenable to PCI);

b. Lack of suitable graft conduits;

c. Unfavorable LAD artery for PCI (i.e., excessive vessel tortuosity or chronic total occlusion).

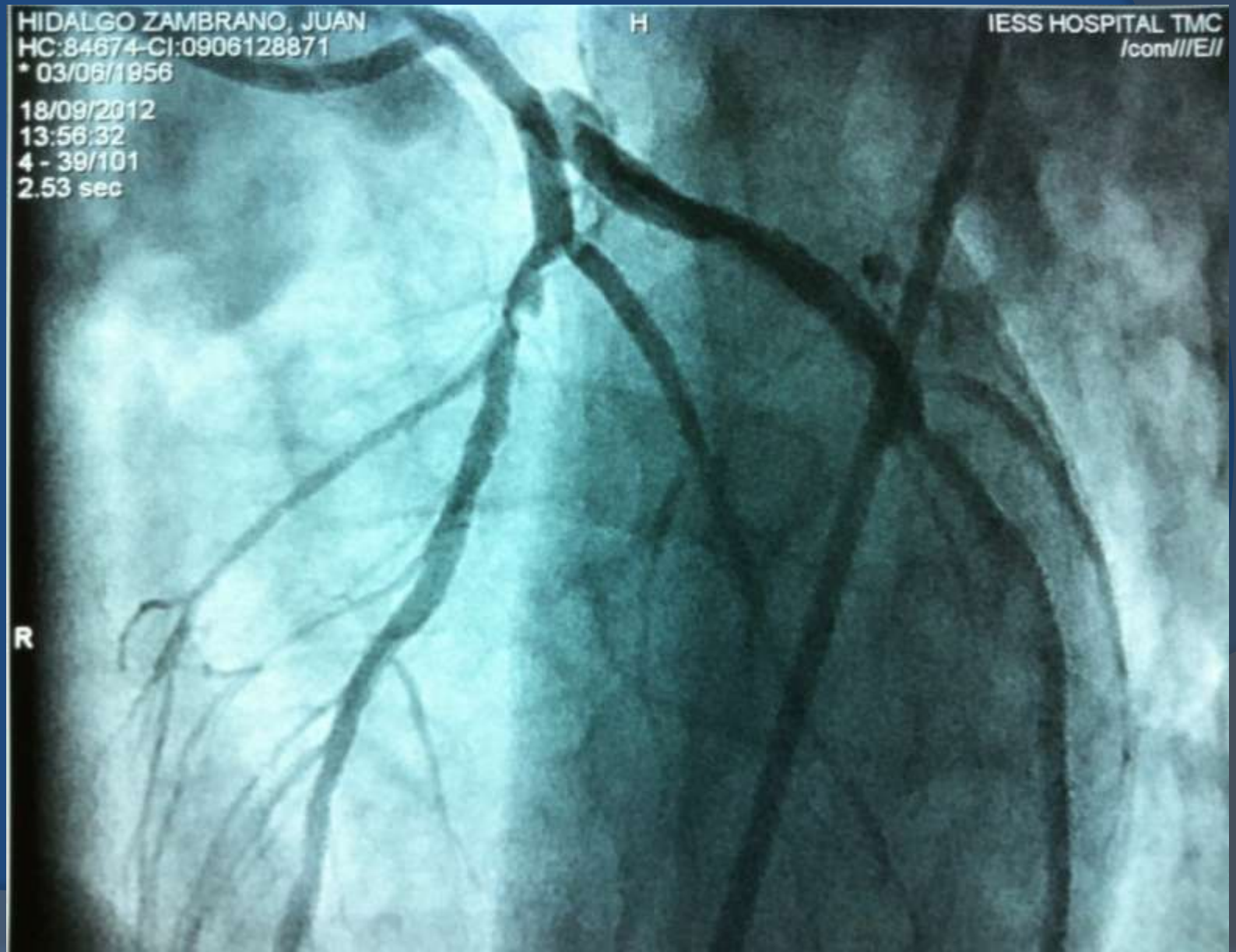
Hybrid Coronary Revascularization (cont.)



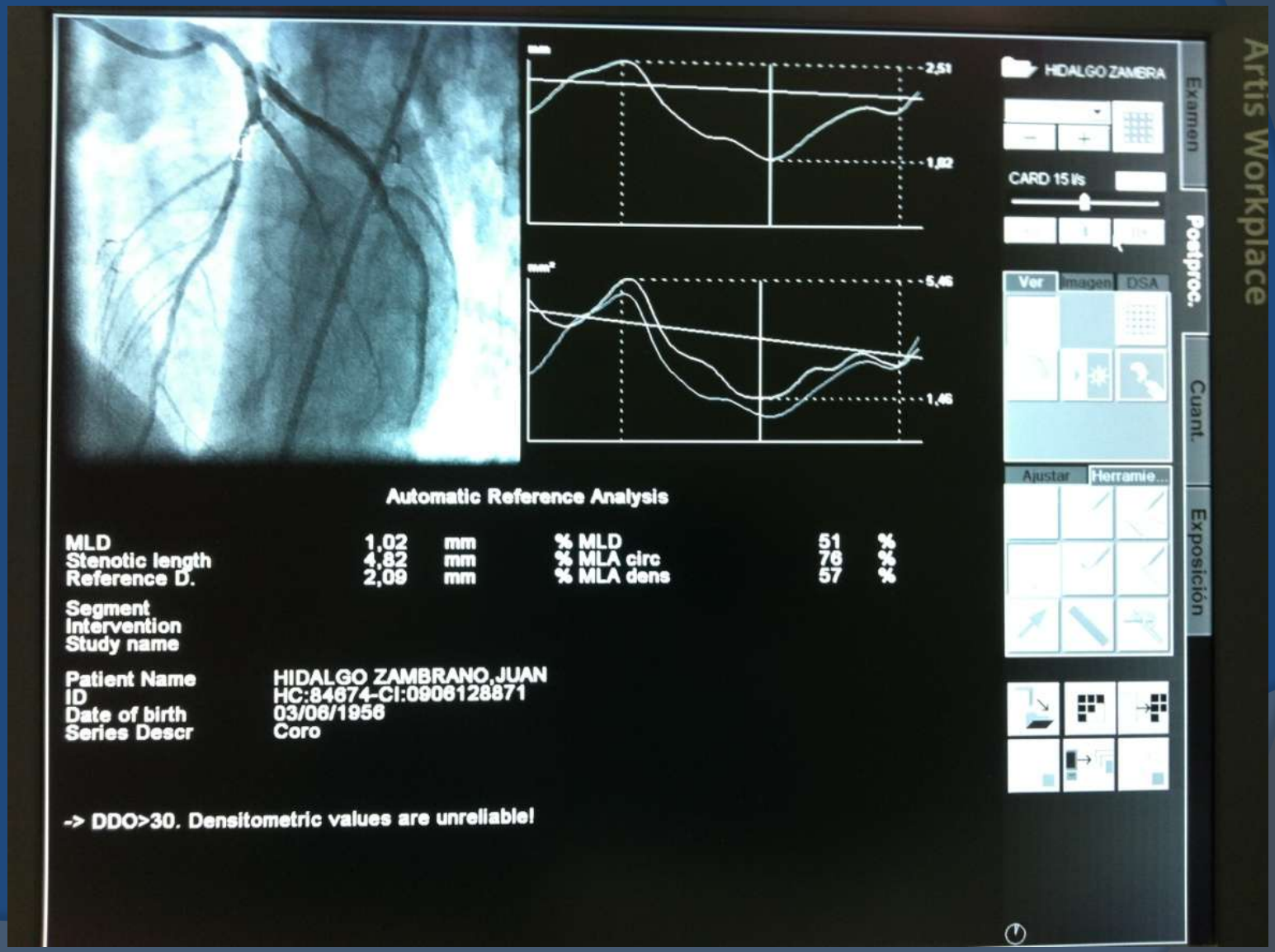
Hybrid coronary revascularization (defined as the planned combination of LIMA-to-LAD artery grafting and PCI of ≥1 non-LAD coronary arteries) may be reasonable as an alternative to multivessel PCI or CABG in an attempt to improve the overall risk-benefit ratio of the procedures.

SALA DE HEMODINAMIA
CLINICA GUAYAQUIL

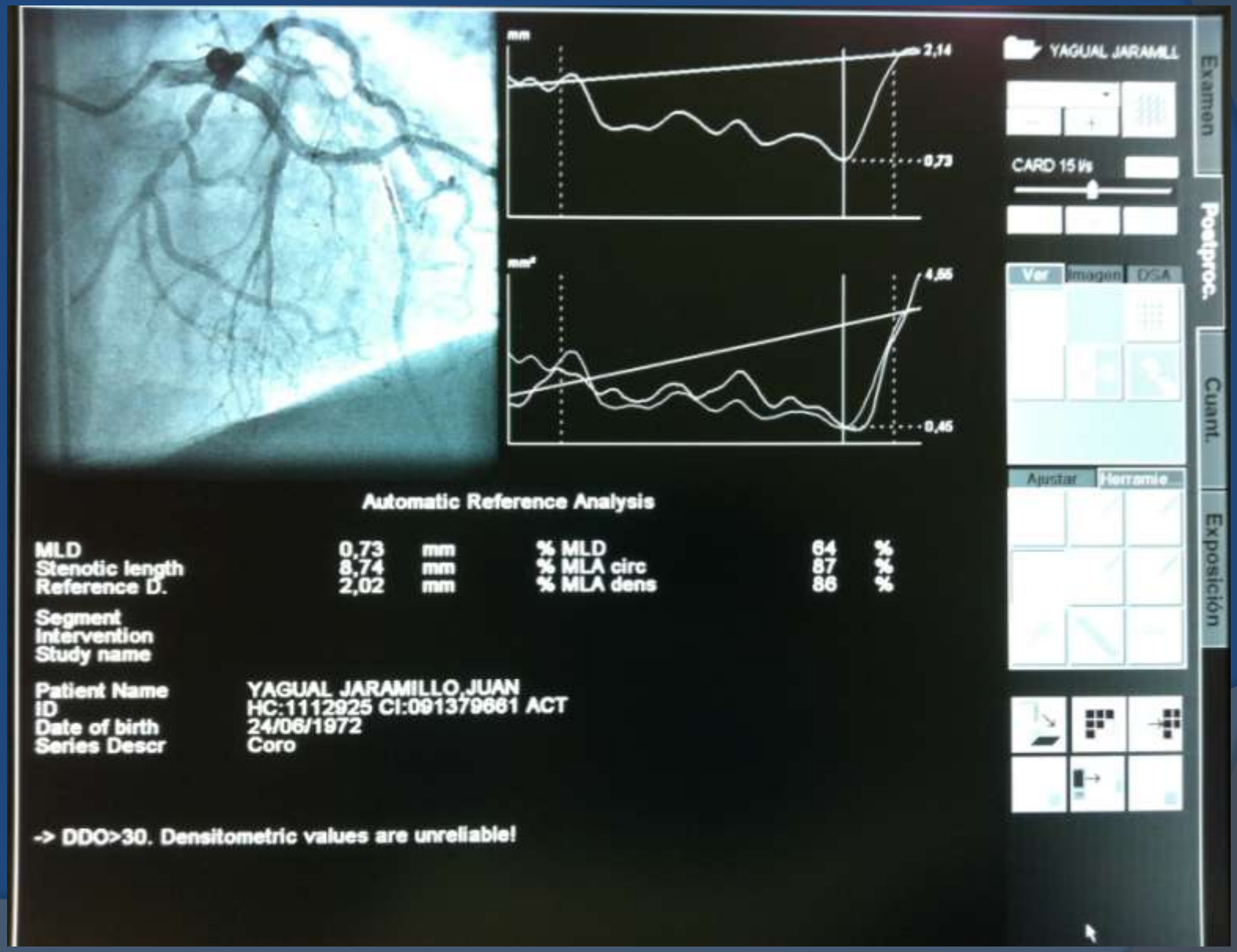
ENFERMEDAD DE UN VASO



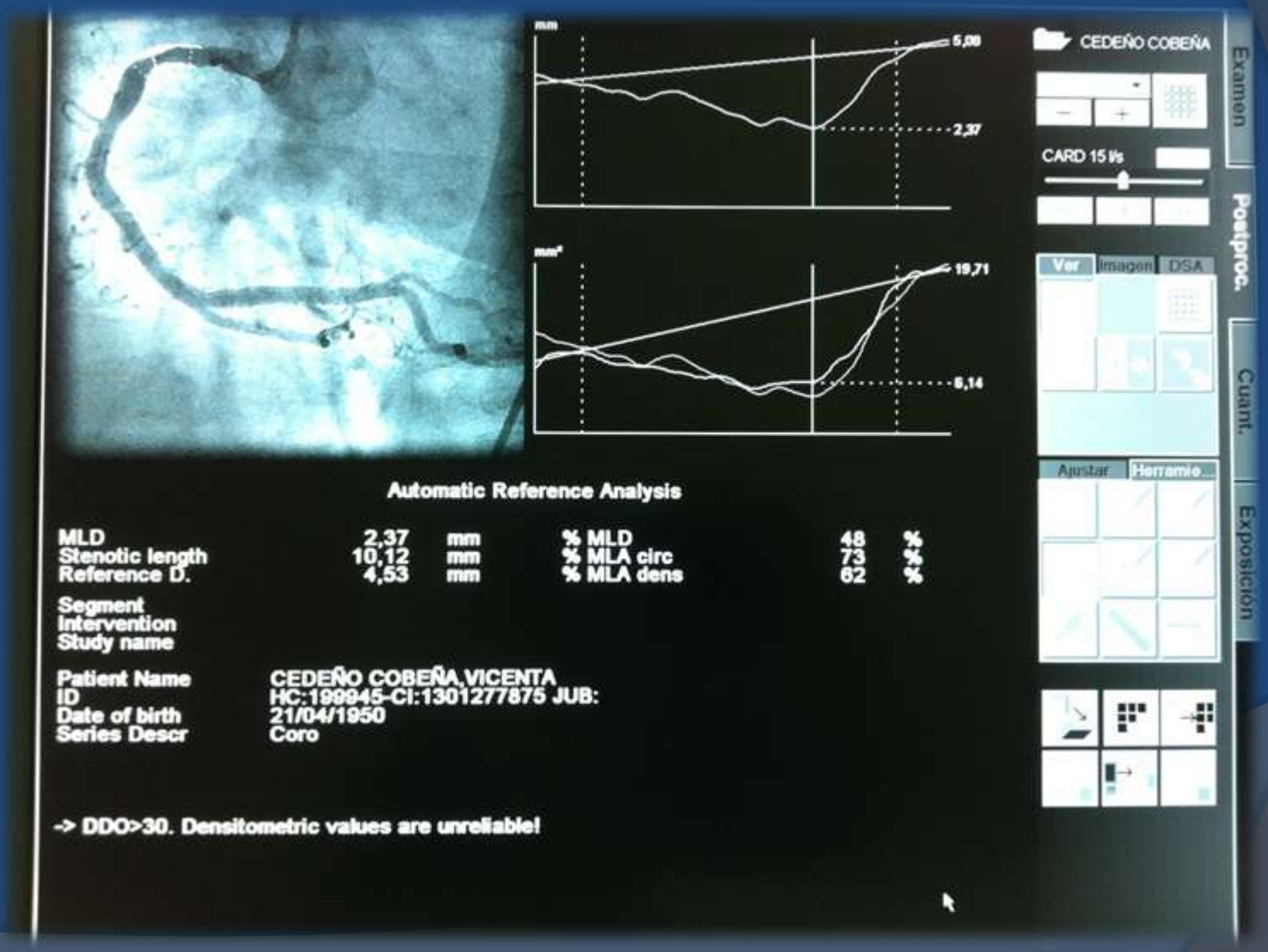
ENFERMEDAD DE UN VASO



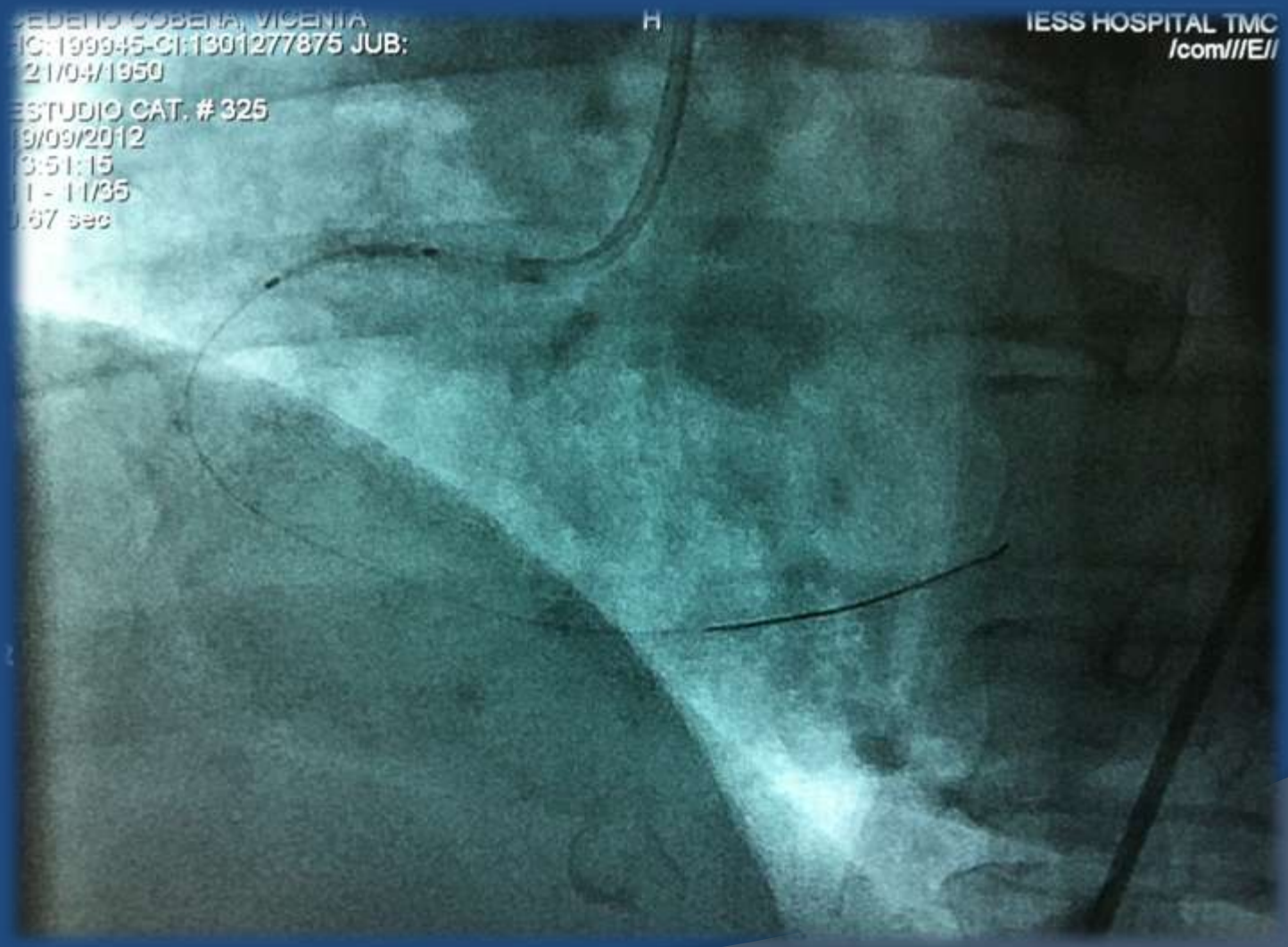
ENFERMEDAD CORONARIA DE DOS VASOS



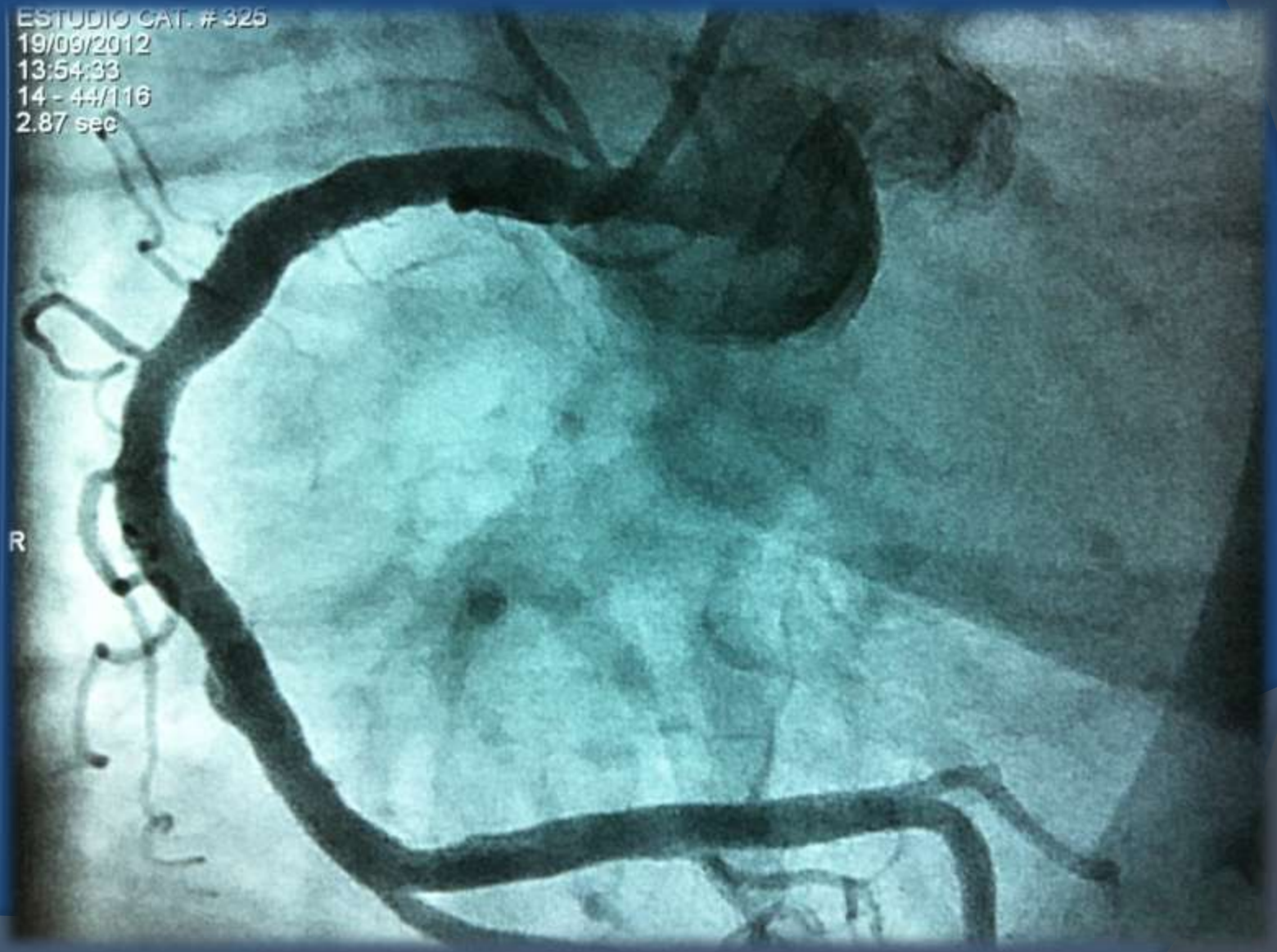
ENFERMEDAD DE UN VASO



STENT CORONARIO



POST STENT CORONARIO



EAC + DISFUNCION DEL VI