

Left Main PCI vs. CABG Today: A Guide to Clinical Decision Making

joint interventional meeting

8.42-8.54

Alaide Chieffo, MD

Interventional Cardiology Unit

San Raffaele Scientific Institute, Milan, Italy

interventional meeting

Disclosure Statement of Financial Interest

I, Alaide Chieffo, DO NOT have a financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation.

ESC/EACS Guidelines for CABG vs. PCI in patients with unprotected left main stenosis.

	CABG	PCI
Left Main (isolated or 1VD, ostium/shaft)	IA	IIa B
Left Main (isolated or 1VD, distal bifurcation)	IA	IIb B
Left Main + 2VD or 3VD and SYNTAX score <32	IA	IIb B
Left Main + 2VD or 3VD and SYNTAX score ≥33	IA	IIIB

ACC/AHA Guidelines

Ila

B

Left main PCI for SIHD - Both must be present:

- Anatomic conditions associated with a low risk of PCI procedural complications and a high likelihood of good long-term outcome (e.g., a low SYNTAX score of ≤ 22 , ostial or trunk left main CAD)
- Clinical characteristics that predict a significantly increased risk of adverse surgical outcomes (e.g. STS-predicted risk of operative mortality $\geq 5\%$)

ACC/AHA Guidelines

IIb

B

Left main PCI for SIHD - Both must be present:

- 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)
- Clinical characteristics that predict an increased risk of adverse surgical outcomes (e.g., moderate-severe COPD, disability from prior stroke, or prior cardiac surgery; STS-predicted risk of operative mortality >2%)

ACC/AHA Guidelines

III

Left main PCI for SIHD: HARM

- In patients with unfavorable anatomy for PCI (e.g. Syntax score ≥ 33) and who are good candidates for CABG (vs. performing CABG)

B

ACC/AHA Guidelines

Ila

B

- Left main PCI for NSTEMI/unstable angina:
- If not a CABG candidate (otherwise CABG)

Ila

C

- Left main PCI for STEMI:
- When distal coronary flow is TIMI flow grade <3 and PCI can be performed more rapidly and safely than CABG

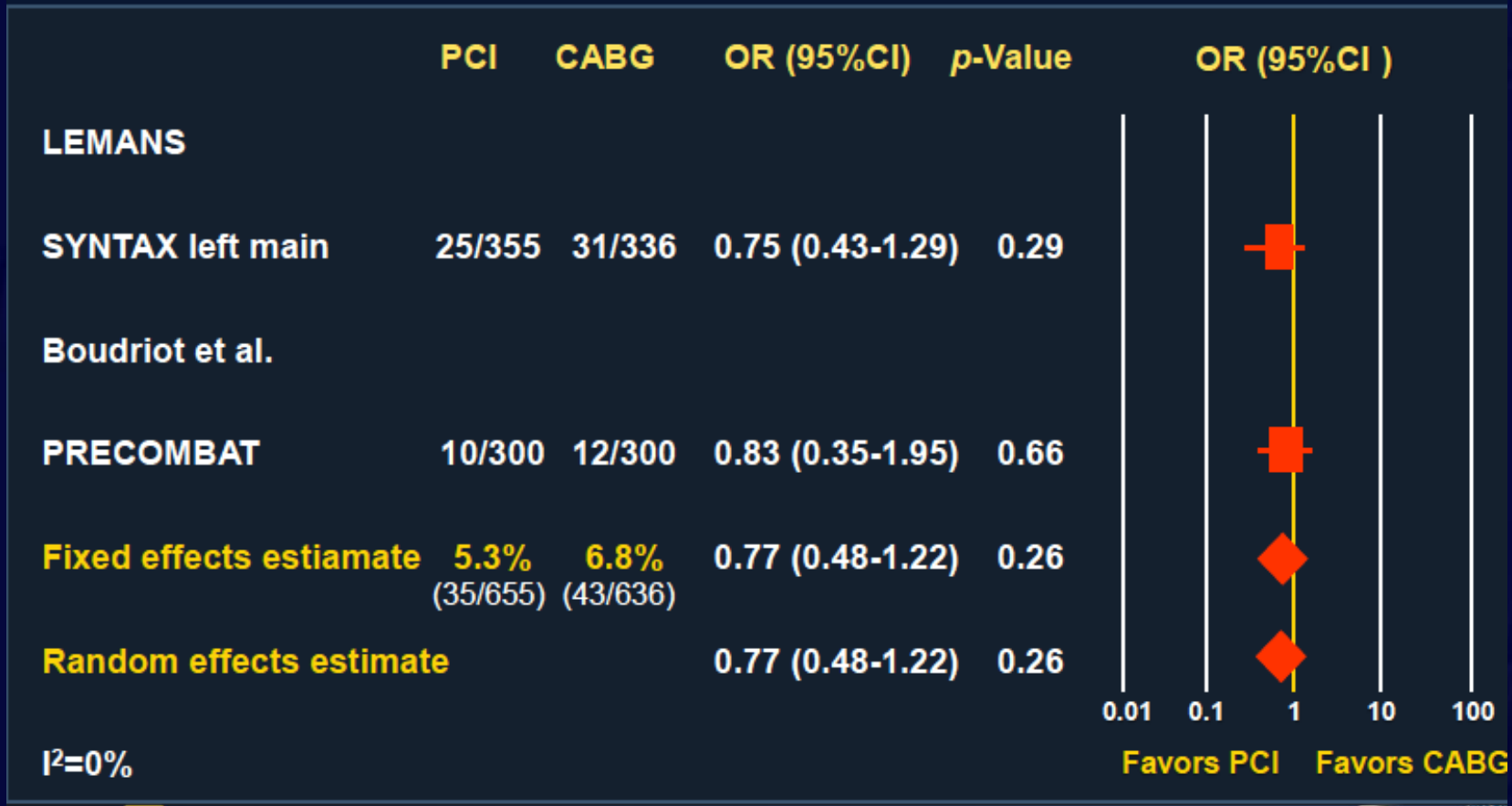
PCI vs. CABG for Left Main Disease Meta-analysis of 4 RCTs, 1,611 Patients

Trial	LEMANS	SYNTAX LM	Boudriot et al.	PRECOMBAT
Year	2008	2009	2010	2011
N total	105	705	201	600
Age, mean years	61	65	68	62
Male	67%	74%	75%	77%
Diabetes	18%	25%	36%	32%
Distal LM involved	58%	61%	71%	65%
+0/1/2/3 VD, %	0/9/23/68	13/20/31/36	29/31/27/14	10/17/32/41
Syntax Score, mean	25	30	24	25
Log Euroscore, mean	3.4	3.9	2.5	2.7
LIMA-LAD	81%	97%	99%	94%

PCI vs. CABG for Left Main Disease

Meta-analysis of 4 RCTs, 1,611 Patients

1-Year Death, MI or Stroke



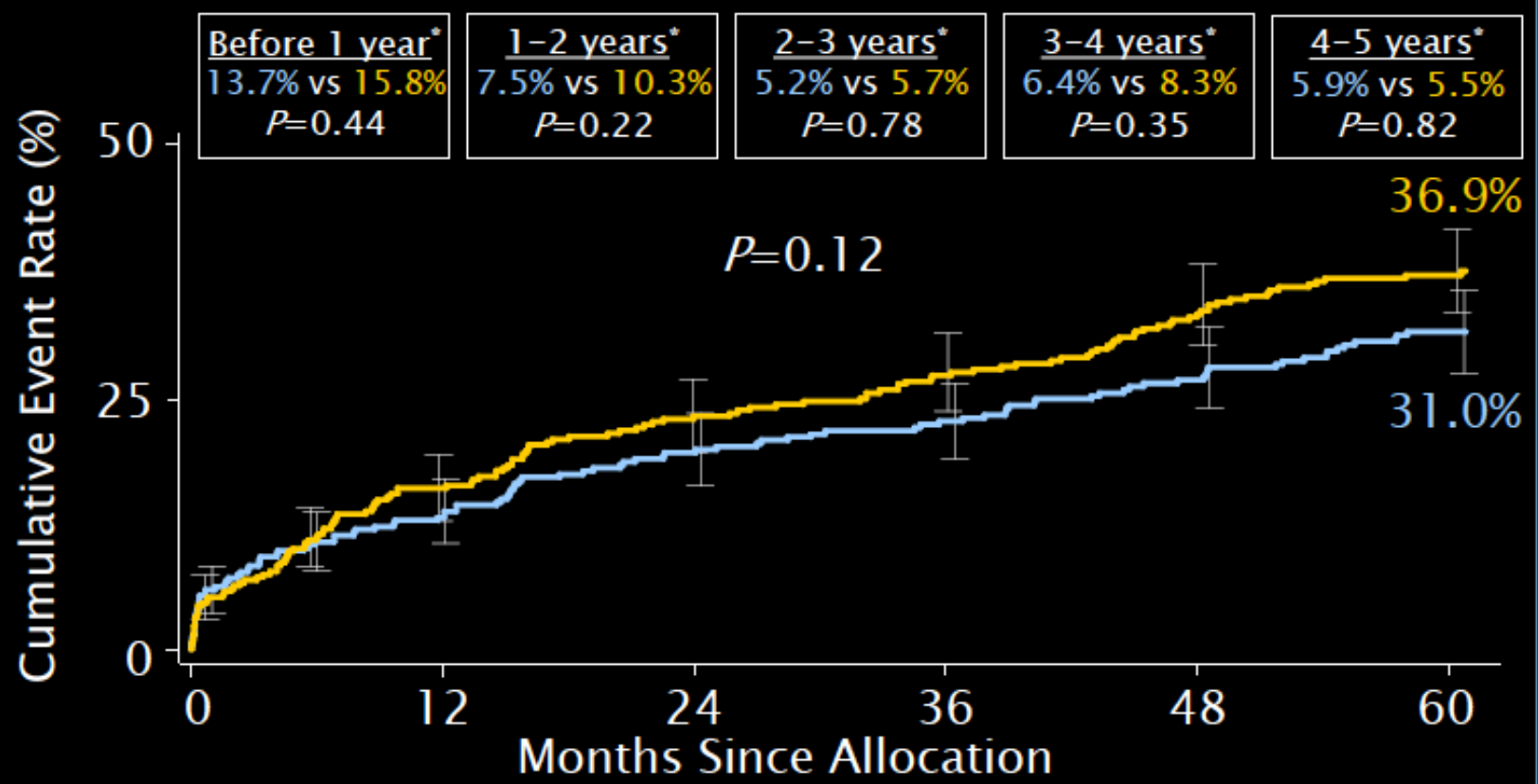
SYNTAX: MACCE to 5 Years

Left Main Subset



■ CABG (N=348)

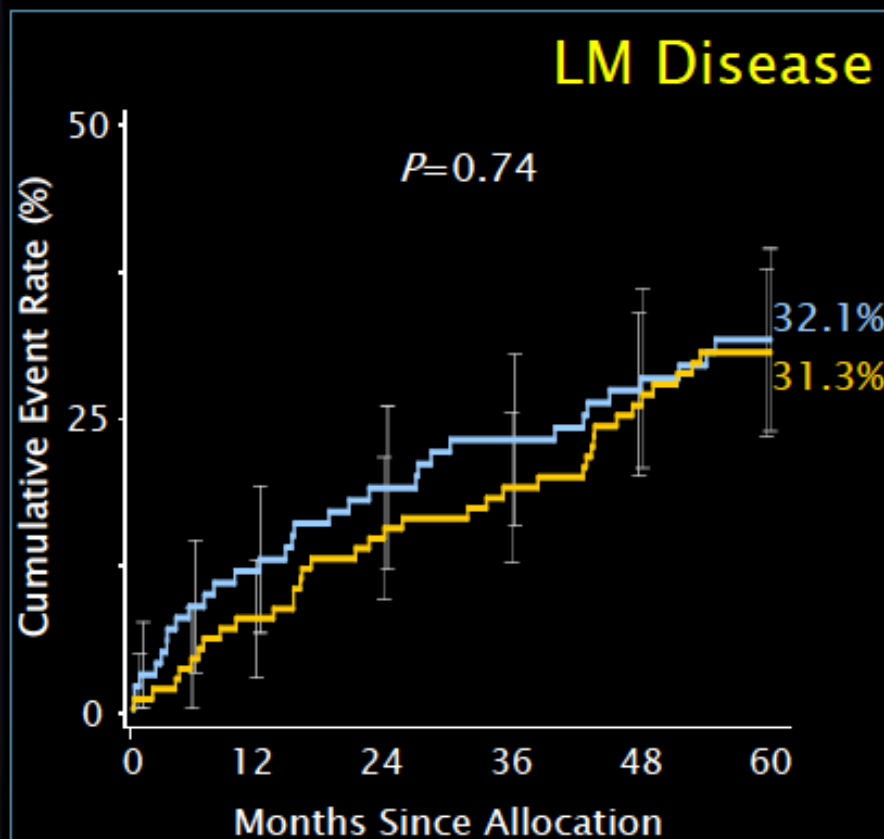
■ TAXUS (N=357)



MACCE to 5 Years by SYNTAX Score Tercile *Low to Intermediate Scores (0-32)*

SYNTAX

■ CABG (N=196)
■ TAXUS (N=221)



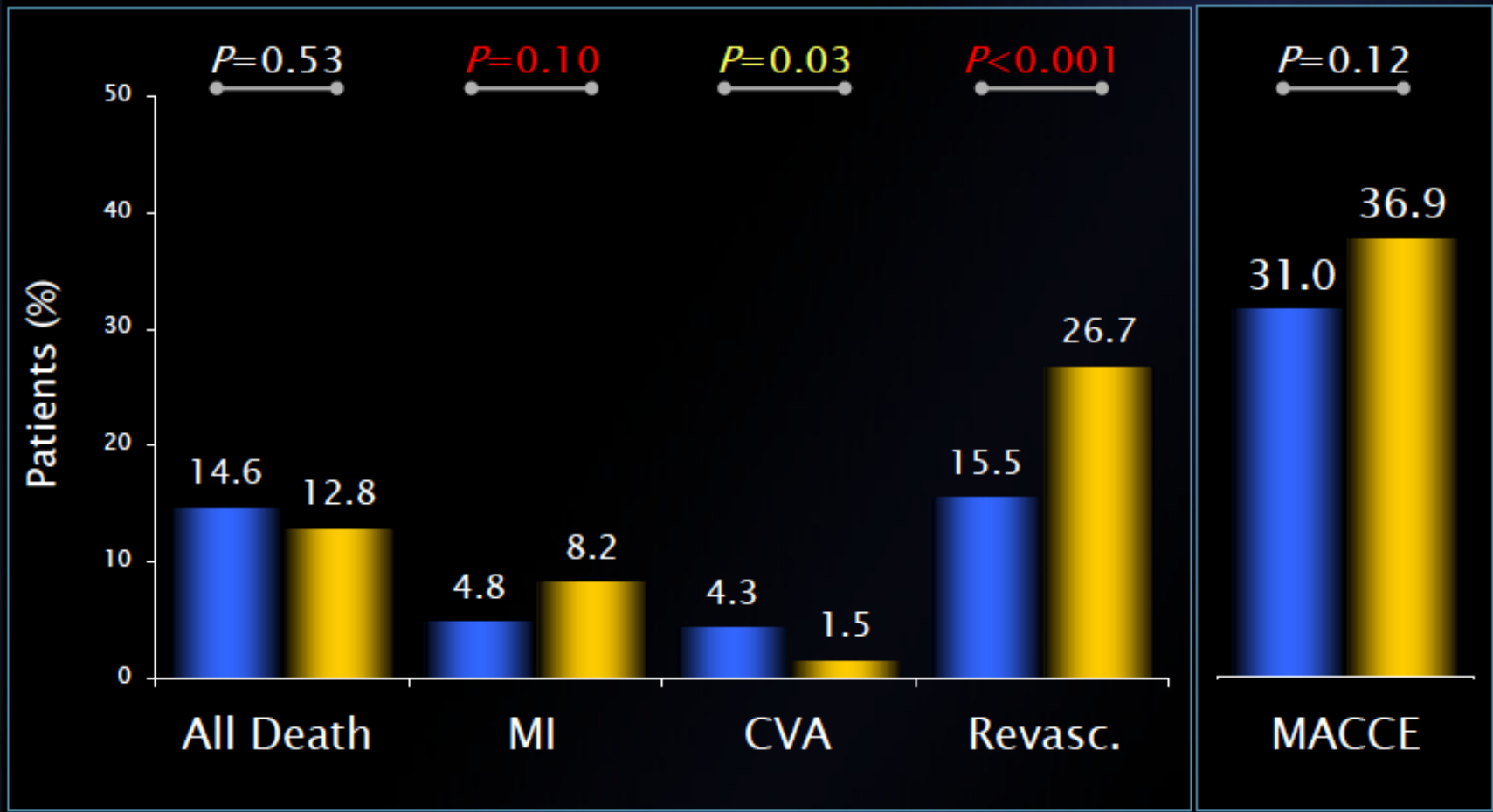
	CABG	PCI	P value
Death	15.1%	7.9%	0.02
CVA	3.9%	1.4%	0.11
MI	3.8%	6.1%	0.33
Death, CVA or MI	19.8%	14.8%	0.16
Revasc.	18.6%	22.6%	0.36

Left Main Disease 5-year Outcomes (N=705)

SYNTAX

■ CABG (n=348)

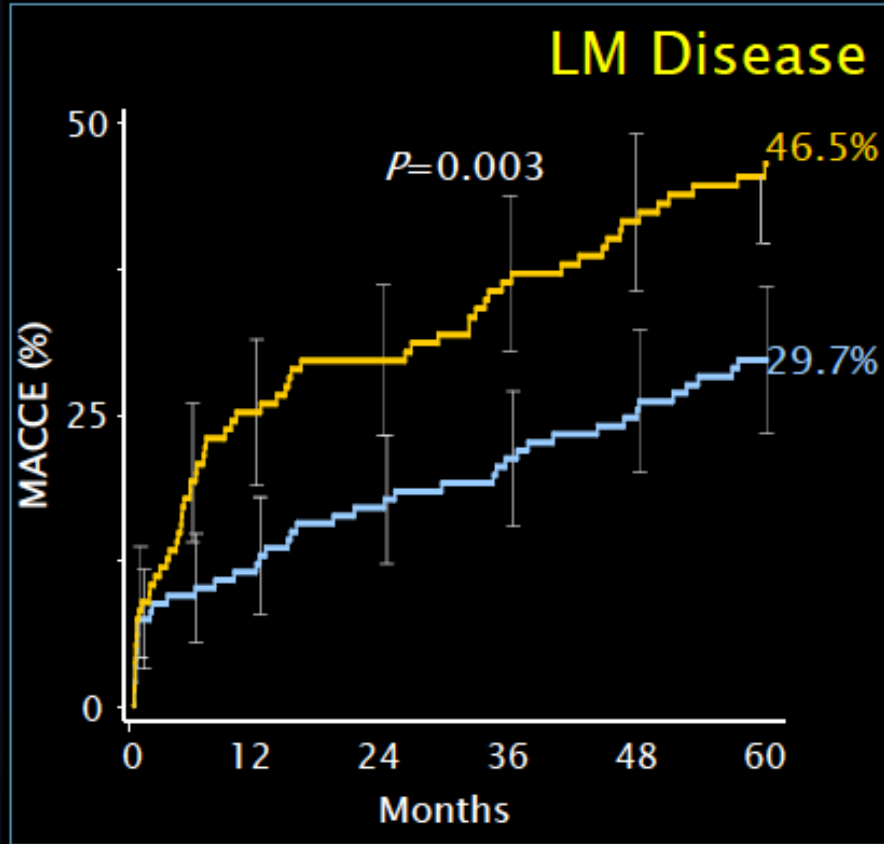
■ TAXUS (n=357)



MACCE to 5 Years by SYNTAX Score Tercile *High Scores ≥ 33*



■ CABG (N=149)
■ TAXUS (N=135)

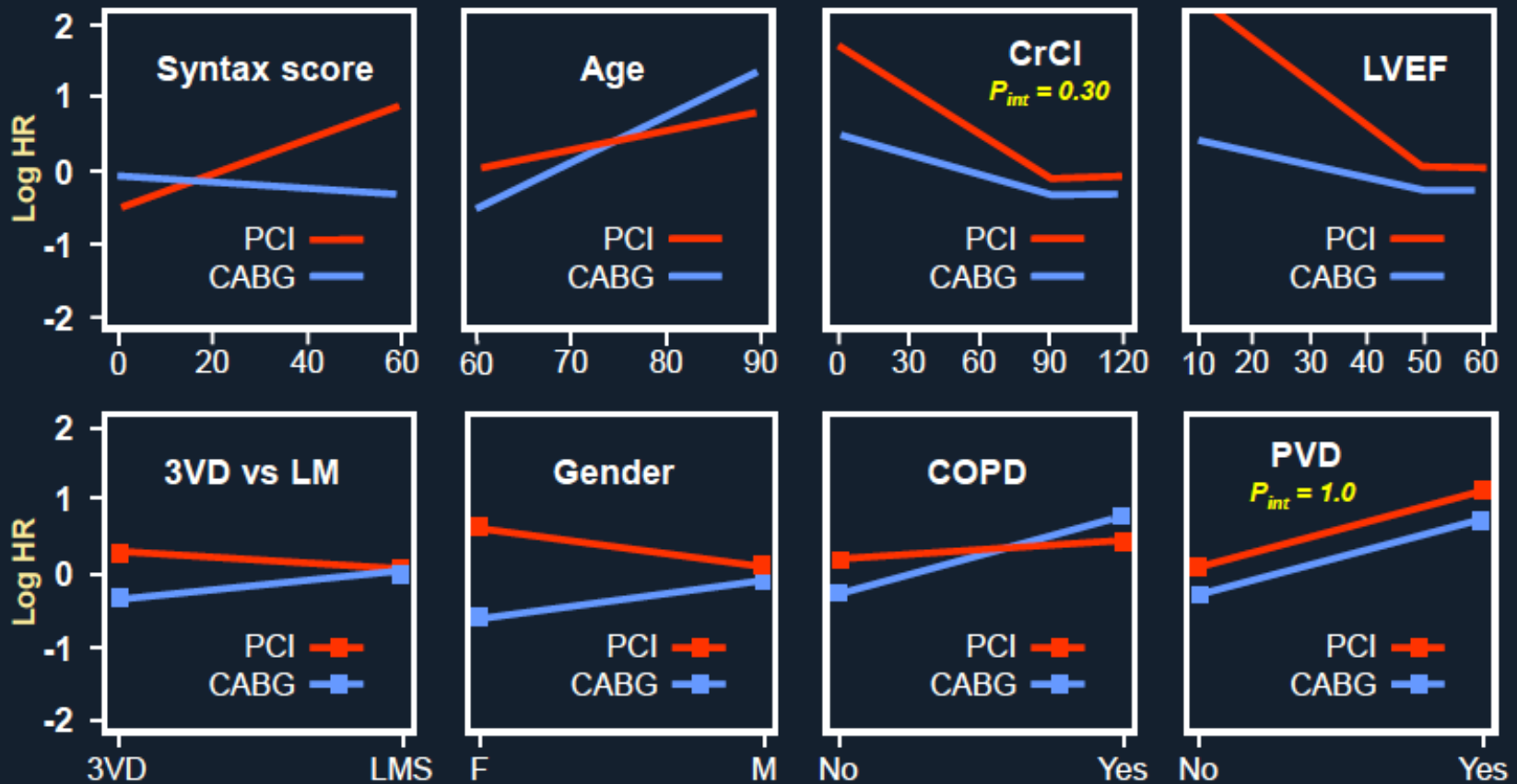


	CABG	PCI	P value
Death	14.1%	20.9%	0.11
CVA	4.9%	1.6%	0.13
MI	6.1%	11.7%	0.13
Death, CVA or MI	22.1%	26.1%	0.40
Revasc.	11.6%	34.1%	<0.001

Serruys PW et al. Lancet 2013;381:629-38

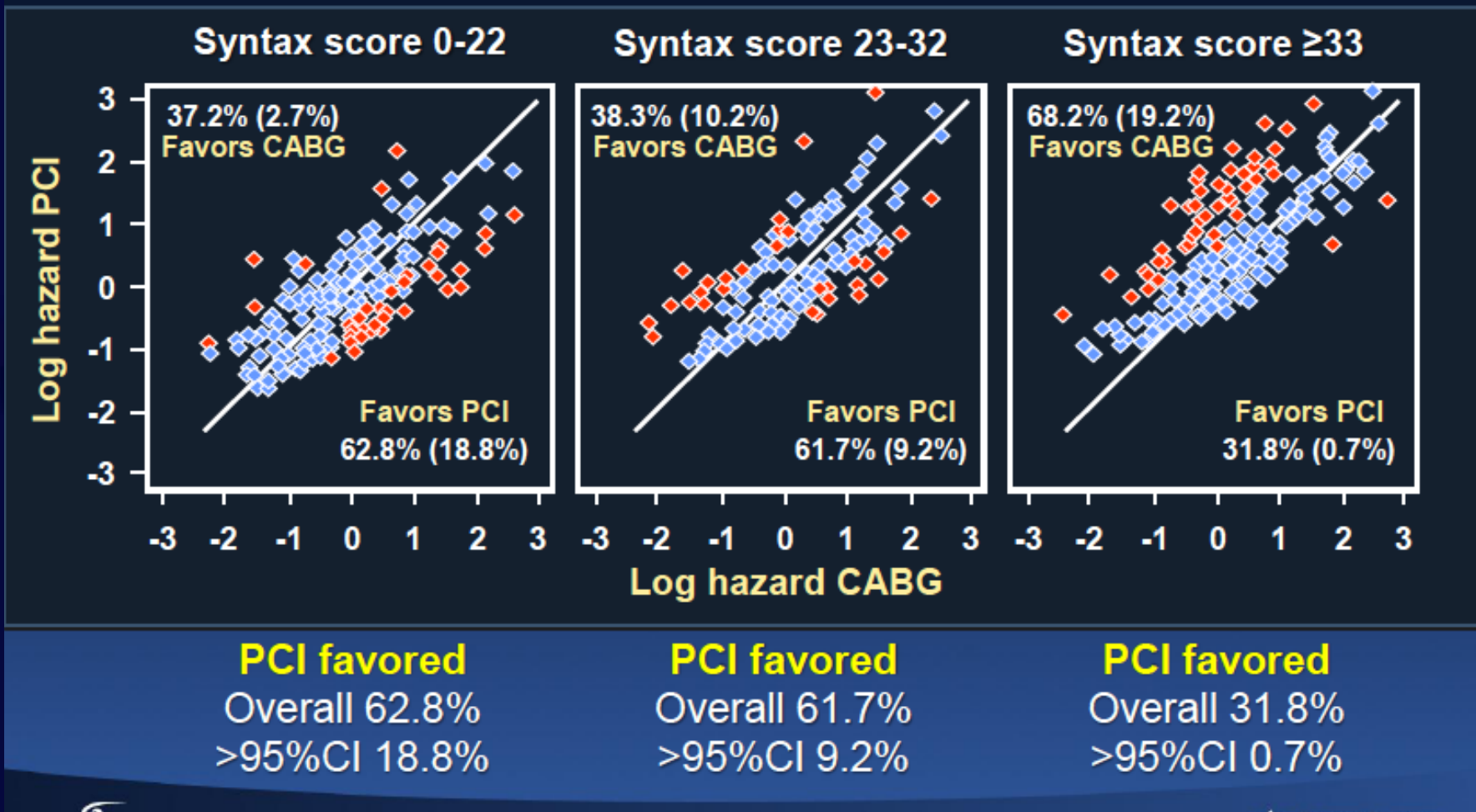
SYNTAX Score II: Designed to Objectively Discriminate Between CABG and PCI Interactions

All other interaction *P* values <0.10



SYNTAX Score I vs II: The SYNTAX Trial

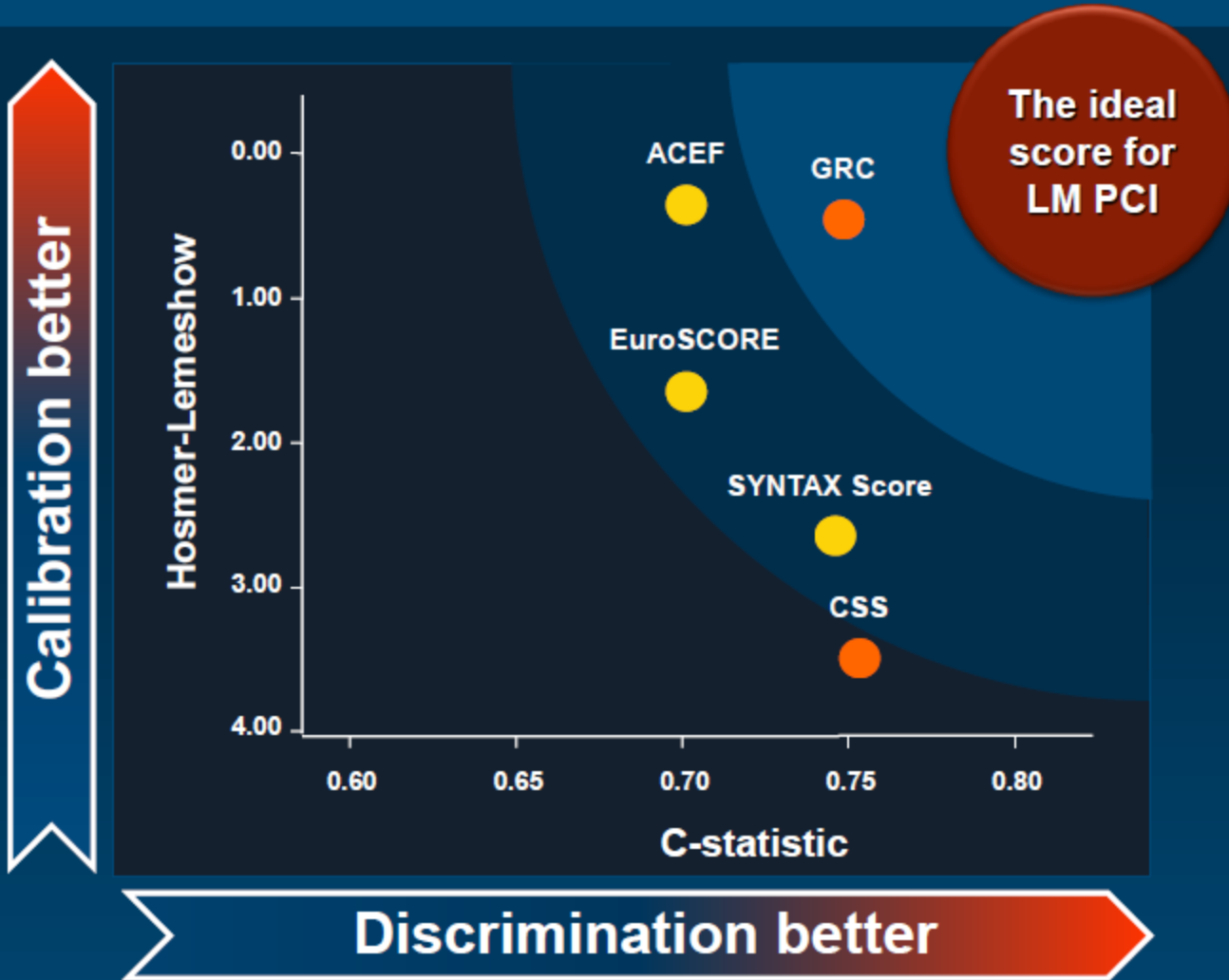
LM pts: Risk Predictions by Tertiles of the SYNTAX Score



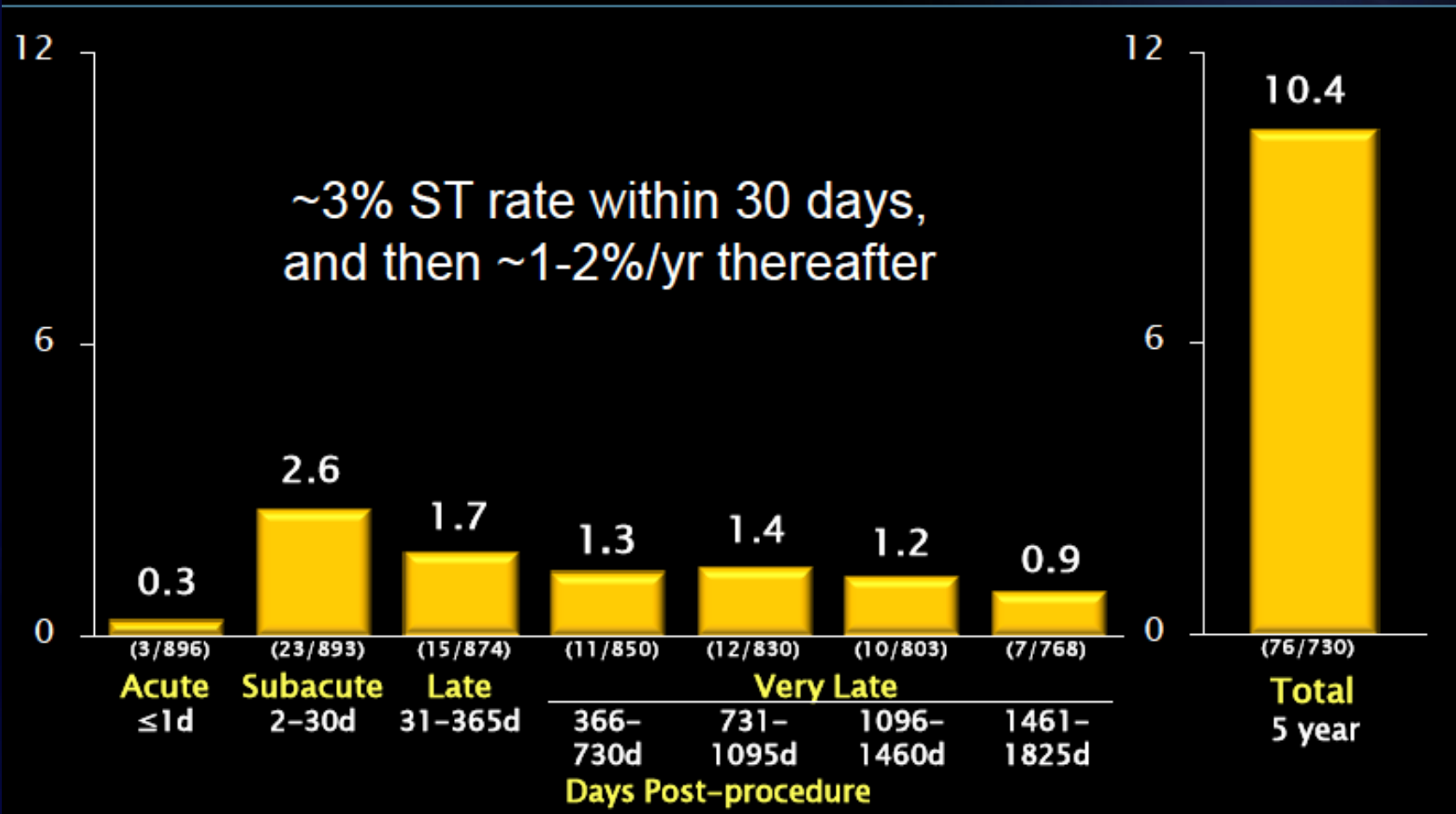
Beyond the Syntax Score...

- **Clinical stand-alone tools**
 - EuroSCORE
 - ACEF score
- **Combined tools**
 - NERS
 - CSS
 - GRC
- **Trends and Future Development**
 - FSS
 - rSS
 - Risk-Benefit Analysis

GRC approaches the ideal model for LM PCI



SYNTAX: Definite/Probable ARC Stent Thrombosis to 5 Years *(Per Patient)*

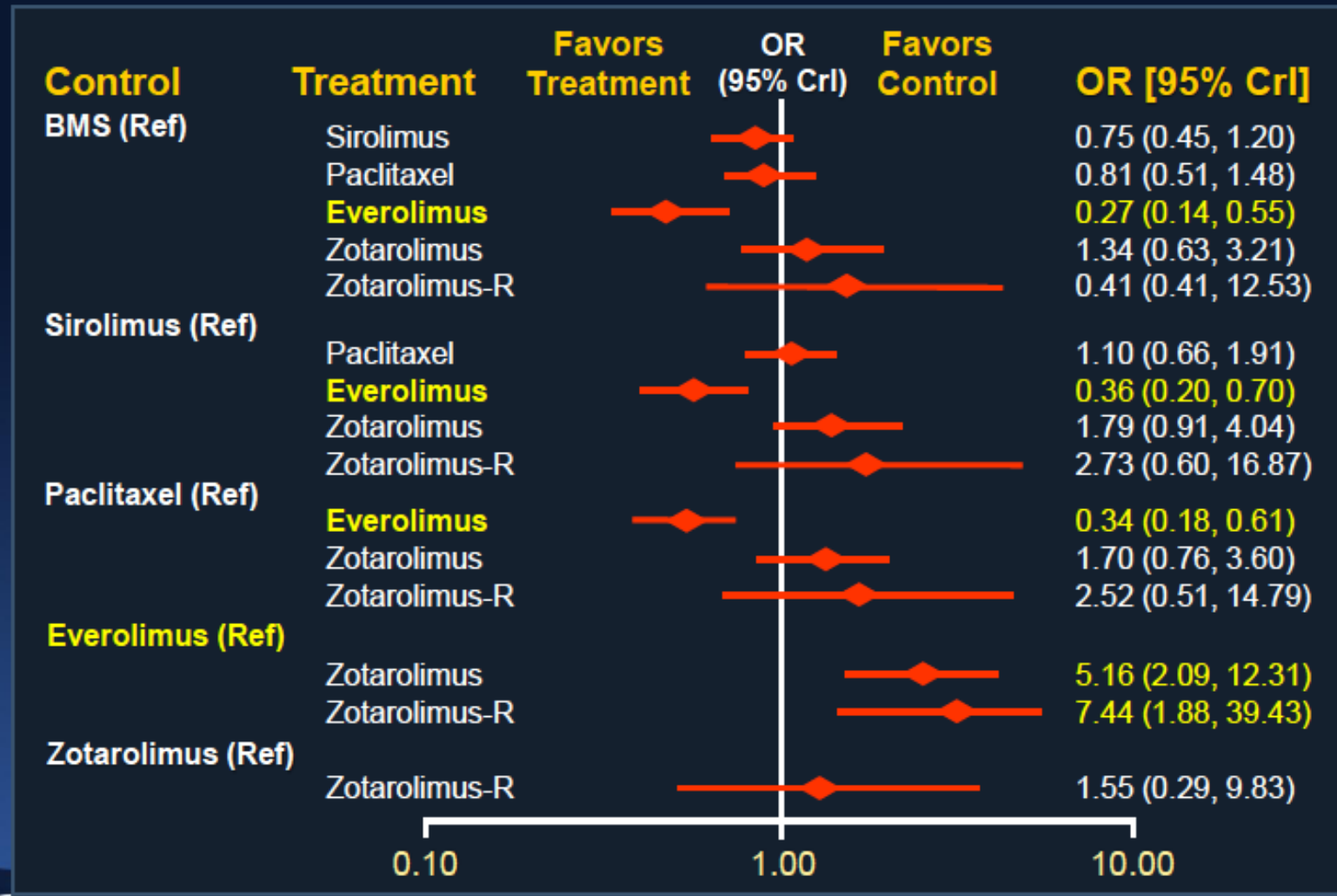


Rate was ~ same in the LM and 3VD cohorts, and roughly independent of Syntax Score

How to Improve Left Main PCI Outcomes

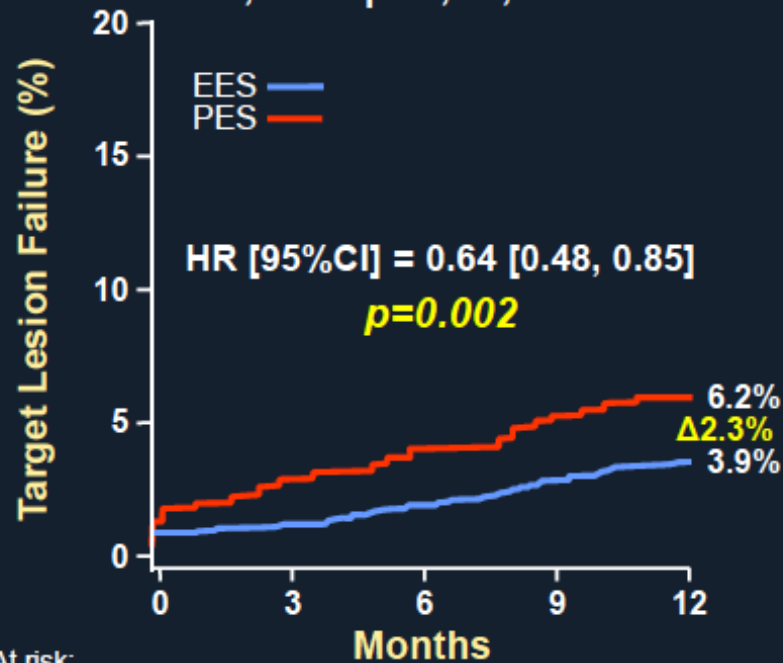
- Use best in class DES
 - Thienopyridine pre-loading
- Optimal pharmacotherapy
 - Statin pre-loading
 - Bivalirudin anticoagulation
- IVUS/FFR to assess the intermediate LM Isn
- FFR to avoid unnecessary stenting, but also to ensure complete ischemic revascularization
- IVUS guided LM stenting
 - 1- vs 2-stent techniques
 - Debulking
- Optimal LM stent technique
 - Hemodynamic support
 - Staging
 - Routine angiographic FU

Network Meta-analysis: 77 RCTs, 57,138 pts 1-year definite stent thrombosis



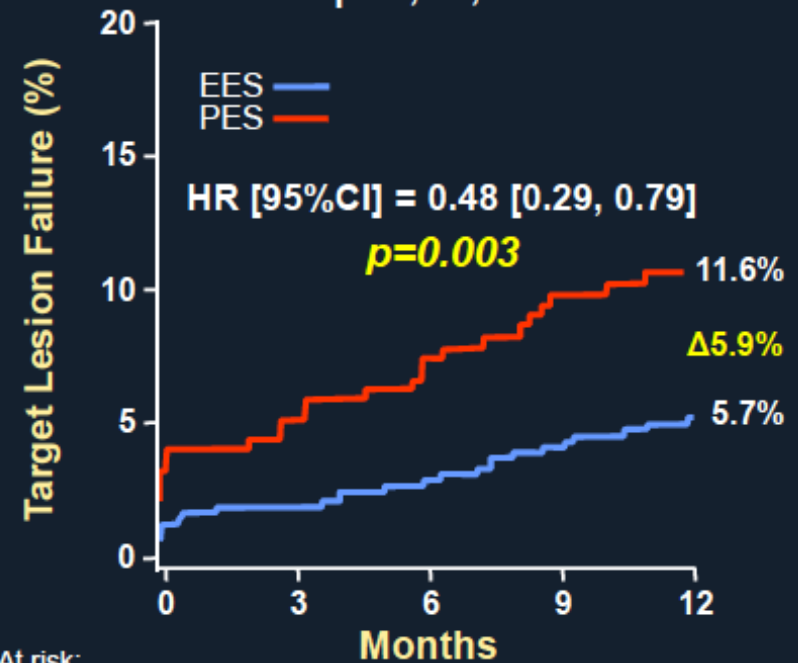
EES vs. PES: 2-year Results of SPIRIT III + IV

Single vessel treated
3,903 pts, 4,196 lsns



ST: PES 0.6% vs. EES 0.3%

Multiple vessels treated
785 pts, 1,686 lsns



ST: PES 2.7% vs. EES 1.2%

EXCEL: Study Design

3600 pts with left main disease

SYNTAX score ≤ 32

Consensus agreement by heart team

Yes

(N=2600)

R

PCI (Xience Prime)
(N=1300)

CABG
(N=1300)

No

(N=1000)

PCI and CABG
registries

(limited in-hosp
data)

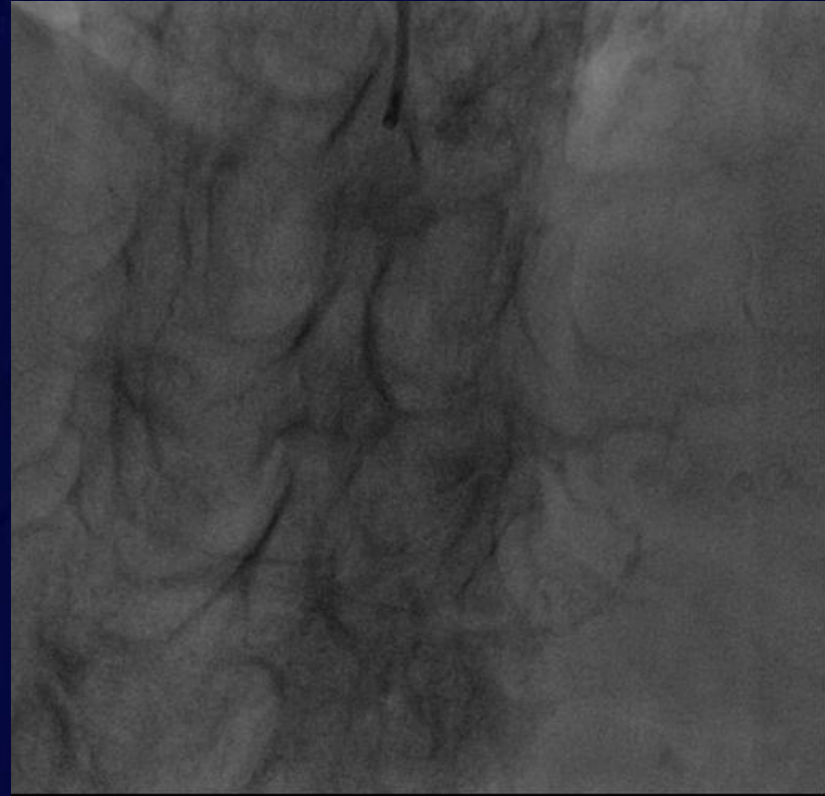
Primary endpoint:

Death, MI, or Stroke at 3 years

Case 2

- F.G. 82 year-old female,
- Cardiac Risk factors: hypertension, dyslipidemia. Peripheral artery disease.
- Past medical history: Chronic atrial fibrillation. Moderate aortic stenosis, LVEF 55%. Cognitive impairment.
- Clinical presentation: unstable angina

Case 2. Angio



Case 2. Decision Making- Milan Heart Team at Work..

- Clinical stratification:
- EuroSCORE standard 16
 - SYNTAX score 14
 - GRC intermediate



Heart Team>>
PCI Registry

Conclusions

- Proper risk stratification is essential in the decision making of revascularization of LMCA stenoses.
- PCI with first gen DES has been demonstrated in Syntaxscore less than 33 to have comparable results in terms of MACCE to CABG.
- There is still an advantage of CABG in Syntaxscore more than 33.
- Waiting for EXCEL results..