Quality of Life After Everolimus-Eluting Stents or Bypass Surgery for Treatment of Left Main Coronary Artery Disease:

Results from the EXCEL Trial

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on behalf of the EXCEL Investigators

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Disclosures

- Within the past 12 months, I have had a financial interest with the organizations listed below:
  - Consulting Fees: Edwards LifeSciences; St. Jude Medical Inc
  - Travel Reimbursement: Medtronic
- The EXCEL trial was funded by Abbott Vascular, Inc.

Background

- The EXCEL trial randomized patients with left main coronary artery disease (LMCAD) and low or intermediate SYNTAX scores to revascularization with PCI using 2nd generation everolimus-eluting stents (XIENCE) or CABG
- Although rates of the primary composite endpoint of death, stroke, or myocardial infarction were similar in both groups at a median of 3 years, timing of clinical events and rates of repeat revascularization differed between the cohorts

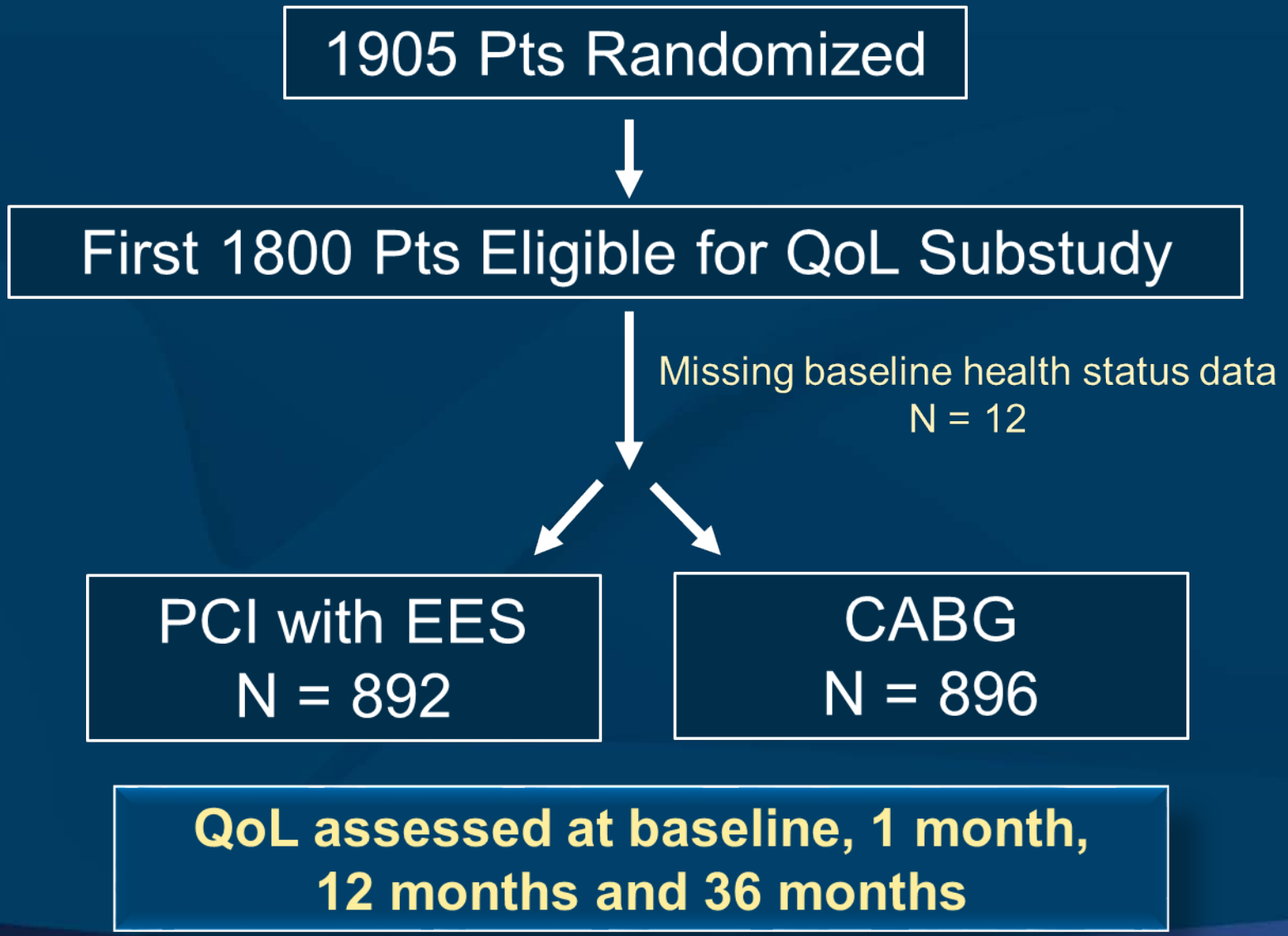
Background

- Prior studies have shown that CABG is associated with greater angina relief when compared with PCI
  - Utilized 1st generation DES
  - Not limited to LMCAD
- Whether differences between PCI and CABG regarding timing of events and rates of repeat revascularization result in differences in quality of life (QoL) in patients with LMCAD treated with PCI vs. CABG in the contemporary era is unknown

Objectives

- To compare QoL outcomes among patients with LMCAD treated with either PCI or CABG
- To determine whether the QoL benefits of PCI vs. CABG vary over time
- To examine whether the QoL benefits of PCI vs. CABG in patients with LMCAD differ according to patient characteristics, including baseline angina frequency and anatomic disease patterns

EXCEL QoL Sub-Study Design



Disease-Specific Health Status Instruments

Instrument	Description/Role
Seattle Angina Questionnaire (SAQ)	• Assesses CAD-specific health status • Domains: Angina Frequency; Physical Limitations; Quality of Life; Angina Stability; Treatment Satisfaction • Scores: 0 to 100 with higher scores indicating less severe symptoms

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Rose Dyspnea Scale (RDS)	• Assesses patient's level of dyspnea with activity • Scores: 0 to 4 (0 = no dyspnea; 4 = dyspnea with minimal activity)

Generic Health Status Instruments

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Medical Outcomes Study Short-Form-12 (SF-12)	• Assesses general physical and mental health • Physical & Mental Summary Scores standardized such that population mean is 50 with SD of 10 with higher scores indicating better QoL

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Patient Health Questionnaire-8 (PHQ-8)	• Assesses sx associated with clinical depression • Scores: 0 to 24 with higher scores indicating worse depression • PHQ-8 ≥ 10 corresponds to significant clinical depression

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Medical Outcomes Study Short-Form-12 (SF-12)	• Assesses general physical and mental health • Physical & Mental Summary Scores standardized such that population mean is 50 with SD of 10 with higher scores indicating better QoL
Patient Health Questionnaire-8 (PHQ-8)	• Assesses sx associated with clinical depression • Scores: 0 to 24 with higher scores indicating worse depression • PHQ-8 ≥ 10 corresponds to significant clinical depression
EuroQOL (EQ-5D)	• Generic instrument for assessment of health utilities • Scores: 0 to 1 (0 = death; 1 = perfect health)

Statistical Methods

- Within-group comparisons performed using Student *t*-tests to evaluate changes between baseline and follow-up
- Between-group comparisons performed using longitudinal random-effect growth curve models
- Exploratory subgroup analyses performed to assess whether the effect of PCI vs. CABG on the SAQ-angina frequency scale at 12 and 36 months varies according to baseline patient characteristics
  - Threshold for significance < 0.01 given multiple comparisons

Baseline Clinical Characteristics

	PCI (N = 892)	CABG (N = 896)	P Value
Age (years)	66 ± 10	66 ± 10	0.69
Male	77%	78%	0.46
Diabetes	30%	29%	0.53
Clinical Presentation			0.10
Stable angina	53%	54%	
Unstable angina	24%	24%	
MI within prior 7 days	15%	15%	
Silent ischemia	7%	7%	
SYNTAX Score*			0.01
Low (≤ 22)	32%	39%	
Intermediate (23-32)	43%	38%	
High (≥ 33)	25%	23%	

* Core-lab defined

Baseline Quality of Life

Disease-Specific Measures

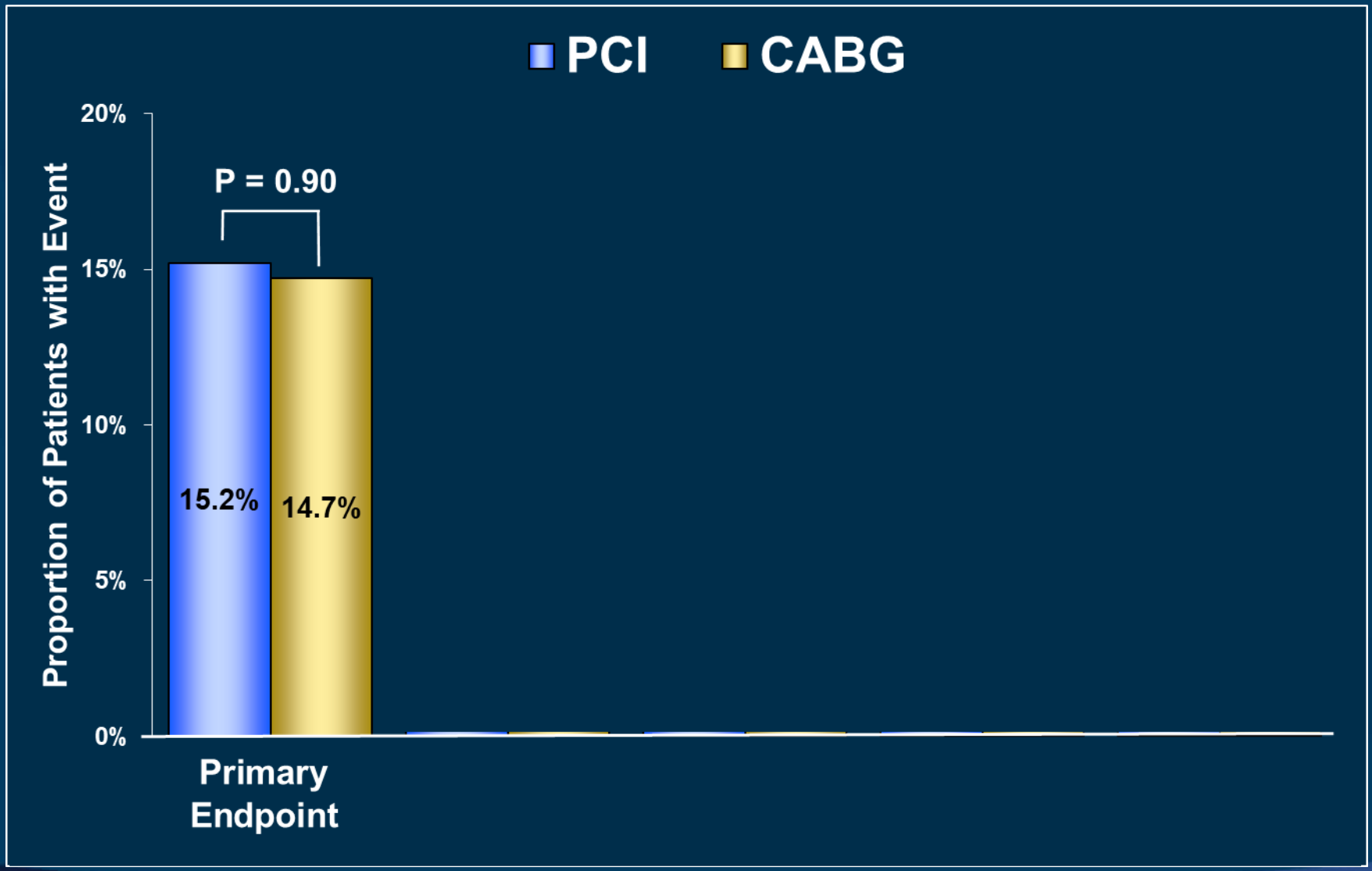
	PCI (N = 892)	CABG (N = 896)	P Value
SAQ – Angina Frequency			0.29
Daily	10%	10%	
Weekly	30%	31%	
Monthly	38%	40%	
None	23%	19%	
SAQ – Physical Limitations	65 ± 25	66 ± 25	0.47
SAQ – Quality of Life	48 ± 24	48 ± 24	0.53
Rose Dyspnea Scale ≥ 2	48%	47%	0.65

Baseline Quality of Life

Generic Measures

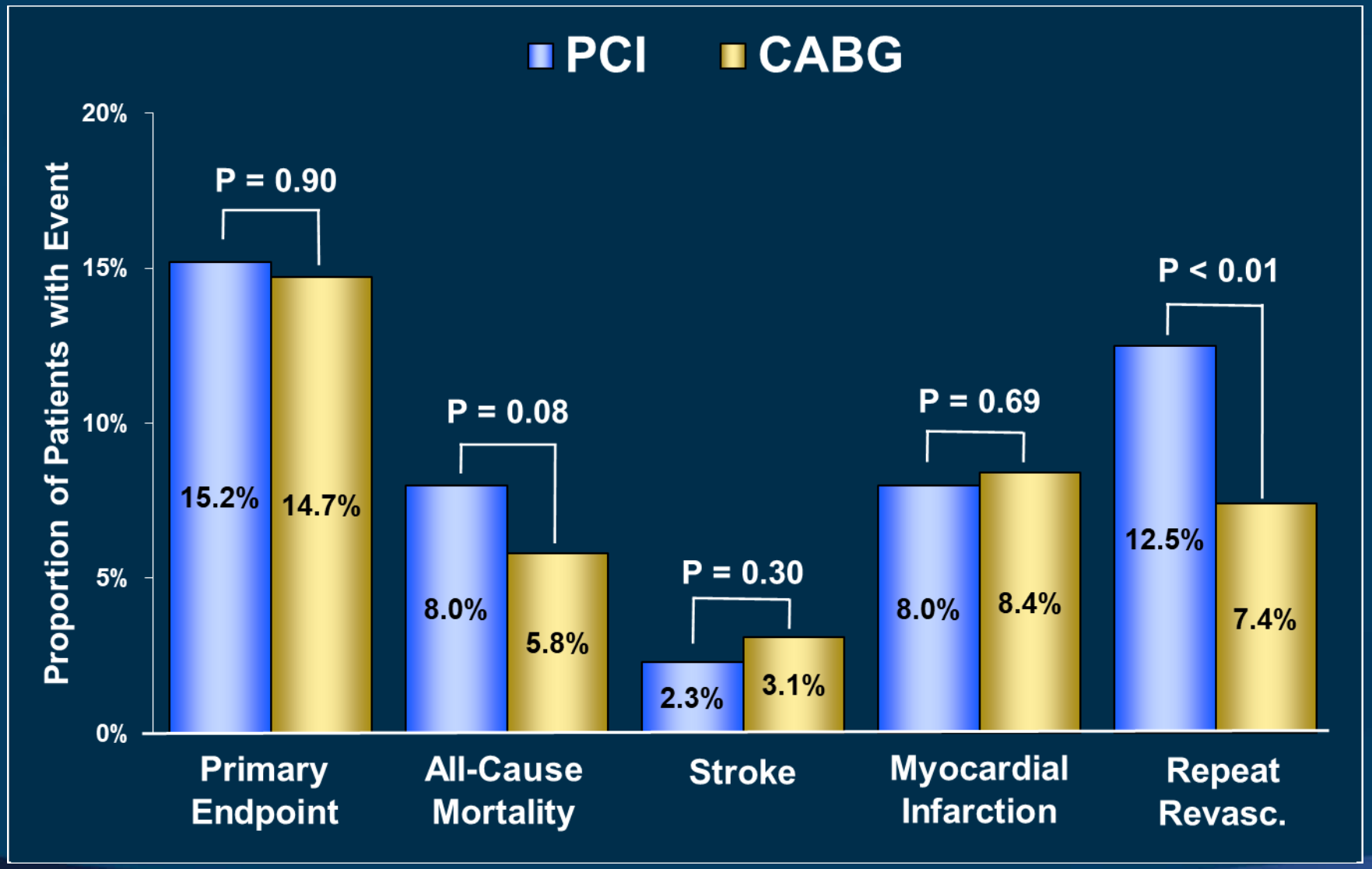
	PCI (N = 892)	CABG (N = 896)	P Value
SF-12			
Physical Component Summary	39 ± 11	38 ± 11	0.56
Mental Component Summary	49 ± 11	50 ± 11	0.36
EQ-5D	0.79 ± 0.19	0.79 ± 0.18	0.83
PHQ-8 ≥ 10	21%	21%	0.90

Clinical Outcomes at 36 Months



* For full trial population

Clinical Outcomes at 36 Months



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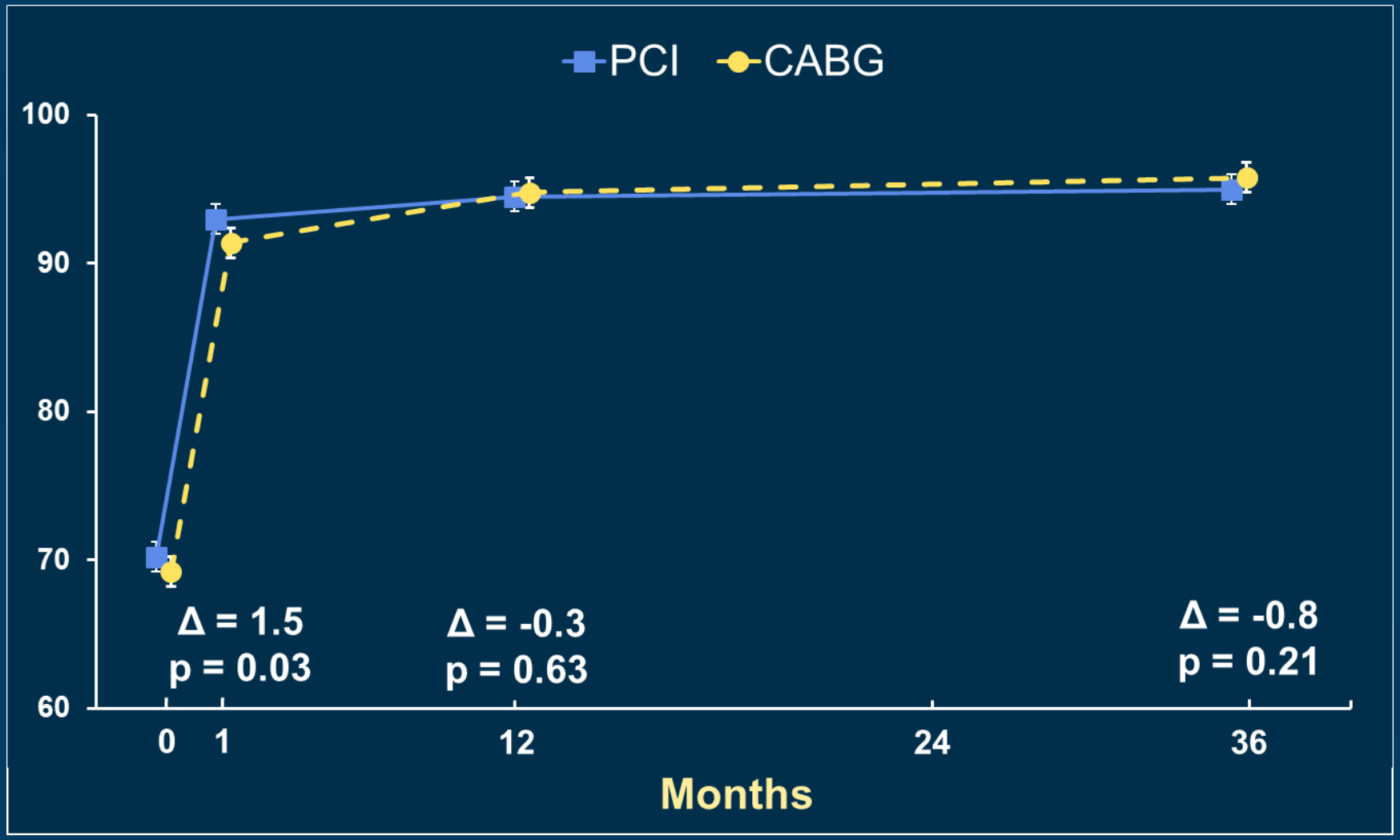
SAQ-Angina Frequency



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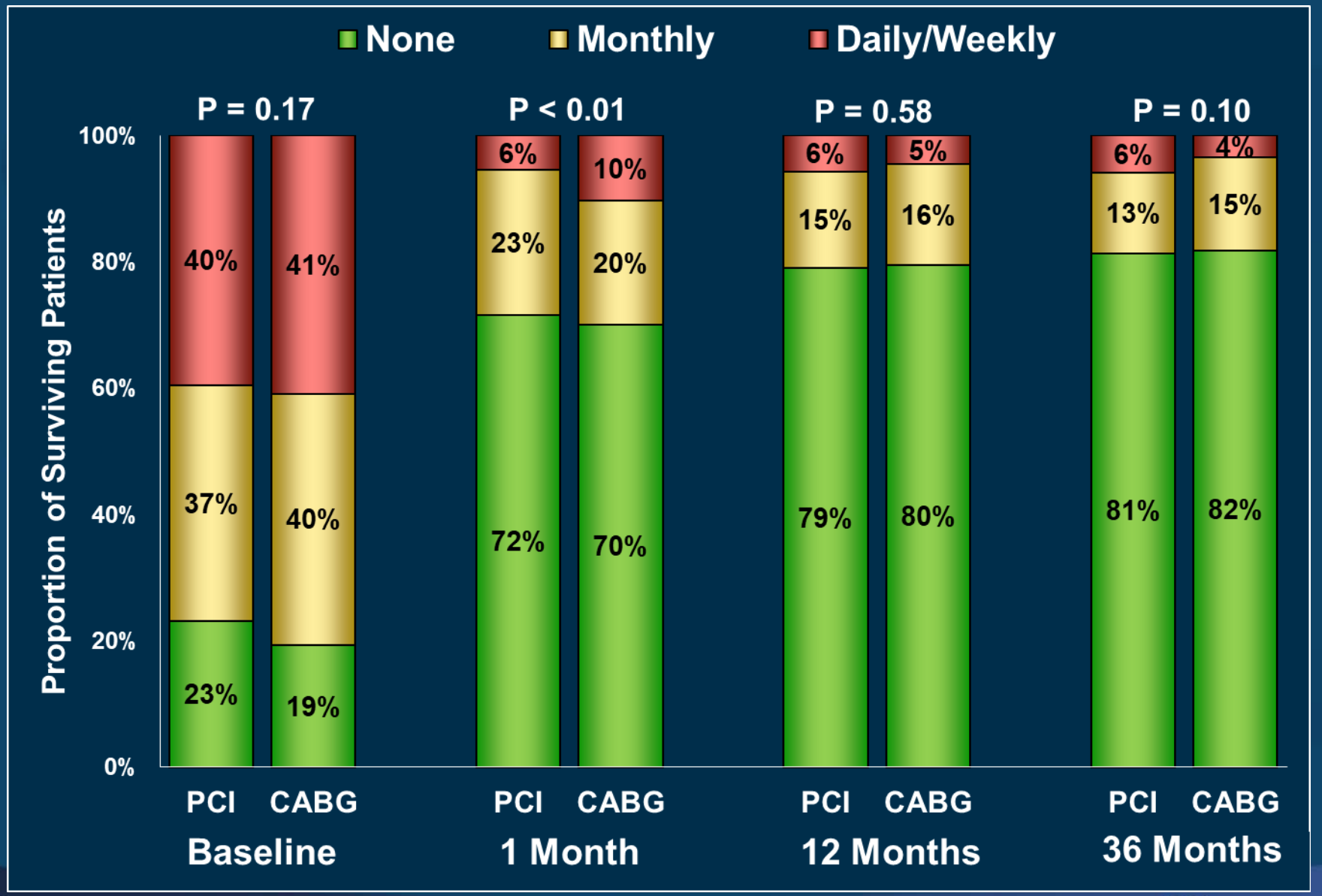
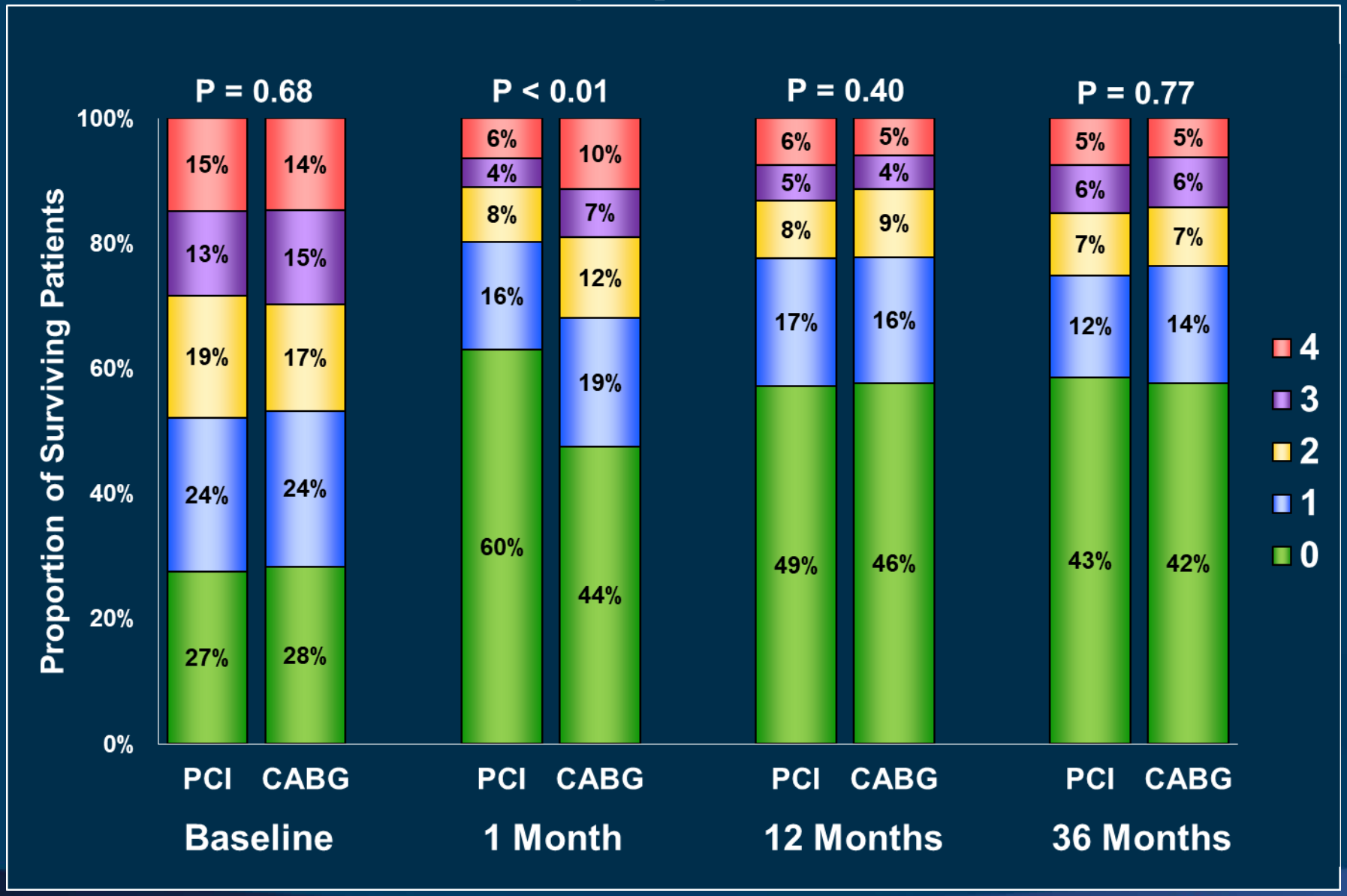
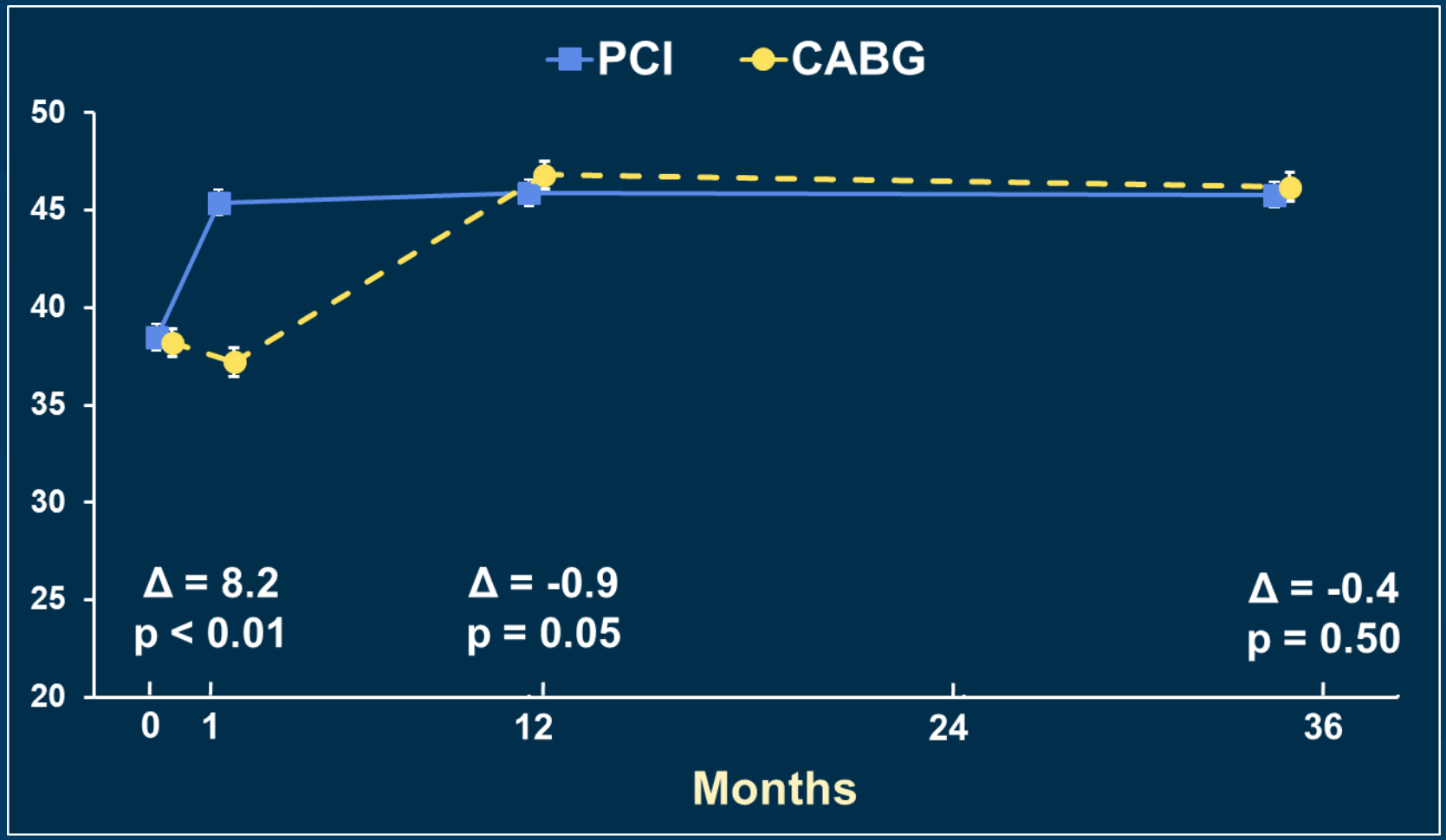


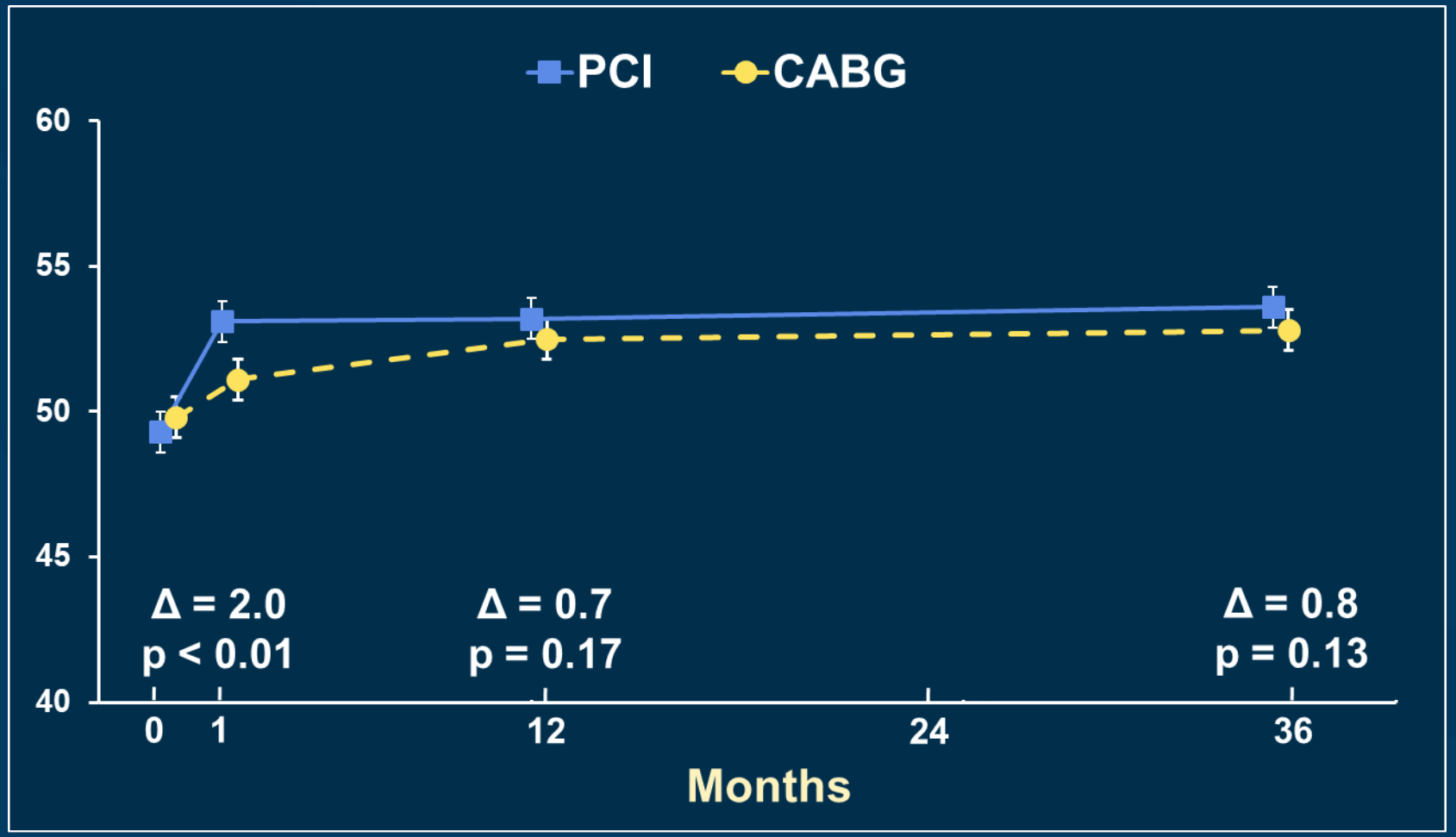
Rose Dyspnea Scale



SF-12 Physical Summary Scale

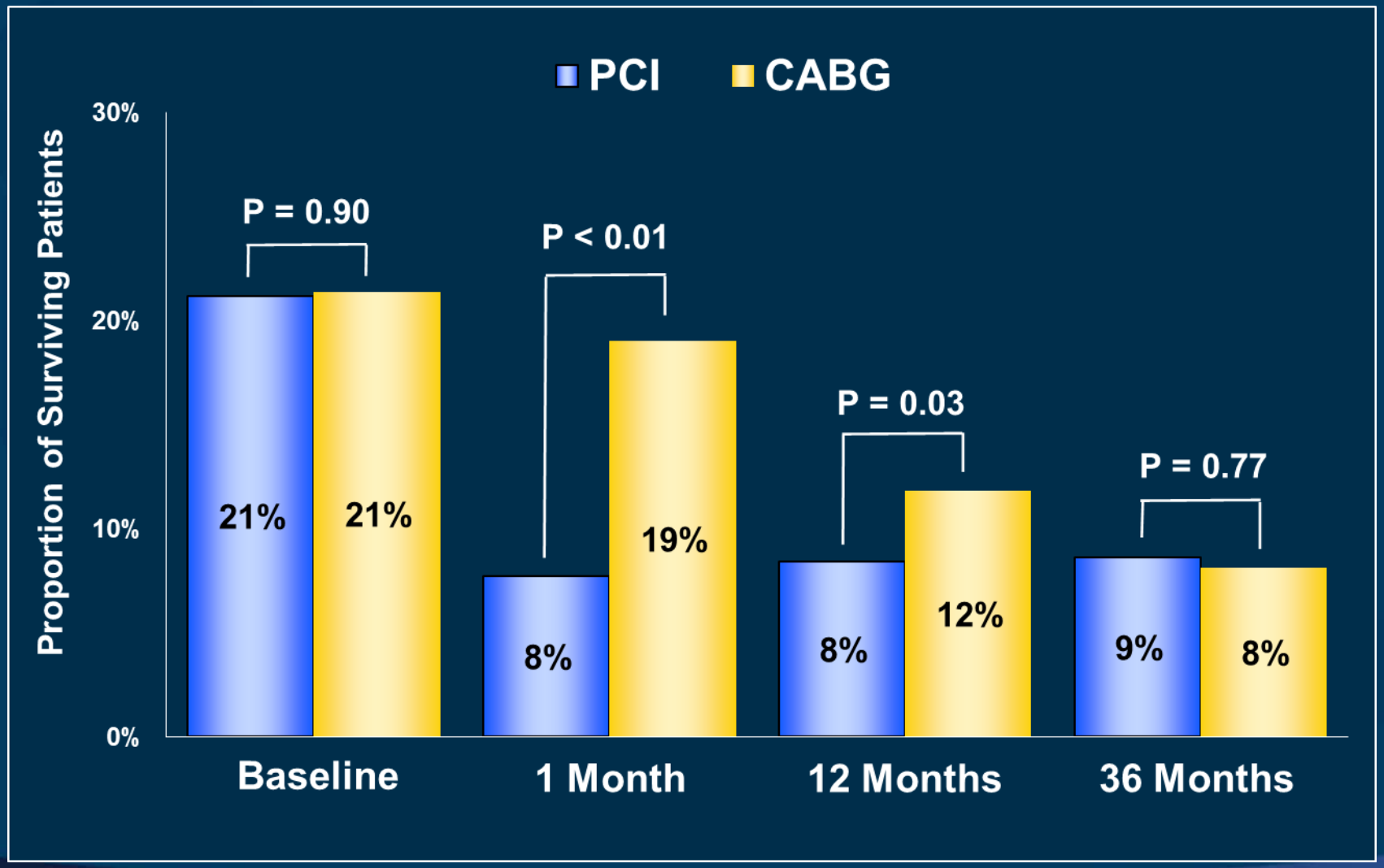


SF-12 Mental Summary Scale



PHQ-8

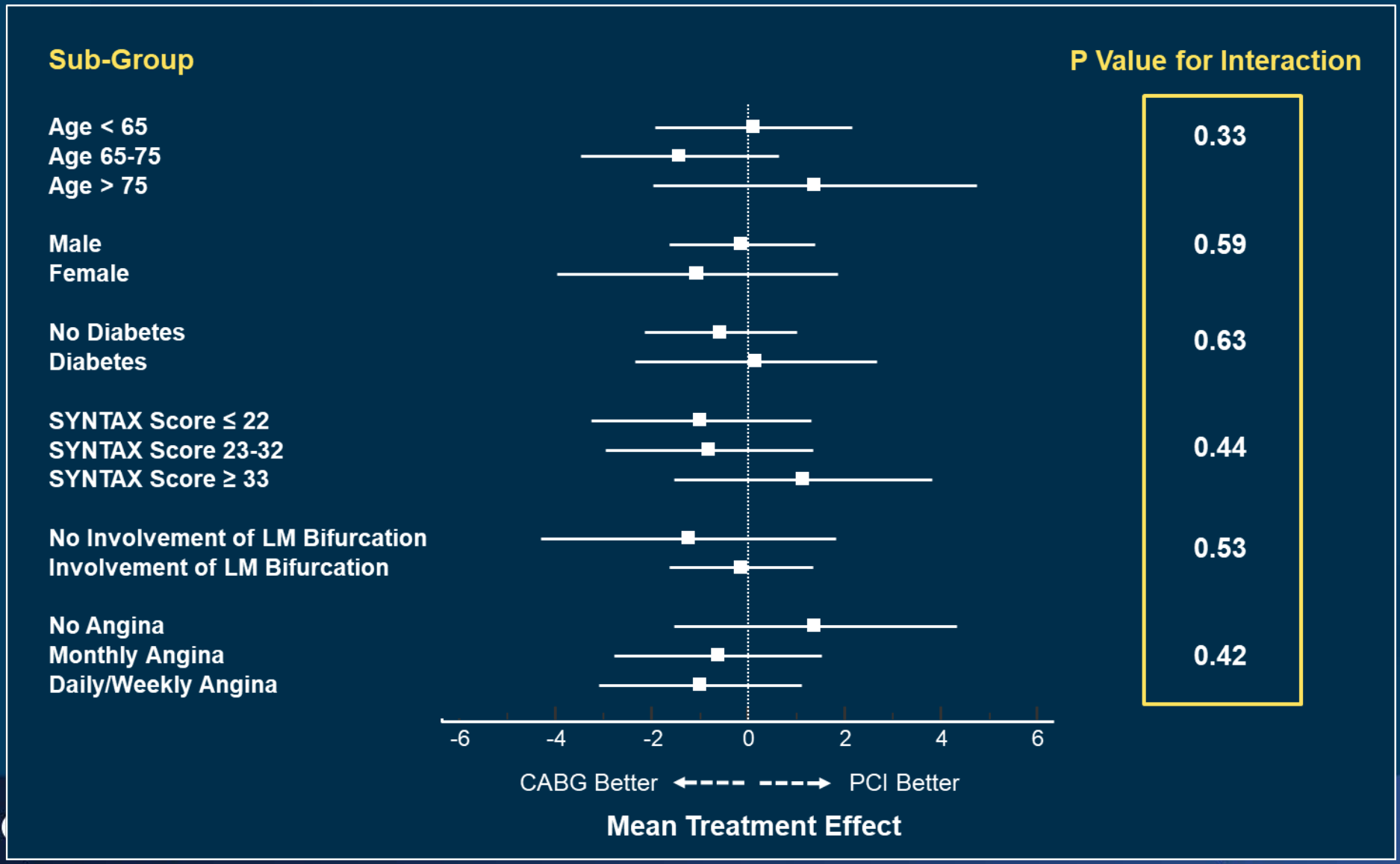
Clinically Significant Depression*



* PHQ-8 ≥ 10

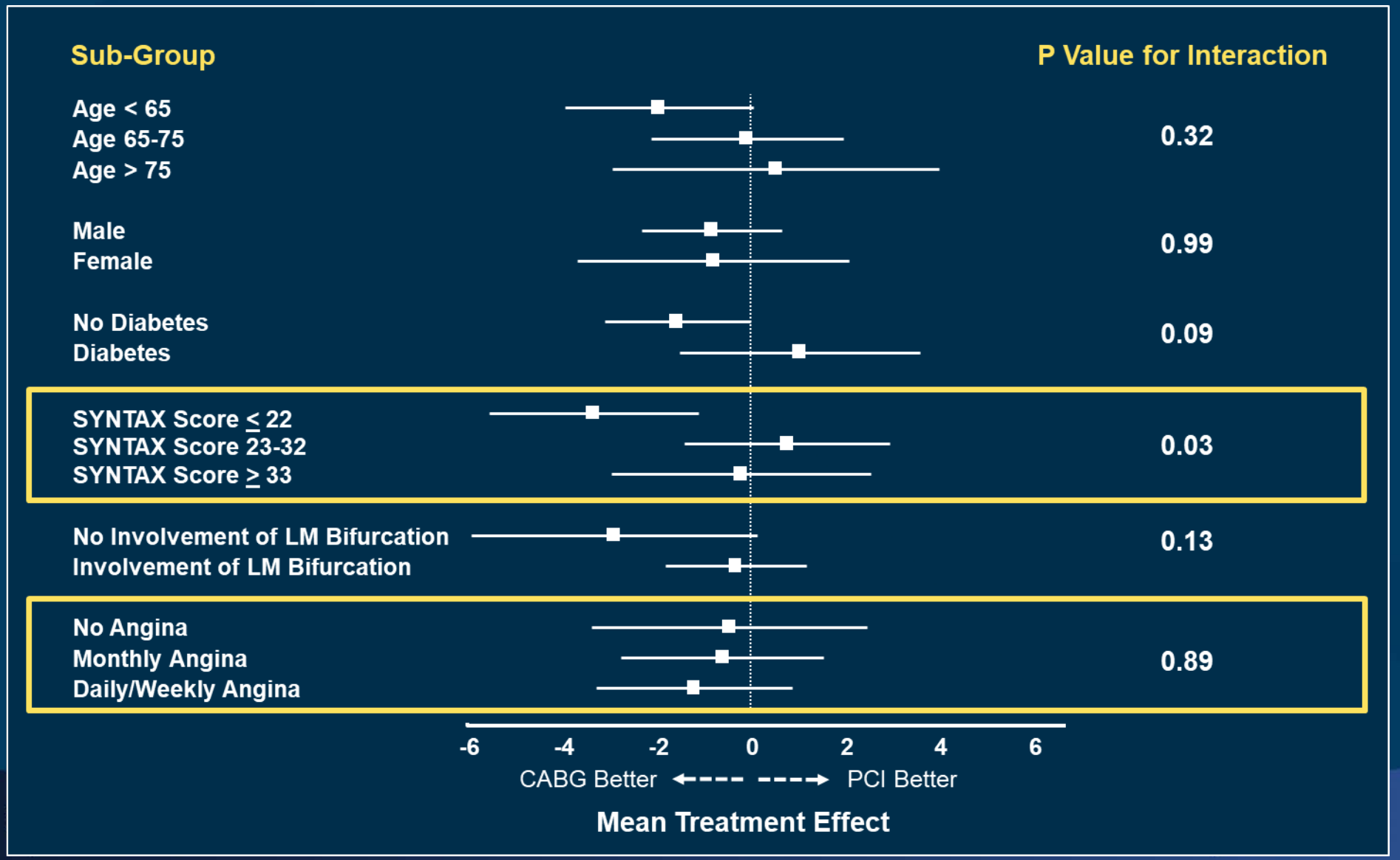
Subgroup Analyses

SAQ-Angina Frequency Scale at 1 Year



Subgroup Analyses

SAQ-Angina Frequency Scale at 3 Years



Comparison of QoL Outcomes with Other PCI vs. CABG Trials

	EXCEL	SYNTAX[1]	FREEDOM[2]

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Long-Term Angina Relief	No difference	Better with CABG	Better with CABG
Subgroup Effects	No difference	CABG better with greater anatomic complexity	CABG better with greater anatomic complexity and with more baseline angina

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Why the Discrepancies?

- Differences in stent type?
- Differences in patient populations?
- Differences in follow-up duration?
- Smaller absolute difference in repeat revascularization rates?

Summary and Conclusions

- In patients with unprotected LMCAD and low-to-intermediate angiographic complexity, both PCI and CABG were associated with clinically meaningful and statistically significant improvements in disease-specific and generic health status that were sustained through 36 months
- PCI resulted in significantly better health status compared with CABG at 1 month on all quality of life scales

Summary and Conclusions

- In contrast to previous trials (e.g. FREEDOM, SYNTAX), there were no significant differences in long-term health status outcomes between PCI and CABG – a finding that was consistent across subgroups
- Taken together with the 3-year clinical data from EXCEL, these results suggest that PCI and CABG provide comparable intermediate-term outcomes for appropriately selected patients with LMCAD

Baron SJ, Chinnakondepalli K, Magnuson EA, Kandzari DE, Puskas JD, Ben-Yehuda O, Es G-Av, Taggart DP, Morice M-C, Lembo NJ, Brown III WM, Banning A, Simonton CA, Kappetein AP, Sabik JF, Serruys PW, Stone GW, Cohen DJ, on behalf of the EXCEL Investigators. Quality of Life after Everolimus-Eluting Stents or Bypass Surgery for Treatment of Left Main Disease. *Journal of the American College of Cardiology* (2017); doi: 10.1016/j.jacc-2017.10.036.