

# LMS Disease Seoul 2015

CABG is still the standard treatment for Left Main Disease

**David P Taggart MD PhD FRCS FESC**

Professor of Cardiovascular Surgery, University of Oxford



Conflicts of Interest:

- (i) **Clinical: Cardiac Surgeon**
- (ii) **One of 25 ESC/EACTS Guidelines Writers on Myocardial Revascularization**
- (iii) **Chairman Surgical Committee of EXCEL trial**

STATE-OF-THE-ART PAPER AND COMMENTARY

## Revascularization for Unprotected Left Main Stem Coronary Artery Stenosis

### Stenting or Surgery

David P. Taggart, MD (HONS), PHD, FRCS,\* Sanjay Kaul, MD, FACC,†  
William E. Boden, MD, FACC,‡ T. Bruce Ferguson, JR, MD, FACC,§  
Robert A. Guyton, MD, FACC,¶ Michael J. Mack, MD,# Paul T. Sergeant, MD, PHD,††  
Richard J. Shemin, MD, FACC,\*\* Peter K. Smith, MD, FACC,||  
Salim Yusuf, DPHIL, FRCPC, FRSC, FACC‡‡

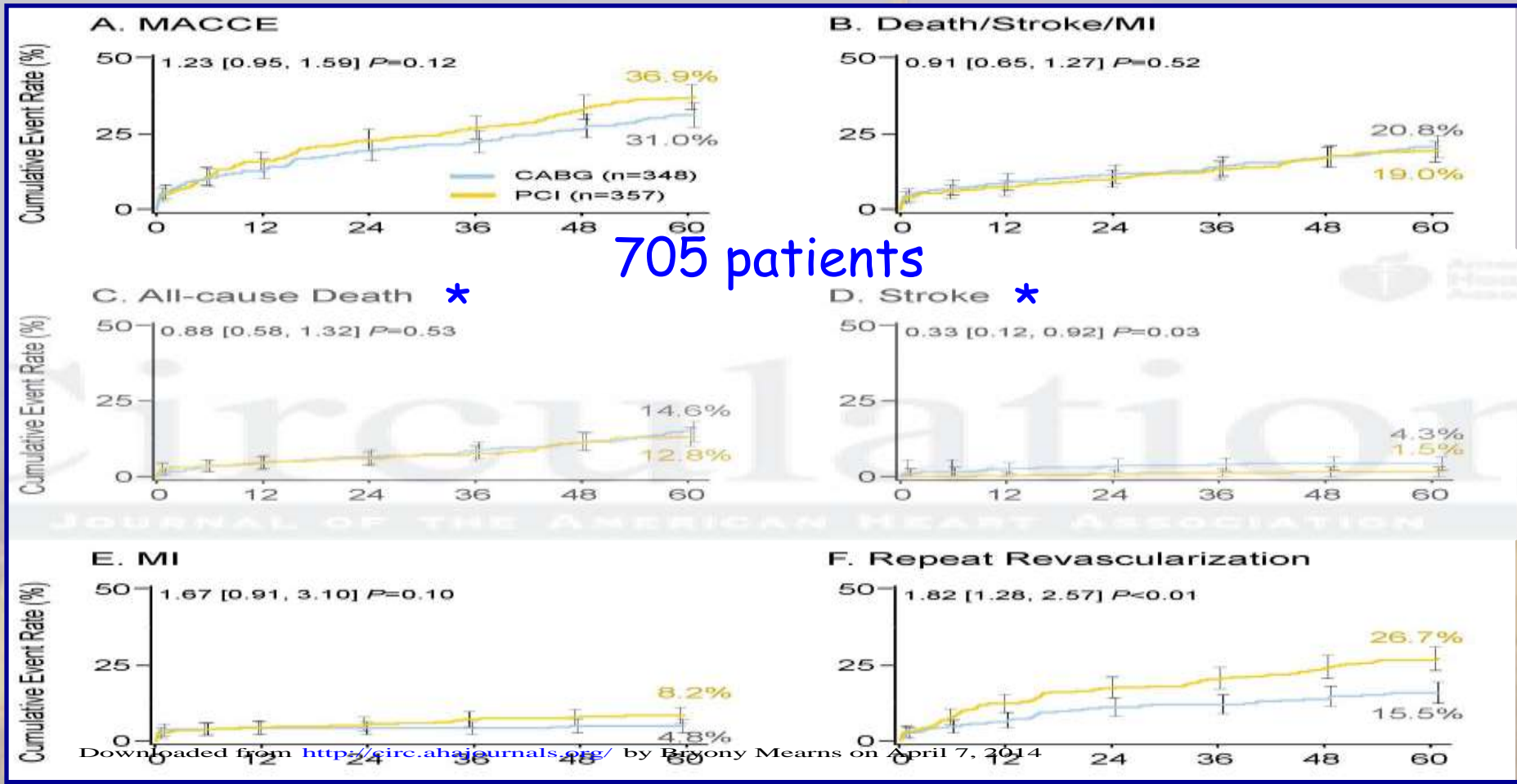
*Oxford, United Kingdom; Los Angeles, California; Buffalo, New York; Greenville and Durham,*

○ <90% of LMS are distal/bifurcation (very high risk of restenosis)  
○ <90% have multivessel CAD (CABG already offers survival benefit)

(CABG) is traditionally regarded as the "standard of care" because of its well-documented and durable survival advantage. There is now an increasing trend to use drug-eluting stents for LMS stenosis rather than CABG despite very little high-quality data to inform clinical practice. We herein: 1) evaluate the current evidence in support of the use of percutaneous revascularization for unprotected LMS; 2) assess the underlying justification for randomized controlled trials of stenting versus surgery for unprotected LMS; and 3) examine the optimum approach to informed consent. We conclude that CABG should indeed remain the preferred revascularization treatment in good surgical candidates with unprotected LMS stenosis. (J Am Coll Cardiol 2008;51:885-92) © 2008 by the American College of Cardiology Foundation

# Five-Year Outcomes in Patients with Left Main Disease Treated with Either Percutaneous Coronary Intervention or Coronary Artery Bypass Grafting in the SYNTAX Trial

Marie-Claude Morice, Patrick W. Serruys, A. Pieter Kappetein, Ted E. Feldman, Elisabeth Ståhle, Antonio Colombo, Michael J. Mack, David R. Holmes, James W. Choi, Witold Ruzylo, Grzegorz Religa, Jian Huang, Kristine Roy, Keith D. Dawkins and Friedrich Mohr **CIRC 2014**



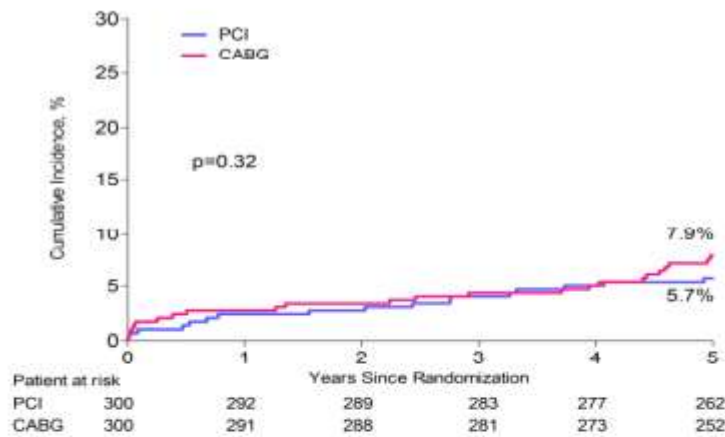
\*= different from SYNTAX 3VD;  
 Inferior medical therapy in CABG [Iqbal et al CIRC 2015]

# Randomized Trial of Stents versus Bypass Surgery for Left Main Coronary Artery Disease: Five-Year Outcomes of the PRECOMBAT Study

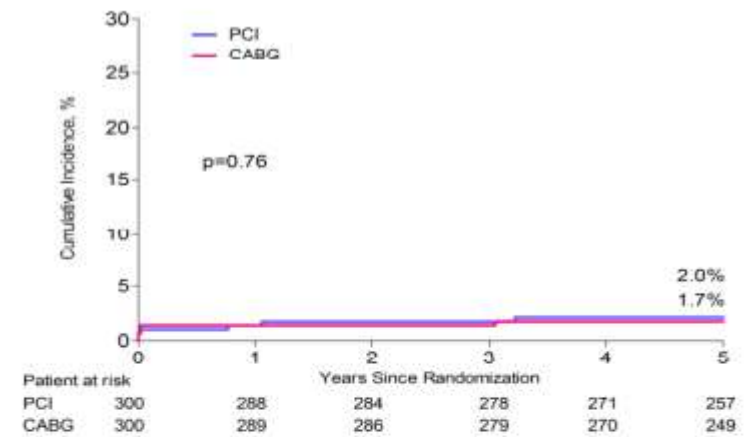
[JACC 2015]

Authors: Jung-Min Ahn, MD\*, Jae-Hyung Roh, MD\*, Young-Hak Kim, MD, Duk-Woo Park,

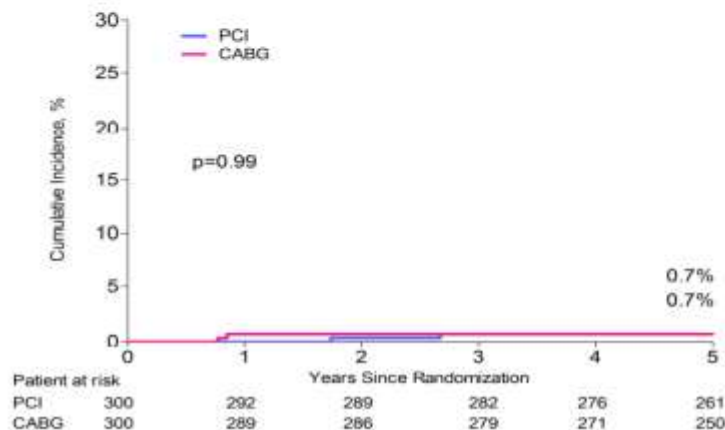
**A) Death from any cause**



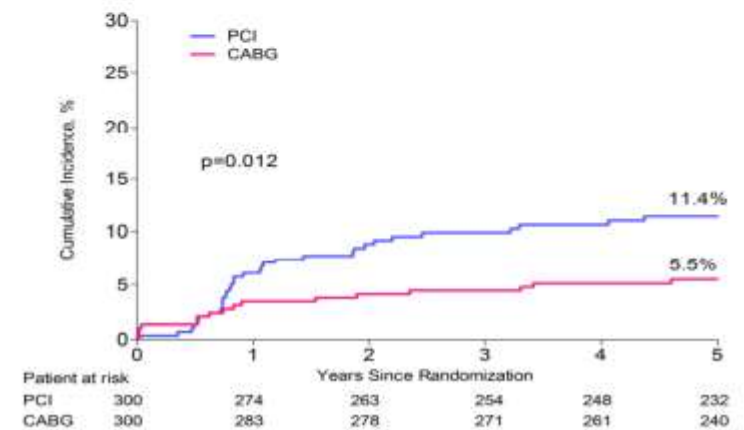
**B) Myocardial infarction**



**C) Stroke**



**D) Ischemia-driven target vessel revascularization**



Despite substantially inferior medical therapy in CABG group

# SYNTAX n=705 PRECOMBAT n=600

Low <23	nos
	death
	CVA
	MI
	D+C+M
	Revasc

118	104	
7	11.3	.28
1.8	4.1	.28
6.2	3.1	.32
13.9	15.2	.71
23	20.3	.65

129	104	
3.9	7	
1.6	0	
2.4	1.1	
10.3	8.1	

Intd 23-32	nos
	death
	CVA
	MI
	D+C+M
	Revasc

103	92	
8.9	19.3	.04
1.0	3.6	.23
6.0	4.6	.71
15.7	24.9	.11
22.2	16.6	.40

102	97	
10.9	7.4	
0	1	
2	0	
13.2	7.5	

High >32	nos
	death
	CVA
	MI
	D+C+M
	Revasc

135	149	
20.9	14.1	.11
1.6	4.9	.13
11.7	6.1	.40
26.1	22.1	.33
34.1	11.6	<.001

58	68	
5.2	13.3	.
0	1.5	
1.7	1.7	
21.7	6	<0.131

## Left Main Coronary Artery Stenosis

### A Meta-Analysis of Drug-Eluting Stents Versus Coronary Artery Bypass Grafting

---

**Objectives** The goal of this study was to provide a systematic review comparing the long-term outcomes of percutaneous coronary intervention (PCI) with drug-eluting stents (DES) versus coronary artery bypass graft surgery (CABG) for unprotected left main coronary artery (UPLM) stenosis.

**Background** One-year outcomes from randomized controlled trials, observational studies, and pooled analyses have demonstrated the safety and efficacy of PCI of the UPLM when compared with CABG. However, there remain concerns over the sustainability of PCI with DES at longer follow-up.

**Methods** Studies published between January 2000 and December 2012 of PCI versus CABG for UPLM stenosis were identified using an electronic search and reviewed using meta-analytical techniques.

**Results** Twenty-four studies comprising 14,203 patients were included in the analysis. There was no significant difference for all-cause mortality between PCI or CABG at 1 year (odds ratio [OR]: 0.792, 95% confidence interval [CI]: 0.53 to 1.19), 2 years (OR: 0.920, 95% CI: 0.67 to 1.26), 3 years (OR: 0.94, 95% CI: 0.60 to 1.48), 4 years (OR: 0.84, 95% CI: 0.53 to 1.33), and 5 years (OR: 0.79, 95% CI: 0.57 to 1.08). The need for target vessel revascularization (TVR) was significantly higher in patients undergoing PCI at all time points. The occurrence of stroke, however, was significantly less frequent in patients treated with PCI. The occurrence of nonfatal myocardial infarction showed a statistically significant trend towards a lower incidence in CABG patients at 1 year (OR: 1.62, 95% CI: 1.05 to 2.50), 2 years (OR: 1.60, 95% CI: 1.09 to 2.35), and 3 years (OR: 2.06, 95% CI: 1.36 to 3.1). There was no significant difference in combined major adverse cardiovascular and cerebrovascular events between the 2 groups.

**Conclusions** Our findings suggest that PCI with DES is a safe and durable alternative to CABG for the revascularization of UPLM stenosis in select patients at long-term follow-up. (J Am Coll Cardiol Intv 2013;6:1219-30) © 2013 by the American College of Cardiology Foundation

---

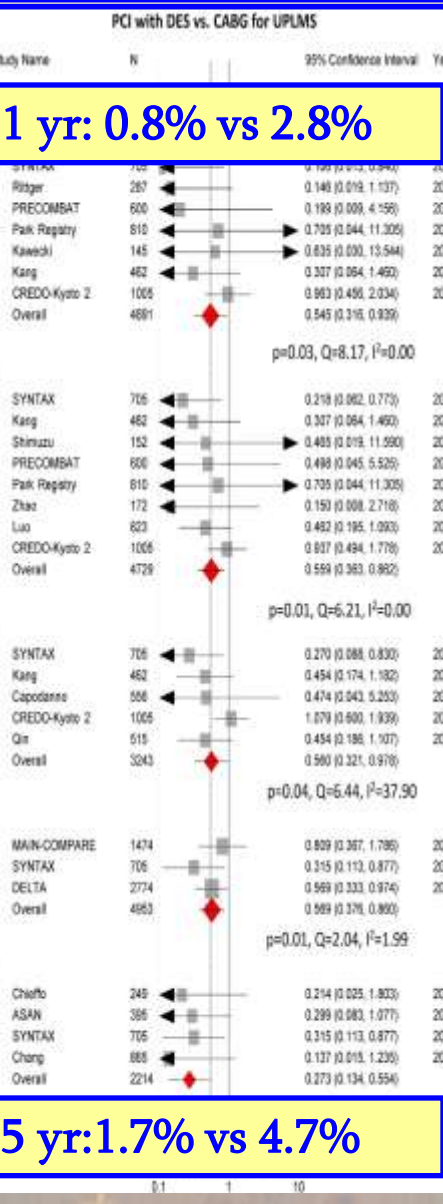
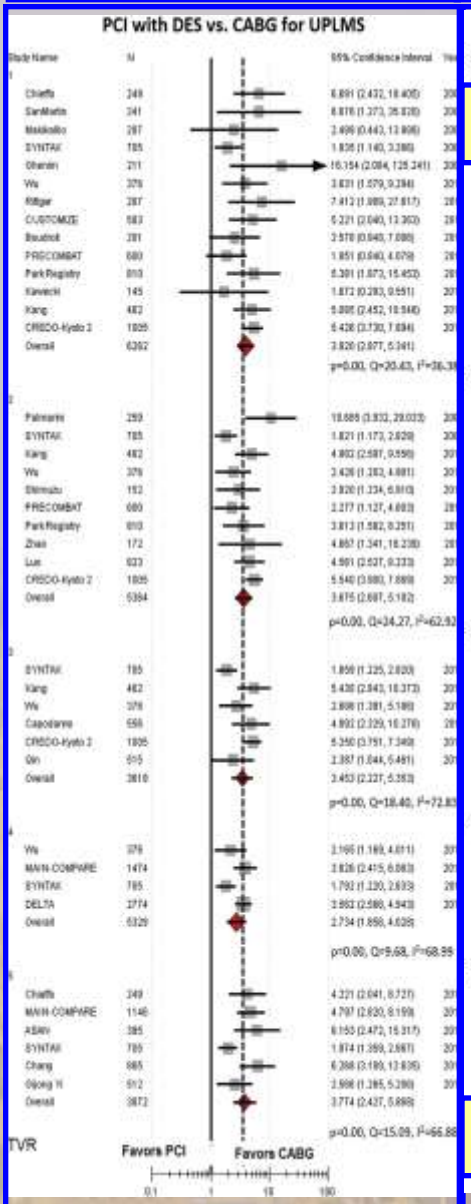
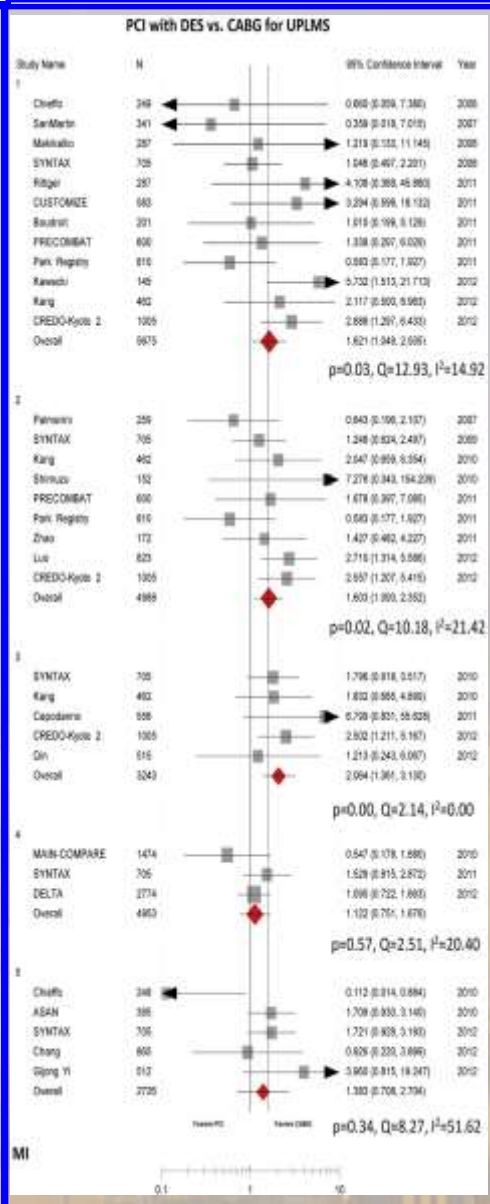
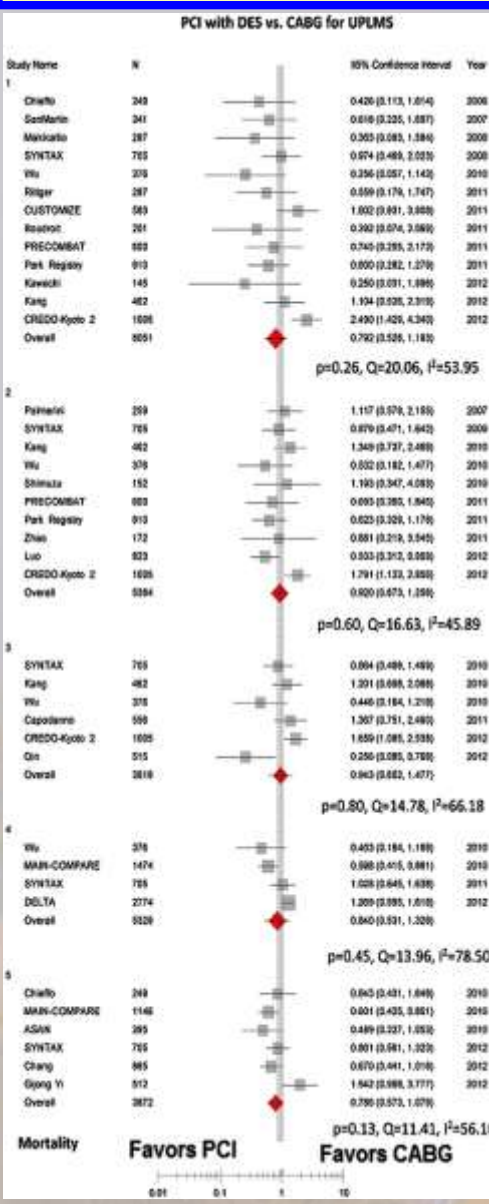
24 studies (3 RCTs) with 14203 patients followed up to 5 years

**DEATH (5 yr):**  
No Difference

**MI:**  
(↑ PCI @ 1-3yrs)

**TVR:**  
(↑ PCI @ 1-5 yr)

**CVA:**  
(↑ CABG @ 1-5yr)

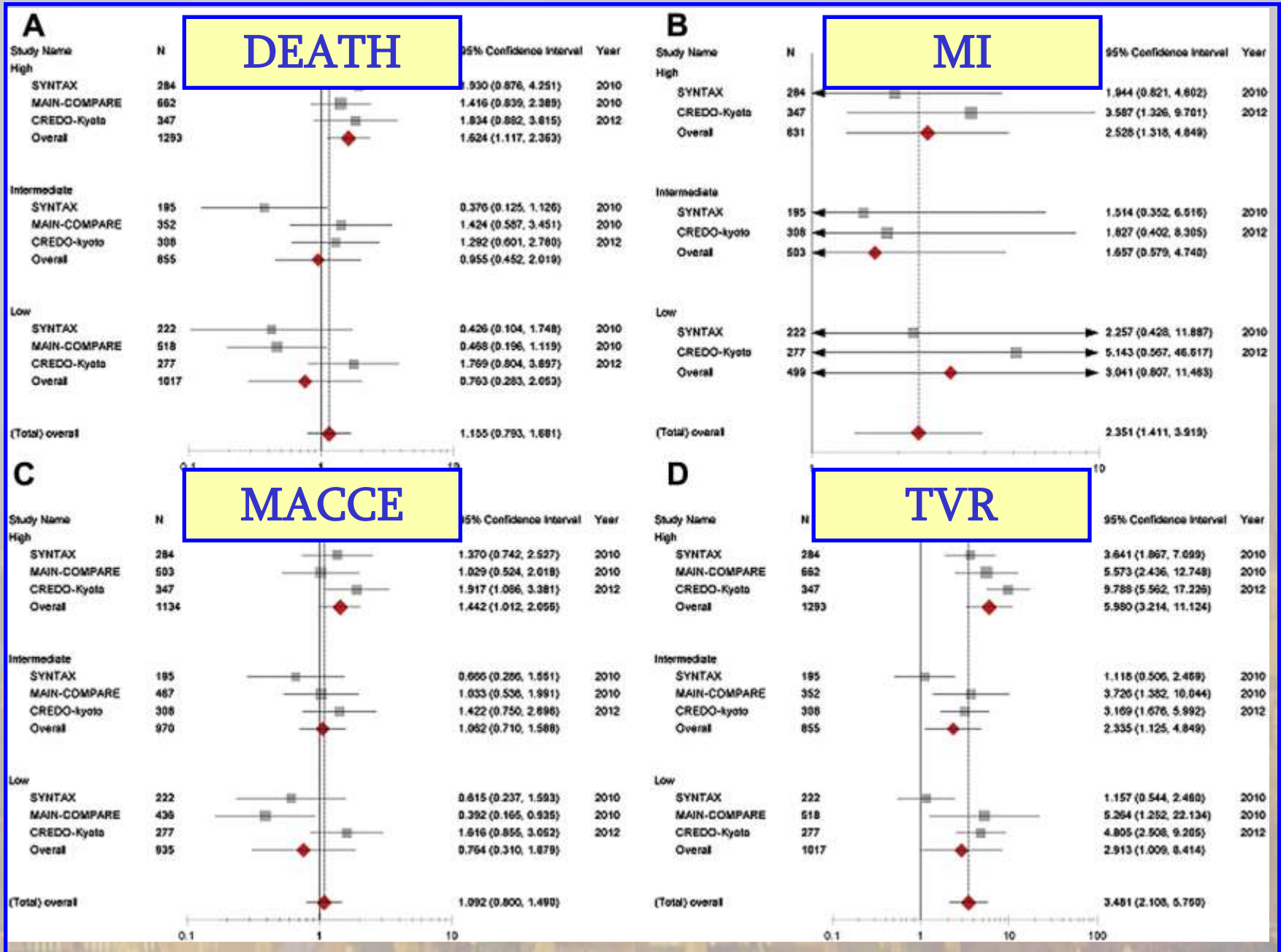


**1 yr: 0.8% vs 2.8%**

**5 yr: 1.7% vs 4.7%**

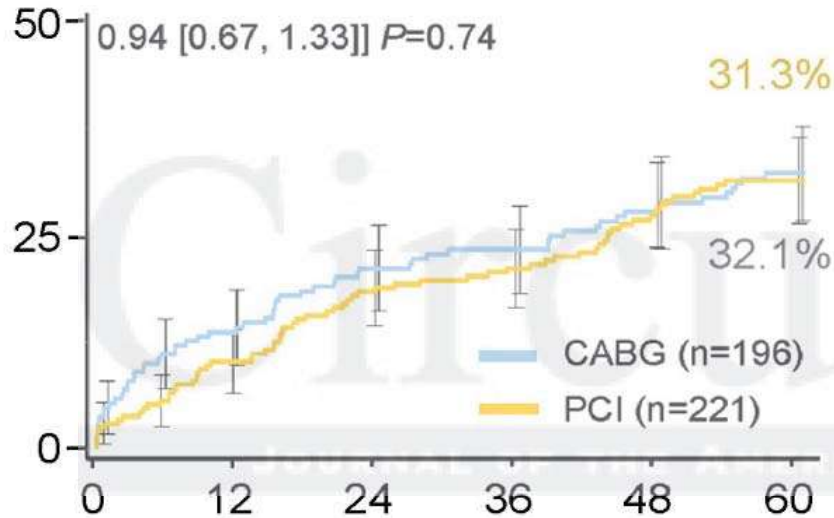
**Different from 3VD where CABG ↓ death, MI, RR and NS for CVA**

# CABG BEST ONLY FOR HIGH TERCILES (>32)

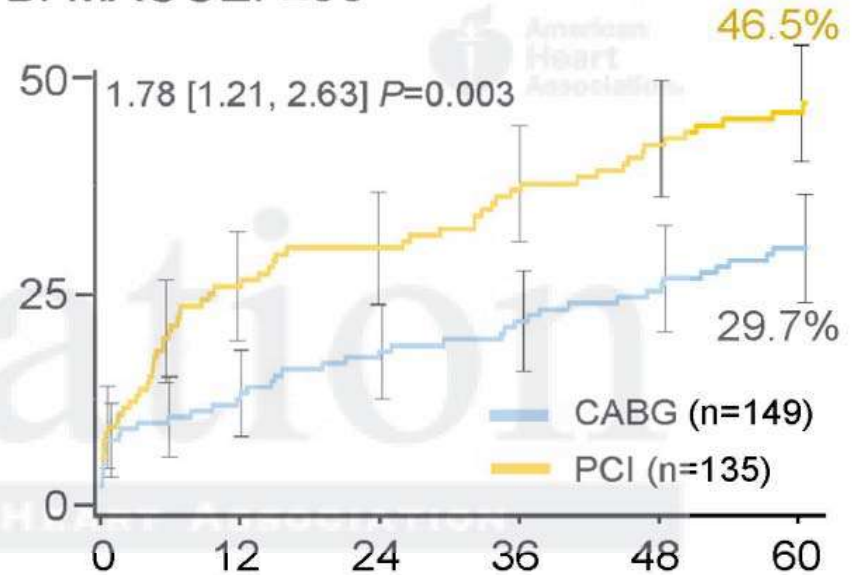




### A. MACCE: 0-32



### B. MACCE: ≥33



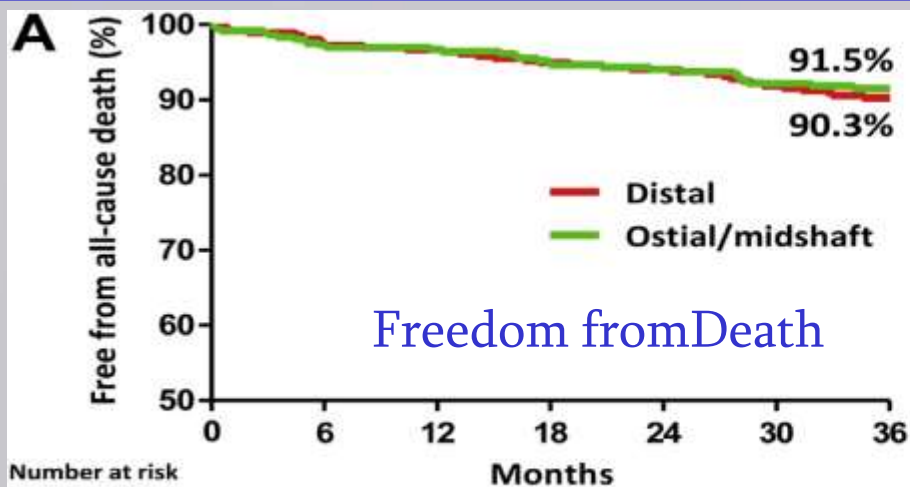
HYPOTHESIS: Unlike 3 VD, LM without additional proximal CAD may result in excessive competitive flow for bypass grafts?

## Trials of CABG vs PCI in Left Main Disease

- NOBLE Trial (planned recruitment of 1200 patients)
- EXCEL Trial (Abbott Vascular) started Sept 2010
  - only in SYNTAX Score <33
  - 3600 patient trial of PCI vs CABG (2600 RCT+1000 Registry)
  - 1000 registry patients now enrolled
  - >1906 RCT patients enrolled to date
  - Enrolment stopped for financial costs (march 2014)

# DELTA REGISTRY: Ostial/Mid-shaft vs Distal LM [JACC 2013]

736 PPM patients (from total of 1612) at a median of 3.2 years



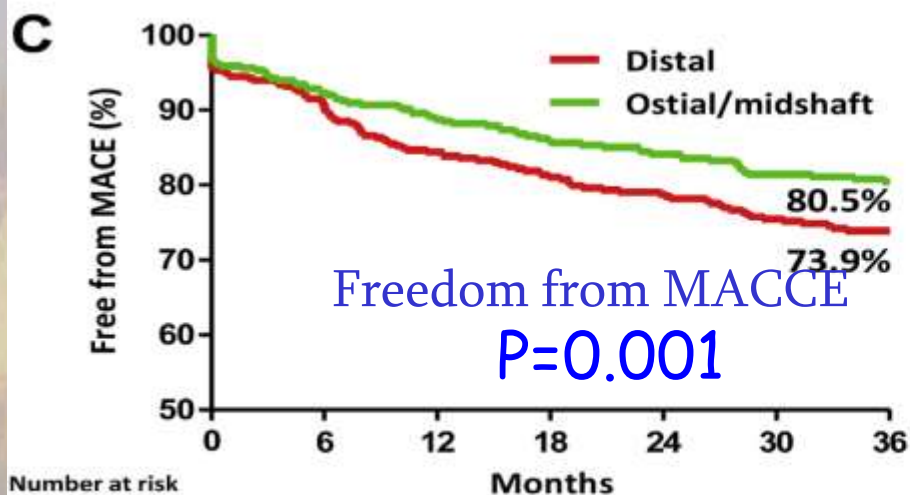
Number at risk

	0	6	12	18	24	30	36
Distal	368	351	345	327	312	288	264
Ostial/midshaft	368	355	346	320	311	290	273



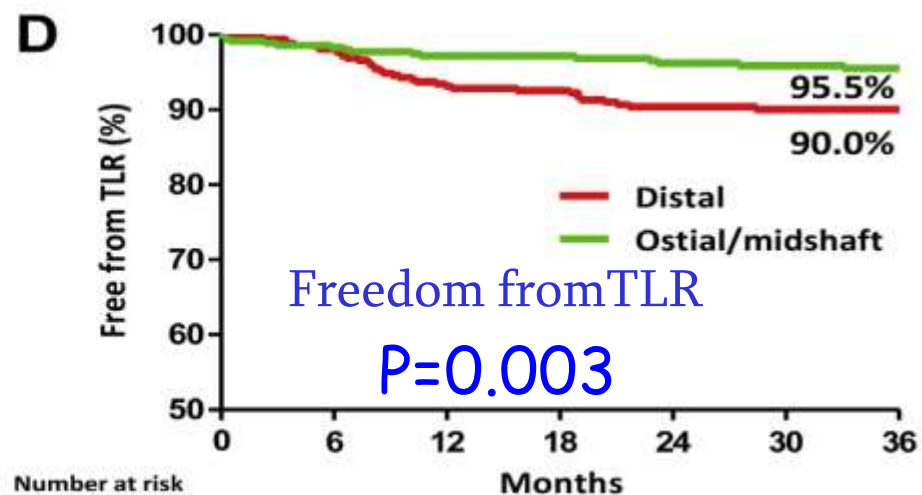
Number at risk

	0	6	12	18	24	30	36
Distal	368	337	331	312	298	274	252
Ostial/midshaft	368	345	335	309	299	277	260



Number at risk

	0	6	12	18	24	30	36
Distal	368	331	308	287	271	245	224
Ostial/midshaft	368	339	323	295	285	264	248



Number at risk

	0	6	12	18	24	30	36
Distal	368	346	320	302	279	256	241
Ostial/midshaft	368	347	337	311	296	276	263

# LM and Diabetes

Coronary artery bypass graft versus percutaneous coronary intervention with drug-eluting stent implantation for diabetic patients with unprotected left main coronary artery disease: the D-DELTA registry. [Eurointervention 2013]

Meliga E1, De Benedictis M, Chieffo A et al

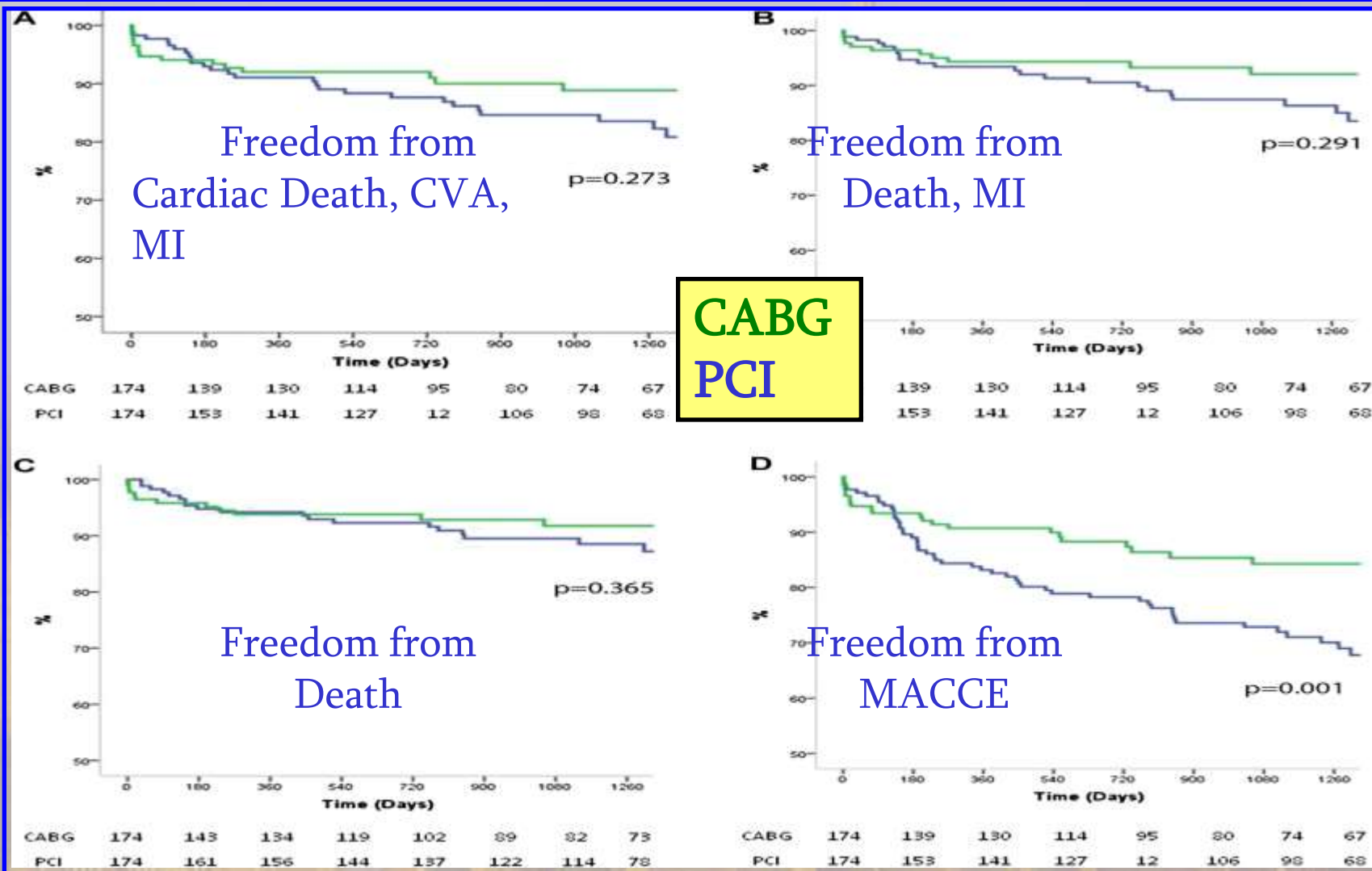
4yrs	DES (520)	CABG (306)	$\Delta$	p
Death	17.5	12.6	-4.9	0.12
Death ,MI, CVA	21.1	14.6	-6.5	0.11
TVR	20.6	4.6	-16	<0.001
MACCE	35.3	18.1	-17.2	<0.001

# LM and Gender

DELTA REGISTRY: WOMEN [AM J Cardiol 2014]

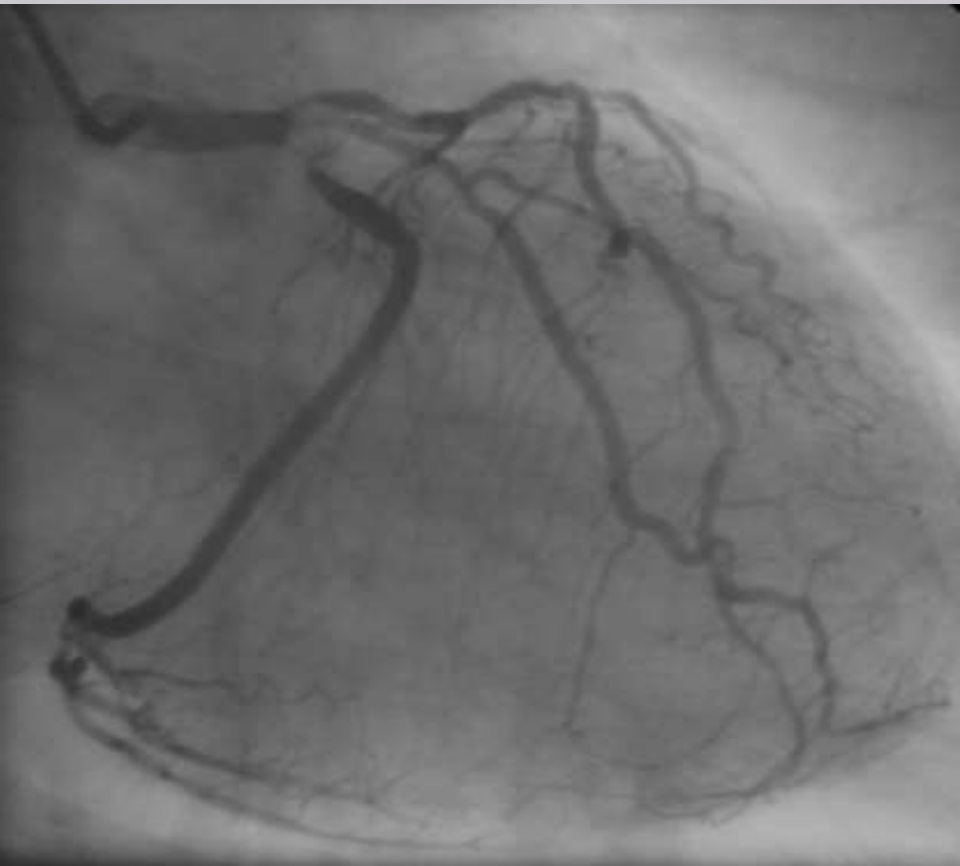
350 PPM (from total of 817) women at median of 3.2 years

SYNTAX score 26.6 PCI vs 34 CABG



**CABG for LM-Are they all doable ? YES**

**And how ? DEPENDS as THERE IS LMD AND THERE IS LMD**



**Complex LM equivalent  
High Syntax Score  
CABG x 3 + arterial grafts  
Little competitive flow**



**OSTIAL LM  
LOW SYNTAX score  
CABG x ? arterial grafts  
Much competitive flow**

# What do the Guidelines Say for Left Main ?

ESC/EACTS Guidelines	CABG	CABG	PCI	PCI
	2010	2014	2010	2014
LM SYNTAX <22	IA	IB	IIaB	IB
LM SYNTAX 23-32	IA	IB	IIbB	IIA
LM SYNTAX >32 <span style="border: 1px solid blue; padding: 2px;">66%</span>	IA	IB	IIIB	IIIB

## Summary and Conclusions

- Previous concept that LM is exclusive surgical disease is no longer viable (SYNTAX and PRECOMBAT @ 5 years)
- CABG remains best treatment for 2/3 of LM (ie SYNTAX score >32) even when disadvantaged by substantially inferior OMT
- Benefits of CABG may be greater in distal LM and in females and diabetes
- PCI may produce superior results in isolated ostial and mid shaft LM and especially with SYNTAX scores < 32
- LM without additional proximal CAD may result in excessive competitive flow for bypass grafts
- Definitive answer to treatment of LM with Syntax scores < 32 will come from EXCEL trial

# WHY DOES CABG HAVE SUCH A SURVIVAL BENEFIT OVER PCI ?

Anatomically, atheroma is mainly located in the proximal coronary arteries

1. Placing bypass grafts to the **MID CORONARY VESSEL** has **TWO** effects
  - (i) Complexity of '**CULPRIT**' lesion is irrelevant
  - (ii) over the long term offers prophylaxis against **FUTURE** 'culprit' lesionsIn contrast, PCI only treats '**SUITABLE**' localised proximal 'culprit' lesions but has **NO PROPHYLACTIC BENEFIT** against new disease

462  
2

THE NEW ENGLAND JOURNAL OF MEDICINE

Aug. 25, 1988

IMA elutes **NO** into coronary circulation reducing risk of further disease

## DIFFERENCE BETWEEN ENDOTHELIUM-DEPENDENT RELAXATION IN ARTERIAL AND IN VENOUS CORONARY BYPASS GRAFTS

THOMAS F. LÜSCHER, M.D., DENNIS DIEDERICH, M.D., ROBERT SIEBENMANN, M.D., KURT LEHMANN, M.D.,

## Drug-Eluting Stent and Coronary Thrombosis

Biological Mechanisms and Clinical Implications CTRC 2007

impairs re-endothelialization, creates pro-thrombotic environment, impairs endothelial function downstream

3. PCI means incomplete revascularization (*Hannan Circ 2006*)
  - Of 22,000 PCI 69% had incomplete revascularization
  - >2 vessels (+/- CTO) HR for mortality 1.4 (95% CI = 1.1-1.7)

PCI will 'never' match the results of CABG for LM/MVD (POBA;BMS;DES)



# Late Stroke: Comparison of Percutaneous Coronary Intervention Versus Coronary Artery Bypass Grafting in Patients With Multivessel Disease and Unprotected Left Main Disease: A Meta-Analysis and Review of Literature

Ganesh Athappan, Paul Chacko, Eshan Patvardhan, Rama Dilip Gajulapalli, Emin Murat Tuzcu and Samir R. Kapadia

**CIRC 2014**

80,314 patients (9 RCT and 48 non-randomized studies)

		nos	PCI%	CABG%	delta	OR
EARLY		38908	0.004	1.4	1.4	0.26 (0.25-0.35)
ALL	1yr	39497	1.2	2.2	1	0.55 (0.42-0.71)
	5yr	22518	3.5	4.4	0.9	0.79 (0.69-0.91)
MVD	1 yr	27890	0.01	2.1	2.1	0.55 (0.41-0.74)
	5yr	20333	3.8	4.6	0.8	0.82 (0.72-0.95)
LM	1yr	5247	0.8	2.8	2	0.47 (0.28-0.78)
	5yr	1605	1.7	4.7	3	0.36 (0.19-0.69)
DM	1yr	6966	1	2.3	1.3	0.50 (0.33-0.76)
	5yr	4530	3.8	5.3	1.5	0.71 (0.53-0.94)

TIME	OR
30d	
1yr	0.98 (0.68-1.35)
2yr	1.04 (0.86-1.28)
3 yr	0.90 (0.73-1.11)
4 yr	0.92 (0.74-1.12)
5 yr	0.83 (0.60-1.55)
10yr	0.79 (0.40-1.55)

## Appropriate use of stents in LMS

**Favorable Long-Term Outcome After Drug-Eluting Stent Implantation in Nonbifurcation Lesions That Involve Unprotected Left Main Coronary Artery**

**A Multicenter Registry [*Circulation*. 2007;116:158-162]**

**Alaide Chieffo, MD; Seung J. Park, MD, PhD; Marco Valgimigli, MD; Young H. Kim, MD, PhD; Joost Daemen, MD; Imad Sheiban, MD; Alessandra Truffa, MD; Matteo Montorfano, MD; Flavio Airoldi, MD; Giuseppe Sangiorgi, MD; Mauro Carlino, MD; Iassen Michev, MD; Cheol W. Lee, MD, PhD; Myeong K. Hong, MD, PhD; Seong W. Park, MD, PhD; Claudio Moretti, MD; Erminio Bonizzoni, PhD; Renata Rogacka, MD; Patrick W. Serruys, MD, PhD; Antonio Colombo, MD**

○ 790 LMS:

- 19% NonBifurcation Lesions
- ostial (52%) or mid shaft (28%) or both (+35% RCA disease)
- 1 hospital death
- 73% repeat angiogram at 6 months with 1 restenosis
- at 2.5 years 3.4% mortality and 5% revascularization

**'Stent thrombosis could not be excluded in the 4 patients (2.7%) who died of unknown causes'**

# The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

APRIL 24, 2008

VOL. 358 NO. 17

## Stents versus Coronary-Artery Bypass Grafting for Left Main Coronary Artery Disease

Ki Bae Seung, M.D., Duk-Woo Park, M.D., Young-Hak Kim, M.D., Seung-Whan Lee, M.D., Cheol Whan Lee, M.D., Myeong-Ki Hong, M.D., Seong-Wook Park, M.D., Sung-Cheol Yun, Ph.D., Hyeon-Cheol Gwon, M.D., Myung-Ho Jeong, M.D., Yangsoo Jang, M.D., Hyo-Soo Kim, M.D., Pum Joon Kim, M.D., In-Whan Seong, M.D., Hun Sik Park, M.D., Taehoon Ahn, M.D., In-Ho Chae, M.D., Seung-Jea Tahk, M.D., Wook-Sung Chung, M.D., and Seung-Jung Park, M.D.

### MAIN-COMPARE Registry of UPLM disease in 1102 stents and 1138 CABG

**Table 3. Hazard Ratios for Clinical Outcomes after Stenting as Compared with after CABG among Propensity-Matched Patients.\***

Outcome	Overall Cohort (N = 542 pairs)		BMS (N = 207 pairs)		DES = 396 pairs)	
	Hazard Ratio (95% CI)	P Value	Hazard Ratio (95% CI)	P Value	Hazard Ratio (95% CI)	P Value
Death	1.18 (0.77–1.80)	0.45	1.04 (0.59–1.83)	0.90	1.36 (0.80–2.30)	0.26
Composite outcome of death, Q-wave myocardial infarction, or stroke	1.10 (0.75–1.62)	0.61	0.86 (0.50–1.49)	0.59	1.40 (0.88–2.22)	0.15
Target-vessel revascularization	4.76 (2.80–8.11)	<0.001	10.70 (3.80–29.90)	<0.001	5.96 (2.51–14.10)	<0.001

there was a trend toward higher rates of death and the composite end point in the group that received DES

# Readmission Rate After Coronary Artery Bypass Grafting Versus Percutaneous Coronary Intervention for Unprotected Left Main Coronary Artery Narrowing.

[Am J Cardiol. 2014 Mar 1 \[Epub ahead of print\]](#)

[Roh JH, Kim YH, Ahn JM, Yun SH, Lee JB, Ge J, Le W, Park GM, Lee JY, Park DW, Kang SJ, Lee SW, Lee CW, Park SW, Park SJ.](#)

- unadjusted and adjusted risk of readmissions in 1,352 patients (783 PCI and 569 CABG)
- consecutively enrolled in a multicenter registry of ULMCA stenosis (PRECOMBAT)
- At a median of  $48.7 \pm 16.0$  months of follow-up 26.3% PCI vs 14.8% CABG patients experienced at least 1 readmission after the index procedure during (p <0.001).
- The most frequent causes of readmission were repeat revascularization after PCI (41%) and noncardiac readmissions after CABG (48%).
- PCI was associated with more readmissions than CABG (HR 2.0: 95% CI 1.5 to 2.7, p <0.001), being an independent predictor of readmission (HR 1.8, 95% CI 1.4 to 2.31; p <0.001).
- Except for the first 3 months, when there was no significant difference in readmission rate, a higher rate after PCI was consistently observed over the remainder of the follow-up period.

In conclusion, PCI was associated with a higher risk of readmission than CABG in treating ULMCA. This higher risk was attributable to more frequent revascularization in the PCI group.

## Summary and Conclusions

- ① Traditional view that CABG is the only treatment for LM disease is no longer tenable and there is consistent evidence from RCTs and registries that some LM disease is, at least, as effectively treated by stents as CABG for at least for 4-5 years
- ② Increasing evidence that PCI provides equal if not superior benefit to CABG in patients with lower severity left main (excessive competitive flow for bypass grafts ?)
- ③ CABG results in increased risk of stroke in LM (vs MVD). ?greater burden of aortic disease and a higher incidence of carotid disease
- ④ Some evidence that patients with DM and women may have better outcomes with CABG (certainly the case for 3VD); ?distal LM
- ⑤ CABG: fewer readmissions than PCI mainly because of lower TVR
- ⑥ NOBLE and EXCEL trials are likely to give definitive guidance regarding optimal treatment for LM with SYNTAX scores <32
- ⑦ 40% to 65% of all left main disease have SYNTAX scores >32 and appear to have strong survival advantage with CABG by 3 years and continuing to increase past 5 years
- ⑧ Comparisons of survival outcome of PCI vs CABG should have a minimum follow-up of 5 years

# The 2010 Guidelines...what do they recommend ?

Subset of CAD by anatomy	CABG		PCI		
	ESC/EA CTS	ACC	ESC/EA CTS	ACC	
<b>Heart team for LM or complex CAD</b>	I C	I C	I C	I C	
1 VD: NON proximal LAD	IIb C	III B	I C	III B	
1 VD: proximal LAD	I A	IIa B	IIa B	IIb B	
2 VD: NON proximal LAD	IIb C	IIa B	I C	IIb B	
2 VD: proximal LAD	I A	I B	IIa B	IIb B	
3 VD, simple lesions, full functional revasc achievable with PCI, SYNTAX scores <22	I A	I B	IIa B	IIb B	III B
3 VD, complex lesions, incomplete revasc achievable with PCI, SYNTAX scores >22	I A	I B	III A	IIb B	III B
LM (isolated or 1VD, ostium/shaft)	I A	I B	IIa B	IIa B	
LM (isolated or 1VD, distal bifurcation)	I A	I B	IIb B	IIb B	III B
LM + 2VD or 3VD, SYNTAX scores <33	I A	I B	IIb B	IIb B	III B
LM + 2VD or 3VD, SYNTAX scores >32	I A	I B	III B	IIb B	III B

79%

66%

**Broad agreement between European and North American Guidelines**

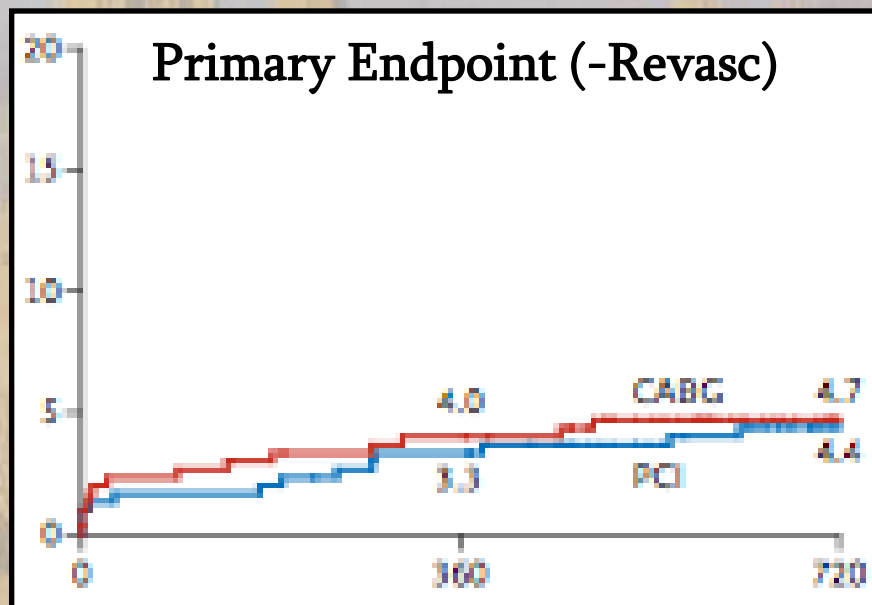
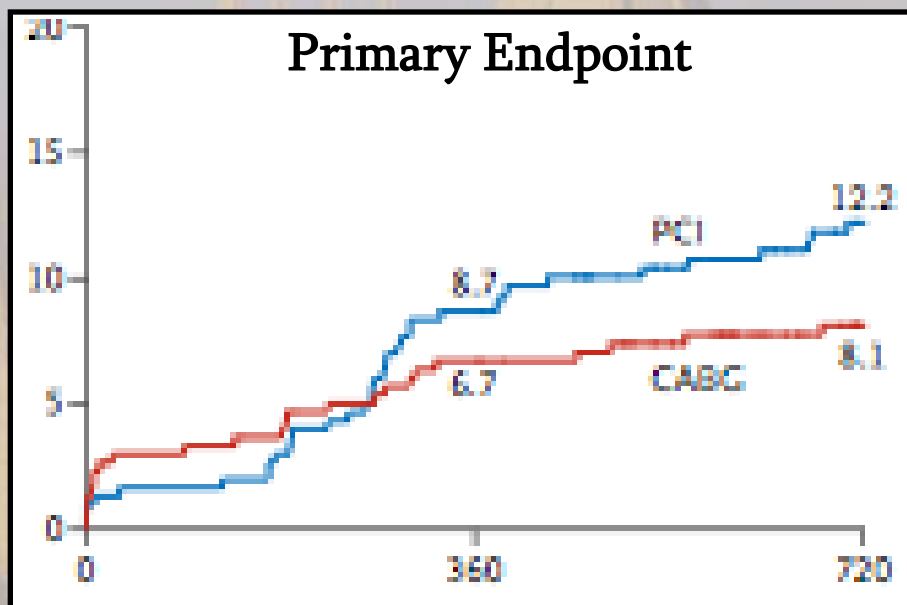
# Randomized Trial of Stents versus Bypass Surgery for Left Main Coronary Artery Disease

NEJM 2011

Seung-Jung Park, M.D., Young-Hak Kim, M.D., Duk-Woo Park, M.D.,

'PRECOMBAT': 600 patient RCT (300 PCI vs 300 CABG)

- Cohort of 1454 LM patients (59% NOT randomized)
- Mean SYNTAX score: 25 (vs 30 in SYNTAX)
- Mean Euroscore: 2.7 (vs 3.8 in SYNTAX)
- Primary endpoint: Death; CVA; MI; Repeat Revasc at 2years



○ Incidence of stroke 0.4% PCI vs 0.7% CABG

○ No difference in mortality or stroke with CABG

# The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

MARCH 5, 2009

VOL. 360 NO. 10

## THE SYNTAX TRIAL

### Percutaneous Coronary Intervention versus Coronary-Artery Bypass Grafting for Severe Coronary Artery Disease

Patrick W. Serruys, M.D., Ph.D., Marie-Claude Morice, M.D., A. Pieter Kappetein, M.D., Ph.D., Antonio Colombo, M.D., David R. Holmes, M.D., Michael J. Mack, M.D., Elisabeth Stähle, M.D., Ted E. Feldman, M.D., Marcel van den Brand, M.D., Eric J. Bass, B.A., Nic Van Dyck, R.N., Katrin Leadley, M.D., Keith D. Dawkins, M.D., and Friedrich W. Mohr, M.D., Ph.D., for the SYNTAX Investigators\*

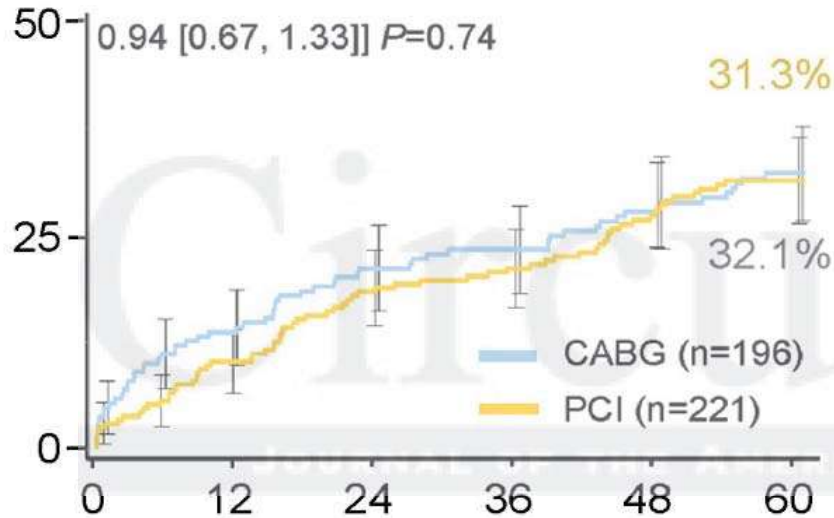
Landmark trial (most important trial ever of PCI vs CABG)

Addressed the two limitations of all previous RCTs

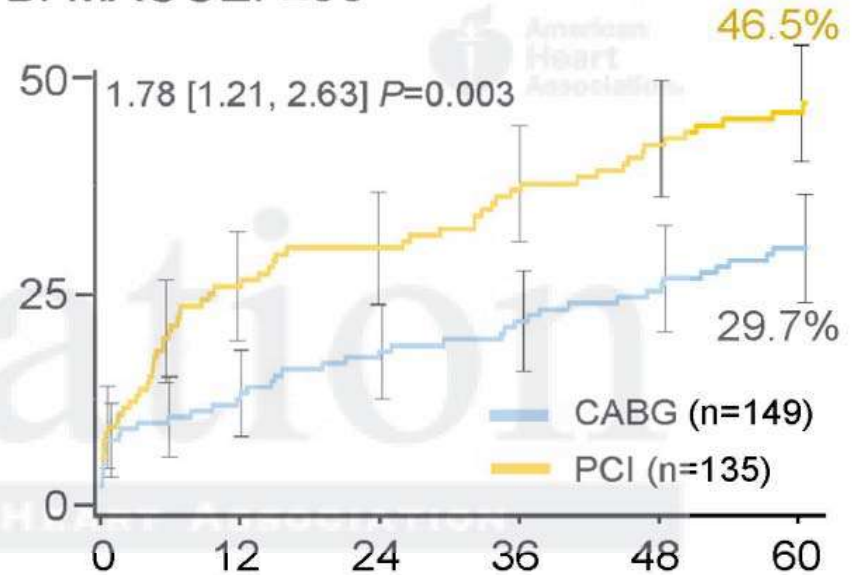
- 'All comer' trial (vs highly select patients in previous RCTs)
- 5 year outcomes death and MACCE [[Lancet Feb 22 2013](#)]
- Parallel Registry (35% of patients straight to CABG !!)



### A. MACCE: 0-32



### B. MACCE: ≥33



HYPOTHESIS: Unlike 3 VD, LM without additional proximal CAD may result in excessive competitive flow for bypass grafts?

## Trials of CABG vs PCI in Left Main Disease

- NOBLE Trial (planned recruitment of 1200 patients)
- EXCEL Trial (Abbott Vascular) started Sept 2010
  - only in SYNTAX Score <33
  - 3600 patient trial of PCI vs CABG (2600 RCT+1000 Registry)
  - 1000 registry patients now enrolled
  - >1906 RCT patients enrolled to date
  - Enrolment stopped for financial costs (march 2014)

# SYNTAX RCT Results (5/5 Years): Left Main: n=705

	PCI	CABG	
nos	357	348	p
Death	12.8	14.6 (+1.8%) *	.53
Cardiac Death	8.6	7.2 (-1.4%)	.46
MI	8.2	4.8 (-3.4%)	.10
CVA	1.5	4.3 (+2.8%) *	.03
D+C+M	19	20.8 (+1.8%)	.57
Revasc	26.7	15.5 (-11.2%)	<0.01

\* = different from SYNTAX 3VD

## EXCEL TRIAL (Abbott Vascular)

- 2600 patient RCT: PCI vs CABG
- **only in SYNTAX Score <33**
- 1000 registry patients now enrolled
- ie 3600 in total
- started Sept 2010
- >1906 RCT patients enrolled to date
- Enrolment stopped for financial costs

Low <23	nos	118	104	
	death	7	11.3	.28
	CVA	1.8	4.1	.28
	MI	6.2	3.1	.32
	D+C+M	13.9	15.2	.71
	Revasc	23	20.3	.65

Intd 23-32	nos	103	92	
	death	8.9	19.3	.04
	CVA	1.0	3.6	.23
	MI	6.0	4.6	.71
	D+C+M	15.7	24.9	.11
	Revasc	22.2	16.6	.40

High >32	nos	135	149	
	death	20.9	14.1	.11
	CVA	1.6	4.9	.13
	MI	11.7	6.1	.40
	D+C+M	26.1	22.1	.33
	Revasc	34.1	11.6	<.001