Mortality and Stroke of PCI versus CABG in Multivessel and Left Main Disease with and without Diabetes

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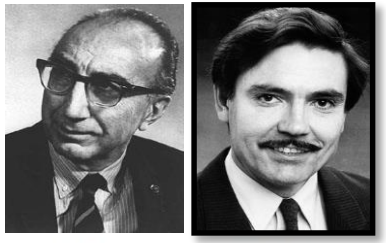
Disclosure Statement of Financial Interest

I, Stuart Head, 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.

RCTs on Revascularization



LIMITATIONS OF RCTS

1. No power to detect mortality differences

2. Little information on infrequently occurring events during follow-up (e.g. Stroke)

3. Subgroups too small for substantiated conclusions

Evaluated 5-year mortality and stroke differences between CABG versus PCI with stents in randomized patients with multivessel or left main coronary artery disease

THE LANCET

INDIVIDUAL PATIENT-DATA POOLED ANALYSIS OF 11,518 PATIENTS FROM 11 RANDOMIZED TRIALS

Mortality after coronary artery bypass grafting versus percutaneous coronary intervention with stenting for coronary artery disease: a pooled analysis of individual patient data

Stuart J Head, Milan Milojevic, Joost Daemen, Jung-Min Ahn, Eric Boersma, Evald H Christiansen, Michael J Domanski, Michael E Farkouh, Marcus Flather, Valentin Fuster, Mark A Hlatky, Niels R Holm, Whady A Hueb, Masoor Kamalesh, Young-Hak Kim, Timo Mäkikallio, Friedrich W Mohr, Grigorios Papageorgiou, Seung-Jung Park, Alfredo E Rodriguez, Joseph F Sabik 3rd, Rodney H Stables, Gregg W Stone, Patrick W Serruys, Arie Pieter Kappetein

Summary

Background Numerous randomised trials have compared coronary artery bypass grafting (CABG) with percutaneous coronary intervention (PCI) for patients with coronary artery disease. However, no studies have been powered to detect a difference in mortality between the revascularisation strategies.

Published Online
February 22, 2018
http://dx.doi.org/10.1016/
S0140-6736(18)30423-9

Study Design

Included trials (n=11):

- ***ERACI II*** *(n=450)*
- ***ARTS*** *(n=1205)*
- ***MASS II*** *(n=408)*
- ***SoS*** *(n=988)*
- ***SYNTAX*** *(n=1800)*
- ***PRECOMBAT*** *(n=600)*
- ***FREEDOM*** *(n=1900)*
- ***VA CARDS*** *(n=198)*
- ***BEST*** *(n=880)*
- ***NOBLE*** *(n=1184)*
- ***EXCEL*** *(n=1905)*

11,518 patients

PCI 5753 vs CABG 5765

Follow-up 3.8 ± 1.4 yrs

976 deaths and 293 strokes

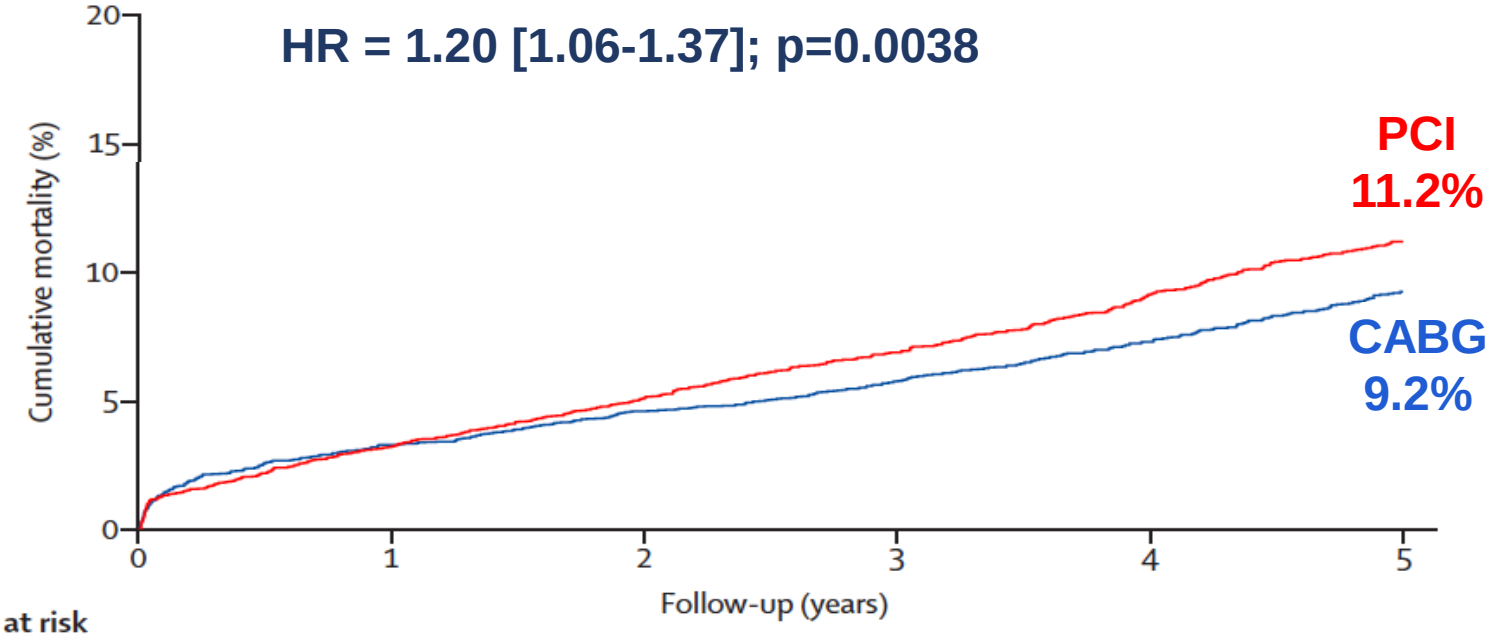
Head SJ et al. Lancet 2018; 391: 939-48

Baseline and Procedural Characteristics

		PCI	CABG
Age		64 ± 9.8	64 ± 9.9
Female sex		24%	24%
Diabetes		39%	38%
Previous MI		28%	28%
Moderate/poor LVEF		16%	15%
Vessels	Any LM	39%	39%
	3VD	59%	62%
SYNTAX	Mean	26 ± 9.3	26 ± 9.8
	≥33	21.3%	22.8%
DES used		73.4%	-
Number of stents		3.1 ± 2.0	-
BIMA use		-	18.7%
Off-pump CABG		-	27.5%

Head SJ et al. Lancet 2018; 391: 939-48

All-cause Mortality at 5 Years



Number at risk

CABG	5765	5360	4994	3761	3299	2263
PCI	5763	5458	5101	3853	3382	2407

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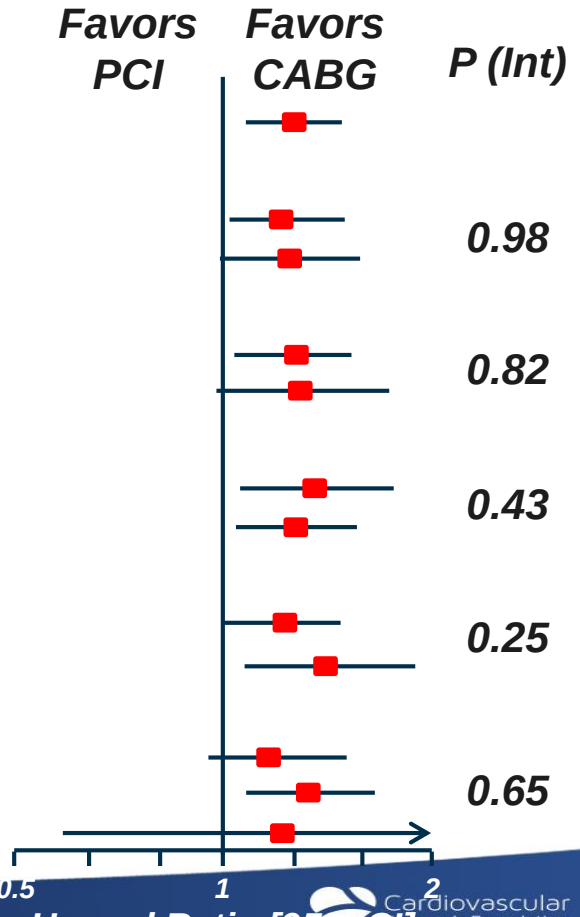
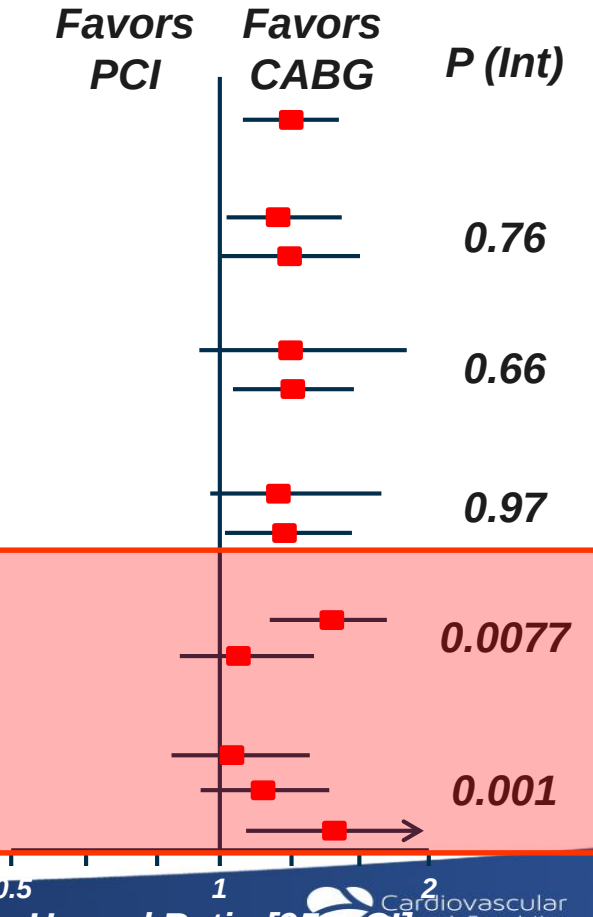
5-Year All-Cause Death

	PCI	CABG	HR [95% CI]	P (Int)
All patients	11.2%	9.2%	1.20 [1.06, 1.37]	
Age				
- ≥65 years	14.8%	12.5%	1.19 [1.02, 1.40]	0.98
- <65 years	8.0%	6.4%	1.23 [1.00, 1.51]	
Sex				
- Male	10.7%	8.8%	1.20 [1.03, 1.39]	0.82
- Female	12.7%	10.6%	1.23 [0.97, 1.57]	
Body-mass index				
- ≥30	12.1%	8.6%	1.35 [1.05, 1.73]	0.43
- <30	11.2%	9.4%	1.20 [1.04, 1.40]	
Hypertension				
- Yes	12.2%	10.6%	1.16 [1.00, 1.34]	0.25
- No	9.1%	6.6%	1.37 [1.06, 1.76]	
Left ventricular ejection fraction				
- ≥50%	9.6%	8.3%	1.14 [0.98, 1.32]	0.65
- 30-49%	19.3%	15.1%	1.41 [1.08, 1.84]	
- <30%	57.3%	34.4%	1.25 [0.64, 2.46]	



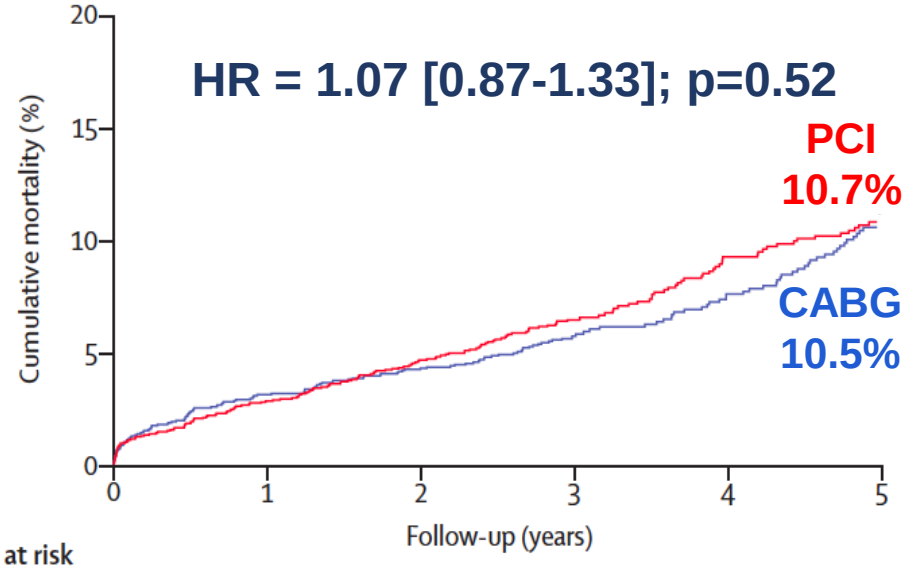
5-Year All-Cause Death

	PCI	CABG	HR [95% CI]	P (Int)
All patients	11.2%	9.2%	1.20 [1.06, 1.37]	
Hypercholesterolemia				
- Yes	11.0%	9.1%	1.19 [1.02, 1.39]	0.76
- No	11.6%	9.5%	1.24 [1.00, 1.55]	
Peripheral vascular disease				
- Yes	20.7%	16.0%	1.35 [0.96, 1.90]	0.66
- No	10.6%	8.7%	1.21 [1.05, 1.39]	
Previous myocardial infarction				
- Yes	14.2%	11.6%	1.21 [0.97, 1.50]	0.97
- No	10.2%	8.4%	1.22 [1.03, 1.44]	
Diabetes				
- Yes	15.7%	10.7%	1.44 [1.20, 1.74]	0.0077
- No	8.7%	8.4%	1.02 [0.86, 1.21]	
SYNTAX Score				
- 0-22	8.8%	8.1%	1.02 [0.77, 1.34]	0.001
- 23-32	12.4%	10.9%	1.20 [0.94, 1.51]	
- ≥33	16.5%	11.6%	1.52 [1.15, 2.02]	



Impact of LM or Multivessel Disease

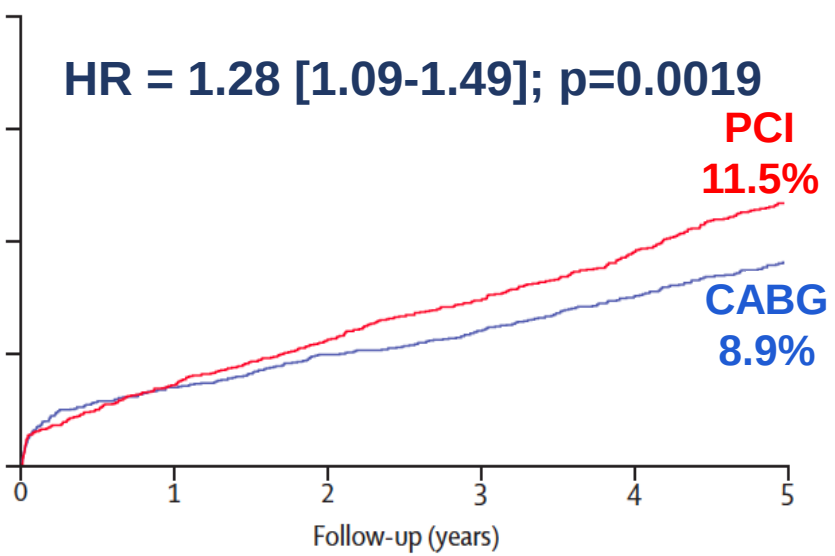
Left main disease (n=4478)



Number at risk

CABG	2245	2086	1903	932	804	406
PCI	2233	2120	1946	978	849	478

Multivessel disease (n=7040)



CABG	3520	3274	3091	2829	2495	1856
PCI	3520	3338	3155	2875	2533	1928

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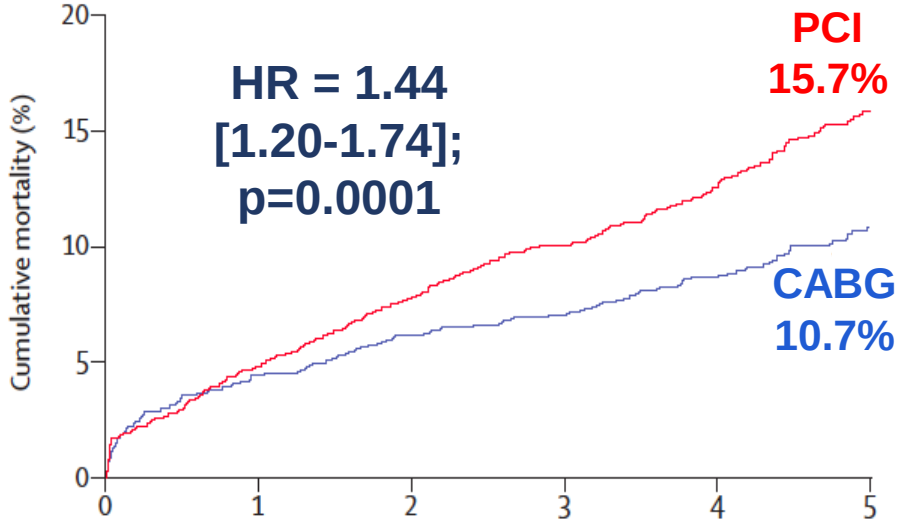
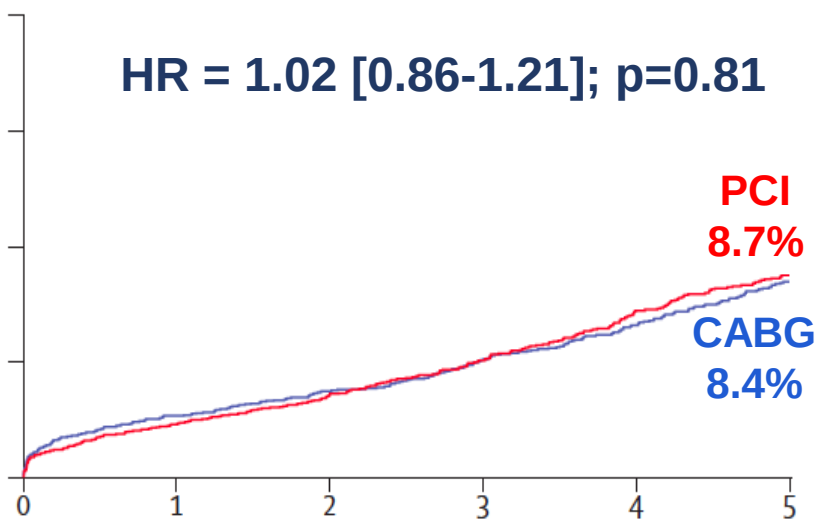
IMPACT OF DIABETES

Diabetes (n=4386)



No diabetes (n=7132)



Number at risk

CABG	2171	1958	1786	1325	1044	629	3594	3402	3208	2436	2255	1633
PCI	2215	2041	1856	1376	1086	681	3538	3417	3245	2477	2296	1724

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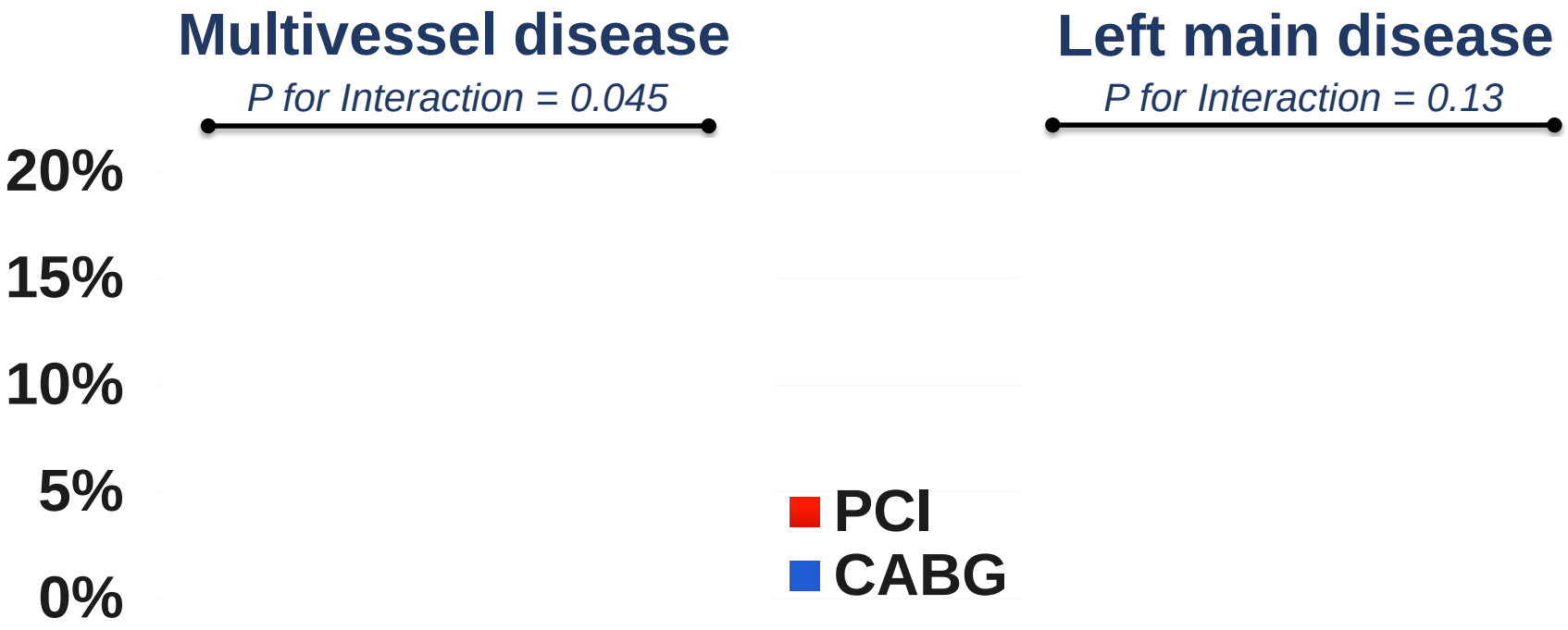
DIABETES IN MVD AND LMD



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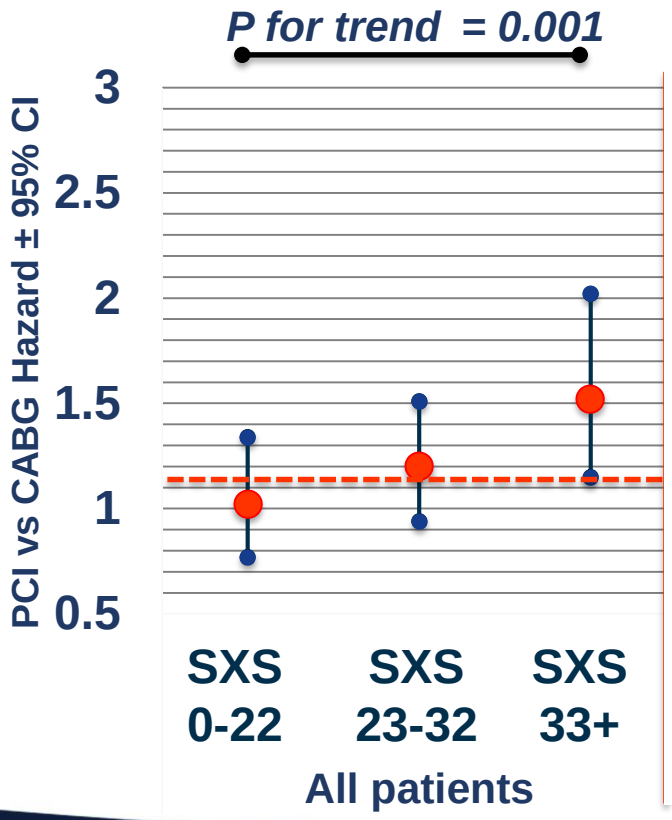
IMPACT OF SYNTAX SCORE



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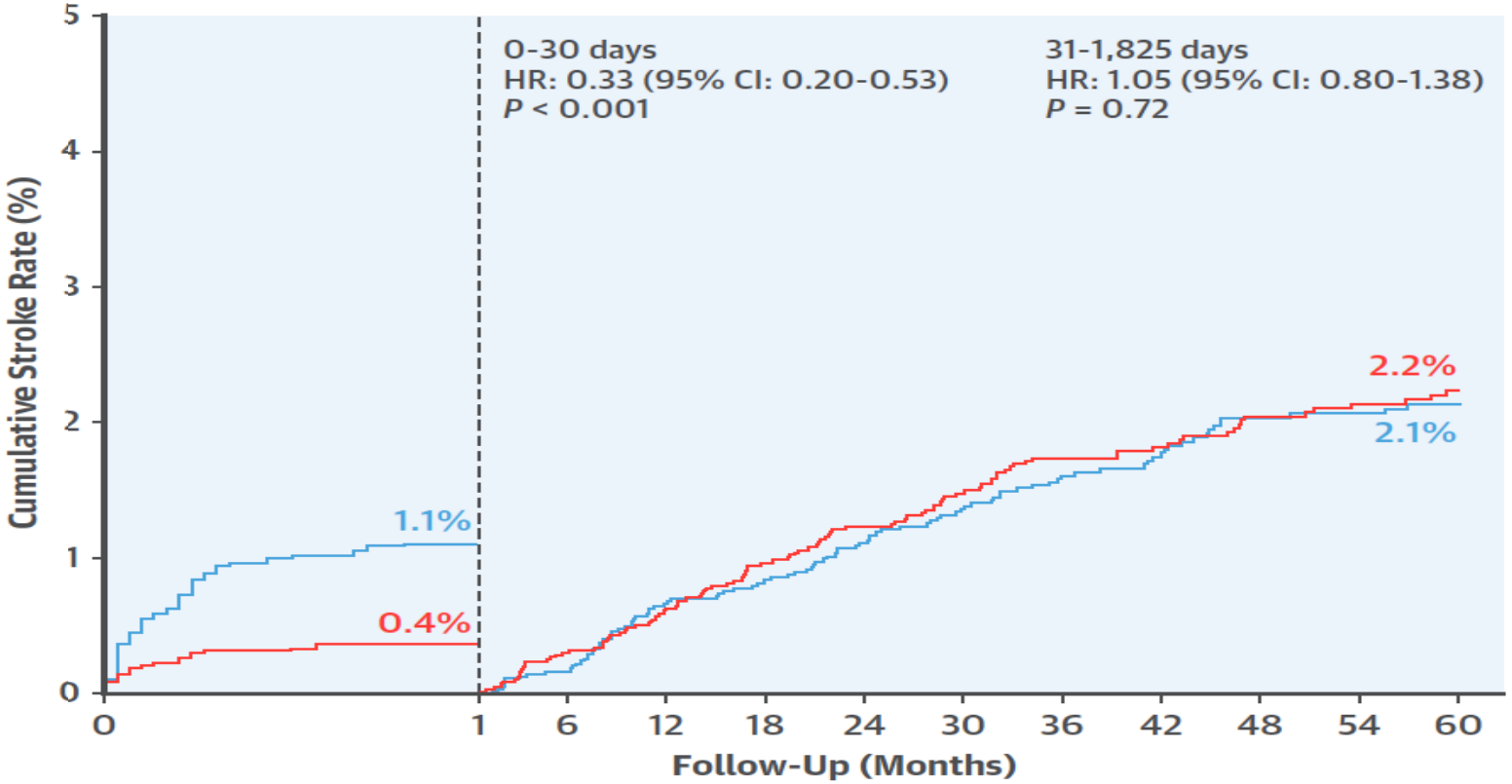
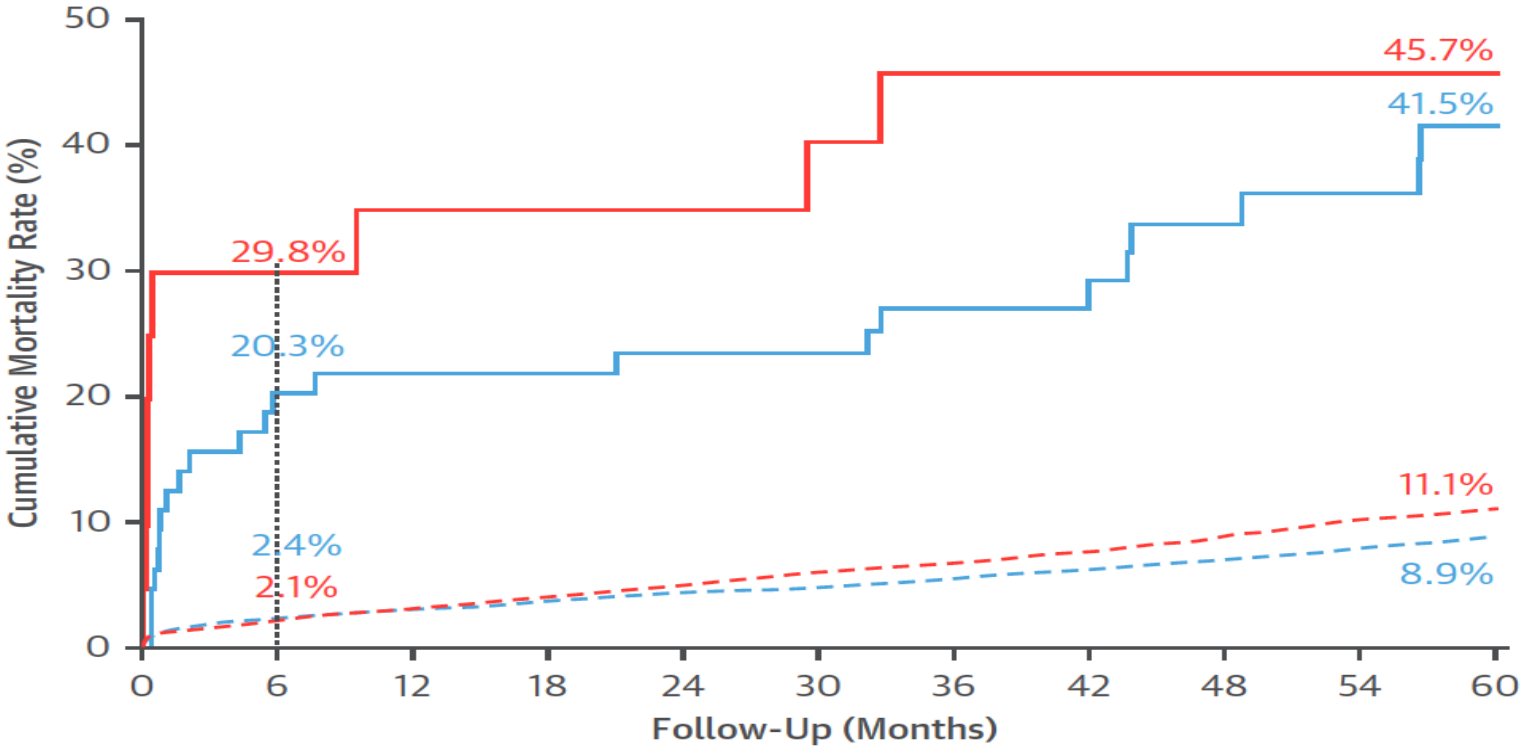
STROKE PRIMARILY EARLY POST-CABG



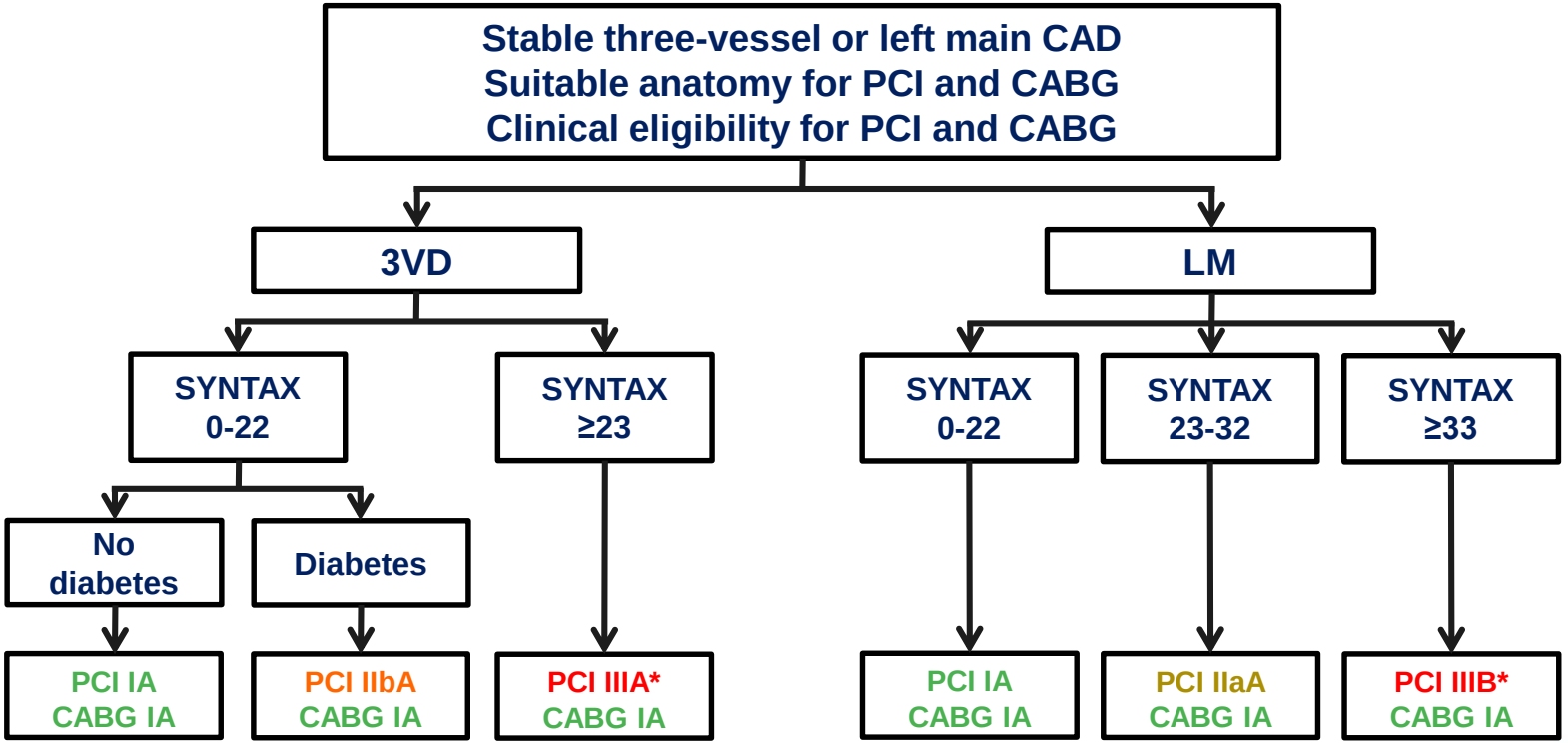
Head SJ et al. JACC 2018; 72: 386-398

Death after Procedural Stroke



Head SJ et al. JACC 2018; 72: 386-398

TYPE OF REVASCULARIZATION IN PATIENTS WITH 3VD OR LM



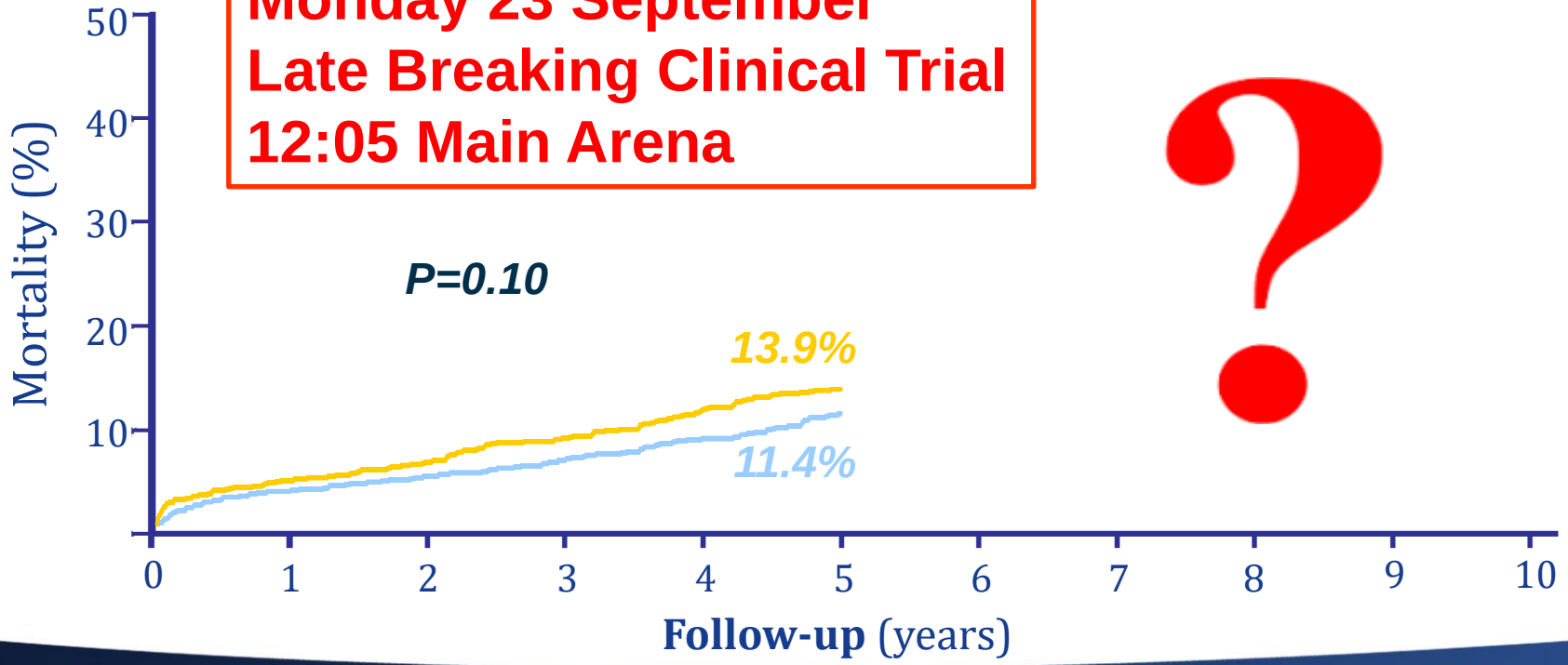
Windecker S et al. Eur Heart J 2018; in press

Take Home Messages

1. • *LM disease, diabetes, SYNTAX Score*
2. • *30-day stroke higher with CABG than PCI*
3. • *CABG superior in MVD, particularly diabetics*
4. • *PCI in low-intermediate SYNTAX score LMD*
5. • *Longer follow-up is required*

SYNTAX 10-Year Follow-up

Monday 23 September
Late Breaking Clinical Trial
12:05 Main Arena



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