Updated meta-analysis for PCI vs CABG for Left Main Disease

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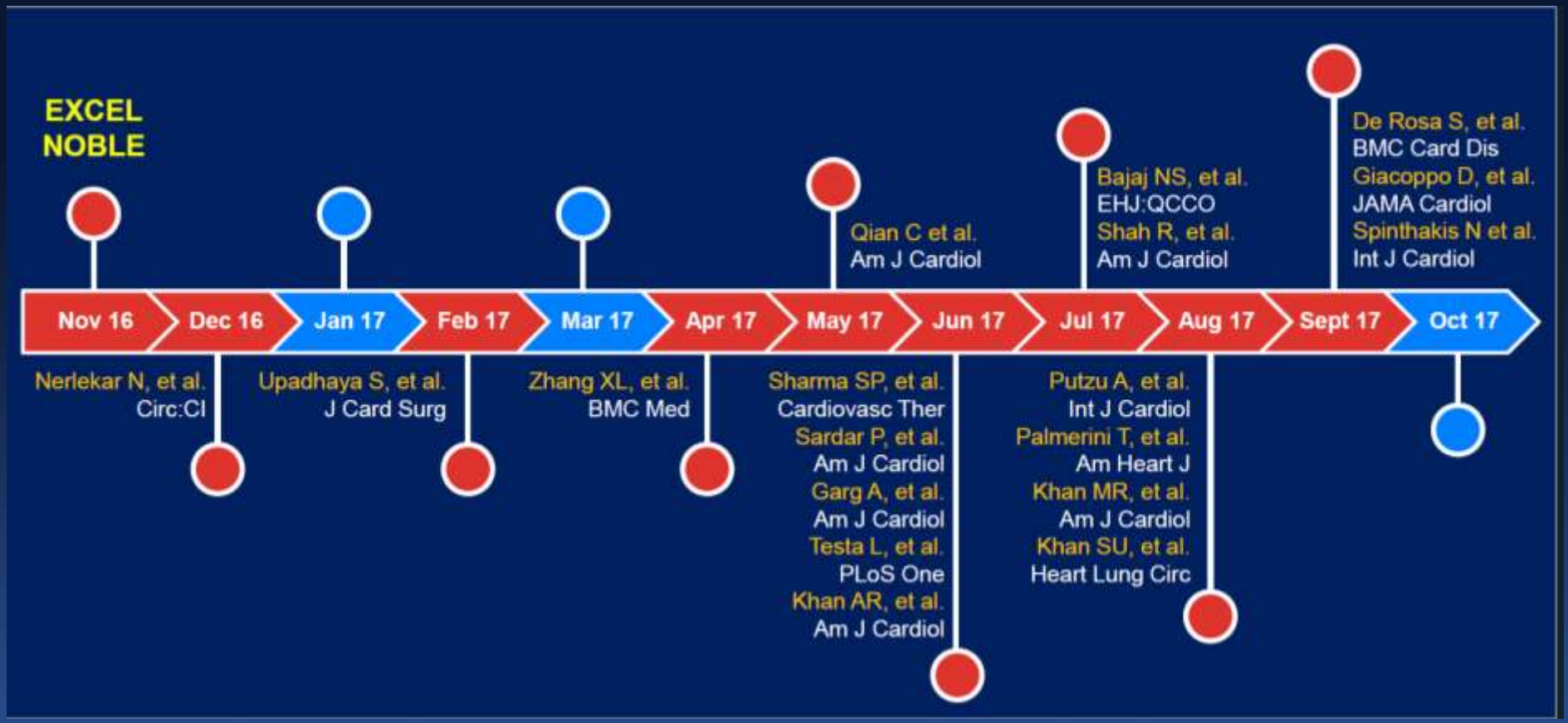
Randomzied trials of CABG vs PCI in ULMCA disease

Study	Period of enrollment	No. of patients in each treatment arm	Design and time point measurement of the primary end point	Primary end point	Median follow-up duration after randomization (y)	Results of the primary end point
LE MANS	2001-2004	PCI (n = 52) CABG (n = 53)	Multicenter, noninferiority at 1 year	Change in LVEF	1	PCI was superior to CABG.
BUDRIOT et al	July 2003 to February 2009	PCI (n = 100) CABG (n = 100)	Multicenter, noninferiority at 1 y	Cardiac death, MI, or repeat revascularization	1	Noninferiority of PCI was not demonstrated.
PRECOMBAT	April 2004 to August 2009	PCI (n = 300) CABG (n = 300)	Multicenter, noninferiority at 1 y	Death, MI, stroke, or TVR	5	PCI was noninferior to CABG.
SYNTAX LEFT MAIN	March 2005 to April 2007	PCI (n = 357) CABG (n = 348)	Multicenter, noninferiority at 1 y	Death, MI, stroke, or UR	5	PCI was noninferior to CABG for the subgroup of patients with ULMCAD.
NOBLE	December 2008 to January 2015	PCI (n = 592) CABG (n = 592)	Multicenter, noninferiority at 3 y	Death, nonprocedural MI, stroke, or UR	3.1	Noninferiority of PCI was not demonstrated.
EXCEL	September 2010 to March 2014	PCI (n = 948) CABG (n = 957)	Multicenter, noninferiority at 3 y	Death, stroke, or MI	3	PCI was noninferior to CABG.

Palmerini et al; AHJ 2017

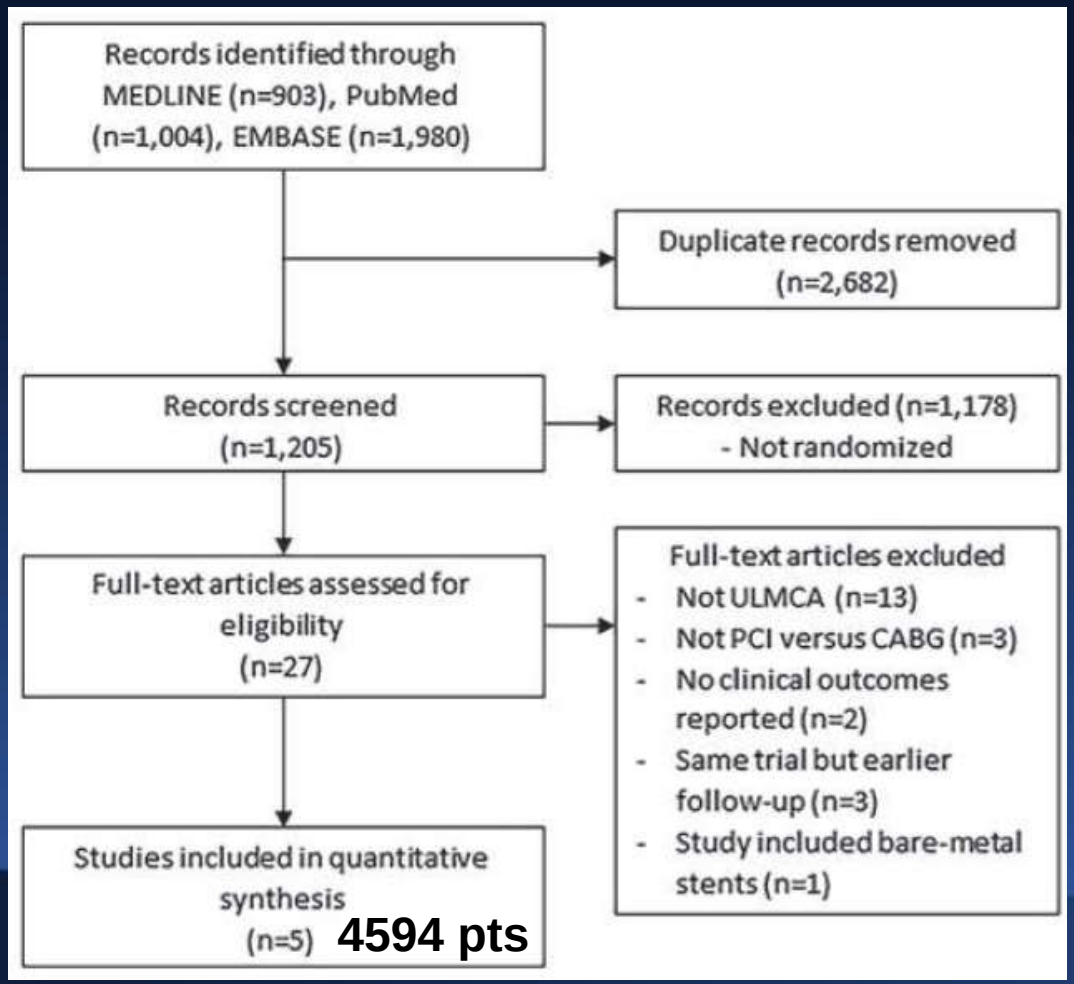
Eighteen meta-analyses after Excel and Noble



Six meta-analyses in the same journal

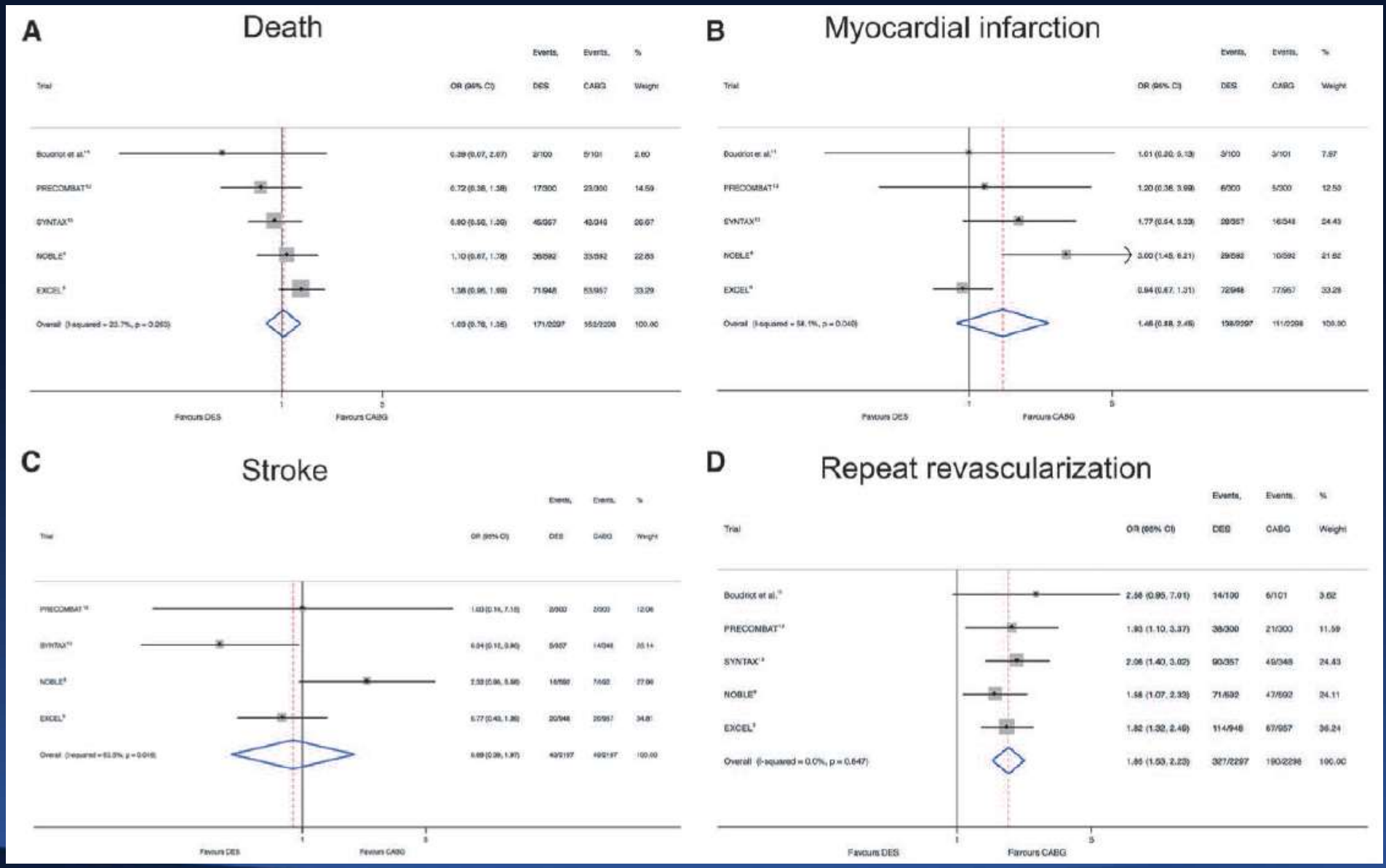
Percutaneous Coronary Intervention Using Drug-Eluting Stents Versus Coronary Artery Bypass Grafting for Unprotected Left Main Coronary Artery Stenosis

A Meta-Analysis of Randomized Trials



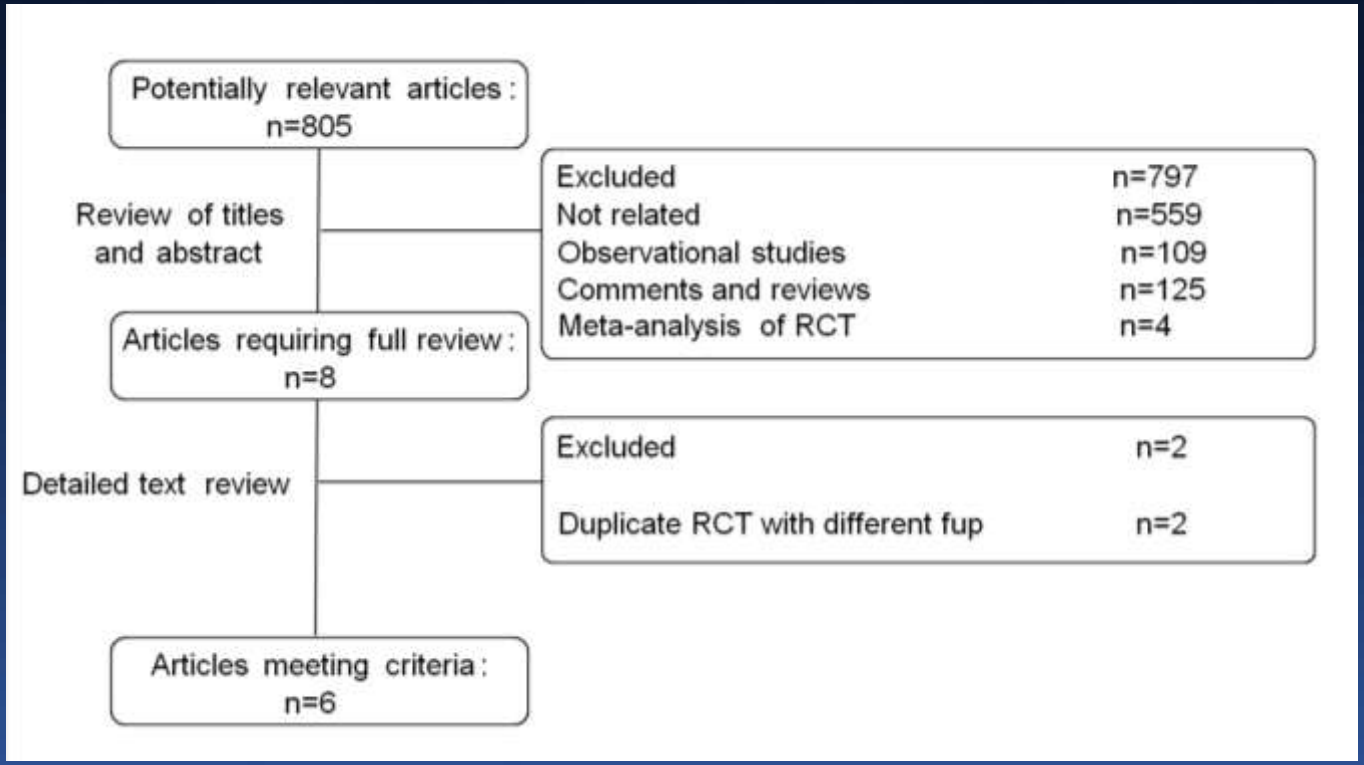
4594 pts

Nerlekar et al; Circ CV Int 2016



Nerlekar et al; Circ CV Int 2016

Clinical outcomes with percutaneous coronary revascularization vs coronary artery bypass grafting surgery in patients with unprotected left main coronary artery disease: A meta-analysis of 6 randomized trials and 4,686 patients



Palmerini et al; Am Heart J 2017

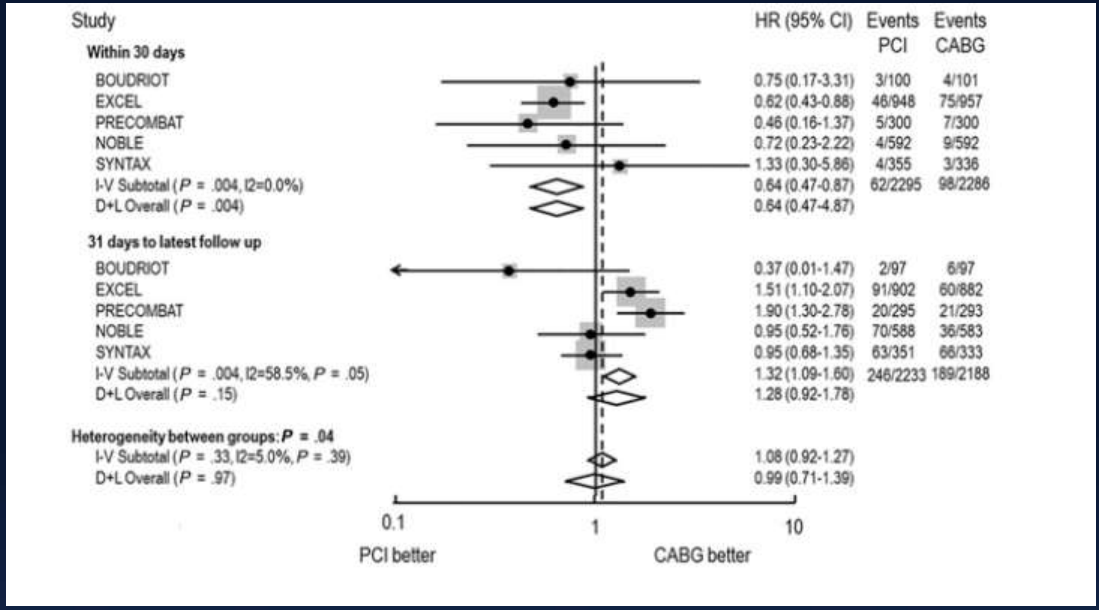
Data collected from principal investigators

Study	30 days	Latest follow up available
BUDRIOT et al	Stroke Death/MI/stroke Death/MI/stroke/UR	Stroke Death/MI/stroke Death/MI/stroke/UR
PRECOMBAT	All cause death Cardiac death MI Stroke TVR All cause death/MI All cause death/MI/stroke All cause death/MI/stroke/UR	All cause death/MI All cause death stratified by Syntax score Cardiac death stratified by Syntax score MI stratified by Syntax score Stroke stratified by Syntax score UR stratified by Syntax score All cause death/MI stratified by Syntax score All cause death/MI/stroke stratified by Syntax score All cause death/MI/stroke/UR stratified by Syntax score
SYNTAX LEFT MAIN	All cause death Cardiac death MI Stroke All cause death/MI All cause death/MI/stroke All cause death/MI/stroke/UR	All cause death/MI
NOBLE	All cause death/MI All cause death/MI/stroke All cause death/MI/stroke/UR	All cause death/MI All cause death/MI/stroke
EXCEL	All cause death/MI	All cause death/MI All cause death/MI/UR All cause death stratified by Syntax score Cardiac death stratified by Syntax score MI stratified by Syntax score Stroke stratified by Syntax score UR stratified by Syntax score All cause death/MI stratified by Syntax score All cause death/MI/stroke stratified by Syntax score All cause death/MI/stroke/UR stratified by Syntax score

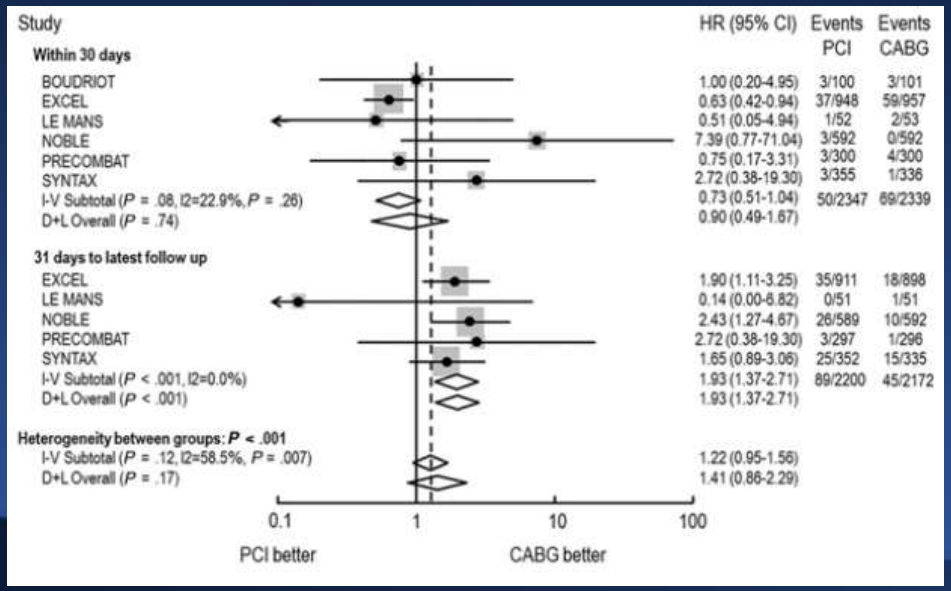
Angiographic and procedural characteristics

Study	PCI vs CABG	Isolated LM	LM + 1 vessel	LM + 2 vessels	LM + 3 vessels	Distal LM	Mean Syntax score	CR	Type of stent/LIMA to LAD
BOUDRIOT et al	PCI	28%	35%	26%	11%	74%	24.0	98%	SES 98%
	CABG	29%	27%	28%	17%	69%	23.0	97%	99%
EXCEL	PCI	17%	31%	35%	17%	82%	20.6	NA	EES 100%
	CABG	18%	31%	32%	19%	79%	20.5	NA	98.8%
LE MANS	PCI	0	13%	27%	60%	56%	25.2	79%	DES 35%
	CABG	0	6%	19%	75%	60%	24.7	89%	81%
NOBLE	PCI	NA	NA	NA	NA	81%	22.5	NA	DES 100%
	CABG	NA	NA	NA	NA	81%	22.4	NA	93%
PRECOMBAT	PCI	9%	8%	16%	25%	67%	24.4	68%	DES 100%
	CABG	11%	8%	19%	13%	62%	25.8	70%	94%
SYNTAX LEFT MAIN	PCI	12%	19%	31%	38%	56%	29.6	64%	PES 100%
	CABG	14%	20%	30%	35%	52%	30.2	72%	97%

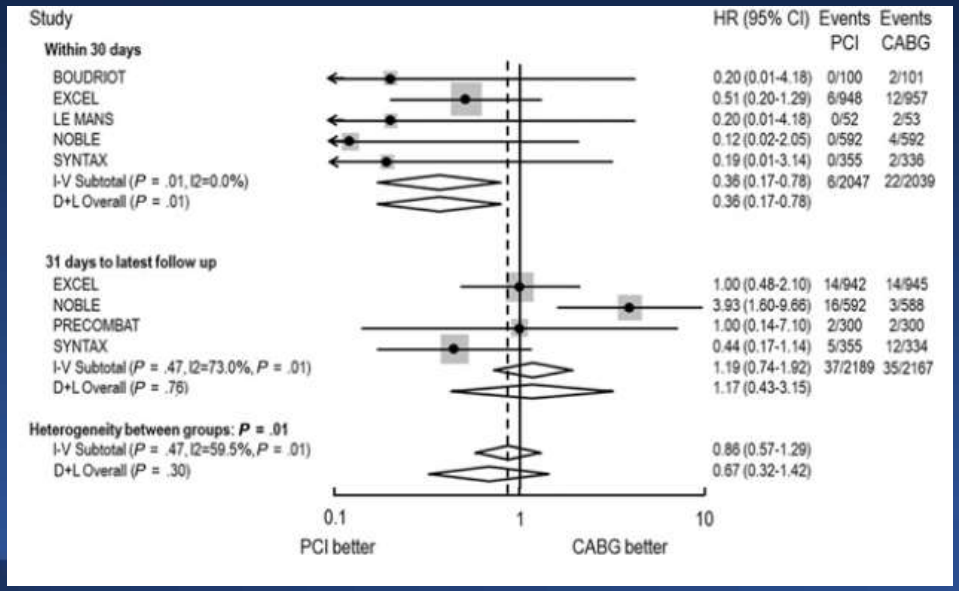
Death, MI, stroke



Myocardial infarction

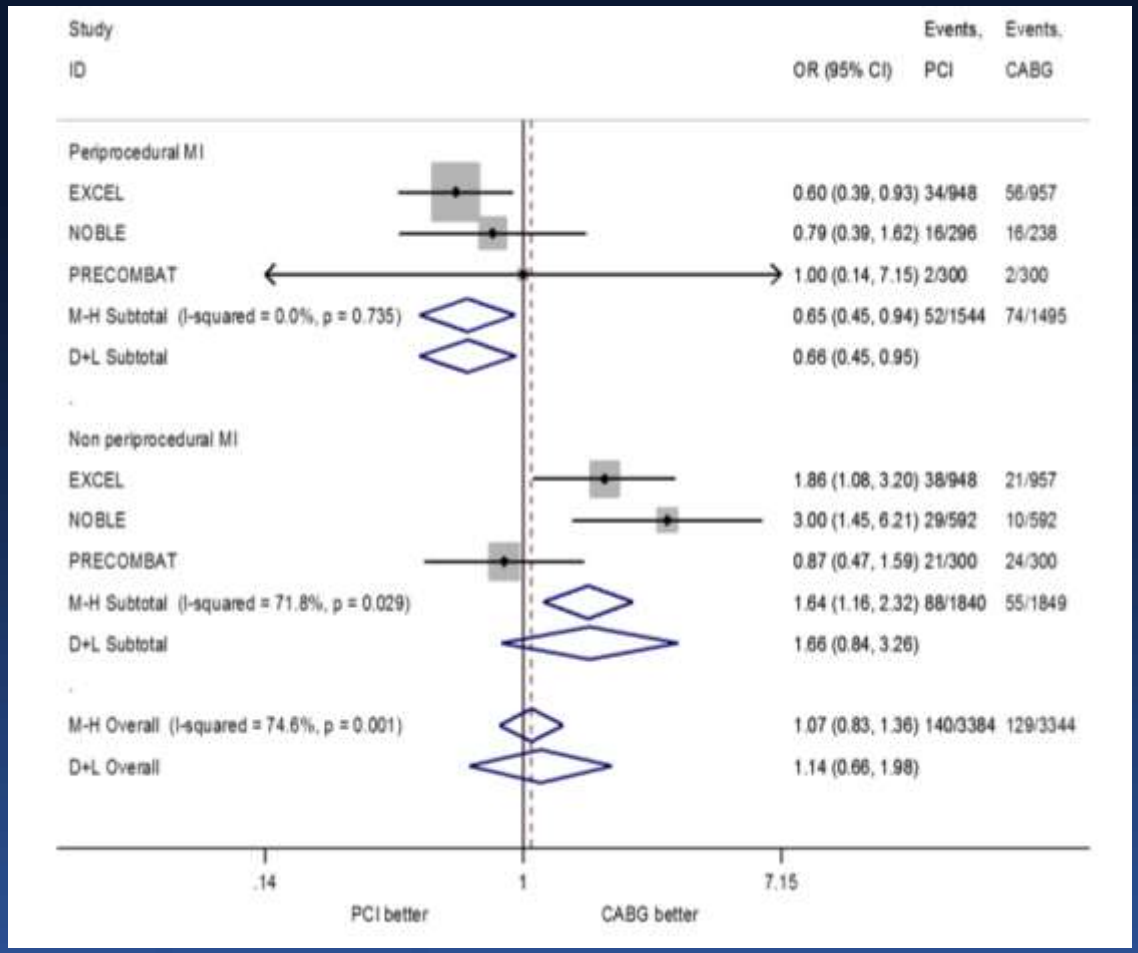


Stroke



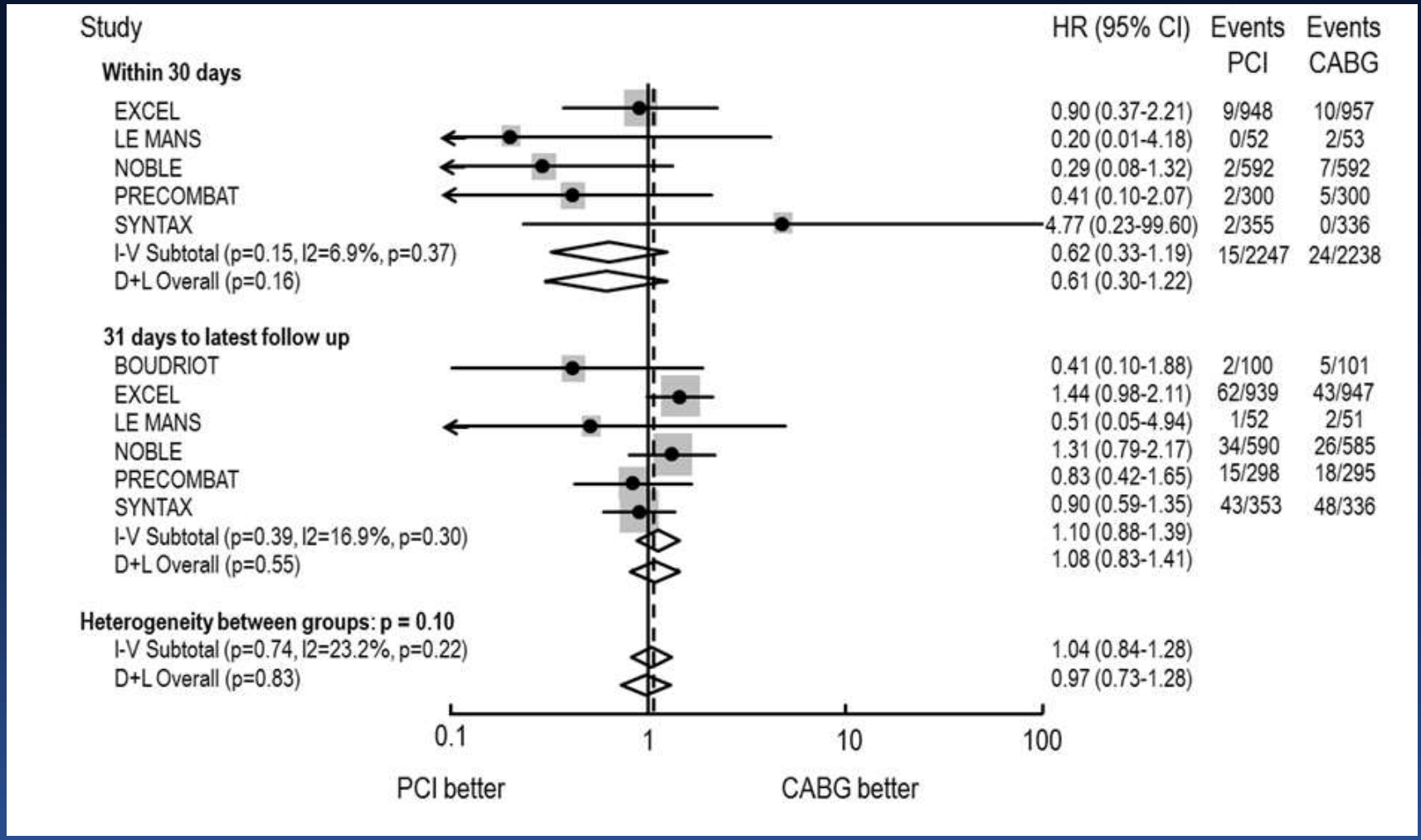
Palmerini et al; Am Heart J 2017

Periprocedural versus non periprocedural MI



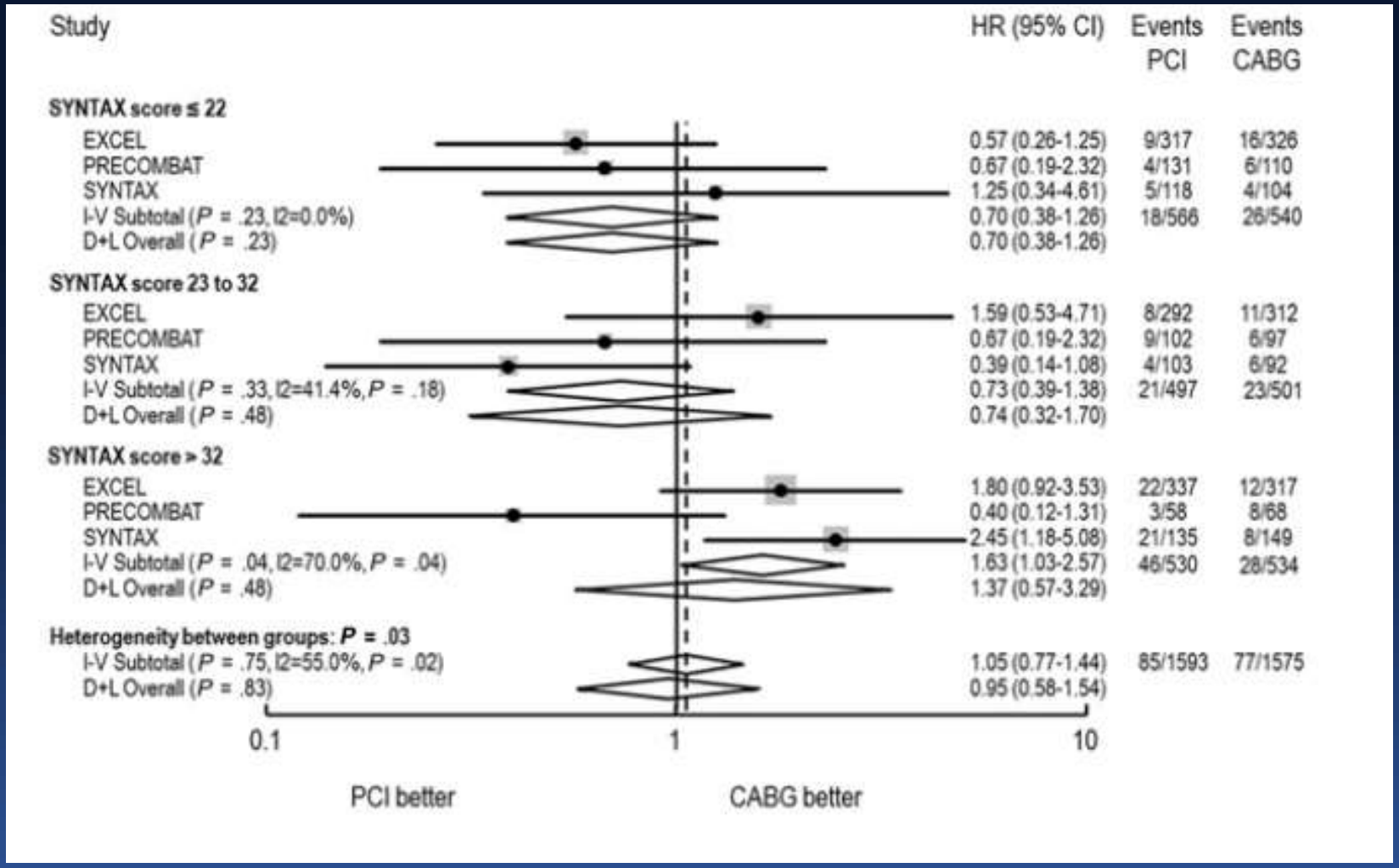
Palmerini et al; Am Heart J 2017

All cause death



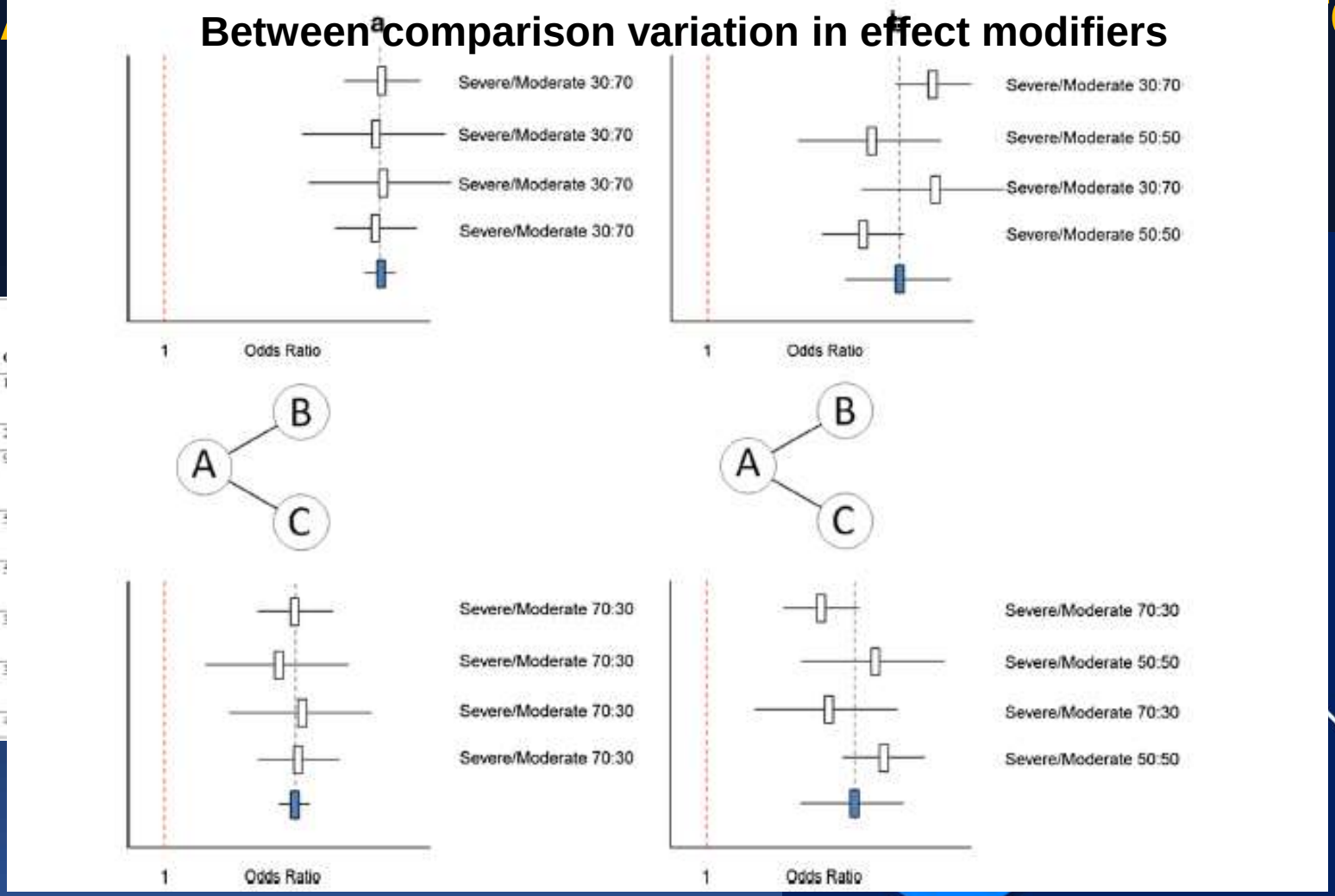
Palmerini et al; Am Heart J 2017

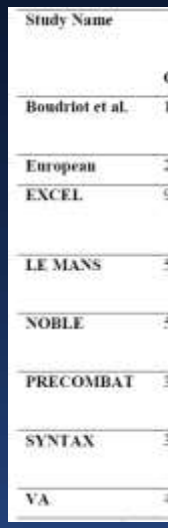
Cardiac death and the Syntax Score



Palmerini et al; Am Heart J 2017

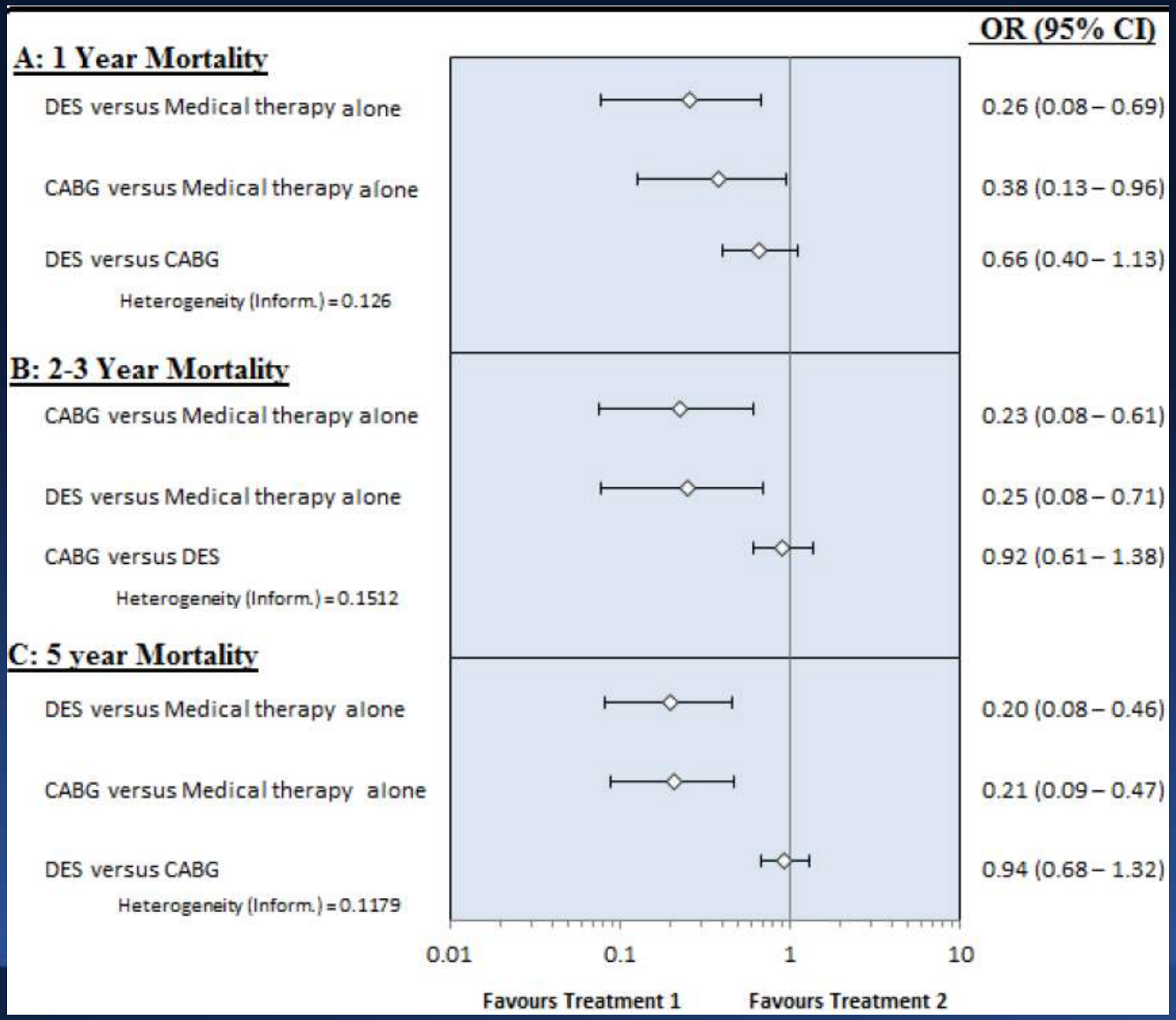
Network meta-analysis comparing CABG vs PES vs Medical Therapy for





Shah et al; AM J Cardiol 2017

Network meta-analysis



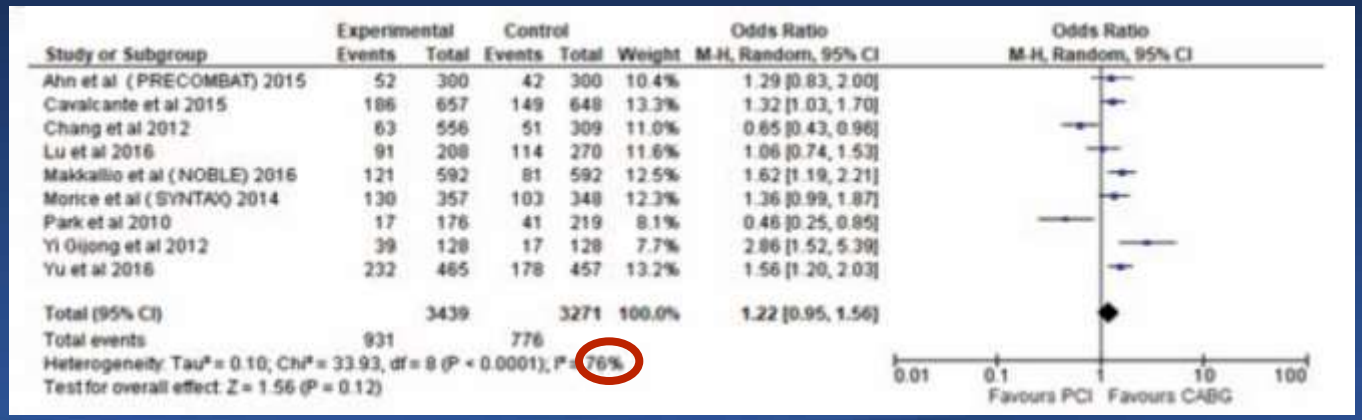
Meta-analysis study comparing percutaneous coronary intervention/drug eluting stent versus coronary artery bypass surgery of unprotected left main coronary artery disease

Clinical outcomes during short-term versus long-term (> 1 year) follow-up

Waleed E. Ali, MD[a,b,*], Satyanarayana R. Vaidya, MD[a,b], Sylvester U. Ejeh, MD, FACC, FSCAI[a,b], Kingsley U. Okoroafor, MD[b]

29 studies with 4 RCT and 25 observational studies

MACCE

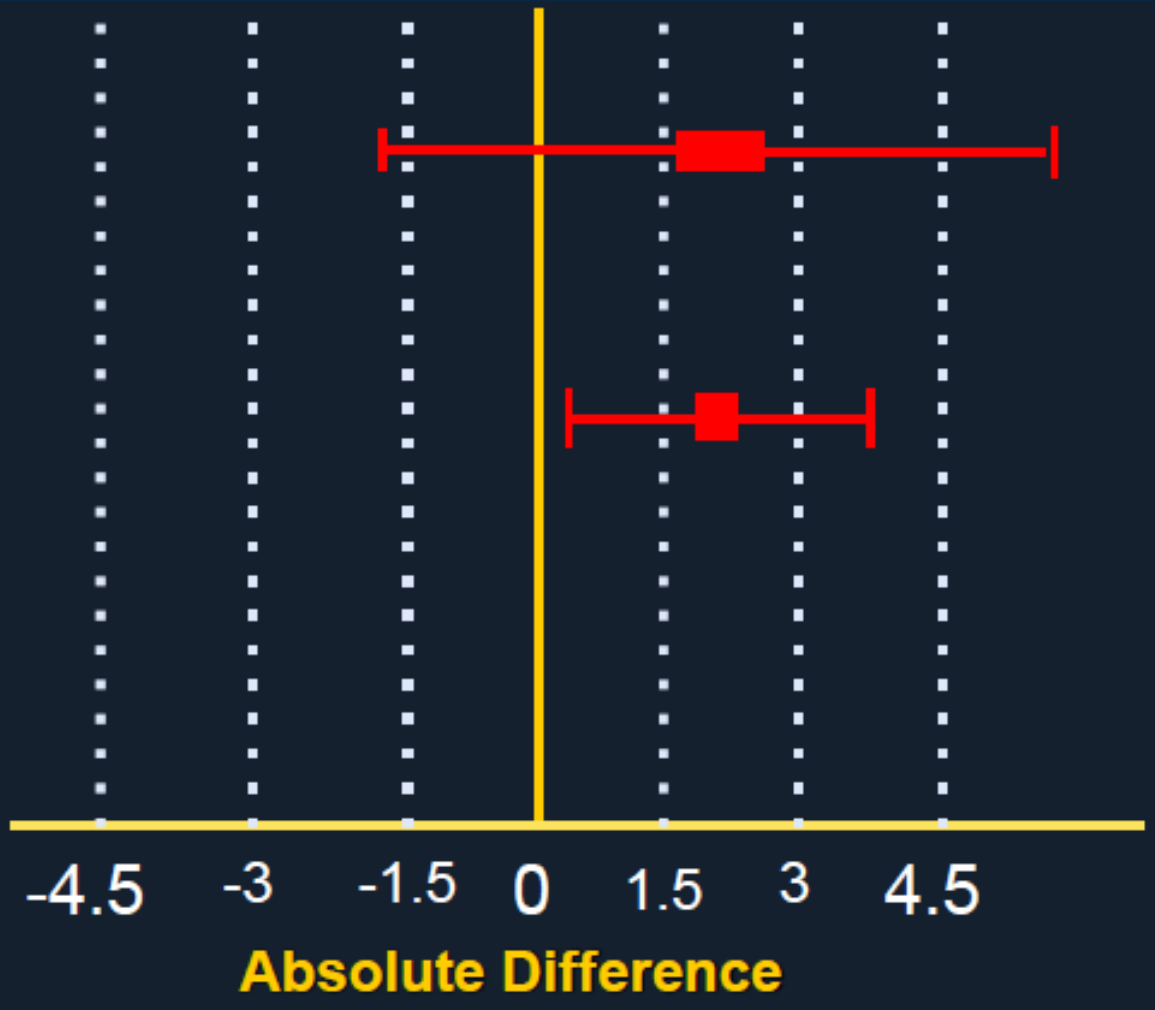


Potential problem

Individual Small Trial

Meta-analysis of several such trials

If all the trials have the same systemic bias, all we have done is to tighten the confidence intervals!



Conclusions I

- Across all meta-analyses comparing CABG vs PCI for the treatment of ULMCA stenosis no significant difference in mortality, cardiac mortality, MI or stroke is apparent between the two strategies of revascularization.
- PCI, however, is associated with higher rates of repeat revascularization compared with CABG
- Heterogeneity was apparent for MI (different definitions) and stroke (due to the Noble trial acting as an outlier)

Conclusions II

- A significant interatction was apparent between treatment effect and time of follow up, such that the composite of death, MI, or stroke rates were lower within the first 30 days, and higher from day 31 to the end of follow up with PCI compared with CABG.
- A significant interaction was also apparent between treatment effect and the SS, such that cardiac mortality tended to be lower in patients with low SS and higher in patients with high SS with PCI compared with CABG.