



Left-Main Disease: When is PCI the Preferred Strategy?

Rafael Cavalcante MD, PhD

Patrick W. Serruys MD, PhD

Thoraxcenter, Erasmus MC, Rotterdam, The Netherlands

InCor, University of Sao Paulo, Sao Paulo, Brazil

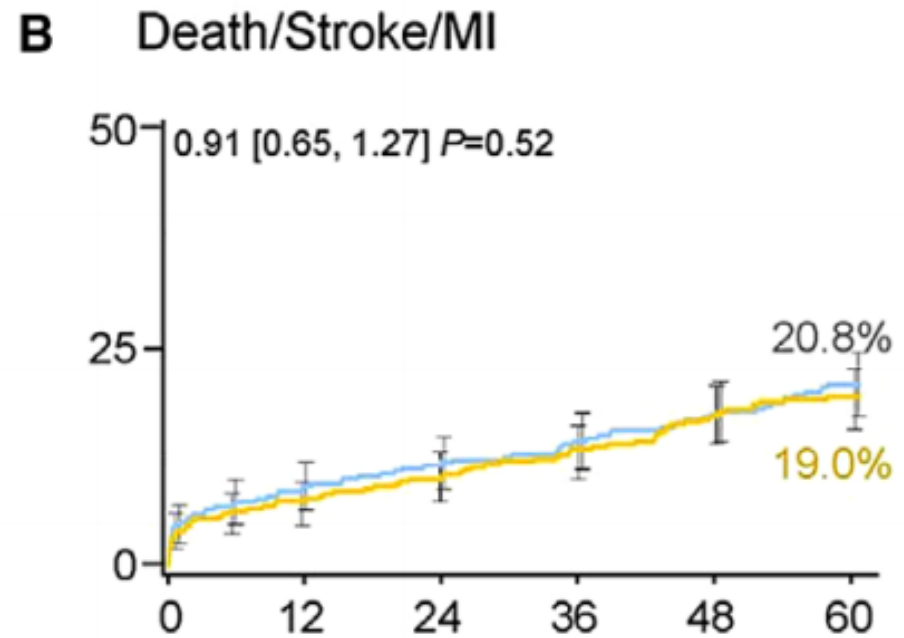
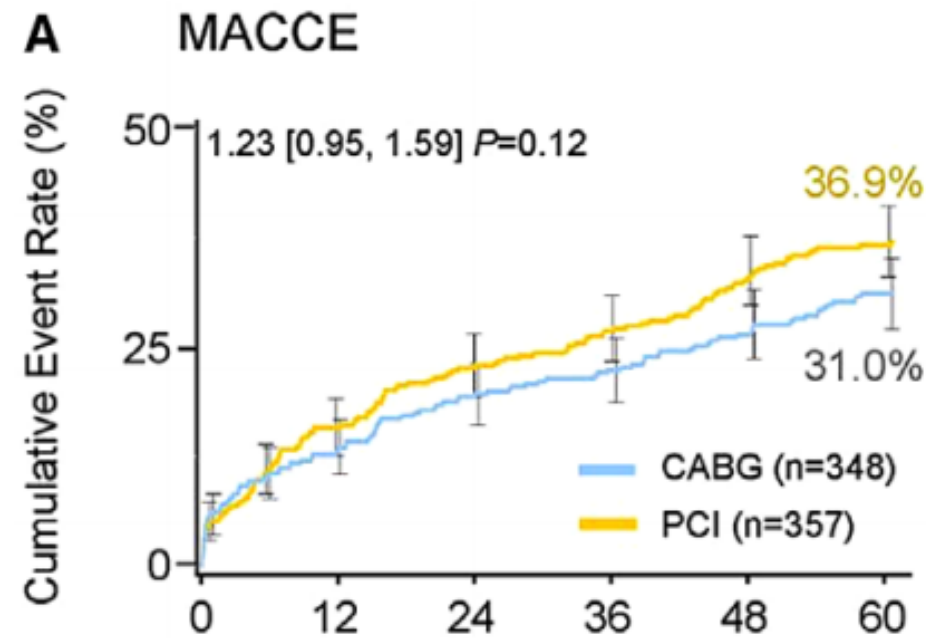


**Imperial College
London**

European Guidelines for Myocardial Revascularization

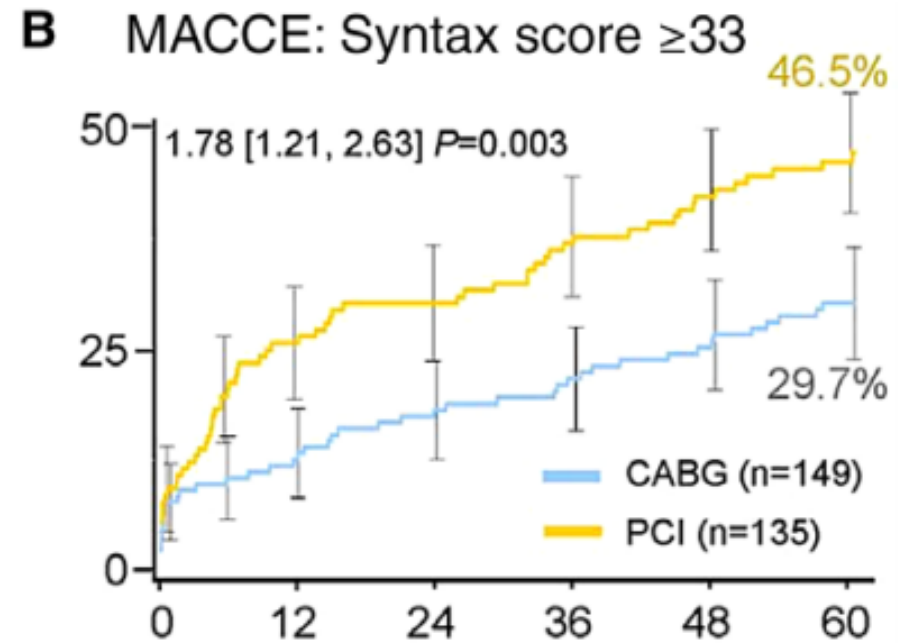
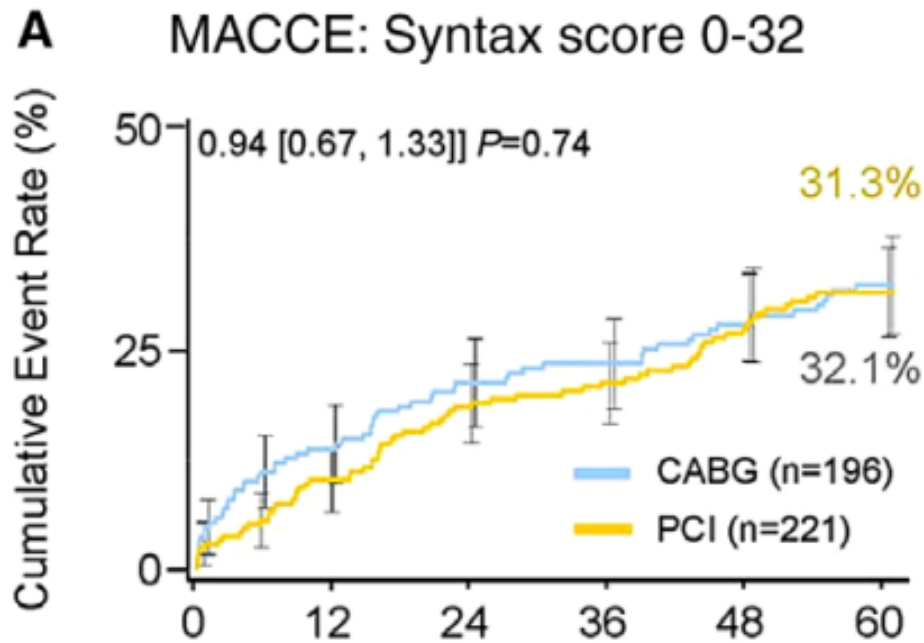
Recommendations according to extent of CAD	CABG		PCI	
	Class ^a	Level ^b	Class ^a	Level ^b
Left main disease with a SYNTAX score ≤ 22 .	I	B	I	B
Left main disease with a SYNTAX score 23–32.	I	B	IIa	B
Left main disease with a SYNTAX score >32 .	I	B	III	B

SYNTAX trial 5 years Left-main cohort (n=705)



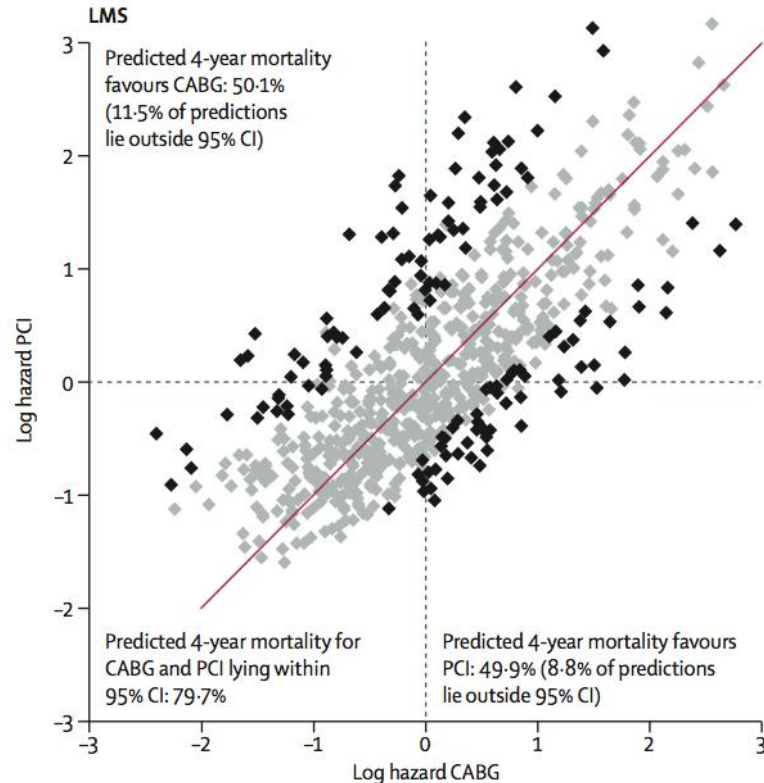
SYNTAX trial 5 years

Left-main cohort (n=705)



SYNTAX trial LM cohort

Predicted 4 years mortality



Favored CABG

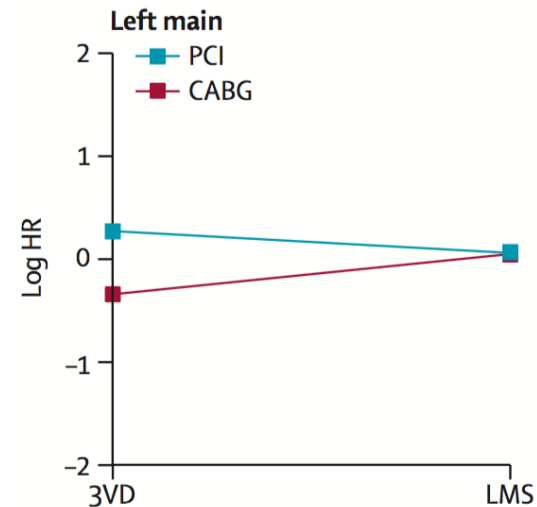
Overall 50.1%
>95%CI 11.5%

Favored PCI

Overall 49.9%
>95%CI 8.8%

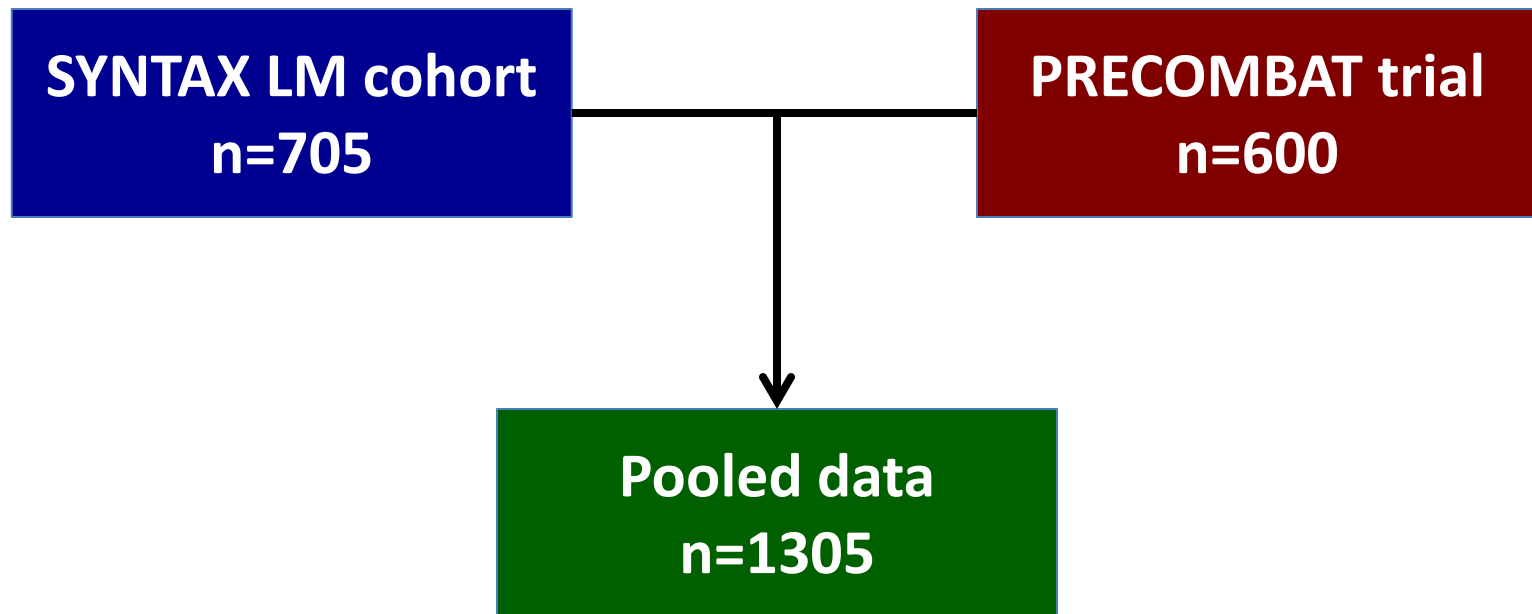
Equipoise

79.7% within 95%CI



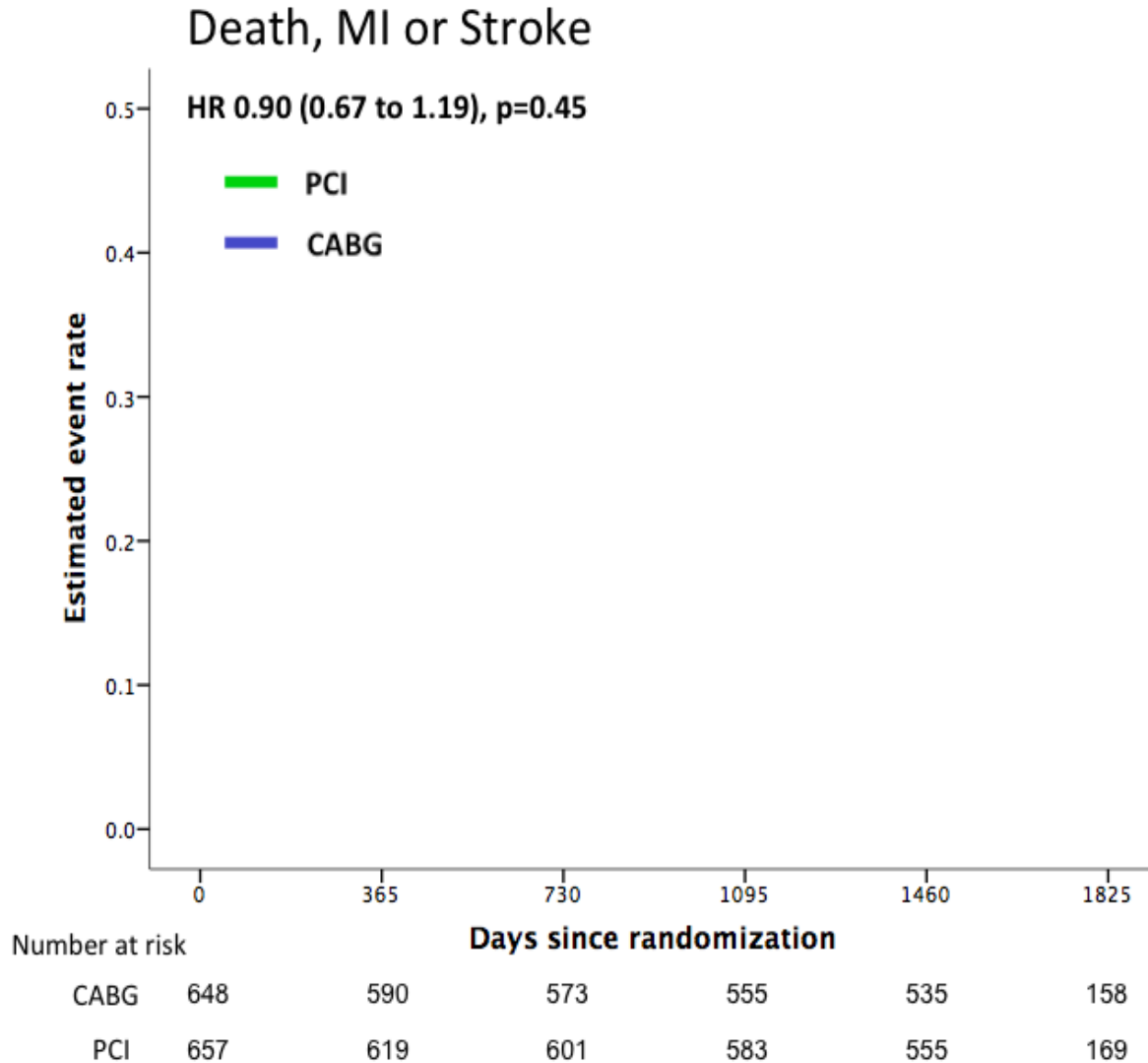
Long-Term Outcomes of Percutaneous Coronary Intervention and Coronary Artery Bypass Grafting in Patients with Left Main Coronary Artery Disease: A Pooled Analysis of Individual Patient Level Data From the SYNTAX and PRECOMBAT Randomized Trials

Rafael Cavalcante, Yohei Sotomi, Cheol Whan Lee, Jung-Min Ahn, Vasim Farooq, Hiroki Tateishi, Erhan Tenekecioglu, Yaping Zeng, Pannipa Swuannasom, Carlos Collet, Felipe Albuquerque, Yoshinobu Onuma, Seung-Jung Park, Patrick W. Serruys



5 years Death/MI/Stroke in Left Main CAD

Pooled SYNTAX and PRECOMBAT Left Main population (n=1305)

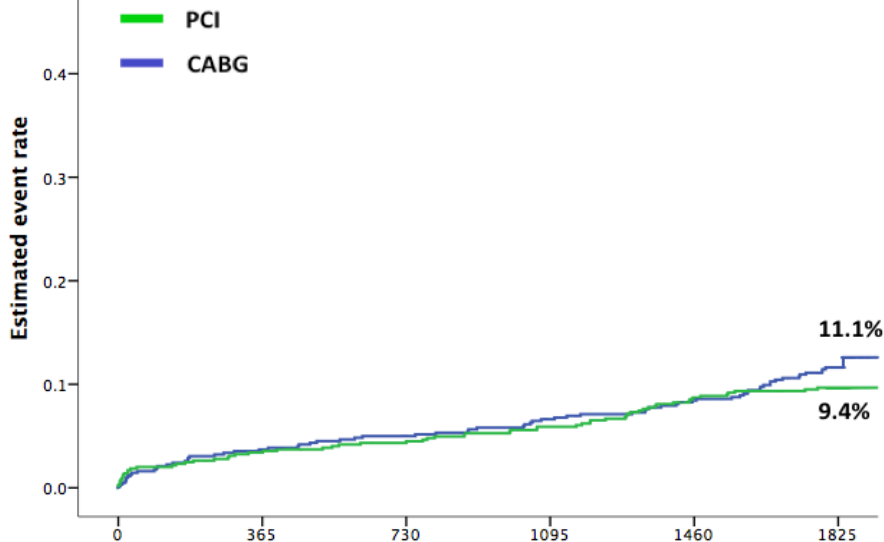


5 years All-cause and Cardiac Mortality in Left Main CAD

Pooled SYNTAX and PRECOMBAT Left Main population (n=1305)

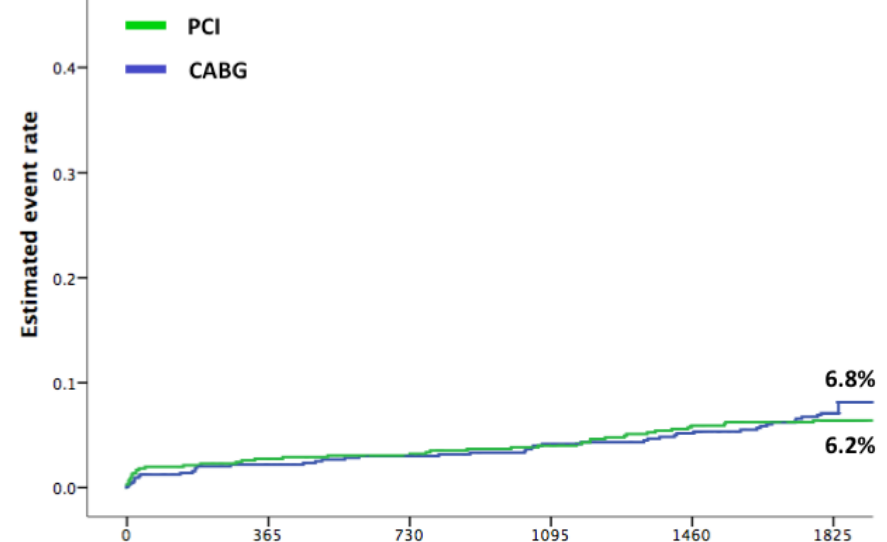
All-cause death

HR 0.83 (0.59 to 1.16), p=0.27



Cardiac death

HR 0.90 (0.59 to 1.37), p=0.61



Number at risk		Days since randomization					
		0	365	730	1095	1460	1825
CABG		648	610	594	577	560	171
PCI		657	633	622	609	583	185

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		0	365	730	1095	1460	1825
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Pooled SYNTAX and PRECOMBAT trials

Left-main – SYNTAX score 0 – 32 (n=878)

All-cause death

Cardiac death

Pooled SYNTAX and PRECOMBAT trials

Isolated left-main / Left-main +1VD (n=548)

All-cause death

Cardiac death

Tools and Techniques - Clinical: SYNTAX score II calculator

Yohei Sotomi¹, MD; Carlos Collet¹, MD; Rafael Cavalcante², MD, PhD;
Marie-Angèle Morel³, BSc; Pannipa Suwannasom^{1,2,4}, MD; Vasim Farooq⁵, MD, PhD;
Menno van Gameren², MD, PhD; Yoshinobu Onuma^{2,3}, MD, PhD; Patrick W. Serruys^{6*}, MD, PhD

EuroIntervention 2016;12:120-123

1. SYNTAX score
2. Age
3. Creatinine Clearance
4. Ejection Fraction
5. Left-main disease
6. Gender
7. COPD
8. Peripheral vascular disease

SYNTAX Score II

SYNTAX II

Decision making -between CABG and PCI- guided by the SYNTAX Score II to be endorsed by the Heart Team.

PCI

SYNTAX Score II:	22.7
PCI 4 Year Mortality:	3.7 %

CABG

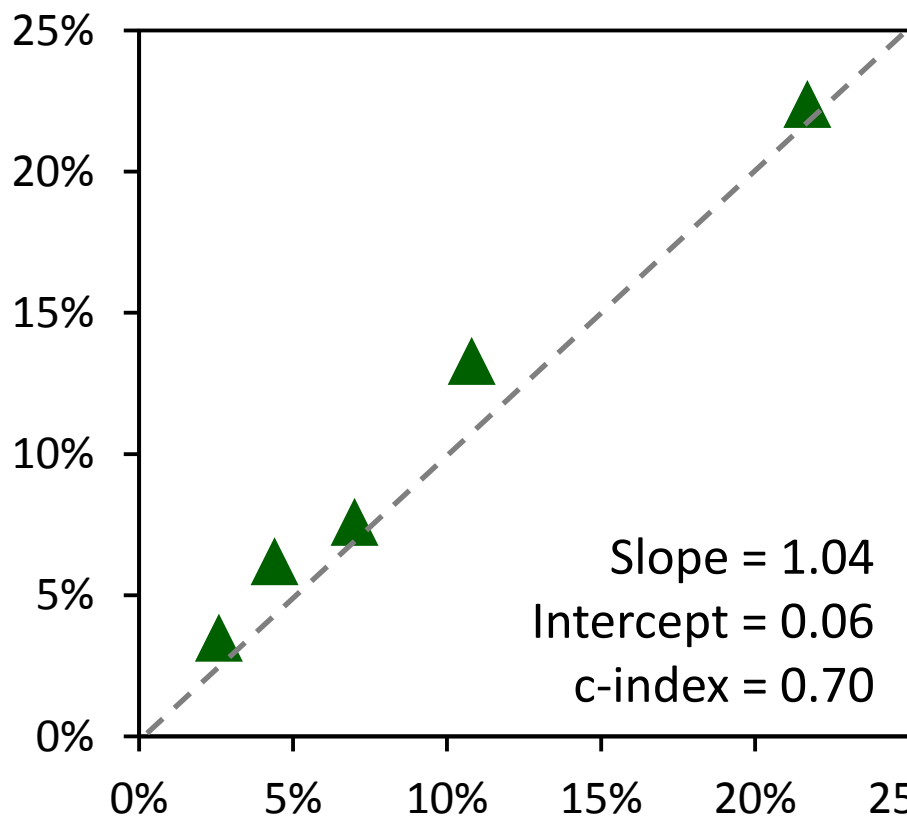
SYNTAX Score II:	20.3
CABG 4 Year Mortality:	3.1 %

Treatment recommendation ⓘ: CABG or PCI

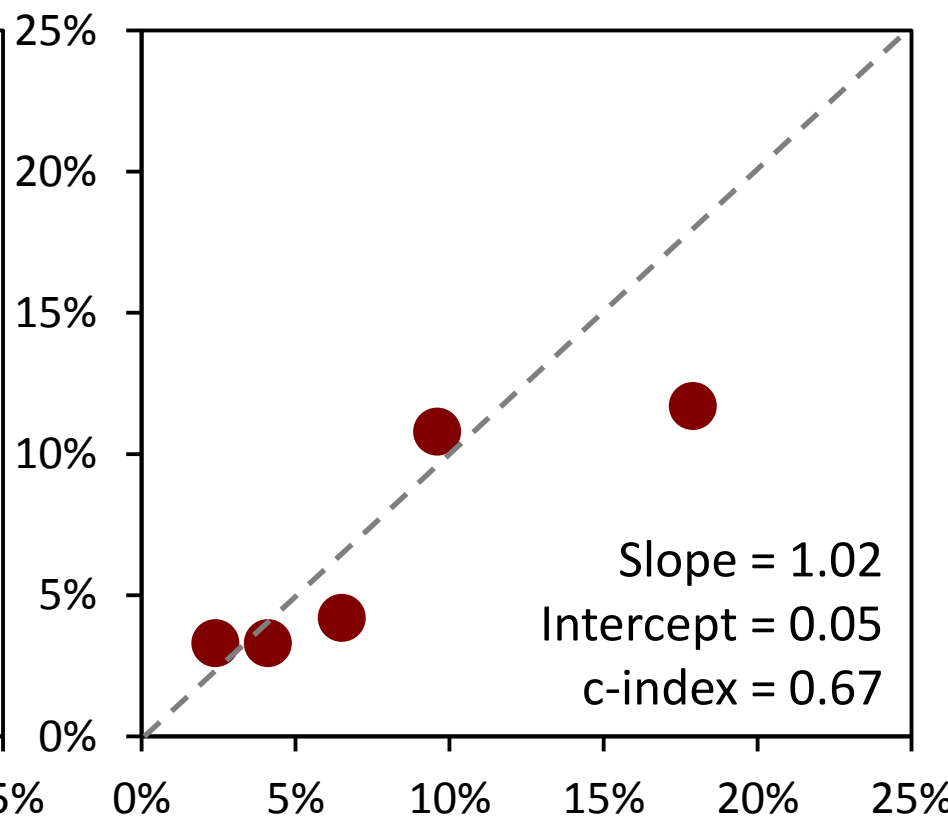
SYNTAX score II model Calibration plots

SYNTAX and PRECOMBAT Left Main population

Pooled data (n=1305)



PRECOMBAT (n=600)



SYNTAX score II Predicted mortality

All-cause death according to SYNTAX score II treatment recommendation

SYNTAX and PRECOMBAT Left Main population

SYNTAX score II Recommendation	<i>As-treated</i>		p-value
	PCI (n=679)	CABG (n=614)	
Equipoise (n=965)	9.9% (50/503)	9.6% (44/459)	0.91
PCI (n=138)	5.8% (4/69)	19.1% (13/68)	0.018
CABG (n=196)	11.2% (12/107)	10.3% (9/87)	0.85

Long-term forecasting and comparison of mortality in the Evaluation of the Xience Everolimus Eluting Stent vs. Coronary Artery Bypass Surgery for Effectiveness of Left Main Revascularization (EXCEL) trial: prospective validation of the SYNTAX Score II

Carlos M. Campos^{1,2†}, David van Klaveren^{1†}, Vasim Farooq³, Charles A. Simonton⁴, Arie-Pieter Kappetein¹, Joseph F. Sabik III⁵, Ewout W. Steyerberg¹, Gregg W. Stone^{6,7}, and Patrick W. Serruys^{1,8*}, On Behalf of the EXCEL Trial Investigators

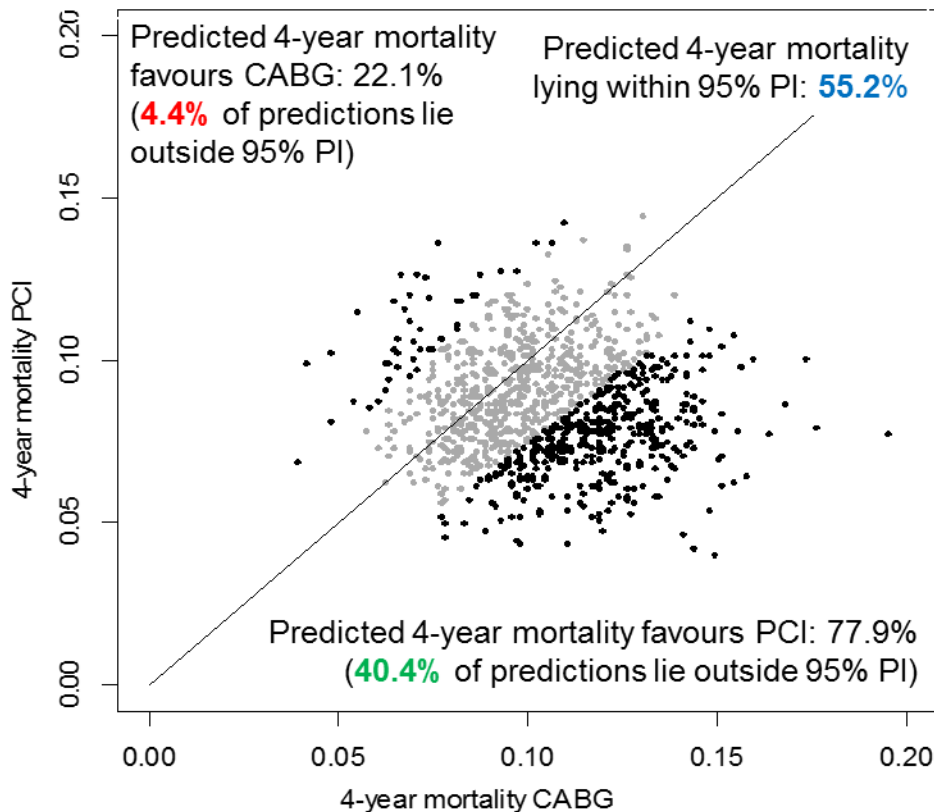
Predicted 4-y mortality PCI,% (95% PI)	8.5% (5.4-11.9)
Predicted 4-y mortality CABG,% (95% PI)	10.5% (6.6-15.1)
OR PCI:CABG (95% PI)	0.79 (0.43-1.50)

4-year Mortality Simulations

Overall Results



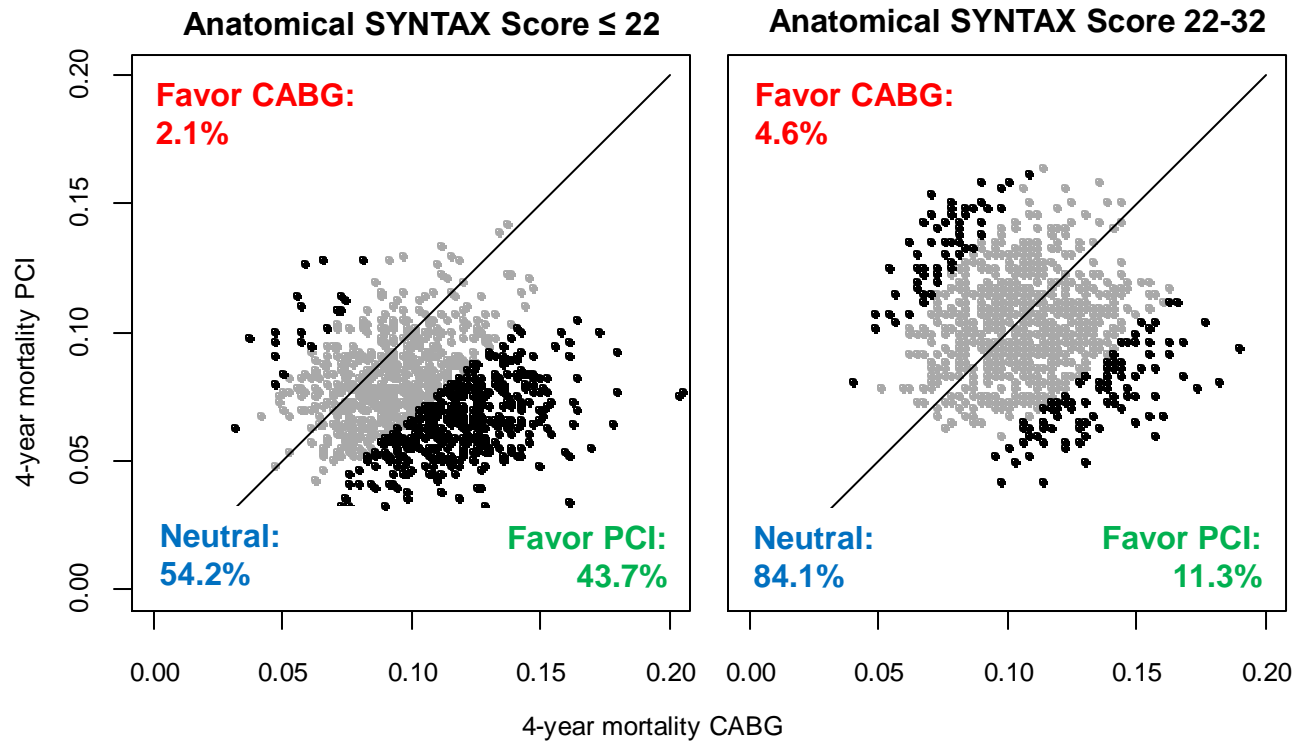
First 1,000 Simulations



- **55.2%** chance of **similar mortality** in the CABG and PCI arms
- **40.4%** chance of significantly **lower mortality in the PCI** arm versus CABG
- **4.4%** chance of **lower mortality in the CABG arm versus PCI**

4-year Mortality Simulations

Stratified by Anatomical SYNTAX score



Predicted 4-y mortality PCI,% (95% PI)	7.4 (4.3-11.0)
Predicted 4-y mortality CABG,% (95% PI)	10.3 (5.9-15.6)
OR PCI:CABG (95% PI)	0.69 (0.34-1.45)

Predicted 4-y mortality PCI,% (95% PI)	10.1 (6.2-14.6)
Predicted 4-y mortality CABG,% (95% PI)	10.8 (6.5-15.5)
OR PCI:CABG (95% PI)	0.93 (0.53-1.62)

PI: prediction interval

Campos CM et al. 2015 Euro Heart J

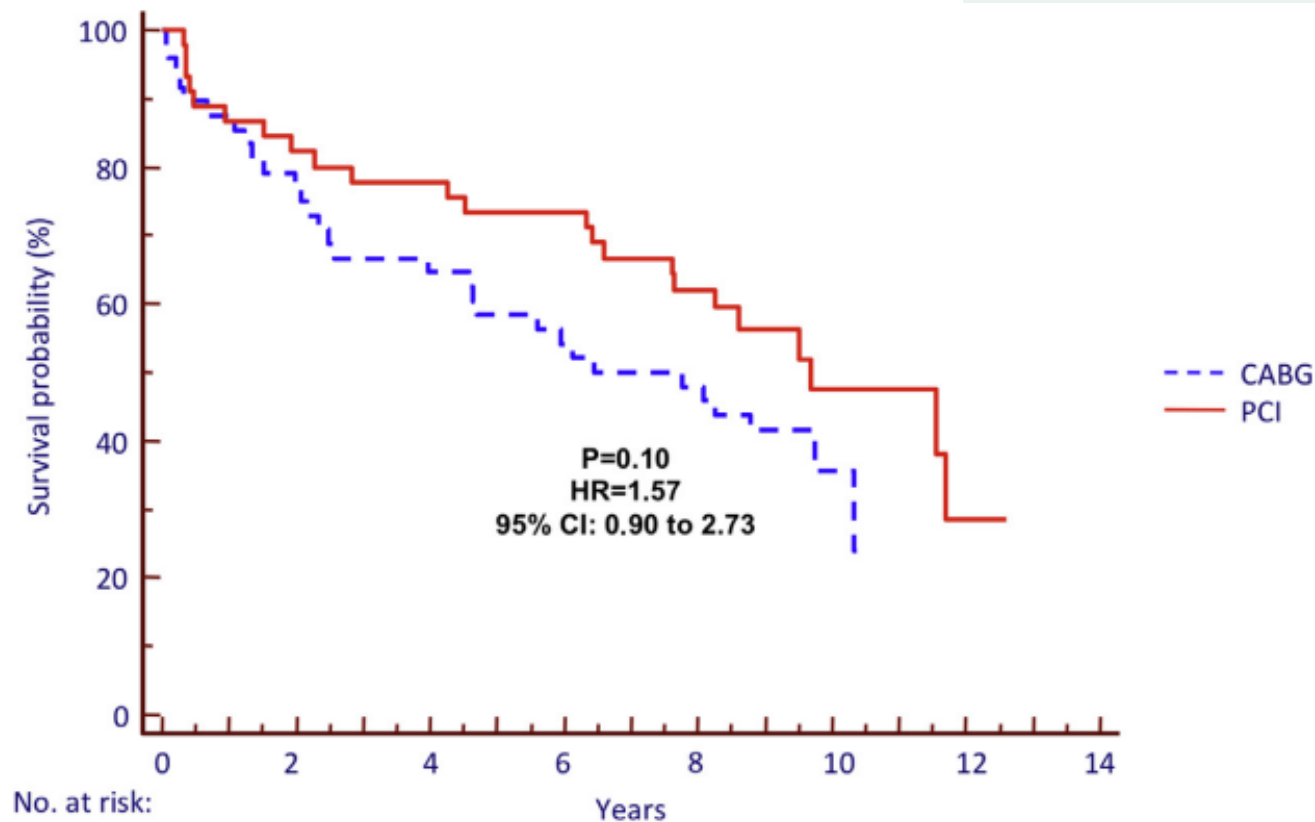
Left Main Stenting in Comparison With Surgical Revascularization

10-Year Outcomes of the (Left Main Coronary Artery Stenting)

LE MANS Trial

Pawel E. Buszman, MD, PhD,^{a,b} Piotr P. Buszman, MD, PhD,^{a,c} Iwona Banasiewicz-Szkróbka, MD, PhD,^a Krzysztof P. Milewski, MD, PhD,^a Aleksander Żurkowski, MD, PhD,^a Bartłomiej Orlik, MD, PhD,^a Magda Konkolewska, MD,^a Błażej Trela, MD,^a Adam Janas, MD,^a Jack L. Martin, MD,^d R. Stefan Kiesz, MD,^e Andrzej Bochenek, MD, PhD^{a,b}

(J Am Coll Cardiol Intv 2016;9:318-27)



No. at risk:

CABG	48	42	37	32	31	28	26	24	23	18	4	0	0	0	0
PCI	45	39	37	35	35	33	33	30	26	13	11	9	2	1	1

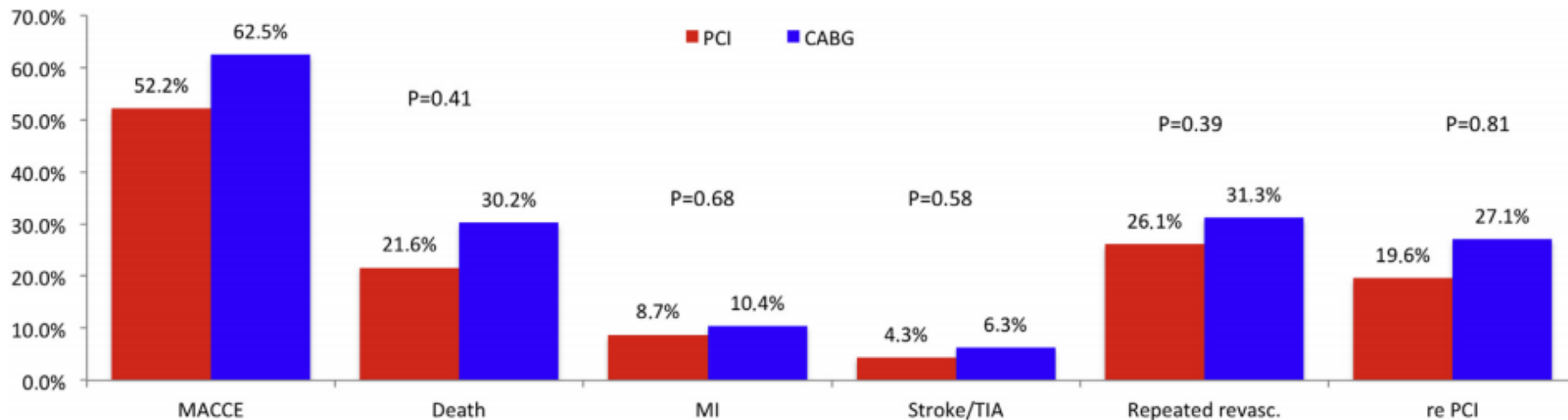
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(J Am Coll Cardiol Intv 2016;9:318-27)

P=0.42



Conclusions (1)

In patients with LMD:

- PCI and CABG show similar rates of the safety endpoint of ***all-cause death / MI / Stroke***
- In the subset of less anatomic complexity/burden PCI leads to ***lower overall and cardiac mortality***
 - **PCI should be the preferred strategy**

Conclusions (2)

In patients with LMD:

- Very long term (10 years) preliminary data is reassuring for the ***safety of PCI***
- The decision making process should take into account **important clinical comorbidities** and demographic factors
- The ***SYNTAX score II*** is a useful tool to help this decision process