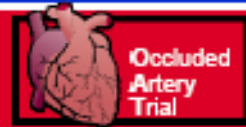


PCI in the Occluded Artery Trial (OAT): Lots of Bucks, Not Much Bang



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Duke Clinical Research Institute

**On behalf of the OAT Economics and Quality of Life
(EQOL) Research Team and the OAT Investigators**

**OAT Research Program supported by
NHLBI (94%) and industry (6%)**

EQOL portion supported by NHLBI

November 5, 2007

Occluded Artery Trial: 1° Hypothesis and Design

1° Hypothesis: Late PCI to open occluded IRA will ↓ death/reinfarction/class IV CHF by 25% compared to MED alone

- 2166 Acute MI pts (2000-2005)
- TIMI 0 or 1 flow
- 3-28 days post MI

+

- High Risk**
- EF < 50%
 - Proximal occlusion affecting ≥ 25% LV
- TOSCA 2

Exclude:

- 3V/LM disease
- Clinically unstable due to ischemia, hemodynamics

PCI with Stent of IRA

Medical RX

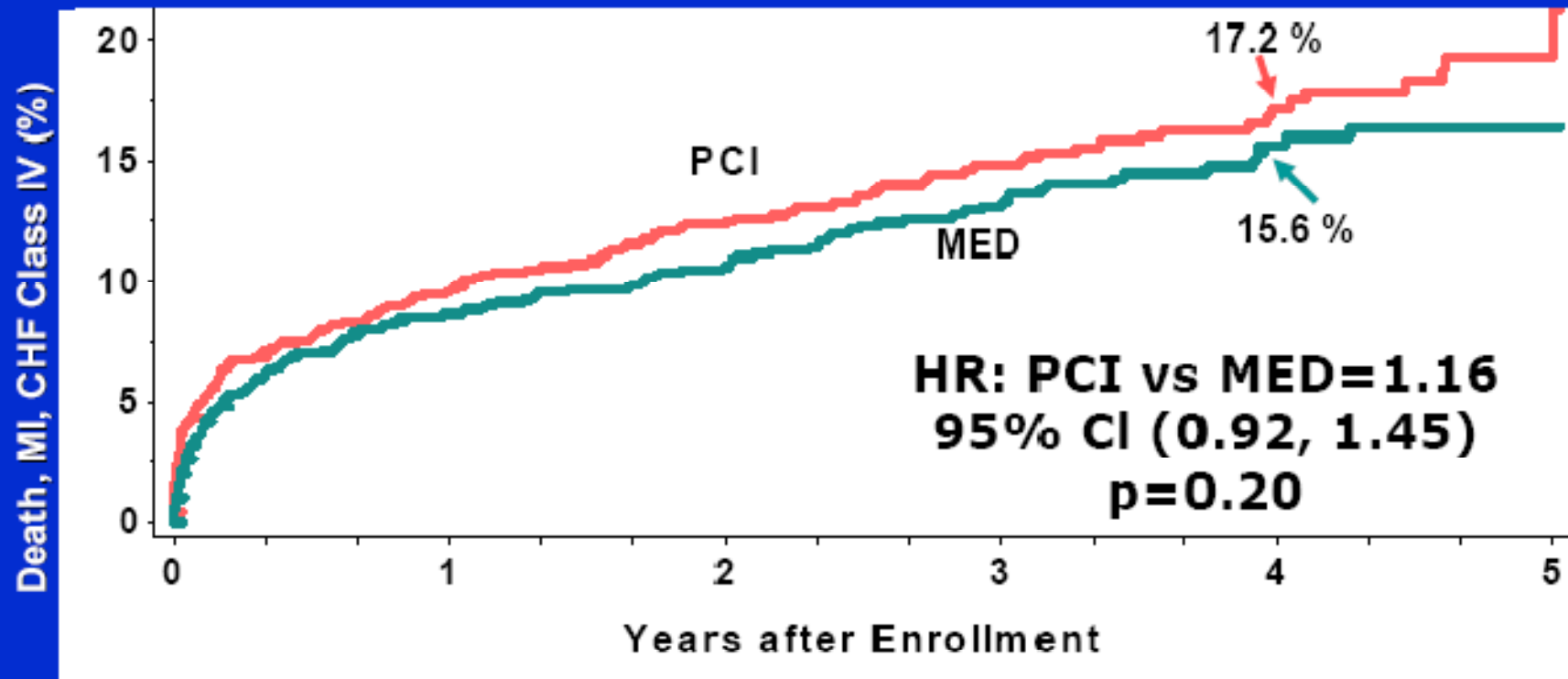
- 87% successful PCI
- 83% open IRA at 1 yr (TOSCA)

- 8% crossover to PCI (total)
- 25% open IRA at 1 yr (TOSCA)

Hochman JS et al. NEJM 12/06

OAT: 1° Composite Endpoint

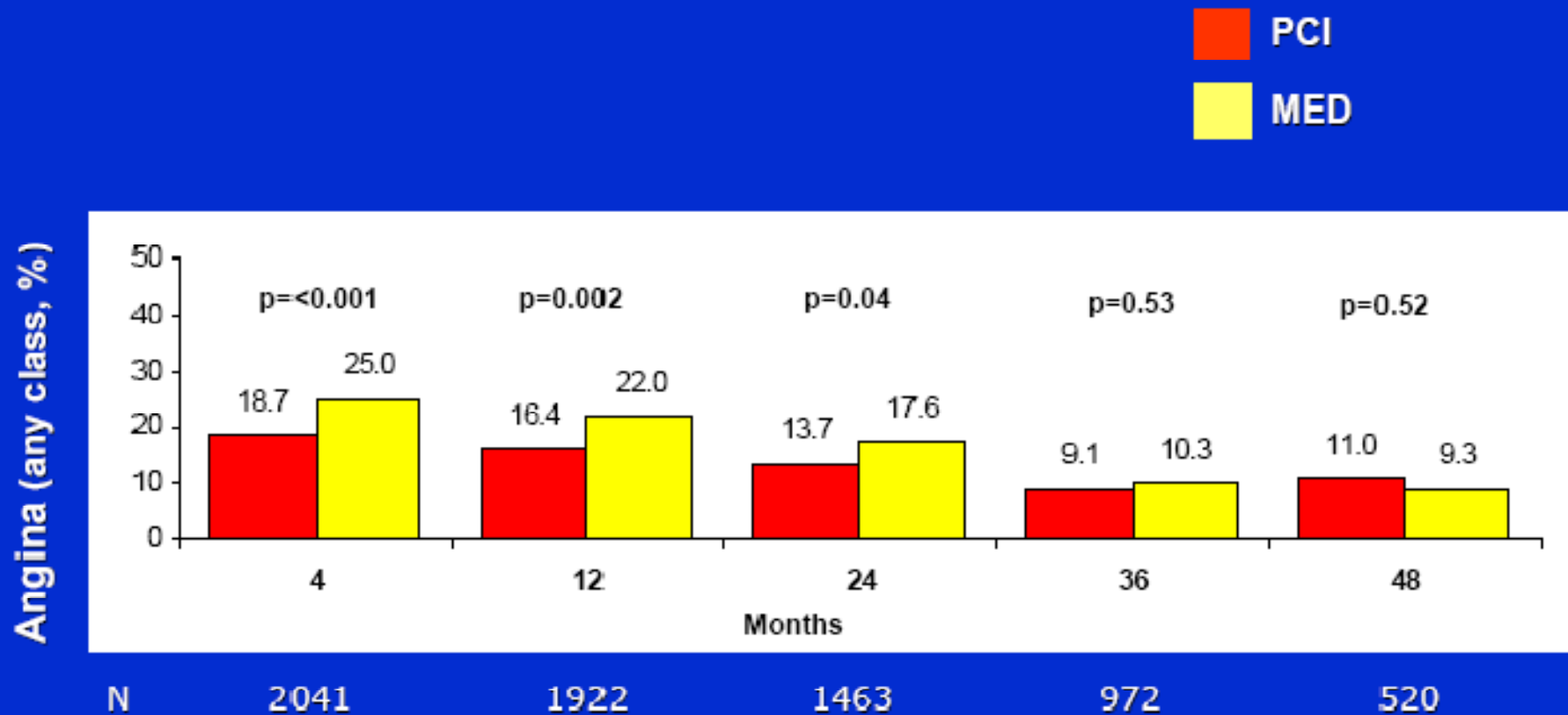
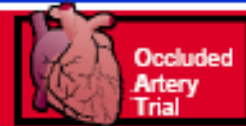
Death, Nonfatal MI, Class IV CHF



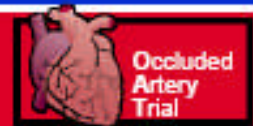
Number at Risk

PCI:	1082	895	719	482	265	85
MED:	1084	909	714	474	268	78

OAT Secondary Outcomes: Angina (CCS Class >0)



Hochman JS et al.
NEJM 12/06



EQOL OAT: Quality of Life (QOL) Methods Overview

- **Originally planned to include all OAT pts when OAT was N. America only**
- **Enrollment modified to account for international participants**
- **QOL structured interviews at baseline, 4 mos, 12 mos, and 24 mos**
- **951 (48%) of 1970 main OAT pts in QOL**
- **3,473 (95% of expected) QOL contacts collected**

EQOL OAT: QOL Assessment Instruments



Instrument

QOL Domain

Duke Activity Status Index (DASI)

Cardiac functional status

SF-36 Mental Health Inventory

Psychological well-being

SF-36 scales

General health, vitality, role and social functioning, bodily pain

Bed and Disability Days

General health

Rose Angina and Rose Dyspnea

Cardiac symptoms

Work Status

Employment

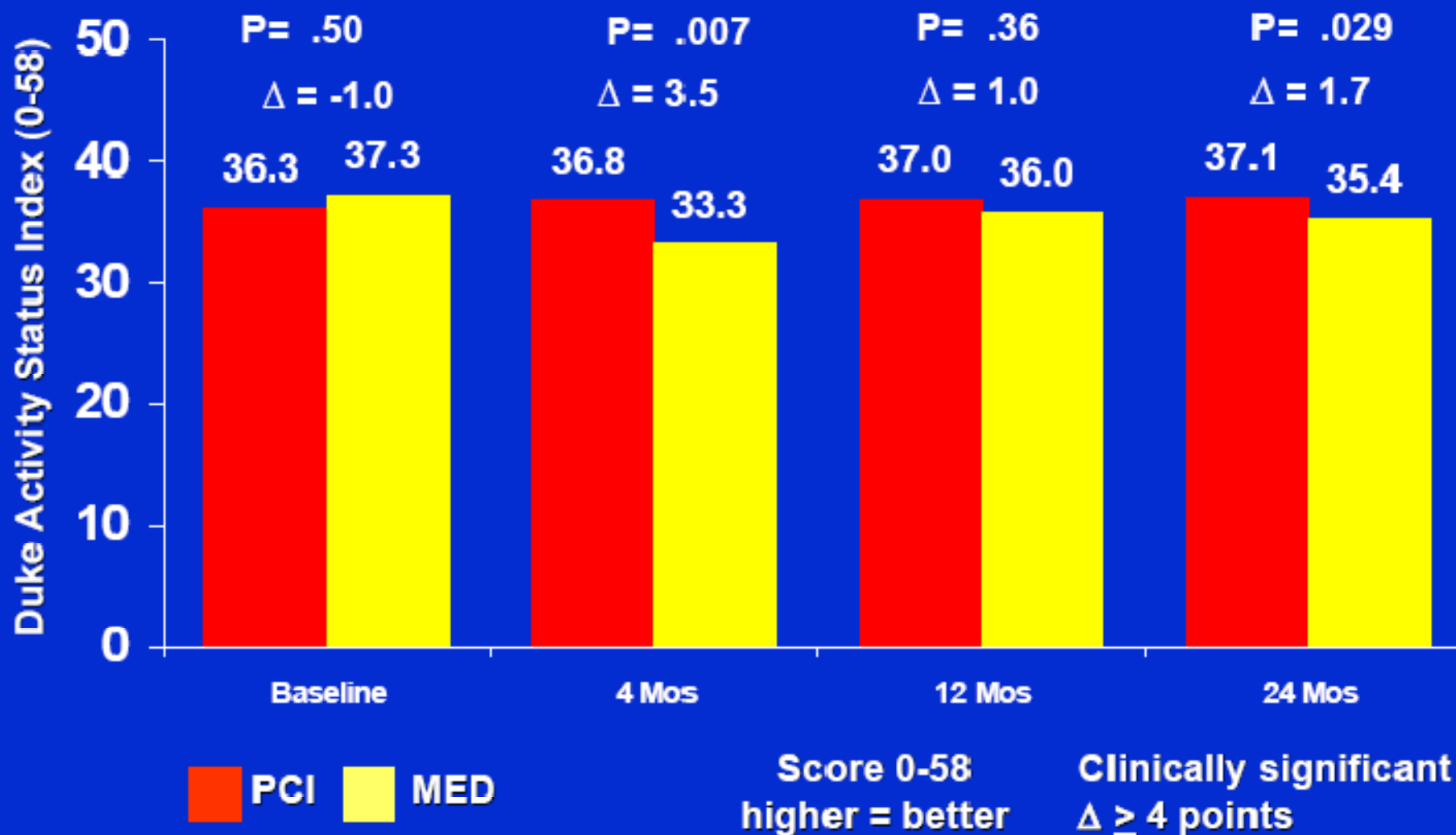
**Time Trade-Off
Self-Rating (0-100)**

Patient utilities

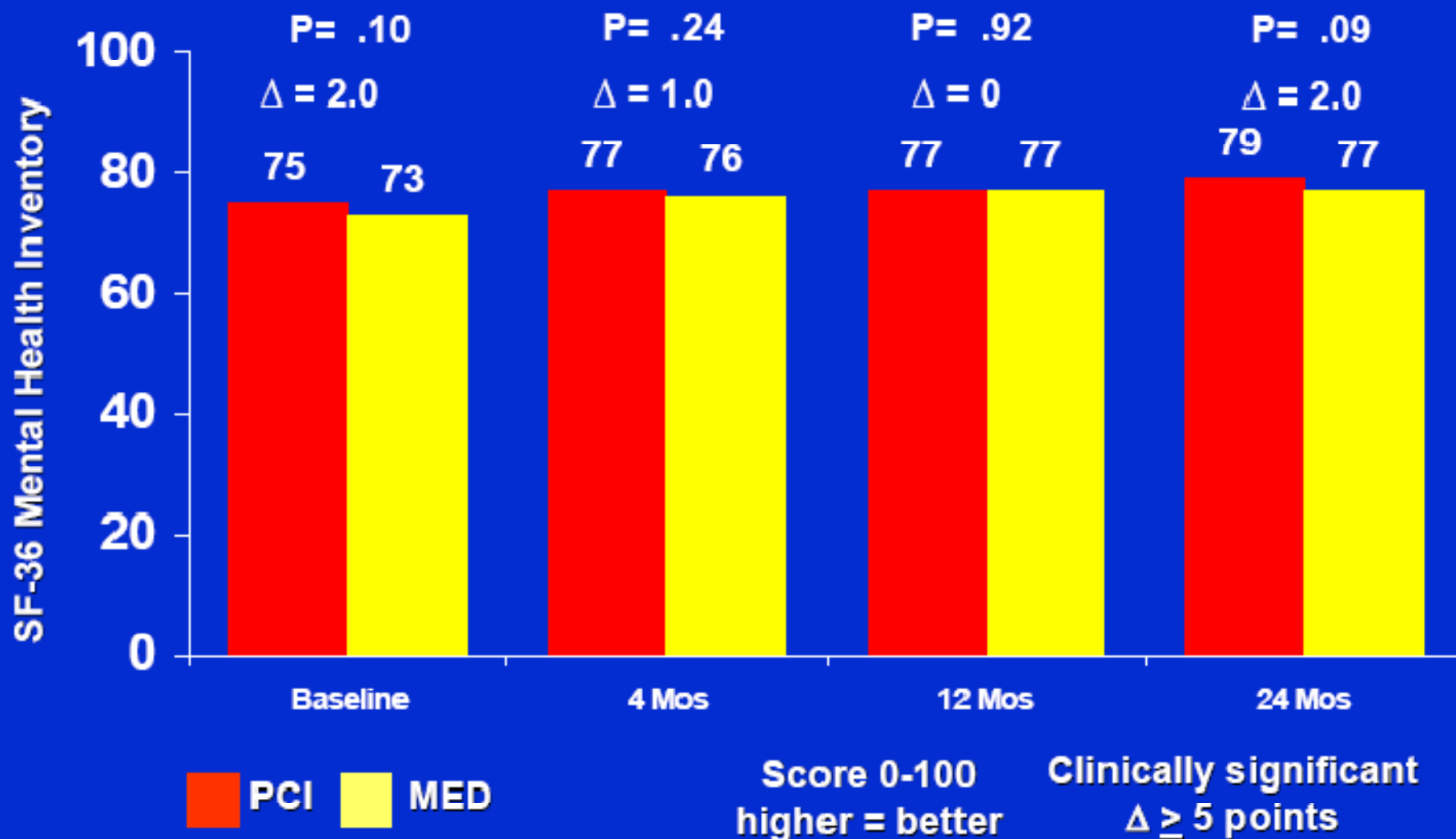
OAT QOL Substudy Pts vs Total OAT Cohort: Baseline Clinical Characteristics

	OAT-QOL (n=951)	OAT Total (n=1970)	P
Age (mean)	59.2	58.8	.06
Male	78%	78%	.78
Race, nonwhite	17%	15%	<.001
Hx of angina	23%	23%	.66
Hx of MI	14%	12%	.006
Hx of CHF	3.6%	2.5%	.002
Hx of DM	23%	21%	.06
Hx prior PCI	5.9%	4.9%	.08
Hx prior CABG	0.7%	0.4%	.03
Days from qualifying MI (median)	6 days	8 days	<.0001

OAT QOL Substudy: Duke Activity Status Index (DASI)



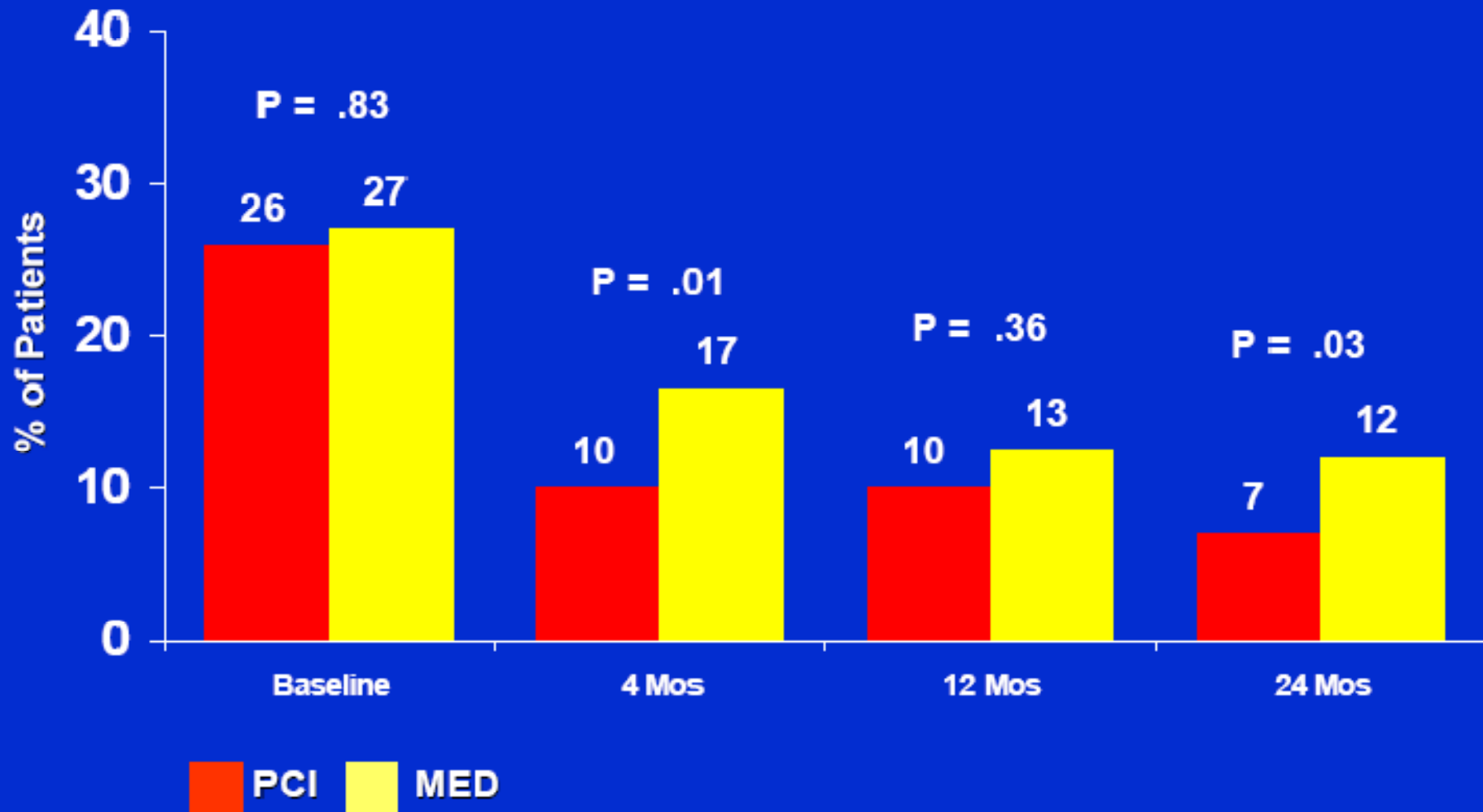
OAT QOL Substudy: Psychological Well-Being (SF-36 MHI-5)

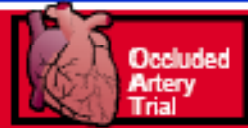


OAT QOL Substudy:

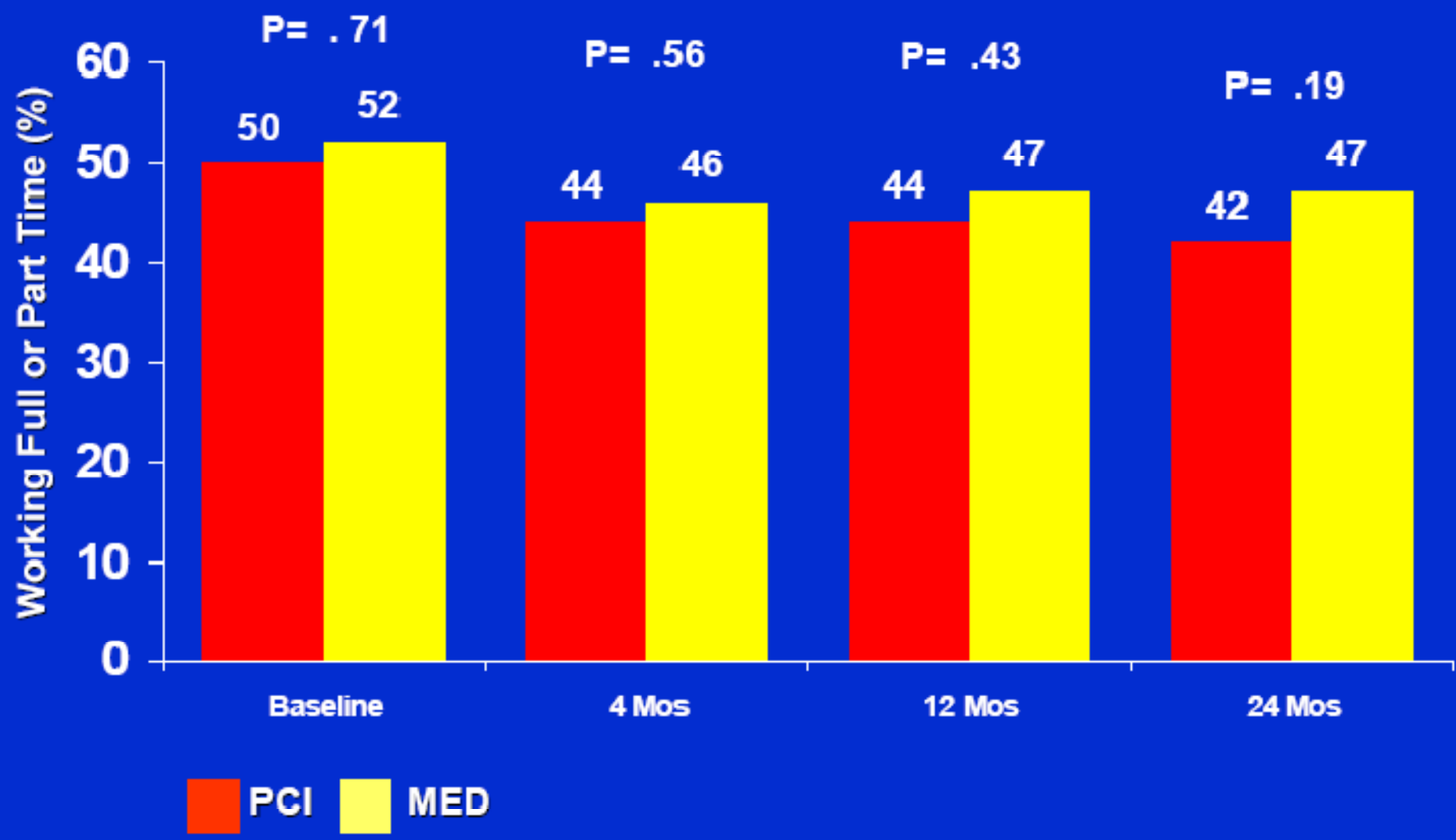


Effort Angina (WHO Rose Angina Questionnaire)





OAT QOL Substudy: Working Full- or Part-time



OAT QOL Substudy: Other Secondary Comparisons by ITT



- **No treatment-related difference in:**
 - SF role function-physical**
 - SF role function-emotional**
 - SF bodily pain**
 - SF general health**
 - SF vitality**
 - SF social function**
 - 0-100 health self rating**
- **No change in results from full adjustment for potential baseline imbalances**

OAT QOL Substudy Caveats



- **Not fully representative of parent OAT cohort (higher proportion of US pts)**
- **Unblinded treatment assignment, participation in RCT may create distortions in care**
- **5-yr QOL data being collected as part of 2nd phase of OAT research effort**

EQOL OAT: Economic Methods Overview

- **Originally planned to include >90% of OAT pts when OAT was North American only**
- **Current report focuses on US pts (n=469, 24% of OAT)**
- **Costs estimated using hospital bills, Medicare correction factors, and Medicare fee schedule**
- **Outpatient care, medications, productivity costs, non-medical costs not included**
- **Results reported in 2005 US\$**

OAT Economic Substudy Pts vs Total OAT Cohort: Baseline Clinical Characteristics

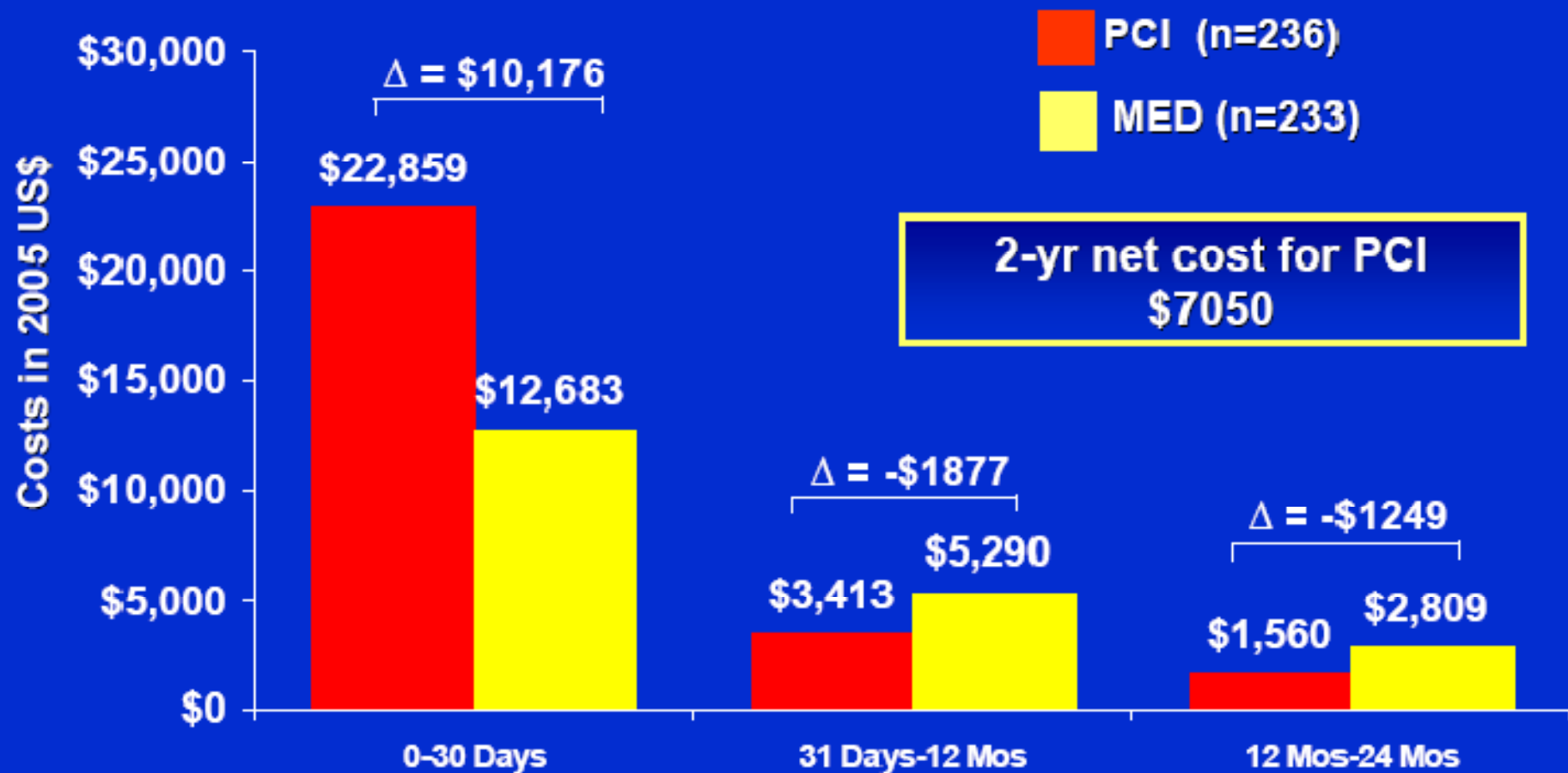
	OAT Econ (n=469)	OAT Total (n=1970)	P
Age (mean)	60	59	.0004
Male	72%	78%	.0005
Race, nonwhite	19%	15%	<.0001
Hx of angina	25%	23%	.36
Hx of MI	16%	12%	.0004
Hx of CHF	5%	2.5%	<.0001
Hx of DM	28%	21%	<.0001
Hx prior PCI	9%	5%	<.0001
Hx prior CABG	1.3%	0.4%	.0007
Days from qualifying MI	6.2 days	10.8 days	<.0001

OAT Economic Substudy: Selected Medical Resource Use in US Cohort by ITT

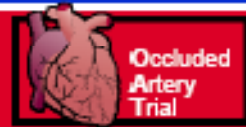


	PCI (n=236)	MED (n=233)
0-30 days		
Dx cath (mean)	1.5/pt	1.0/pt
PCI	1.0/pt	0.16/pt
LOS (mean)	5.8 days	4.6 days
ICU LOS	3.4 days	2.6 days
31 days – 12 mos		
Dx cath	.26	.32
PCI	.07	.10
LOS (mean)	1.1 days	1.9 days
12-24 mos		
Dx cath	.07	.10
PCI	.01	.03
LOS (mean)	0.5 days	0.8 days

OAT Economic Substudy: Medical (Hosp + MD) Costs in US by Rx Strategy



OAT Economic Substudy: Cost-Effectiveness Analysis



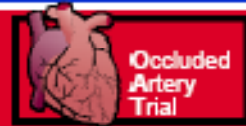
- **Pre-specified 2-year cost-effectiveness analysis, using**
 - 2-yr empirical survival**
 - 2-yr utility (preference) weights**
 - 2-yr costs in US cohort**
- **In 1000 repetitions (bootstrap analysis)**
 - 92% had either lower costs/higher QALYs for MED (65%) or CE ratio $>$ \$100,000 per QALY for PCI vs MED (27%)**

US Economic Substudy: Caveats



- **US economic patient subset differs from parent OAT cohort in multiple ways, including higher risk profile and mortality**
- **Unblinded treatment assignment, participation in randomized controlled trial may create distortions in care**
- **If net health benefits at 2 yrs for PCI underestimate lifetimes benefits or if 2 yr costs for PCI overestimate lifetime costs, 2 year CE ratio may underestimate true lifetime CE ratio for PCI**

OAT Economic and Quality of Life: Substudy Conclusions



- **PCI associated with clinically significant benefit in physical functioning at 4 mos, but not sustained at 1 yr or beyond**
- **No significant effects on psychological well being (prespecified 1° QOL endpoints)**
- **Secondary QOL endpoints showed modest symptom benefits for PCI that attenuated over time**
- **In US pts, a strategy of routine PCI was substantially more expensive than optimal medical therapy alone out to 2 yrs and the small symptom benefits provided were insufficient to make PCI an economically attractive strategy in OAT eligible pts**

OAT QOL Substudy: Baseline Clinical Characteristics by ITT



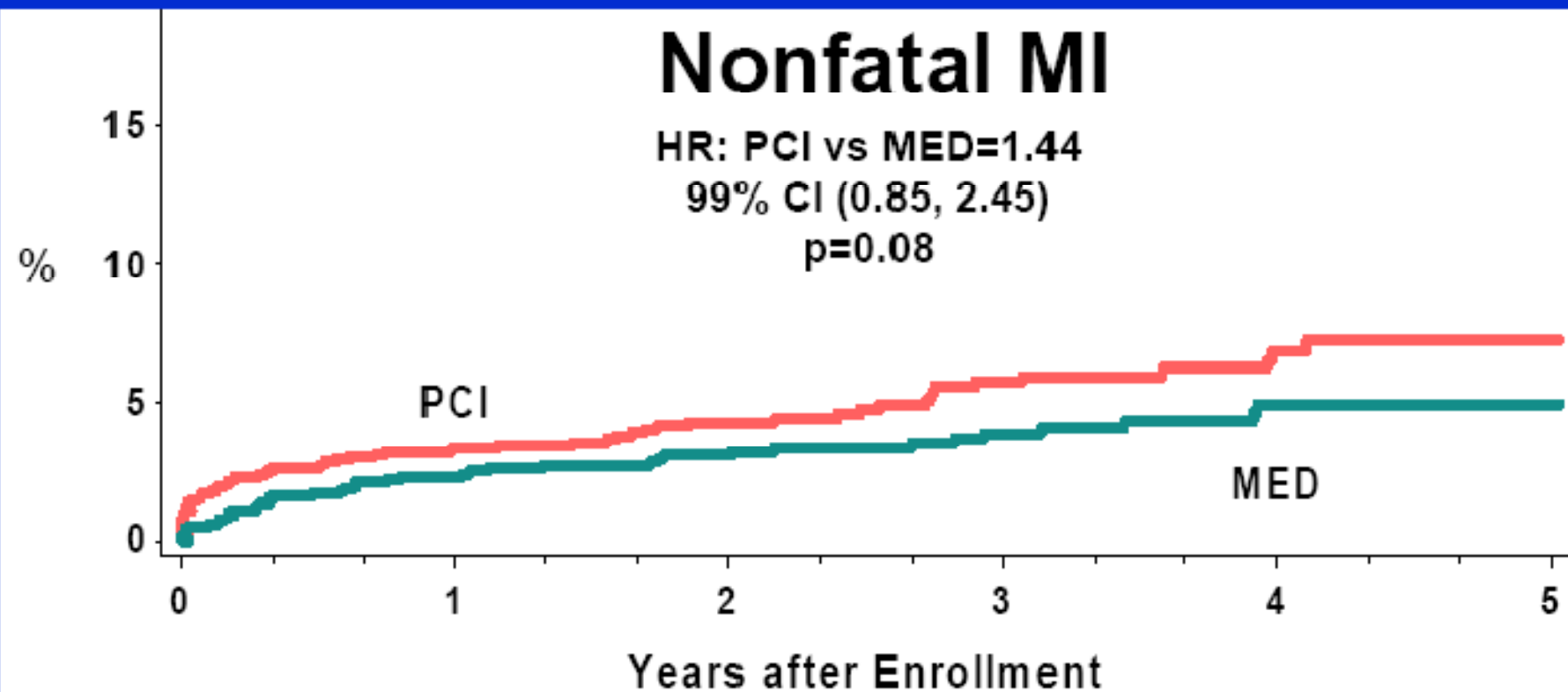
	PCI (n=477)	MED (n=474)	P
Age (mean)	60	59	.50
Male	79%	77%	.40
Race, nonwhite	17%	18%	.13
Hx of angina	22%	23%	.86
Hx of MI	16%	12%	.07
Hx of CHF	4%	3%	.51
Hx of DM	21%	25%	.06
Hx prior PCI	6%	6%	1.0
Hx prior CABG	1%	1%	.71
Days from qualifying MI (median)	7 days	6 days	.37

OAT Economic Substudy: Baseline Clinical Characteristics by ITT



	PCI (n=236)	MED (n=233)	P
Age (mean)	60.7	60.0	.48
Male	76%	69%	.08
Race, nonwhite	19%	19%	.15
Hx of angina	25%	24%	.79
Hx of MI	19%	14%	.15
Hx of CHF	5%	5%	.86
Hx of DM	27%	30%	.48
Hx prior PCI	8%	10%	.42
Hx prior CABG	2%	1%	.42
Days from qualifying MI	6.4 days	6.1 days	.40

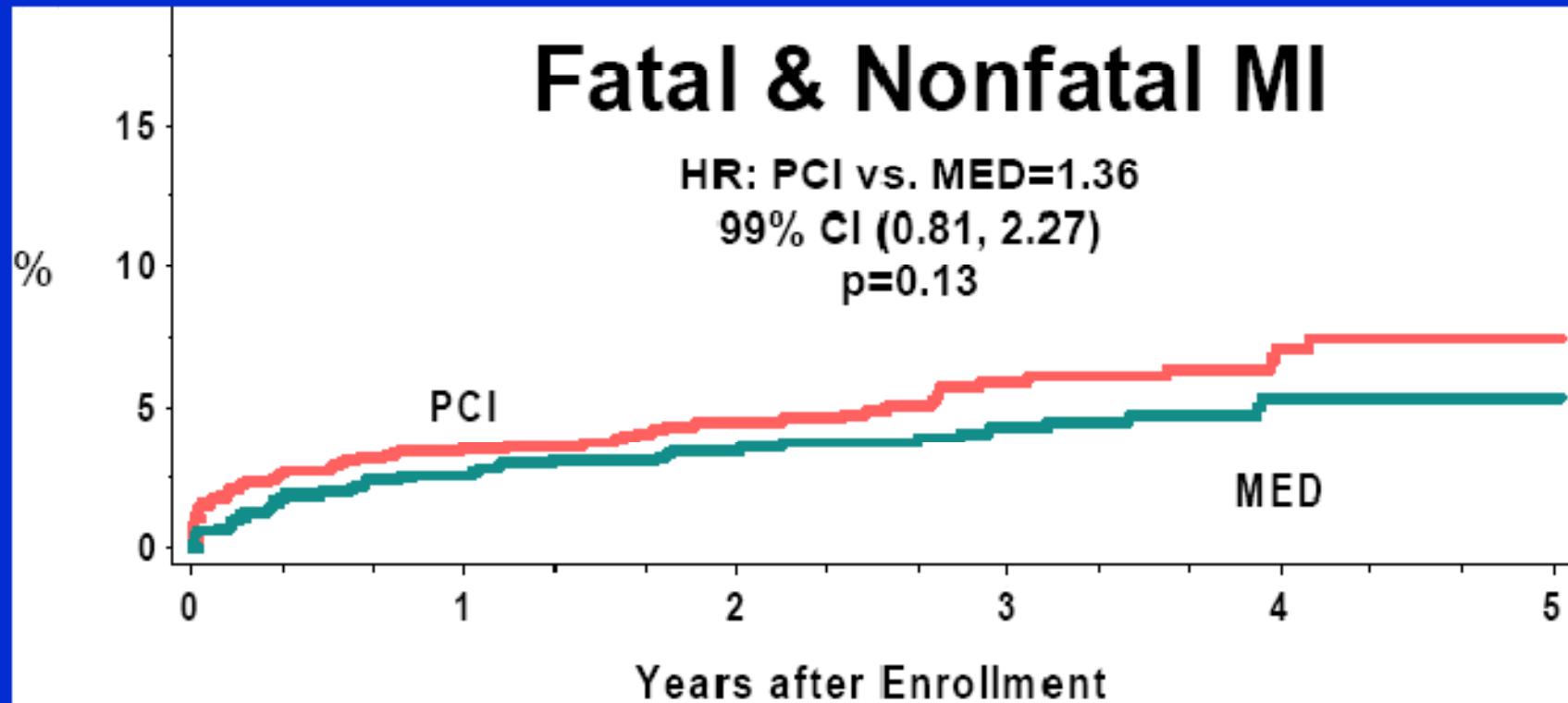
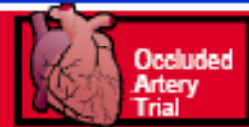
OAT Components of 1^o Endpoint: Nonfatal MI



No. at Risk

PCI: 1082	926	744	500	277	87
MED: 1084	944	745	497	283	82

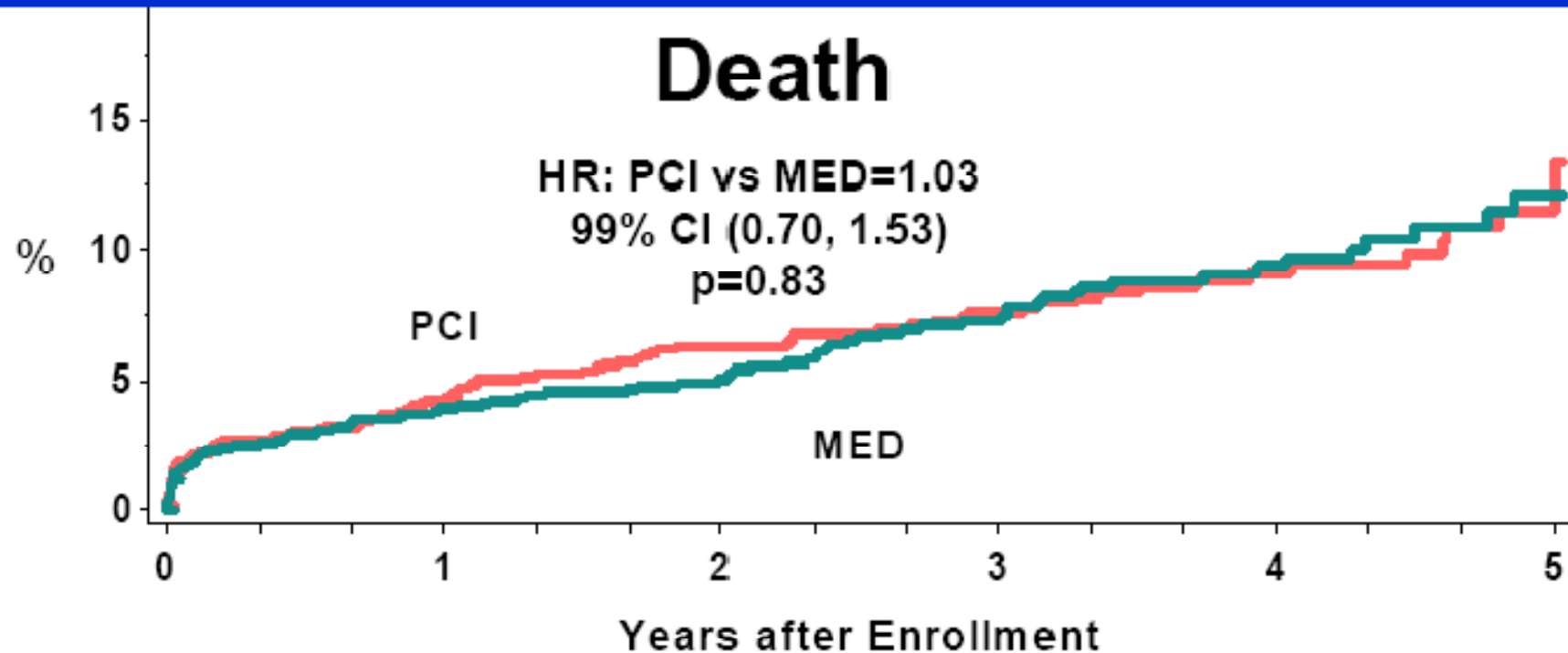
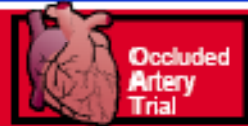
OAT Components of 1° Endpoint: Fatal & Nonfatal MI



*6 of 59 adjudicated MI's procedure related

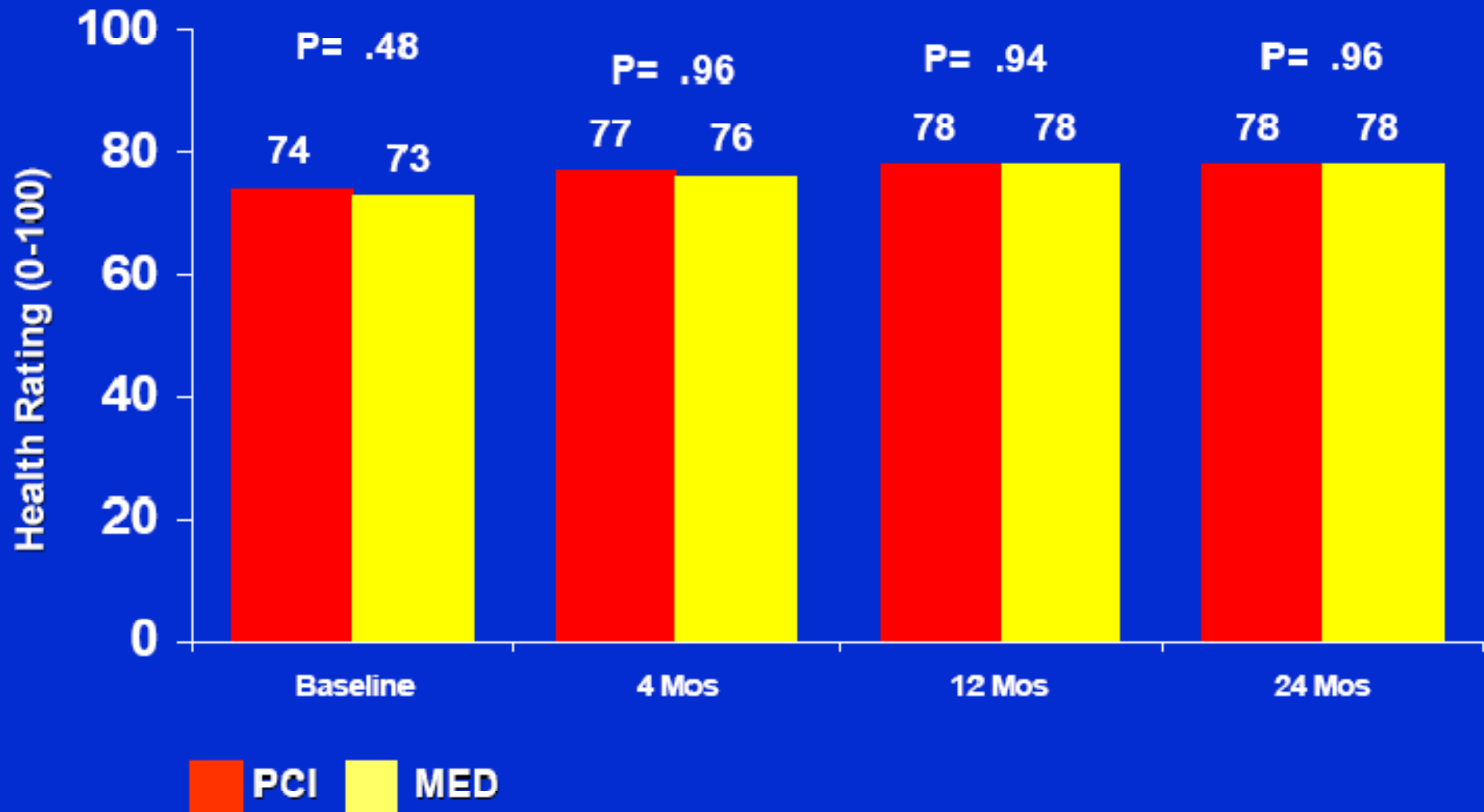
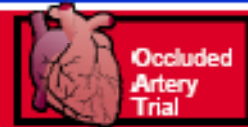
No. at Risk						
PCI:	1082	926	744	500	277	87
MED:	1084	944	745	497	283	82

OAT Components of 1° Endpoint: Death (All Cause)

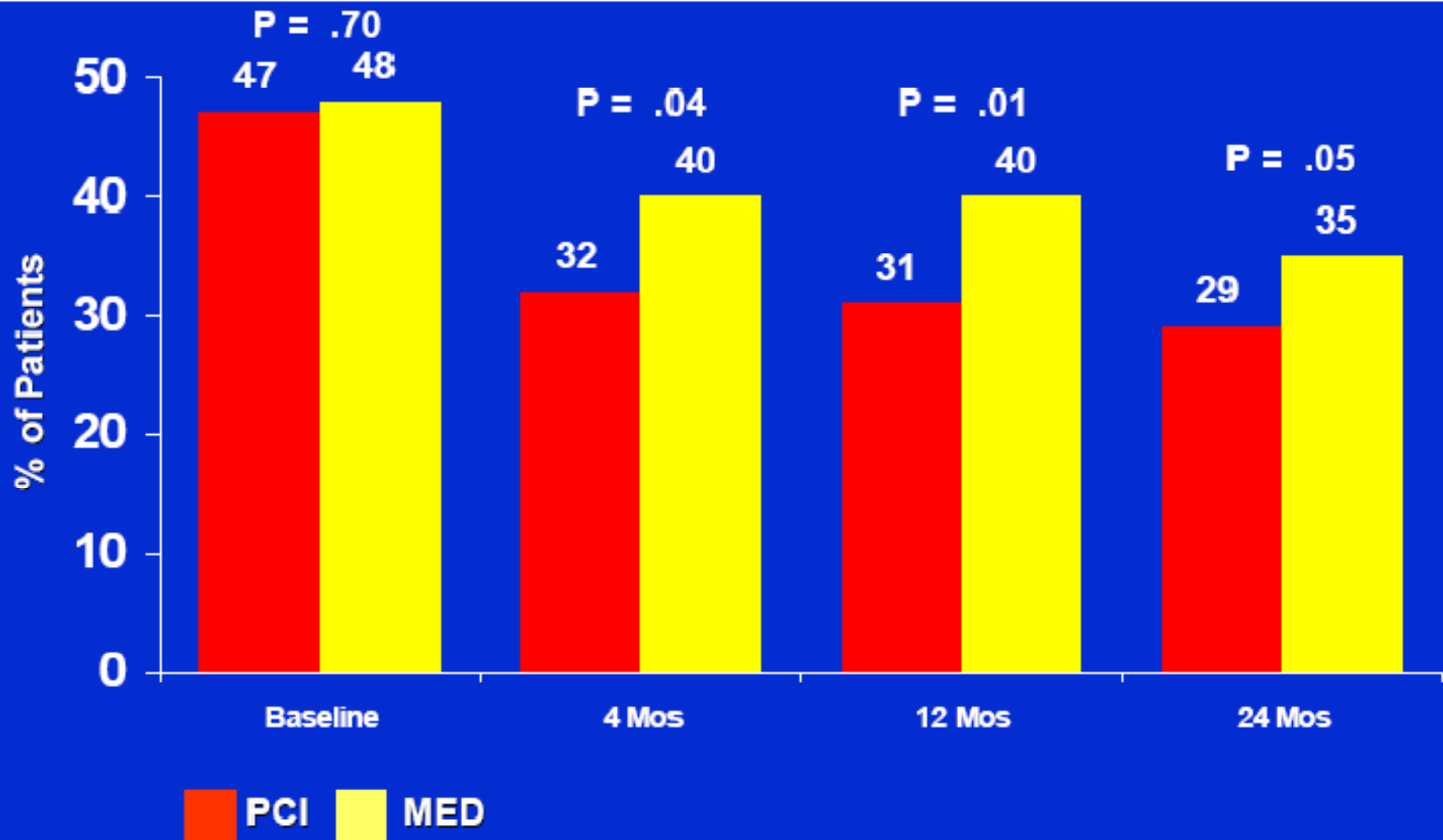


No. at Risk						
PCI:	1082	959	777	528	296	95
MED:	1084	965	770	517	298	84

OAT QOL Substudy: Overall Health Self-Rating (0-100)



OAT QOL Substudy: Rose Effort Dyspnea



Occluded Artery Trial (OAT): Economics and Quality of Life (EQOL) Outcomes



Three Major Analyses Planned Prospectively

- **QOL by ITT**
- **Cost for US pts by ITT**
- **Cost-effectiveness analysis**

QOL and cost prespecified secondary endpoints in OAT