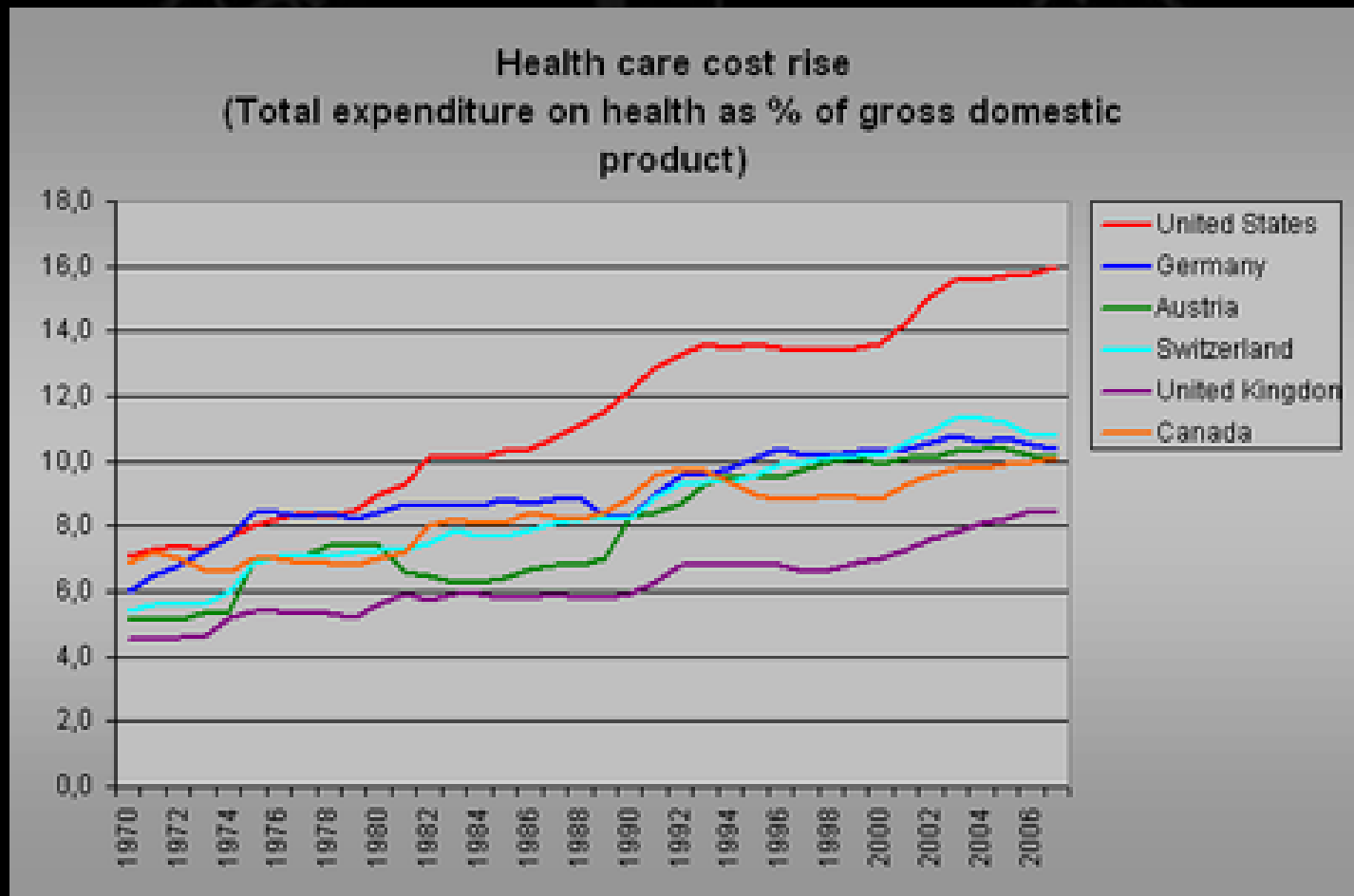


The background of the slide features a large, faint watermark of the University of Brescia seal. The seal is circular and contains the Latin text "UNIVERSITAS · STUDIORUM · BRESCIAE" around its perimeter. In the center of the seal is a detailed illustration of a cityscape with various buildings, including a prominent dome and a tower with a spire.

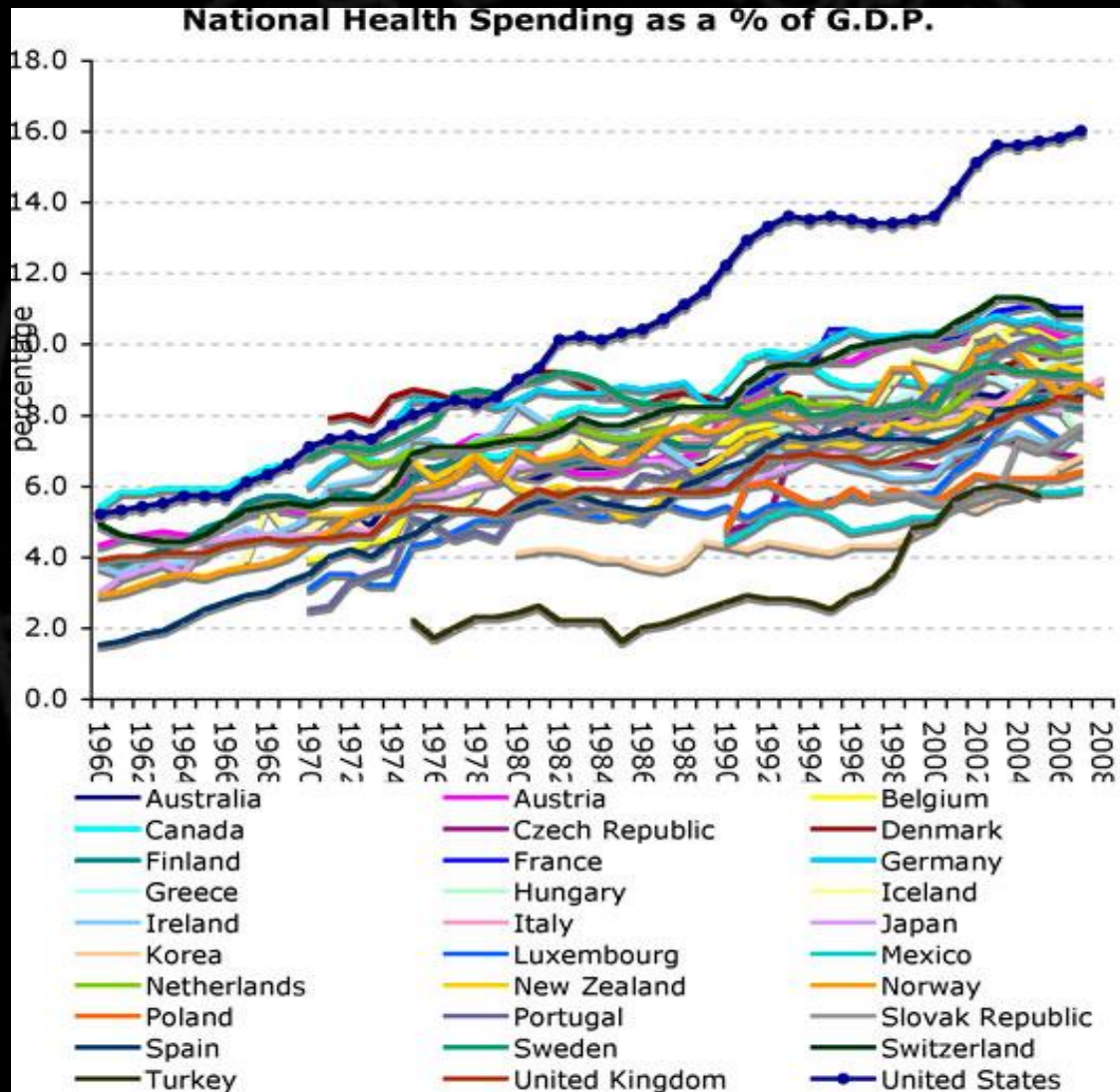
Evaluating Clinical Risk and Guiding management with SPECT Imaging

Raffaele Giubbini
Chair and Nuclear Medicine Unit
University & Spedali Civili – Brescia- Italy

U.S. Congressional Budget Office. "Technological Change and the Growth of Health Care Spending" January 2008



The New York Times



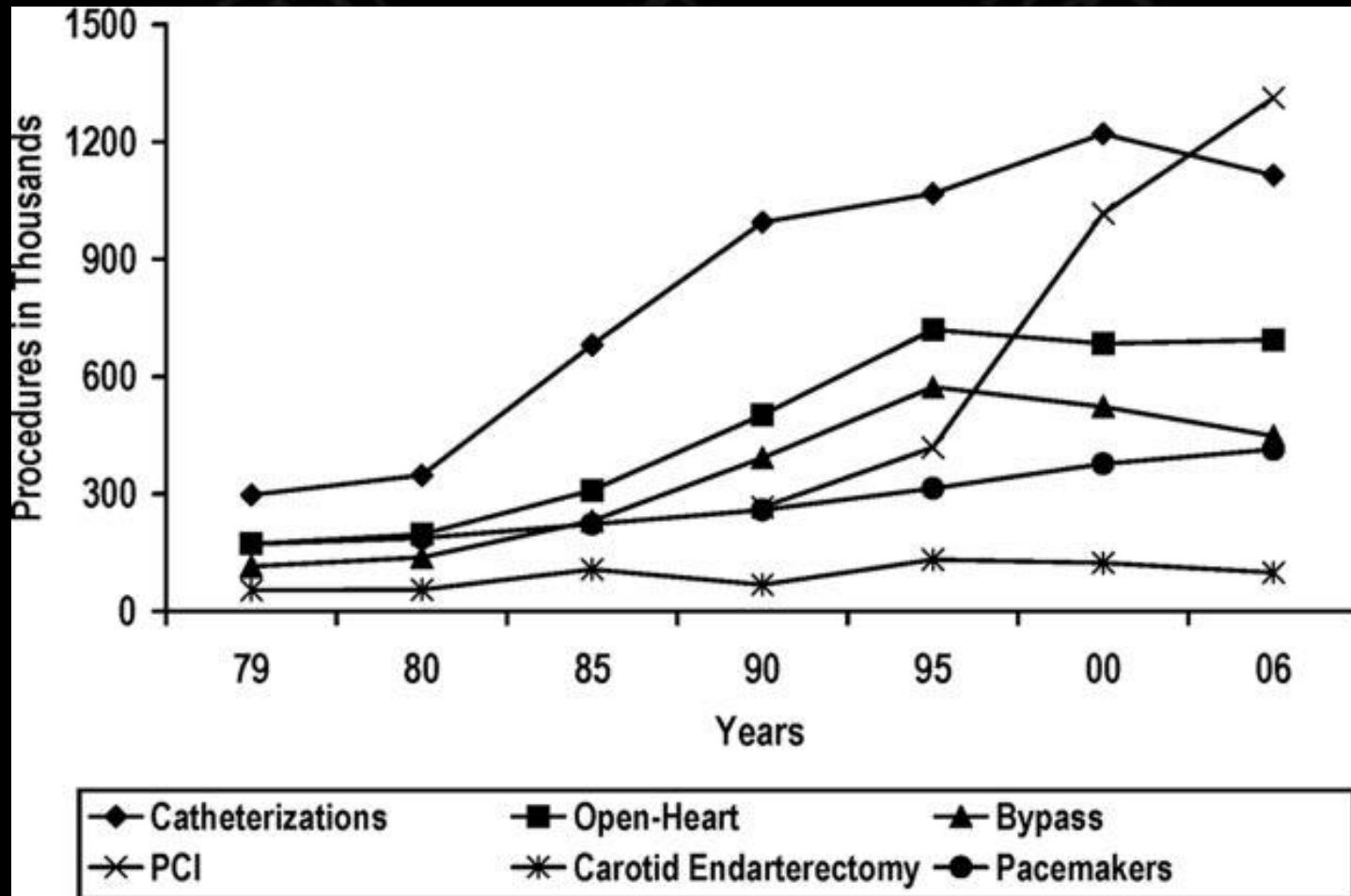
(Organization for Economic Cooperation and Development. New Y Times 19/06/2009)

Heart Disease and Stroke Statistics 2009 Update

From 1996–2006, the total number of inpatient cardiovascular operations and procedures increased 30% from 5,444,000 to 7,191,000 annually. (*AHA computation.*)

**(A Report From the American Heart Association Statistics Committee
and Stroke Statistics Subcommittee *Circulation* 2009;119:e21-e181)**

Heart Disease and Stroke Statistics 2009 Update



(A Report From the American Heart Association Statistics Committee and Stroke Statistics Subcommittee Circulation 2009;119:e21-e181)

PCI in USA

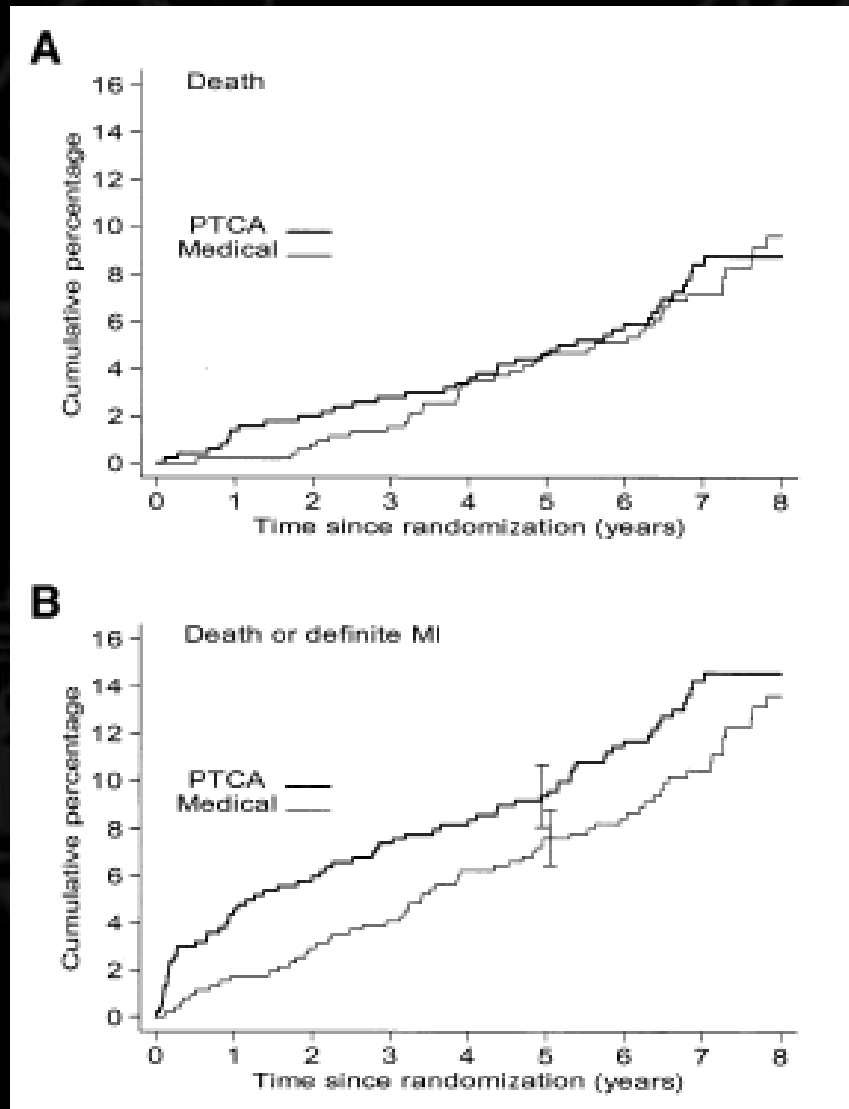
- In 2006 an estimated 1,313,000 PCI
- In 2004 more than 1 million coronary stent procedures
- 85% of all PCI are undertaken electively in pts with stable CAD

*(- Rosamond W et al Heart disease and stroke statistics-2007 update – Am Heart Ass Statistics Committee and stroke Statistics Subcommittee. Circulation 2007;115:e69
- Feldman DN et al Am J Cardiol 2006; 98:1334)*

Outcome as function of early strategy

	conservative	interventional	p
TIMI IIIb ('89-'92; n=1473)			
• 6 w	7.8%	7.2%	n.s.
• 1 y	12.2%	10.8%	n.s.
VANQWISH ('93-'95; n=920)			
• 1 m	5.6%	10.4%	0.01
• 1 y	18.5%	24.0%	0.02
OASIS ('95-'96; n= 7987)			
• 7 d	4.4%	4.9%	n.s.
• 6 m	10.5%	10.8%	n.s.
FRISH II ('96-'97; n= 2457)			
• 6 mi	12.1%	9.4%	0.03
• 1 y	14.1%	10.4%	0.001
TACTIS TIMI – trial ('97-'99; n=2220)			
• 30 d	7.4%	10.5%	0.009
• 6 m	15.9%	19.4%	0.025

Seven-Year Outcome in the RITA 2 Trial: Coronary Angioplasty vs Medical Therapy

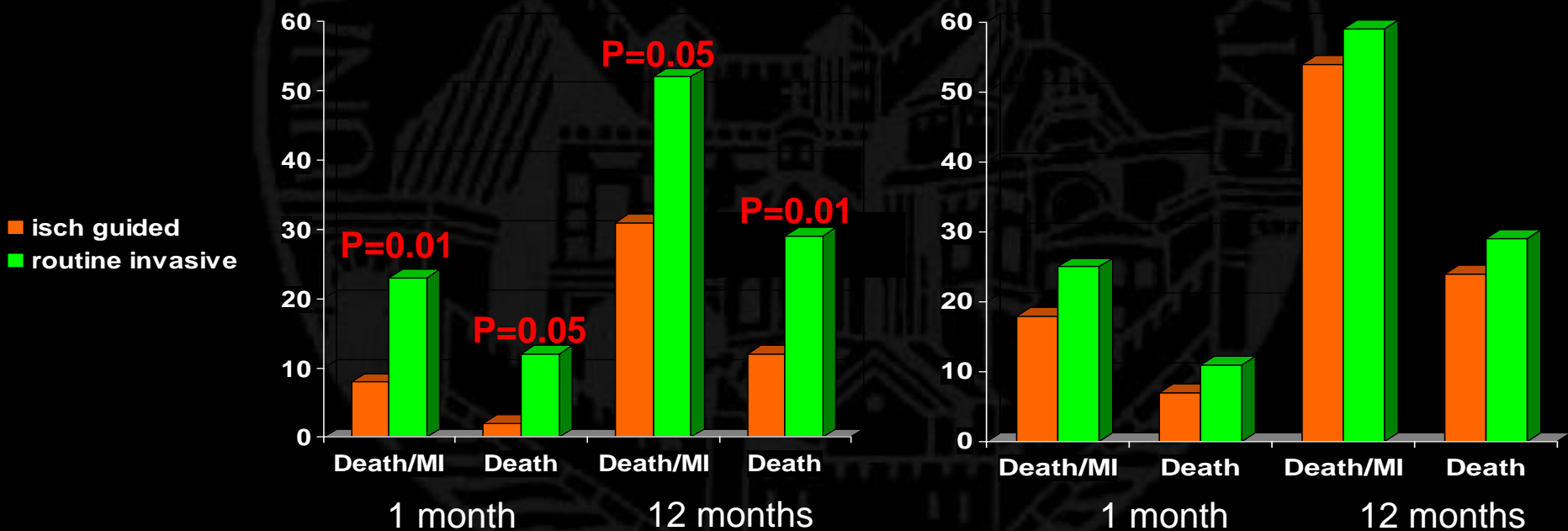


(Henderson RA et al JACC 2003; 42: 1161)

Early Invasive versus Ischaemia-guided Strategies in the Management of non-Q wave Myocardial Infarction Patients with and without Prior Myocardial Infarction (Vanqwish trial)

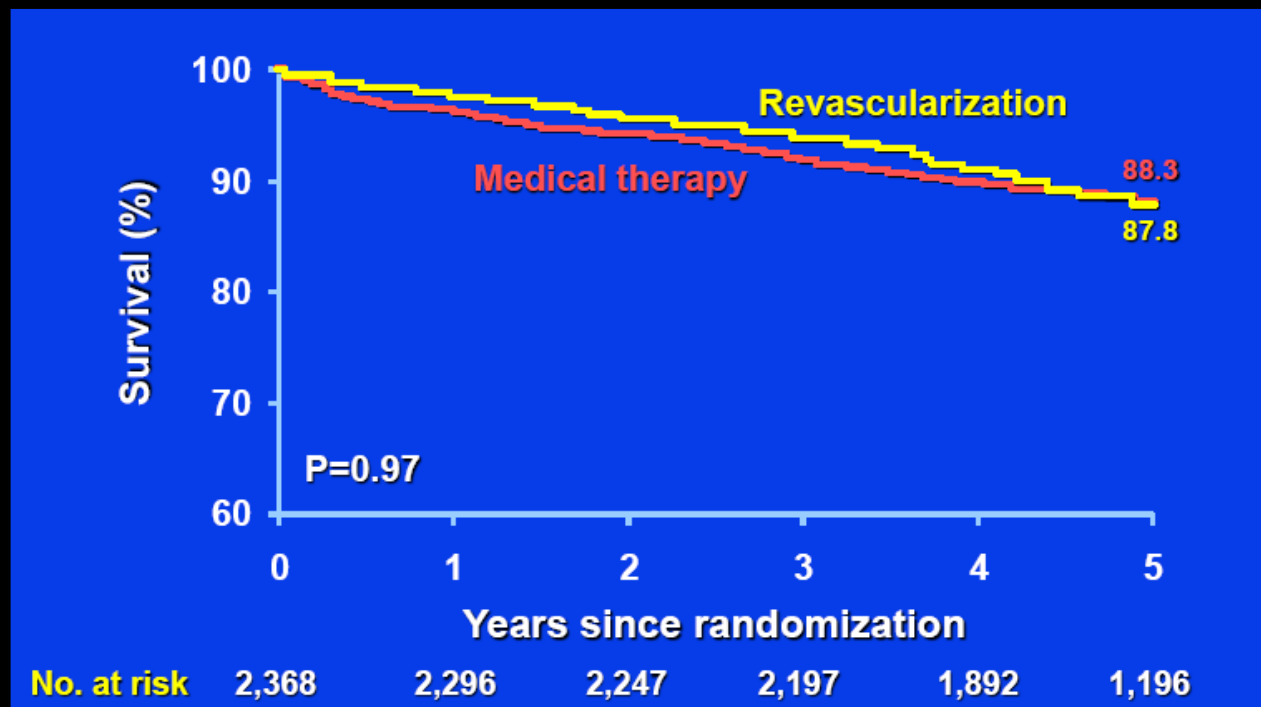
No history of prior MI

Prior MI



(Heggunje PS et al Eur Heart J 2000; 21: 2014)

A Randomized Trial of Therapies for Type 2 Diabetes and Coronary Artery Disease



(BARI 2D study group N Engl J Med 2009; 360:2503)



COMPARISON OF EARLY INVASIVE AND CONSERVATIVE TREATMENT STRATEGIES IN PATIENTS WITH UNSTABLE CORONARY SYNDROME WITH THE GLYCOPROTEIN IIb/IIIa INHIBITORS

CHRISTOPHER P. CANNON, M.D., WILLIAM S. WEINTRAUB, M.D., LAURA A. DEMOPOLIS, MARTIN J. FREY, M.D., NASSER LAKKIS, M.D., FRANZ-JOSEF NEUMANN, M.D., DE PAUL T. DELUCCA, PH.D., PETER M. DiBATTISTE, M.D., C. MICHAEL GIBSON, M.D., FOR THE TACTICS-THROMBOLYSIS IN MYOCARDIAL INFARCTION 18

JAMA®

Online article and related content current as of November 15, 2009.

Routine vs Selective Invasive Strategies in Patients With Acute Coronary Syndromes: A Collaborative Meta-analysis of Randomized Trials

Shamir R. Mehta, Christopher P. Cannon, Keith A. A. Fox, et al.

JAMA. 2005;293(23):2908-2917 (doi:10.1001/jama.293.23.2908)

<http://jama.ama-assn.org/cgi/content/full/293/23/2908>

Correction

Contact me if this article is corrected.

Citations

This article has been cited 152 times.
Contact me when this article is cited.

INTERVENTIONAL CARDIOLOGY AND SURGERY

Interventional versus conservative treatment in acute non-ST elevation coronary syndrome: time course of patient management and disease events over one year in the RITA 3 trial

P A Poole-Wilson, S J Pocock, K A A Fox, R A Henderson, D J Wheatley, D A Chamberlain, T R D Shaw, T C Clayton, for the Randomised Intervention Trial of unstable Angina (RITA) Investigators



in: Quality of Care; Evidence-Based Medicine; Cardiovascular/ Cardiothoracic Surgery; Myocardial Infarction; Cardiovascular Intervention

in these topic areas:

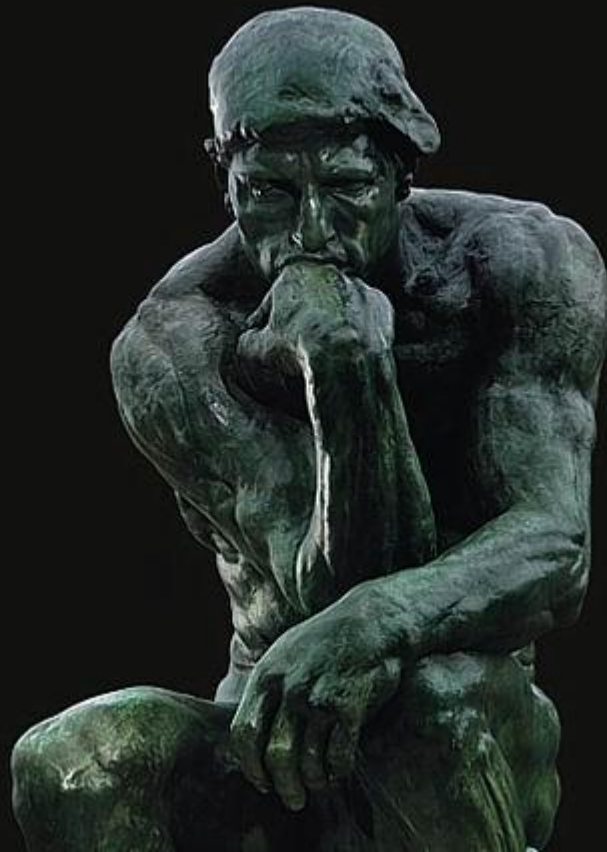
Interventional Cardiology

in Acute Coronary Syndromes
844
5.

845.

1
circres.com/alerts

prints
ahajournals.org



Are PCI benefits similar in
ACS and in stable CAD?

Optimal Medical therapy with or without PCI for Stable Coronary Disease

From 1999 to 2004

2287 Pts

- ✓ Stenosis 70% in at least 1 coronary artery + objective evidence of myocardial ischemia (2168 Pts)
- ✓ Stenosis 80% and classic angina (119 Pts)

EXCLUSION CRITERIA:

- persistent CCS class IV angina
- markedly positive stress test
- heart failure or cardiogenic shock
- EF < 30%
- cor. Anatomy not suitable for PCI
- revascularization procedures within 6 months

(Boden WE et al for the COURAGE Trial research Group NEJM 2007; 356:1503)

Optimal Medical therapy with or without PCI for Stable Coronary Disease

1149 PCI + medical therapy

1077 PCI + Med. Therapy

1138 Medical Therapy

Median Follow-up 4.6 y

Primary event rate

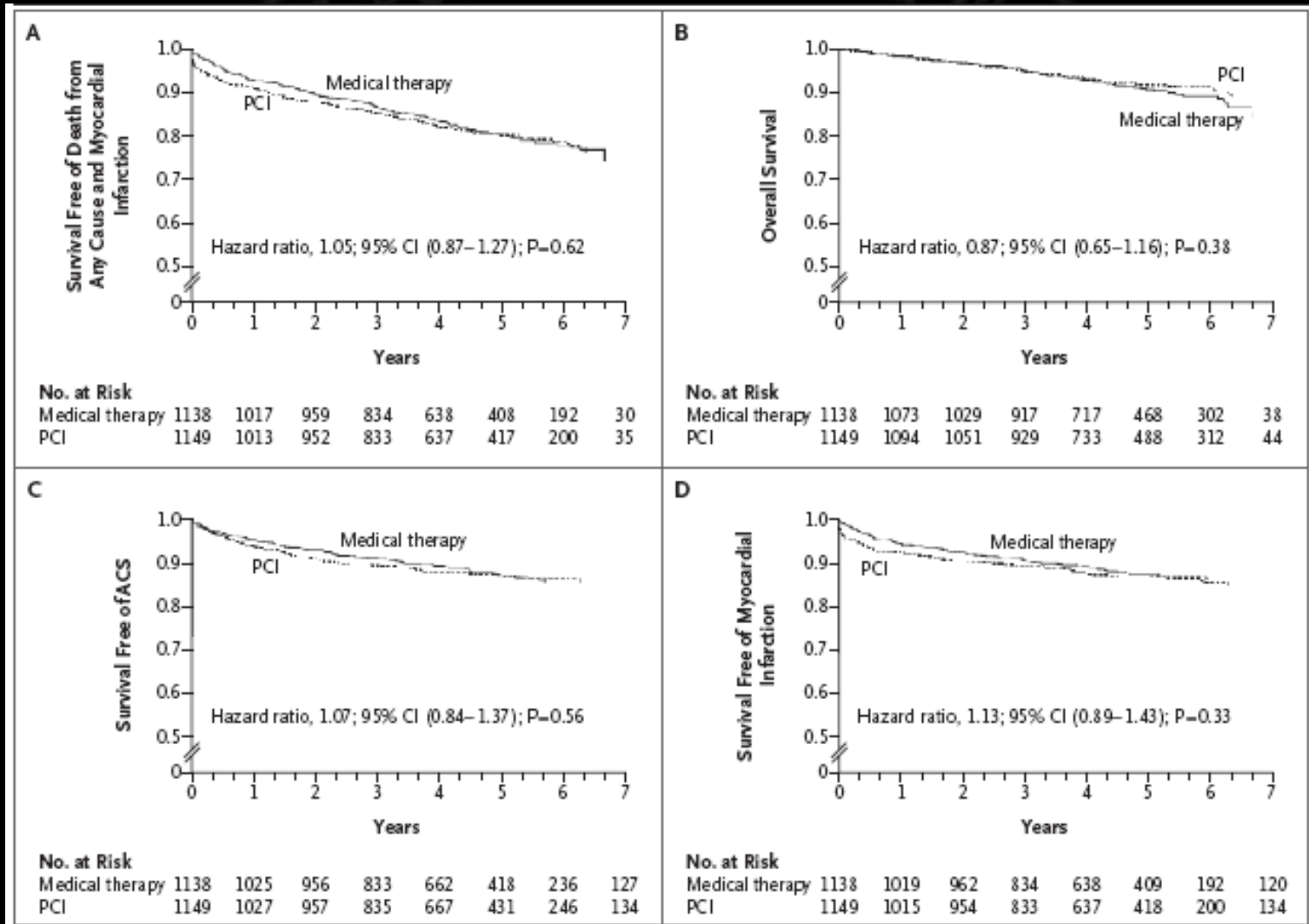
19%

Primary event rate

18.5%

(Boden WE et al for the COURAGE Trial research Group NEJM 2007; 356:1503)

Optimal Medical therapy with or without PCI for Stable Coronary Disease

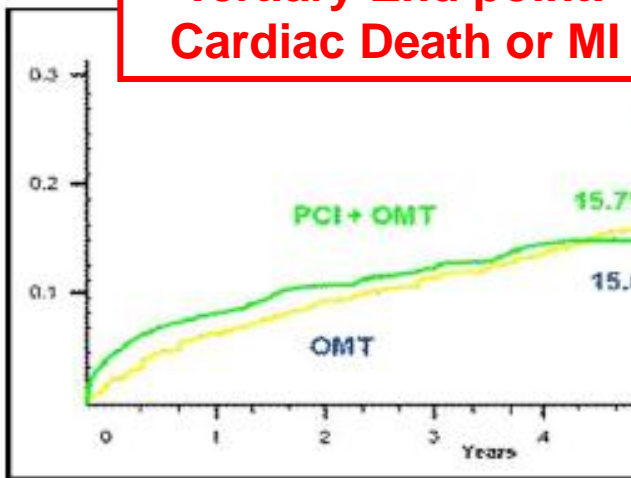


(Boden WE et al for the COURAGE Trial research Group NEJM 2007; 356:1503)

Impact of Optimal Medical Therapy with or without Percutaneous Coronary Intervention on Long-Term Cardiovascular End Points in Patients with Stable Coronary Artery Disease (from the COURAGE Trial)

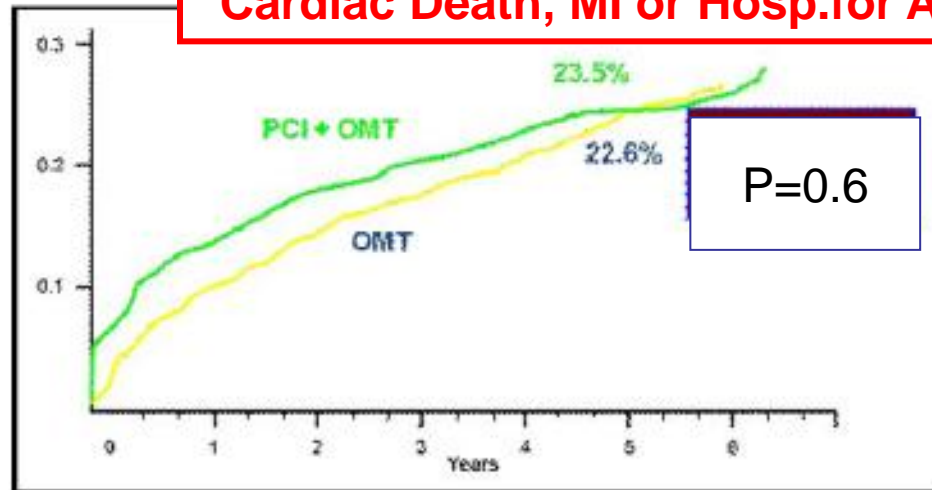
**Tertiary End point:
Cardiac Death or MI**

P=0.62

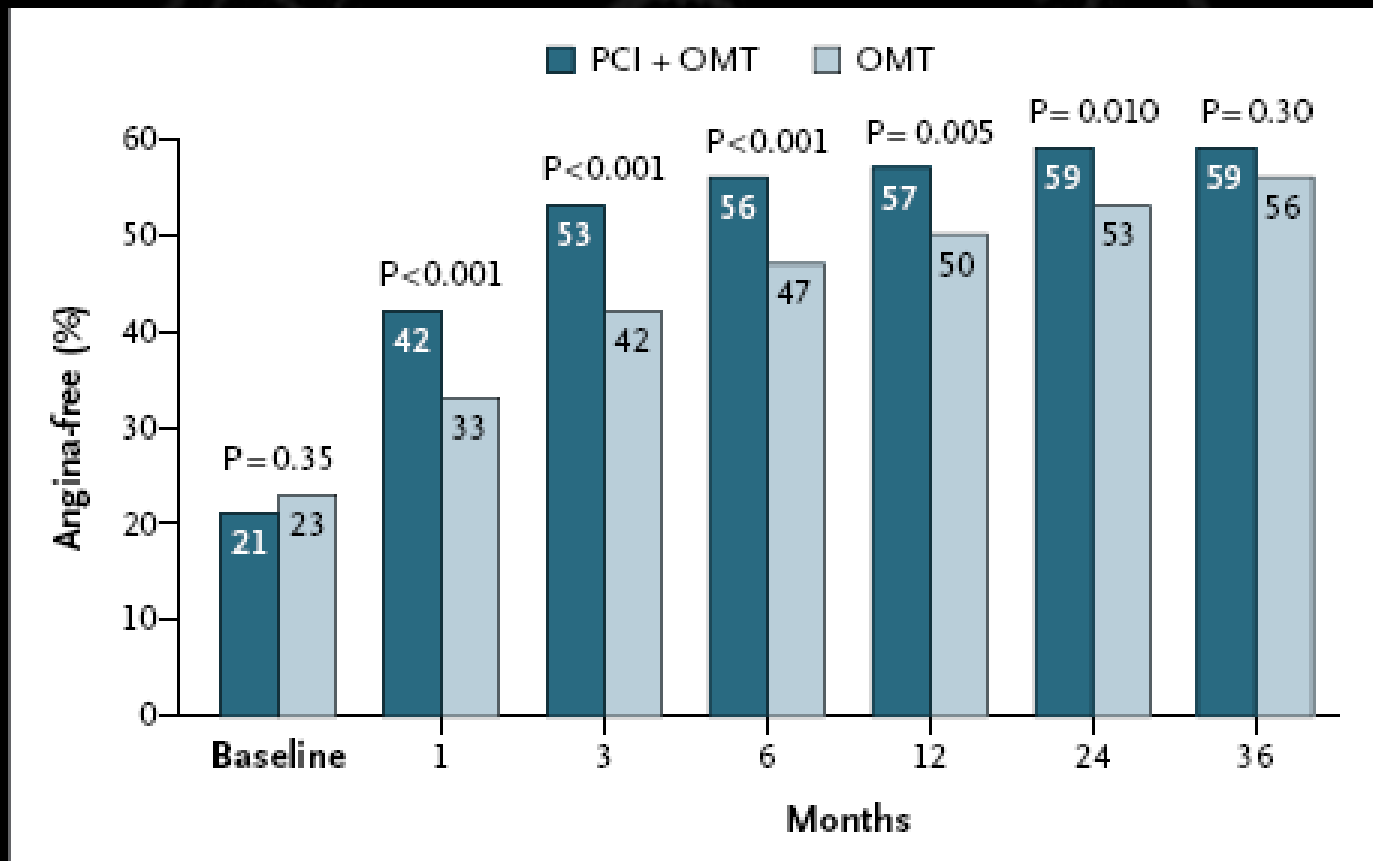


**Tertiary End point:
Cardiac Death, MI or Hosp.for ACS**

P=0.6



Effect of PCI on Quality of Life in Patients with Stable Coronary Disease



(Weintraub WS et al for the COURAGE Trial research Group NEJM 2008; 359:677)

Optimal Medical therapy with or without PCI for Stable Coronary Disease

Revascularization during follow-up



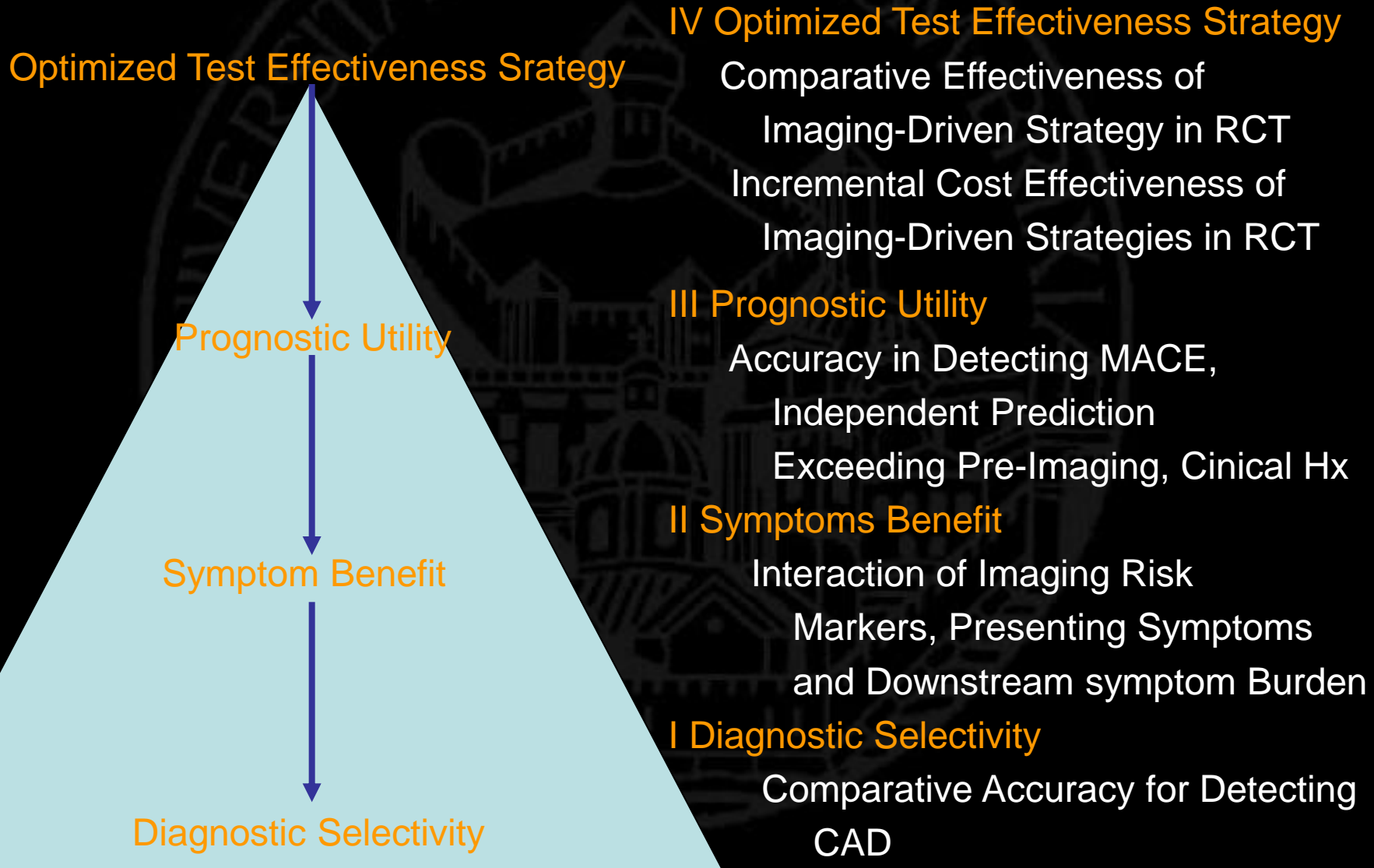
(Boden WE et al for the COURAGE Trial research Group NEJM 2007; 356:1503)



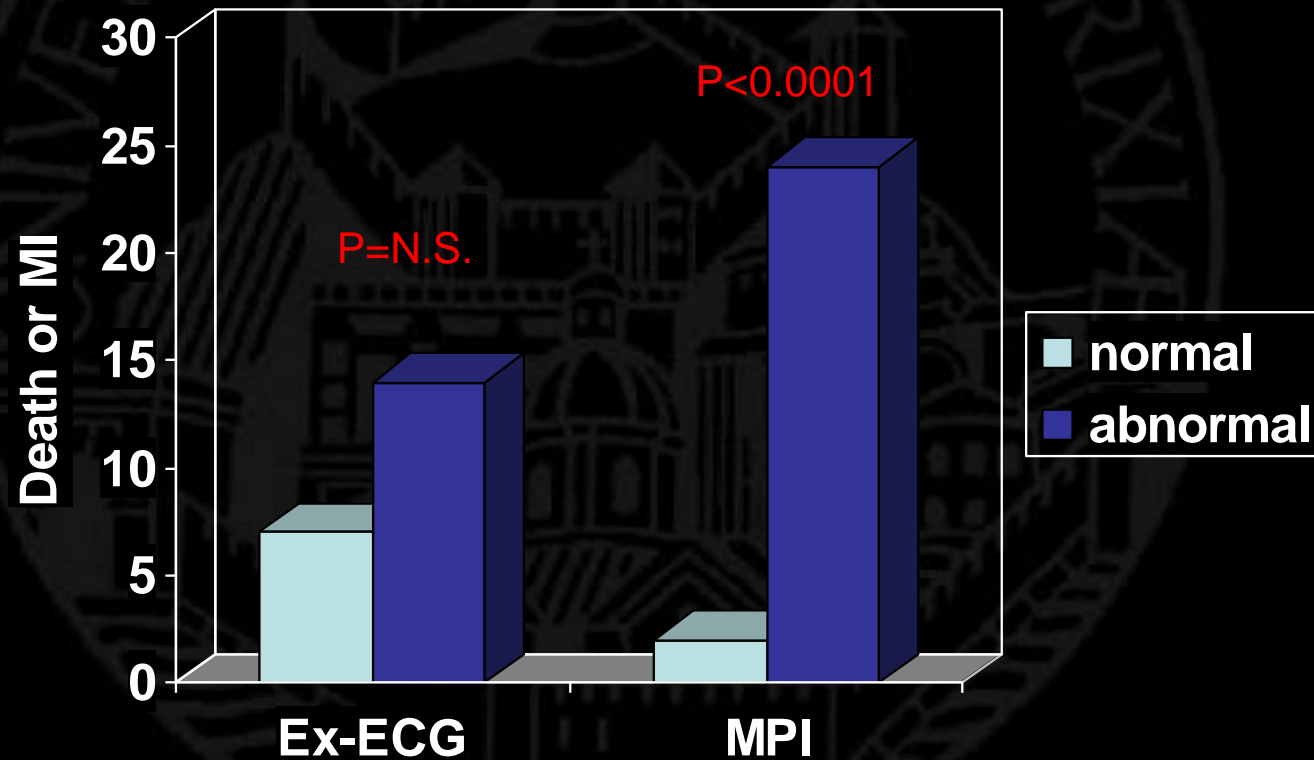
**Is it possible to better
stratify these Patients**

?

Hierarchy of Evidence for CV Imaging



Myocardial Perfusion Scintigraphy: the Evidence



(Underwood SR et al Eur J Nucl Med Mol Imaging 2004; 31: 261)

Prognostic value of normal (low-risk) and moderately to severely abnormal (high-risk) myocardial perfusion SPECT in estimating annual rates of cardiac death and nonfatal myocardial infarction

Year	Author	n	Agent	Average follow-up (y)	Annual event rate	High risk	Low risk
2003	Elhendy72	327	MIBI	7.0	3.8	6.9	—
2003	Patel73	174	MIBI	3.5	2.0	4.3	0.9
2003	Zellweger74	356	TI-201/MIBI	4.0	4.7	17.3	4.3
2003	Berman75	6,173	TI-201/MIBI	2.3	1.0	4.6	0.6
	Nondiabetic						
	Diabetic					7.4	2.2
2002	Hachamovitch76	10,627	TI-201/MIBI	1.9	0.7	6.7	0.7

Year	Author	n	Agent	Average follow-up (y)	Annual event rate	High risk	Low risk
1999	Kang91	1,271	TI-201/MIBI	2.0	3.3	7.0	1.5
1998	Hachamovitch63	5,183	TI-201/MIBI	1.8	3.0	5.9	0.8
1998	Olmos64	225	TI-201	3.7	1.8	2.7	0.9
1998	Alkeylani62	1,086	MIBI	2.3	3.4	5.0	0.6
1997	Snader66	3,400	Thallium	2.0	1.6	3.8	1.0
1997	Boyne65	229	MIBI	1.6	2.2	5.1	0.8
1997	Hachamovitch92	1,159	TI-201/MIBI	2.3	4.5	4.6	0.7
1996	Geleijnse67	392	MIBI	1.8	6.0	8.7	0.8
1996	Hachamovitch93	4,136	TI-	1.7	1.4	6.8	0.6

SPECT experience 10 years [median (25th–75th percentile)]
of pts **69,655**
 F.U. yrs **2.3(1.8-3.9)**
 yr event rate **3.0(1.7-4.3)**
 high risk **5.9(4.6-8.5)**
 low risk **0.85(0.6-1.2)**

2002	Groutars86	597	Tetro	2.0	3.9	5.3	0.7
2001	Calnon87	308	MIBI	1.8	5.8	10.0	2.3
2001	Galassi57	459	Tetro	3.2	2.5	10.7	0.9
2001	Cottin88	152	TI-201	3.3	3.2	8.4	0.9
2001	Diaz50	7,163	TI-201	6.7	1.8	3.6	1.3
2000	Shaw53	8,411	MIBI/TI-201	2.5	1.2	5.0	0.5
2000	Kaminek89	70	TI-201/MIBI	2.1	1.4	10.7	1.2
2000	Amanullah90	633	TI-201/MIBI	1.8	6.0	5.4	0.8

SPECT experience: 10 years [median (25th–75th percentile)]

69,655* 2.3 (1.8-3.9) 3.0 (1.7-4.3) 5.9 (4.6-8.5) 0.85 (0.6-1.2)

MIBI, Tc-99m sestamibi; Tetro, Tc-99m tetrofosmin.

(Shaw LJ, Iskandrian AE. J Nucl Cardiol 2004; 11: 168)

Gated myocardial perfusion single photon emission computed tomography in the clinical outcomes utilizing revascularization and aggressive drug evaluation (COURAGE) trial, Veterans Administration Cooperative study no. 424

PRETREATMENT

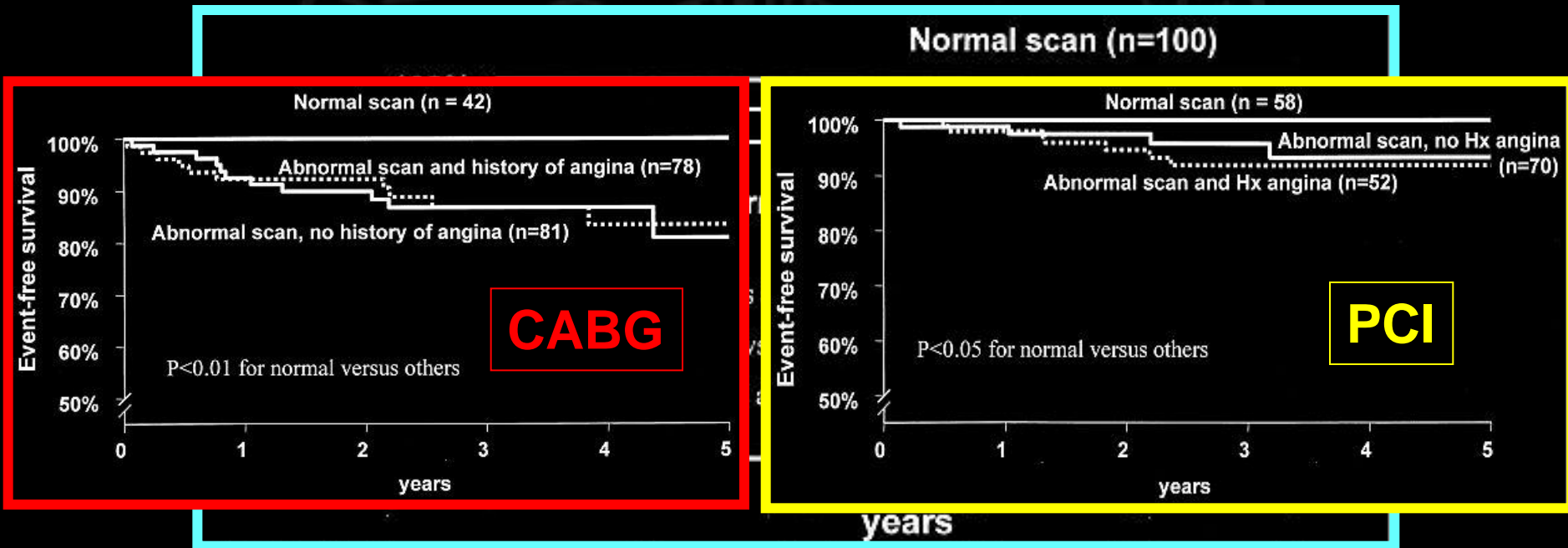
- Assessment of pretreatment gSPECT ischemia and its relationship to patient symptoms and angiographic disease burden

POSTTREATMENT

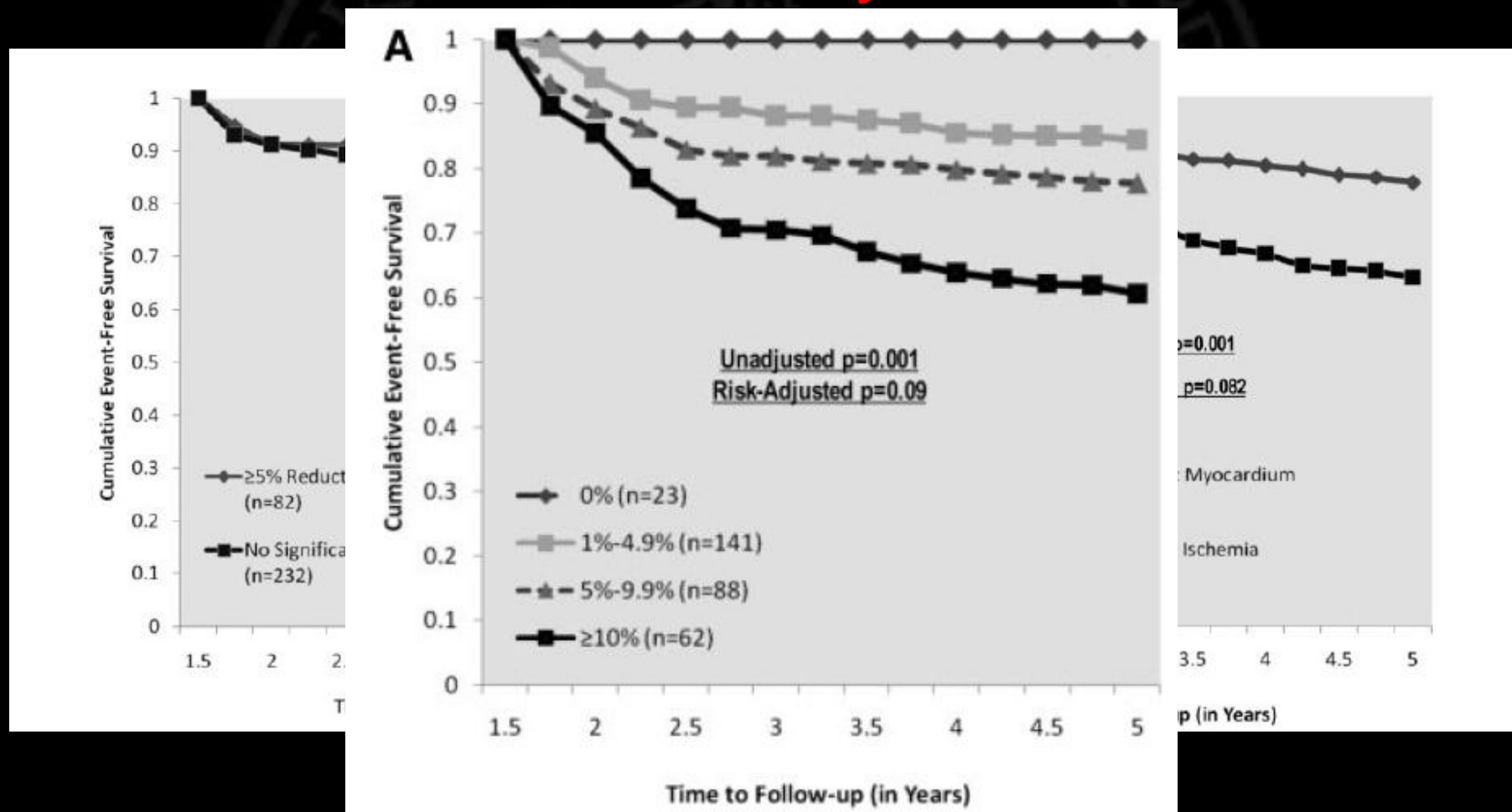
- Role of gSPECT in assessing recurrent chest-pain symptoms after the initial treatment
- Usefulness of gSPECT before and after therapy in assessing treatment effects.

(Shaw LJ et al J Nucl Cardiol 2006; 13: 685)

Risk stratification of patients after myocardial revascularization by stress Tc - 99m Tetrofosmin myocardial perfusion tomography.

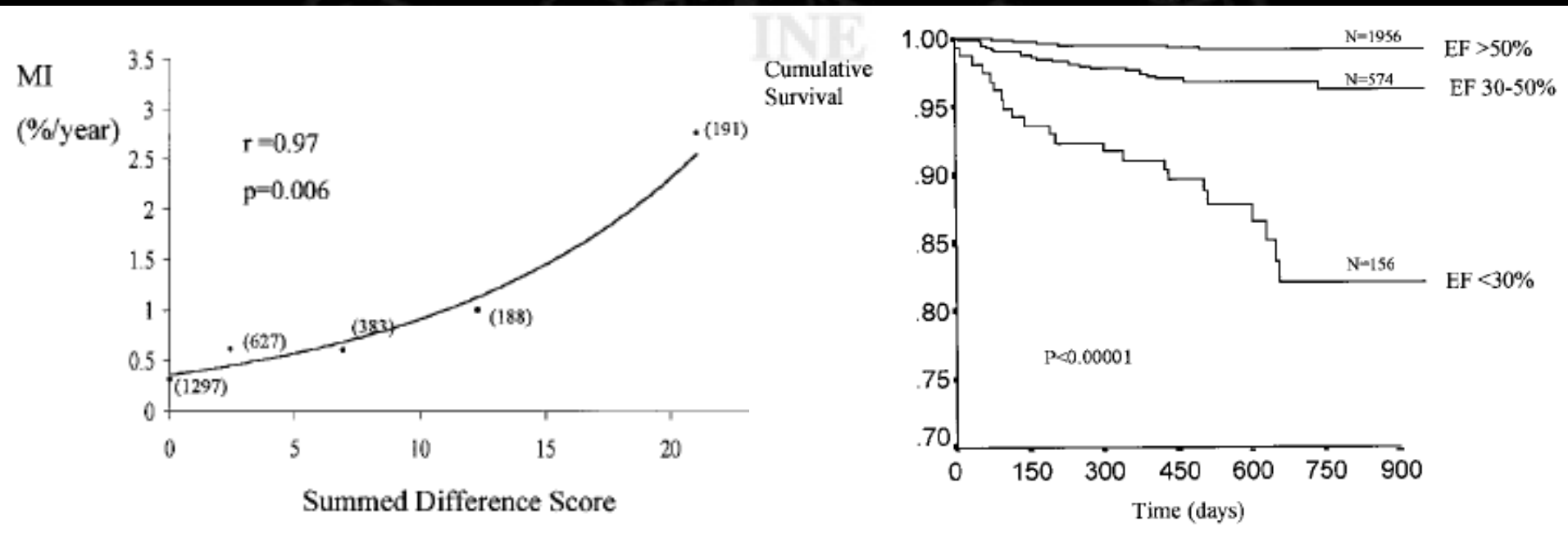


Optimal Medical Therapy With or Without Percutaneous Coronary Intervention to Reduce Ischemic Burden: Results from the Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation (COURAGE) Trial Nuclear Substudy

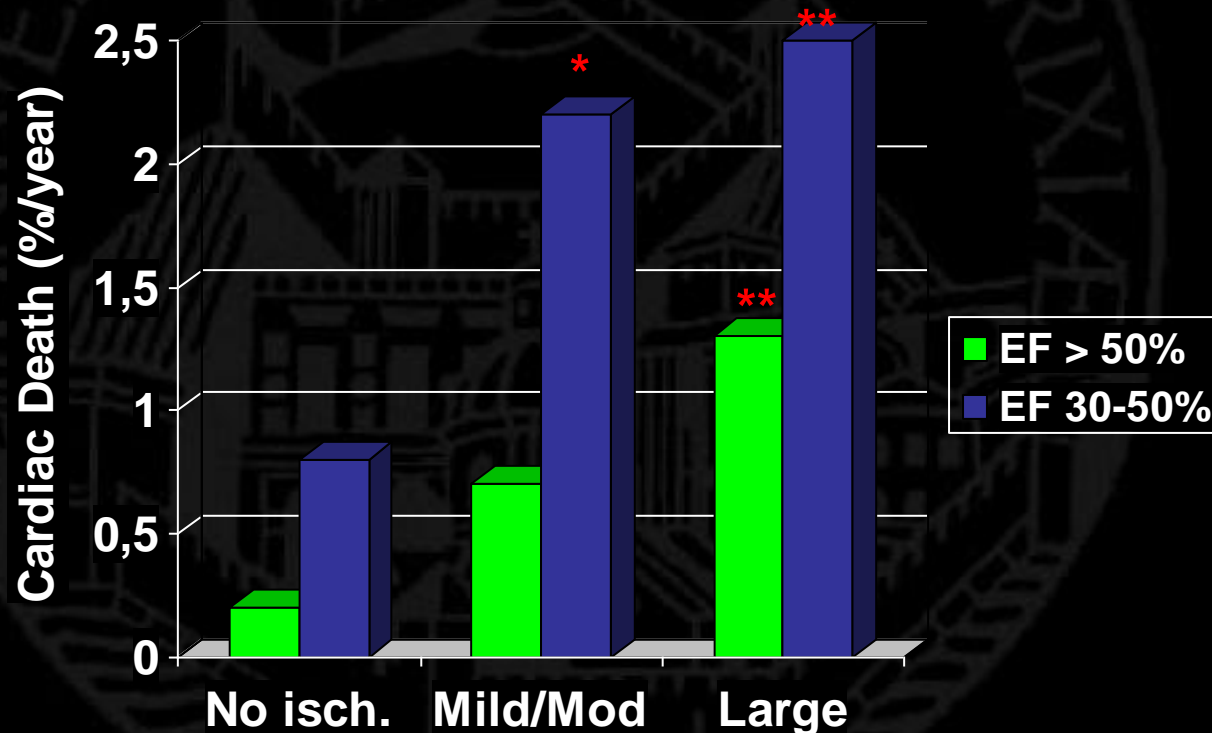


(Shaw LJ et al Circulation 2008; 117: 1283)

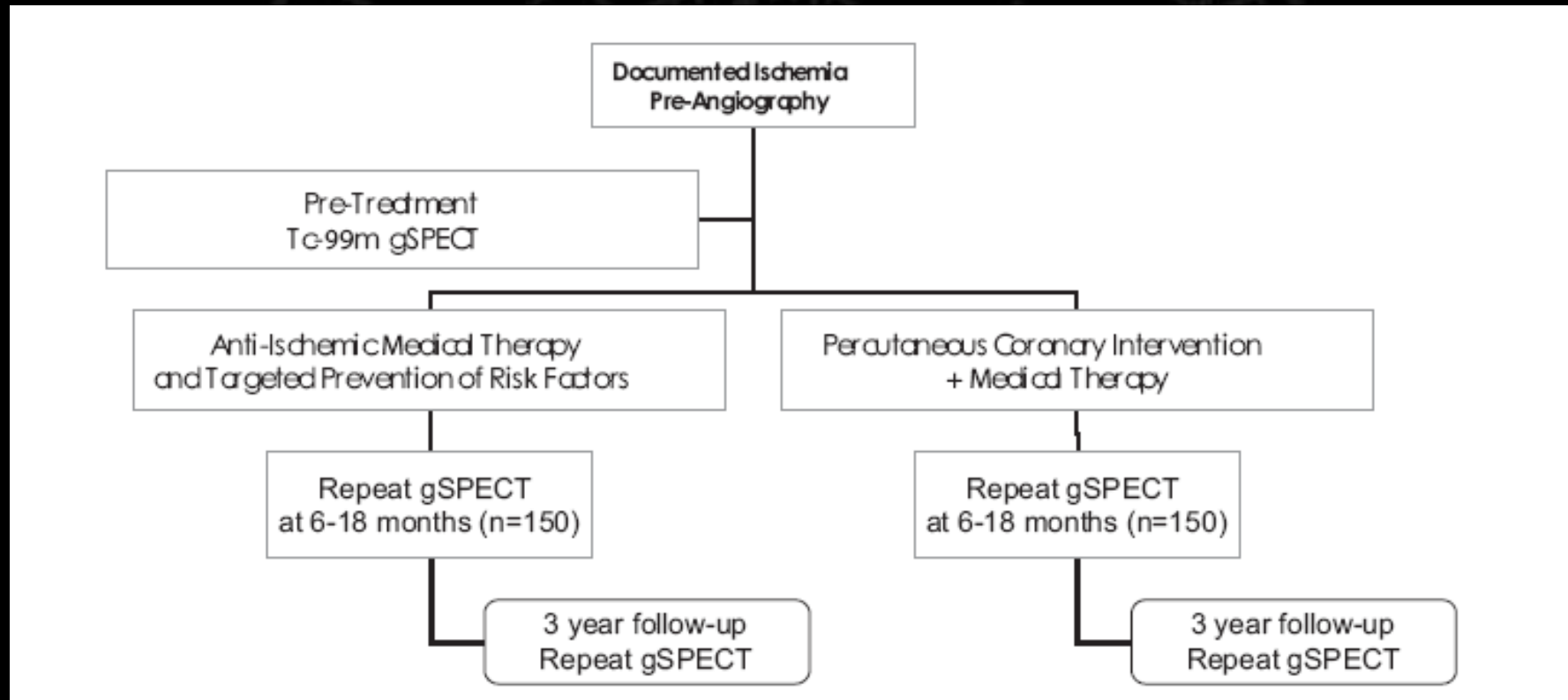
Prediction of Myocardial Infarction versus Cardiac Death by Gated Myocardial Perfusion SPECT: Risk Stratification by the Amount of Stress-Induced Ischemia and the Poststress Ejection Fraction



Prediction of Myocardial Infarction versus Cardiac Death by Gated Myocardial Perfusion SPECT: Risk Stratification by the Amount of Stress-Induced Ischemia and the Poststress Ejection Fraction

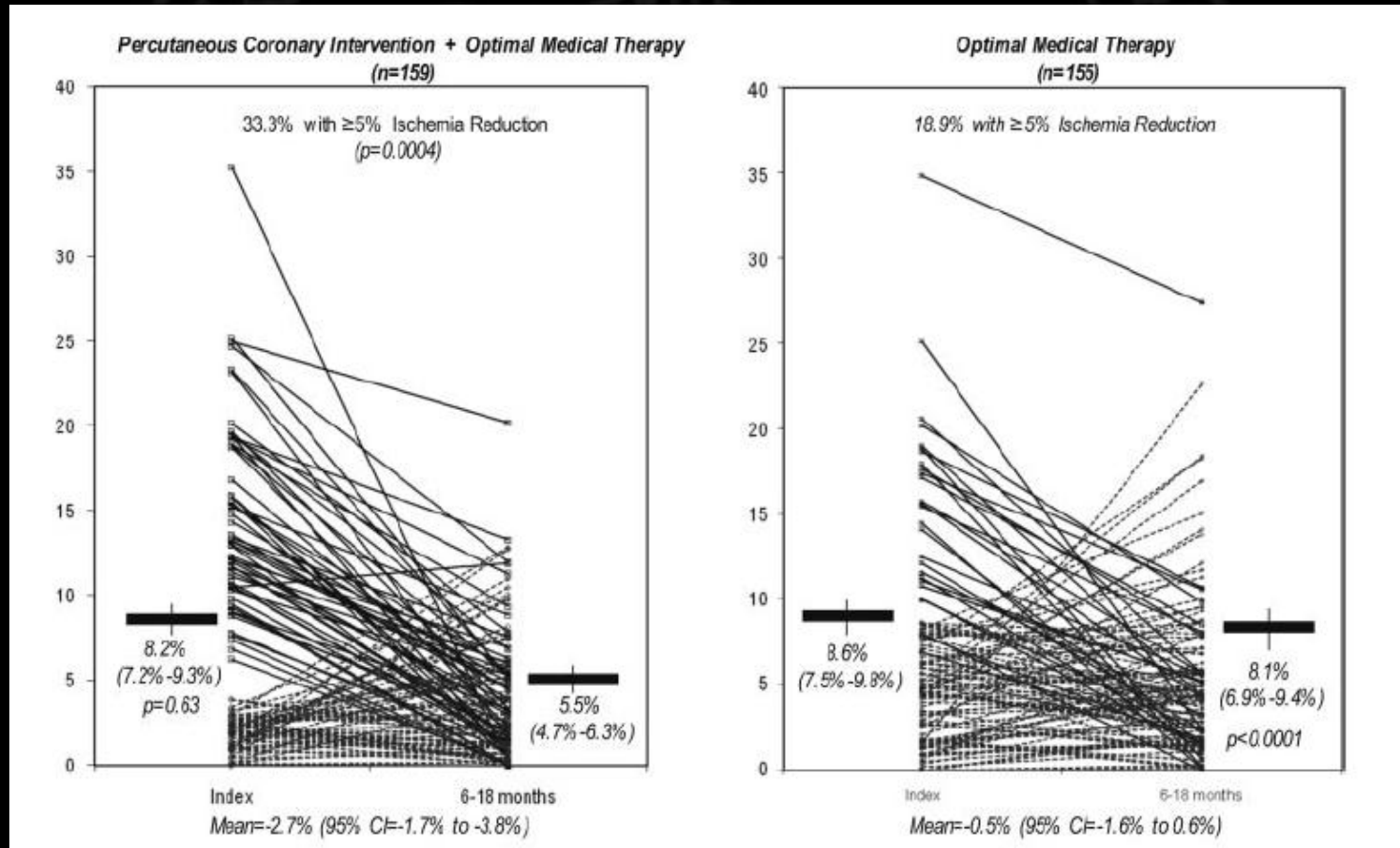


Gated myocardial perfusion single photon emission computed tomography in the clinical outcomes utilizing revascularization and aggressive drug evaluation (COURAGE) trial, Veterans Administration Cooperative study no. 424



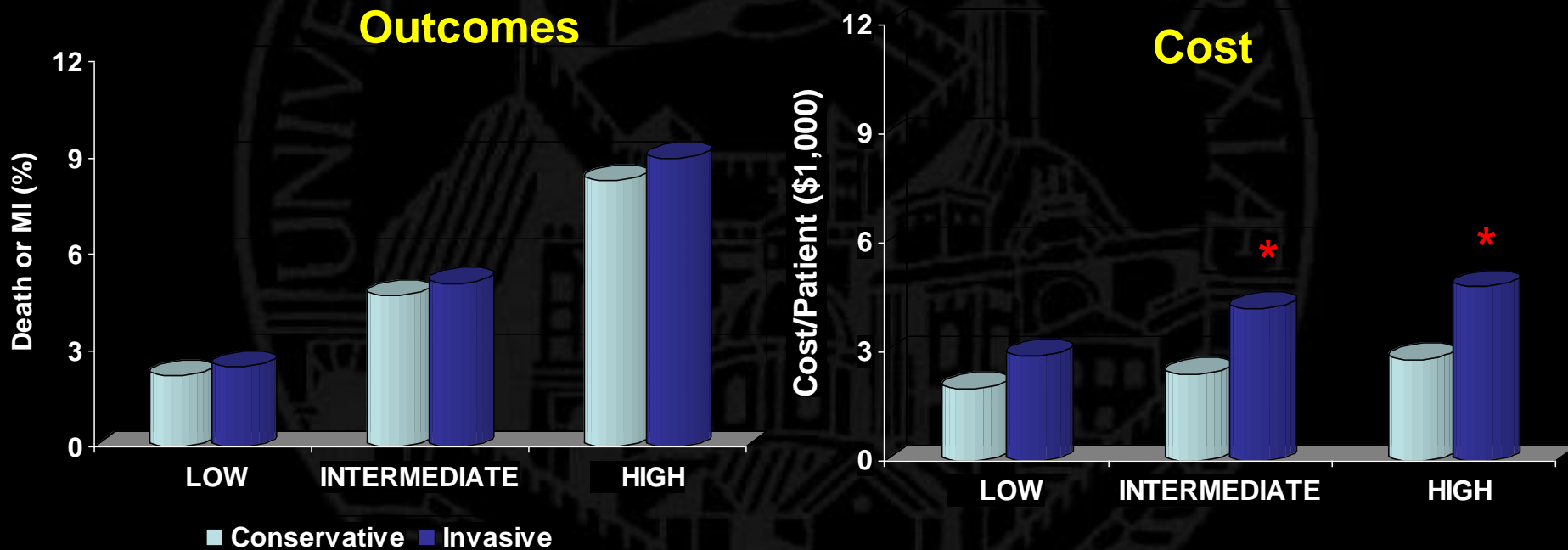
(Shaw LJ et al J Nucl Cardiol 2006; 13: 685)

Optimal Medical Therapy With or Without Percutaneous Coronary Intervention to Reduce Ischemic Burden: Results from the Clinical Outcomes Utilizing Revascularization and Aggressive Drug Evaluation (COURAGE) Trial Nuclear Substudy



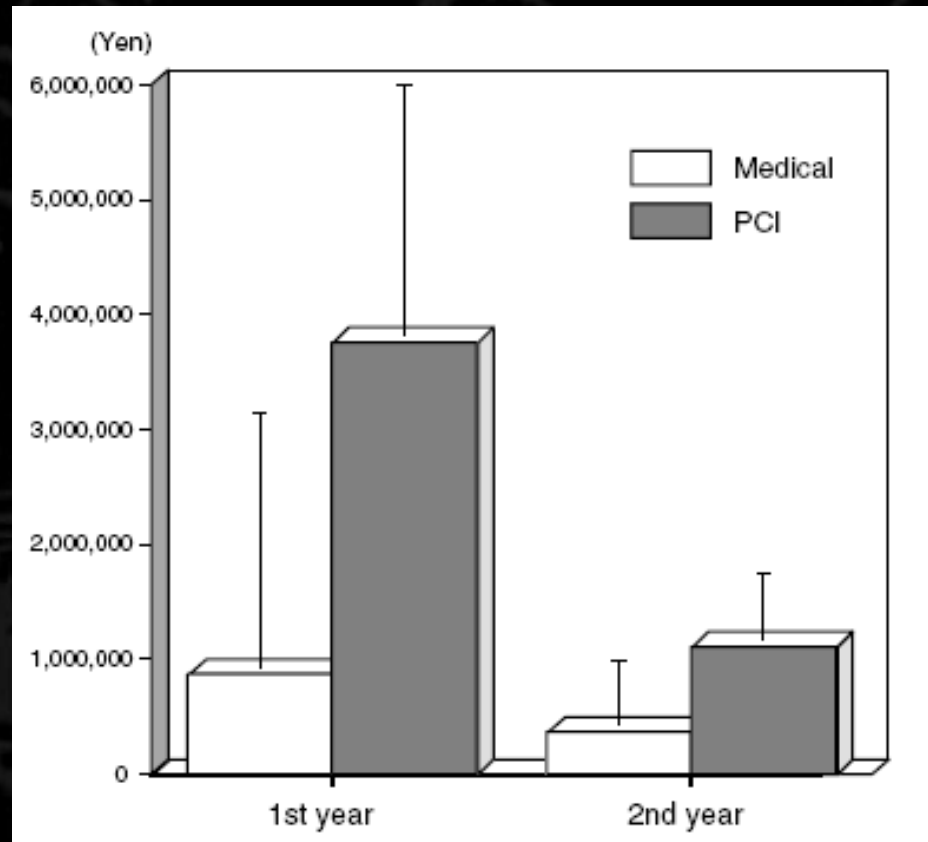
(Shaw LJ et al Circulation 2008; 117: 1283)

The economic consequences of available diagnostic and prognostic strategies for the evaluation of stable angina patients: an observational assessment of the value of precatheterization ischemia. Economics of Noninvasive Diagnosis (END) Multicenter Study Group.

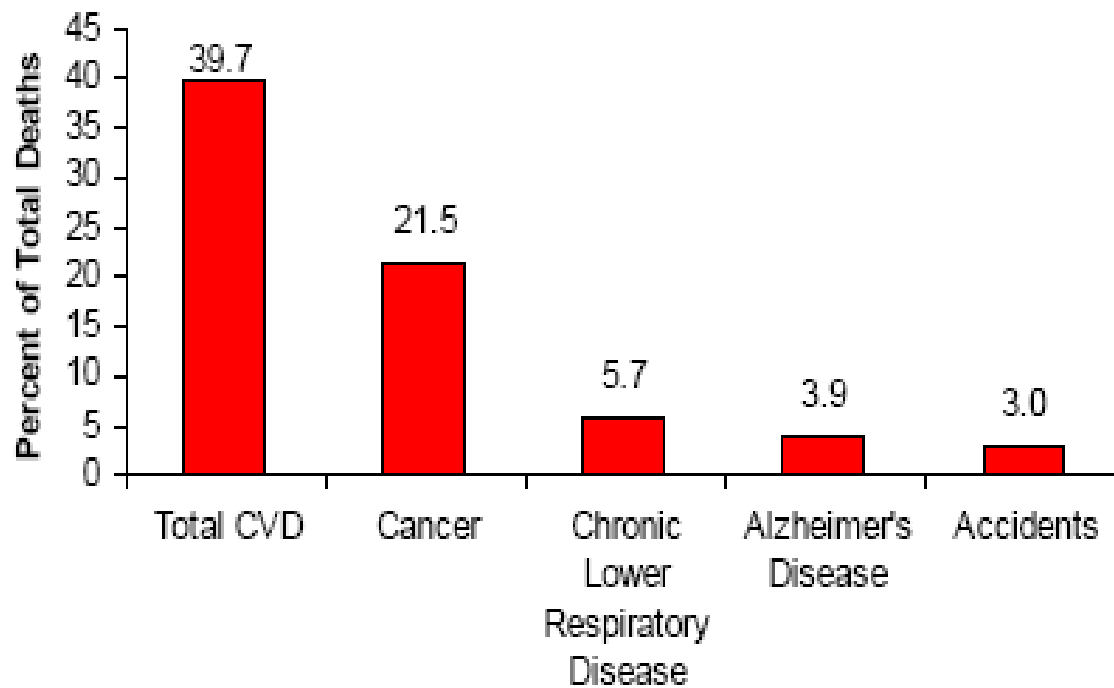


(Shaw LJ et al J Am Coll Cardiol 1999;33:661)

Outcomes of Patients with Stable Low-Risk Coronary Artery Disease Receiving Medical- and PCI- Preceding Therapies in Japan

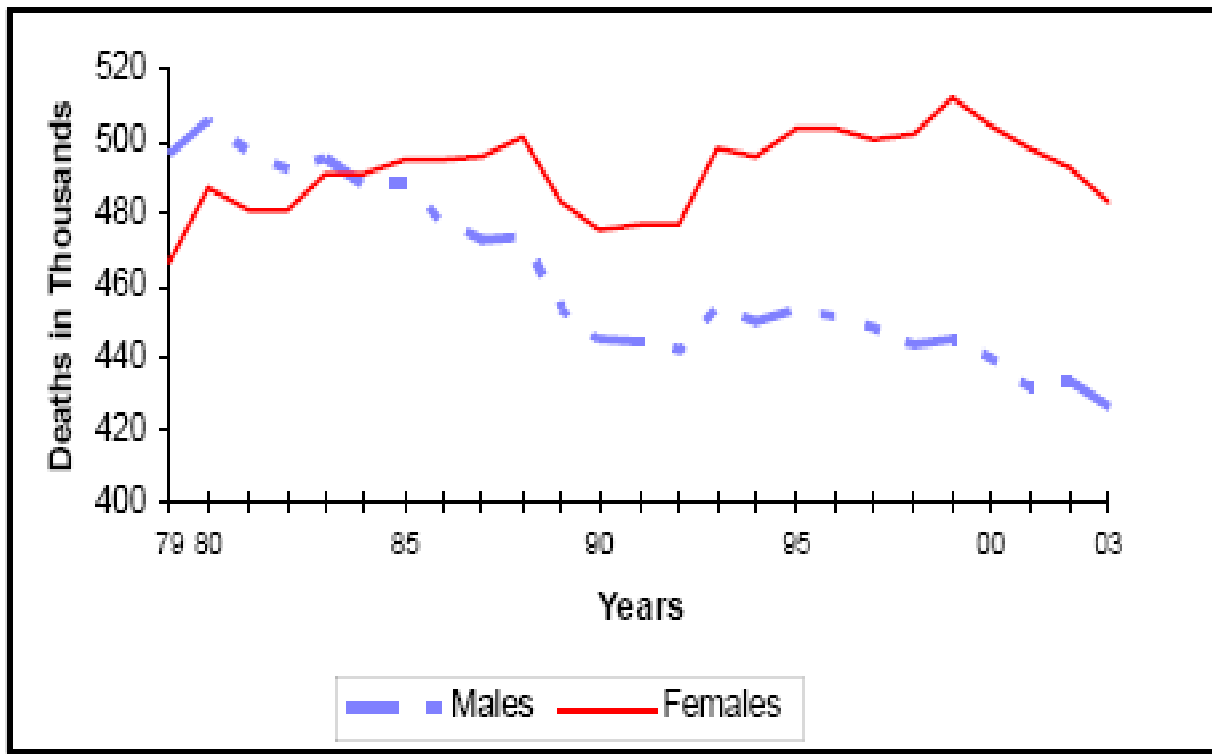


(Tanihata S et al Circ J 2006; 70: 365)



Cardiovascular Disease Mortality Trends for Males and Females

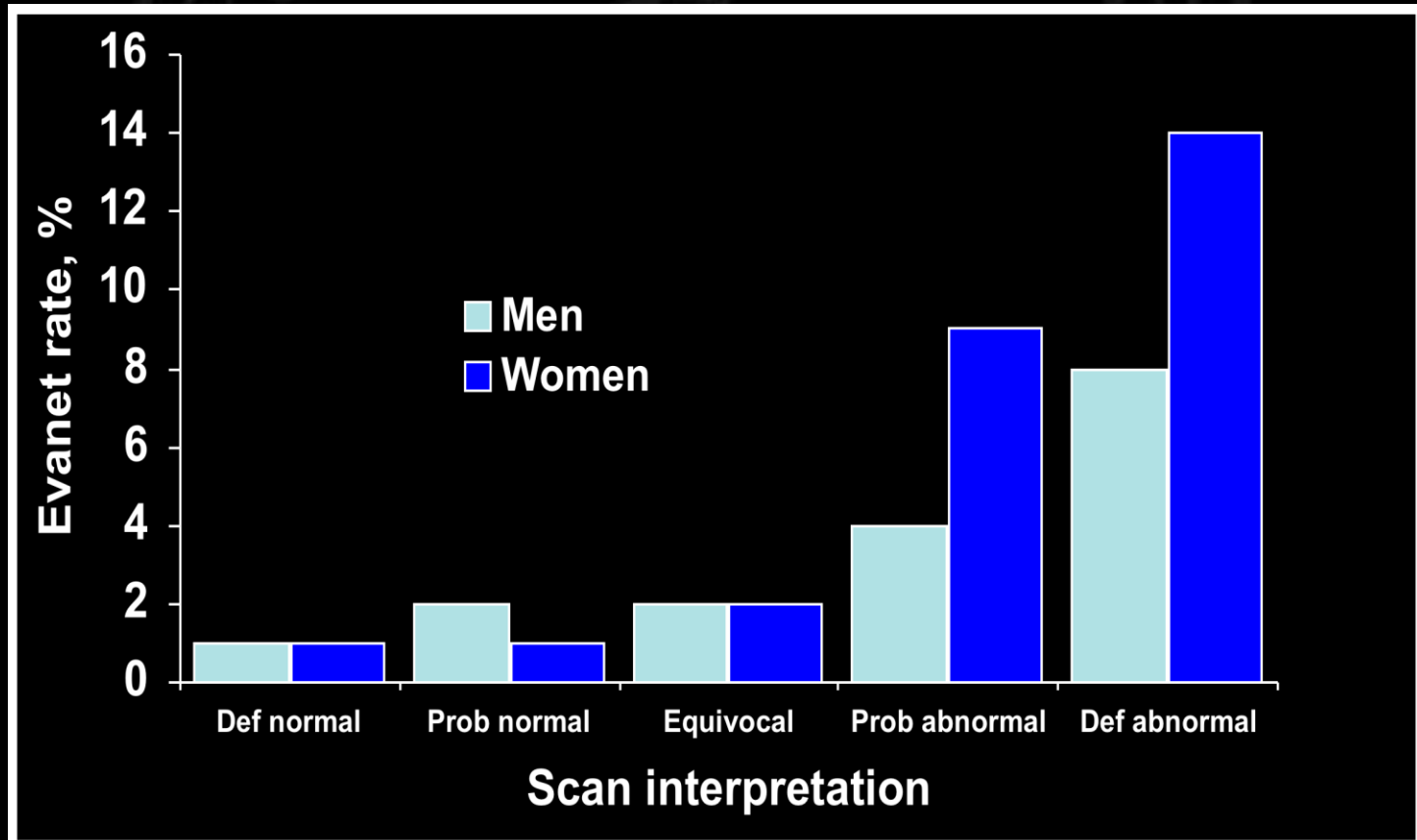
United States: 1979-2003



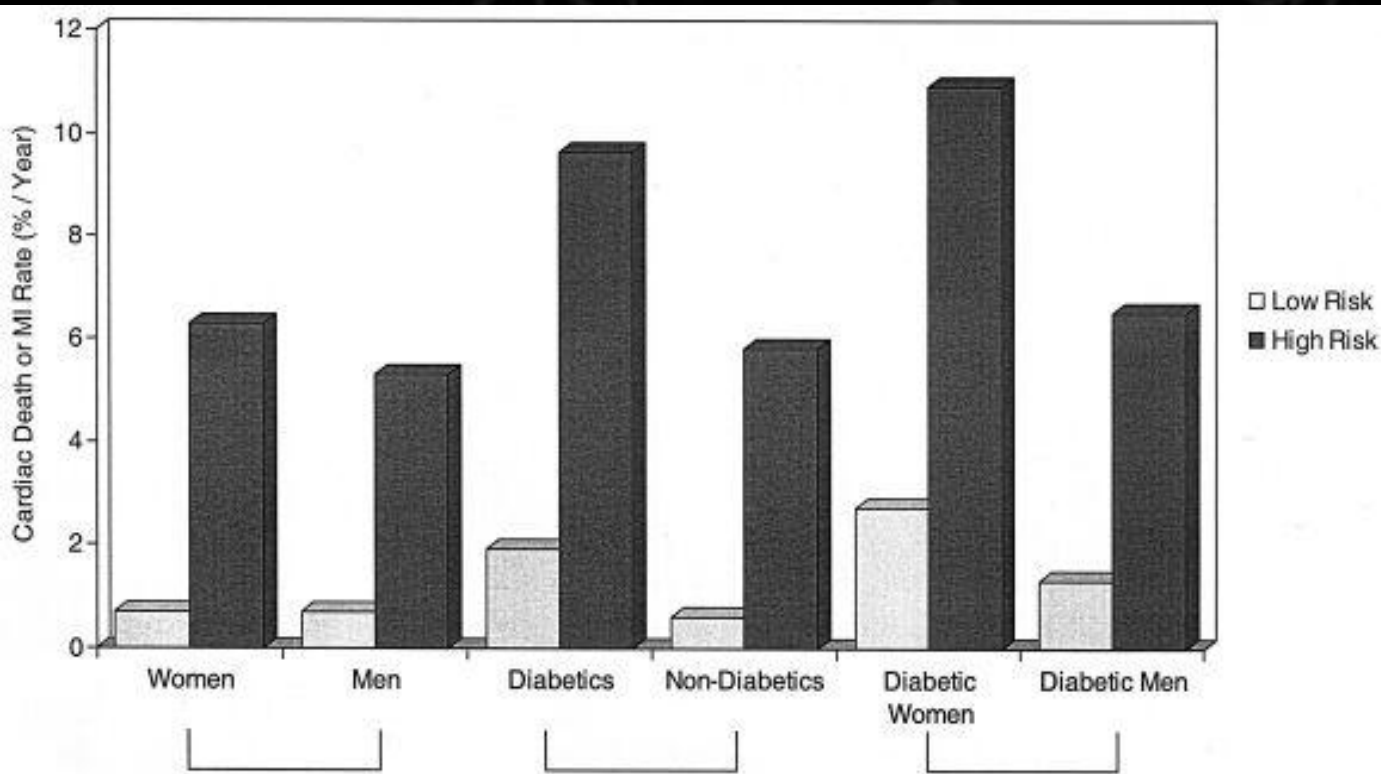
Source: CDC/NCHS. Preliminary underlying mortality for 2003.



Event Rates as Function of MPI With SPECT Results by Gender



Prognostic value of gated myocardial perfusion SPECT.



(Shaw LJ, Iskandrian AE. J Nucl Cardiol 2004; 11: 168)

