DEBATE: Treating Unprotected Left Main Stenoses – DES Should be Favored!

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Angioplasty Summit 2009 – TCT Asia Pacific
April 22-24, 2009; Seoul, Korea

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Presenter Disclosure Information for Angioplasty Summit 2009

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Scientific Advisory Board or Equity:
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DES vs. CABG for LMCA Disease

Techniques of Debating

- Carefully dissect the published evidence-based medicine literature to affirm your position and to discredit your opponent's position
- Employ humor (usually twisted), hyperbole, and academic trickery to exaggerate the differences
- When academic arguments and humor falter, attack your opponent's background, training, clinical skills, and, academic credentials
- When all else fails, challenge your opponent's sexual preferences!

DES vs. CABG for LMCA Disease

Techniques of Debating

- *Mostly, debates bring out the very worst in people, are more theatre than scholarly pursuit, and create unnatural polar positions, bearing little resemblance to the truth … which is why I almost never accept debate invitations!*

DES vs. CABG for LMCA Disease

My opponent… David P. Taggart

- *He is…*

- ✓ An accomplished academic surgeon from an esteemed institution (Oxford University, UK)
- ✓ Widely written in the area of CABG outcomes
- ✓ Extremely articulate and passionate about his position in this debate

DES vs. CABG for LMCA Disease

My opponent… David P. Taggart

- *He is ALSO…*

- ✓ An aggressive (bordering on virulent) debater…known to distort data, cite the literature selectively, and exude antagonism towards PCI and the interventional community
- ✓ Among a new revivalist breed of surgeons who has become the "default" comedic, traveling debater in defense of his dying sub-specialty!

PCI is less invasive than CABG but is it safer ?

FACT 1: DES do NOT improve clinical outcome vs BMS

- Four Meta-analysis of 11 RCT of DES vs (BMS) of >5000 patients
- (Lancet 2004; Eur Heart J 2004; Am J Cardiol 2005; Eur H J 2006)

FACT 2: DES predispose to THROMBOSIS

Risk of 1-5% per annum and 40% mortality (NEJM 2007)
Especially if antiplatelets stopped (Lancet 2004, JAMA2005)
Particular lesions and patient groups

FACT 3: REAL rate of restenosis with DES is 10%-28% at 1 year

- 10% RESEARCH Registry (Lemos Circ 2004).
- 20% DELIVER trial (Lansky Circ 2004)
- 28% Bifurcating Lesions (Tanabe Am J Cardiol 2004)

FACT 4: 10% of PCI cause SIGNIFICANT Myocardial Infarct

- 37% of patients have raised troponin (Selvanyagam 2005, Thomas 2005)
- of whom 28% have MRI defined mean loss of 6g of LV muscle (ie 5% LV mass)

FACT 5: Multiple previous PCI strongly associated with in-hospital CABG mortality (OR: 3.01; p<0.0017) and MACES (OR: 2.31; p<0004) (Thielman Circ 2006)

FACT 6: Risk of cognitive dysfunction SAME for PCI and CABG

- SoS trial: no difference at 6 months and 1yr (Wahrborg P Circ 2004)
- BARI trial: no difference at 5 years (Hlatky MA et al Circ 1997)

"Taggart-isms"

'New IRREVERSIBLE myocardial injury seen in 36% on-pump and 44% off-pump CABG patients'

'Neurocognitive dysfunction remains a limitation of cardiac surgery'

'Cerebral injury is a major cause of morbidity and mortality of CABG. Stroke occurs in 3% of patients'

'Cognitive dysfunction and post operation hypoxia are common sequelae of CABG'

'Aprotinin should be considered routinely in patients undergoing total arterial grafting'

...all from Taggart authored publications

Journal of the American College of Cardiology
© 2008 by the American College of Cardiology Foundation
Published by Elsevier Inc.

Vol. 51, No. 9, 2008
ISSN 0735-1097/08/$34.00
doi:10.1016/j.jacc.2007.09.067

STATE-OF-THE-ART PAPER AND COMMENTARY

Revascul… …ed Left Mai…

Stenting or …

David P. Tagg…
William E. Bo…
Robert A. Guy… …D,††
Richard J. She… …, FACC,* F…
Salim Yusuf, D… HIL, FRCPC, FRSC, FACC†

Oxford, United Kingdom; Los Angeles, California; Buffalo, … …Durham, North Carolina; Atlanta, Georgia; Dallas, Texas; Leuven, Belgium; and … …on, Ontario, Canada

The interventional "inner circle"…Ughhh!

"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

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DES vs. CABG for LMCA Disease

How can I win this debate?

- *Guidelines (US and EU)*
- *Appropriateness Criteria*
- *SYNTAX – NEJM Conclusions*
- *A very confident and worthy opponent*

Current Recommendations for Unprotected LMCA Stenosis

2007 Focused Update of the ACC/AHA/SCAI 2005 Guideline Update for Percutaneous Coronary Intervention

American College of Cardiology/American Heart Association Task Force on Practice Guidelines, 2007 Writing Group to Review New Evidence and Update the ACC/AHA/SCAI 2005 Guideline Update for Percutaneous Coronary Intervention, Writing on Behalf of the 2005 Writing Committee, Spencer B. King, III, Sidney C. Smith, Jr, John W. Hirshfeld, Jr, Alice K. Jacobs, Douglass A. Morrison, and David O. Williams

J. Am. Coll. Cardiol. 2008;51;172-209; originally published online Dec 13, 2007; doi:10.1016/j.jacc.2007.10.002

Recommendation Class IIa (emergent) (B) or III

Class IIa: Weight of evidence /opinion is in favor of usefulness/efficacy; Class III is the conditions for which there is evidence and/or general agreement that a procedure/treatment is not useful/ effective and in some cases may be harmful.

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Current Recommendations for Unprotected LMCA Stenosis

Guidelines for Percutaneous Coronary Interventions

The Task Force for Percutaneous Coronary Interventions of the European Society of Cardiology

Authors/Task Force Members: Sigmund Silber, Chairperson (Germany)*, Per Albertsson, (Sweden), Francisco F. Avilés, (Spain), Paolo G. Camici, (UK), Antonio Colombo, (Italy), Christian Hamm, (Germany), Erik Jørgensen, (Denmark), Jean Marco, (France), Jan-Erik Nordrehaug, (Norway), Witold Ruzyllo, (Poland), Philip Urban, (Switzerland), Gregg W. Stone, (USA), William Wijns, (Belgium)

Eur. Heart. J 2005;26:804-847

Recommendation Class IIb (C)

Class IIb: Usefulness/efficacy is less well established by evidence/opinion
Evidence level C: Consensus of opinion of the experts and/or small studies, retrospective studies, registries

Appropriateness: PCI v CABG

	CABG			PCI		
	No diabetes and normal LVEF	Diabetes	Depressed LVEF	No diabetes and normal LVEF	Diabetes	Depressed LVEF
Two vessel coronary artery disease with proximal LAD stenosis	A	A	A	A	A	A
Three vessel coronary artery disease	A	A	A	U	U	U
Isolated left main stenosis	A	A	A	I	I	I
Left main stenosis and additional coronary artery disease	A	A	A	I	I	I

Patel et al *JACC* 2009 53 (February): 530-553

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MARCH 5, 2009 VOL. 360 NO. 10

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 Ståhle, 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*

ABSTRACT

CONCLUSIONS

CABG remains the standard of care for patients with three-vessel or left main coronary artery disease, since the use of CABG, as compared with PCI, resulted in lower rates of the combined end point of major adverse cardiac or cerebrovascular events at 1 year. (ClinicalTrials.gov number, NCT00114972.)

DES vs. CABG for LMCA Disease

How can I win this debate?

- *My secret weapon(s)…*

PCI vs. CABG

CABG:

"dirty little secrets"

DES vs. CABG for LMCA Disease

CABG – Dirty Little Secrets

- CABG "invasiveness" (including "nuisance" complications) will always be viewed as inferior to PCI (assuming no difference in hard clinical endpoints)
- Stroke and neurocognitive dysfunction still significant after CABG
- Early graft failure @ 12-18 mos, SVG ~30% per SVG, > 40% per patient; IMA ~5-8%
- Late graft failure (> 5 years) in SVGs even more problematic (> 50% per SVG)

DES vs. CABG for LMCA Disease

CABG – Dirty Little Secrets

- Significant progression of native CAD after CABG (esp. with SVGs)
- Bilateral IMAs at most 25% of MVD cases – total arterial revascularization is a myth!
- Off pump CABG, little impact on peri-operative complications; overall penetration only ~25%
- Robotic CABG has been exaggerated and offers no clinical advantages
- *THERE IS NO SUCH THING AS "LESSER-INVASIVE CABG"!!!*

POD #1 after multi vessel revascularization: *OLD* technology

POD #1 after multi vessel revascularization: *NEW* technology

Efficacy and Safety of Edifoligide, an E2F Transcription Factor Decoy, for Prevention of Vein Graft Failure Following Coronary Artery Bypass Graft Surgery

PREVENT IV: A Randomized Controlled Trial

	Edifoligide n = 1508	Placebo n = 1506
Atrial fibrillation (%)	25.1	26.7
Peri-operative MI (%)	9.6	9.9
Renal failure (%)	3.2	3.3
Bleeding requiring reop (%)	2.7	2.4
Pneumonia (%)	2.2	2.5
Stroke (%)	1.9	1.2
ARDS (%)	0.7	1.1

PREVENT IV Invest. *JAMA* 2005; 294:2446

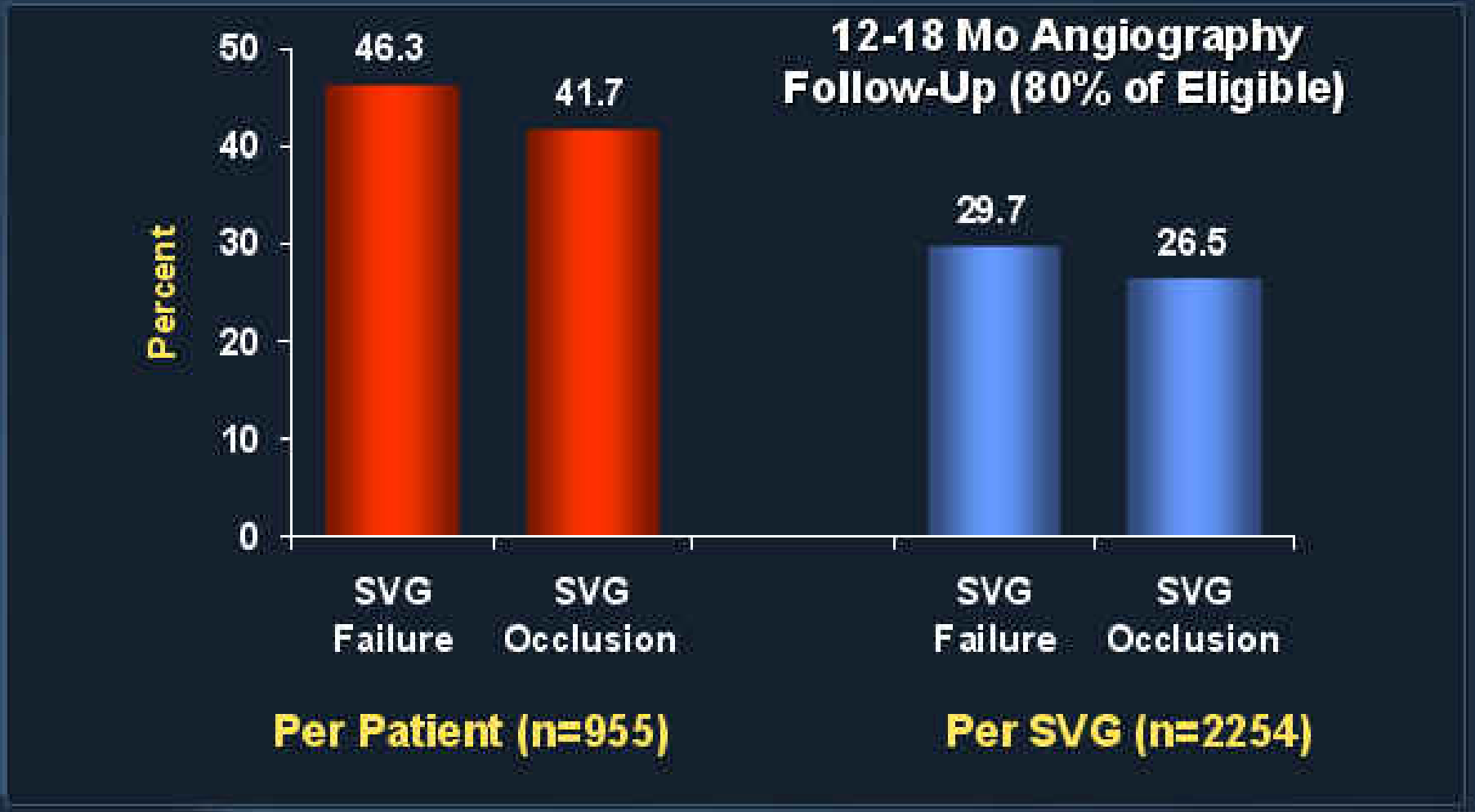
Meta-analysis of 12 cohort and 11 intervention studies of CABG. Pooled analysis of six comparable studies.

Results: 22.5% of pts (18.7% - 26.4%) have a measurable cognitive deficit in ≥ 2/9 tests at 2 months post surgery

Van Dyk, D.et al. J Th CV Surg 2000; 120:632-9

PREVENT IV Placebo Cohort

12 month SVG Failure



PREVENT IV Invest. *JAMA* 2005; 294:2446

PREVENT IV
Angiographic Results

Event	Edifoligide No.	Edifoligide %	Placebo No.	Placebo %	OR (95% CI)	P
Per patient						
Vein graft failure	436/965	45.2	442/955	46.3	0.96 (0.80-1.14)	0.66
Vein graft occlu	403/964	41.8	397/951	41.7	1.00 (0.84-1.20)	0.97
Per vein graft						
Vein graft failure	650/2,303	28.5	671/2,254	29.7	0.94 (0.80-1.10)	0.44
Vein graft occlu	601/2,295	26.1	597/2,242	26.5	0.98 (0.83-1.15)	0.83
Internal thoracic artery graft closure	69/809	***8.5***	60/784	***7.6***	1.12 (0.78-1.61)	0.53

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Alexander JH et al: JAMA 294:2446, 2005

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PREVENT IV

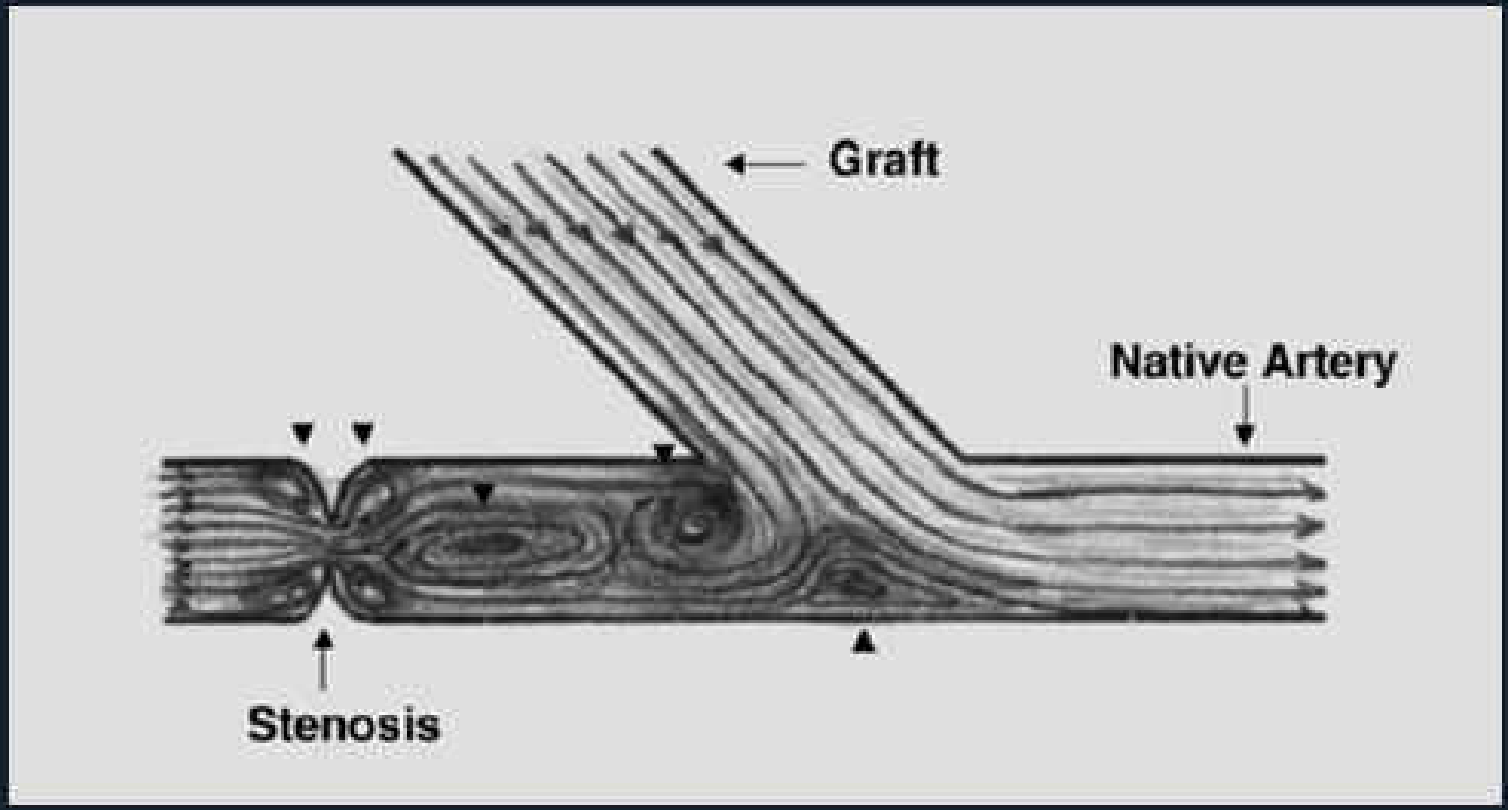
Clinical Events in Patients by Vein Graft Failure Status

Type of event	Vein graft failure (n=878)		No vein graft failure (n=1,042)	
	No.	%	No.	%
Perioperative MI in CABG surgery	118	13.4	71	6.8
Death or MI	122	13.9	9	0.9
Death, MI, or revascularization	228	26.0	19	1.8

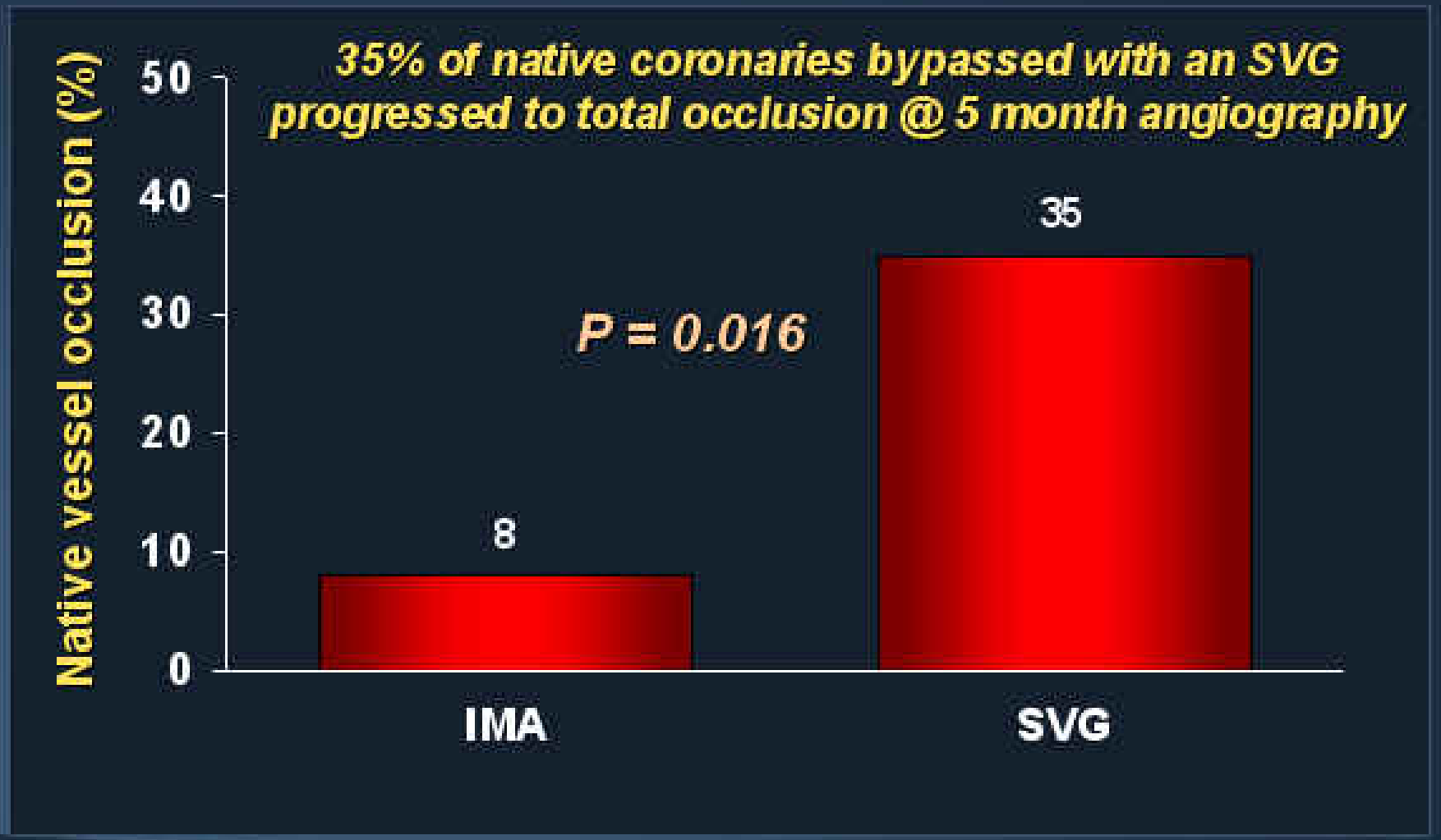
Alexander JH et al: JAMA 294:2446, 2005

The most frequently implanted surgical graft in the U.S. is still a saphenous vein…and after a few years, it's not a pretty site!

Impact of increased sheer stress on native disease progression



Effect of CABG on Native Coronary Artery Stenoses



Hamada et al. J Cardiovasc Surg 2001;42:159

PCI vs. CABG

Early PCI Studies

Systematic Review of PCI vs. CABG Trials

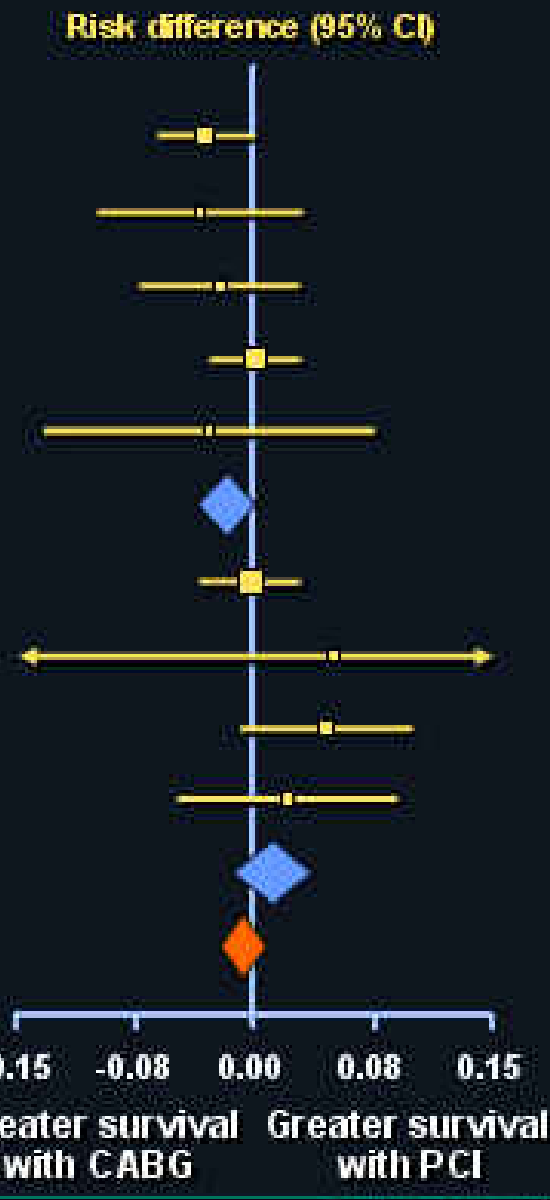
- 23 randomized clinical trials
- 5,019 patients assigned PCI
- 4,944 patients assigned CABG
- Endpoints:

  Death, MI, stroke, angina, additional revascularization

Bravata DM et al. *Ann Intern Med.* 2007;147:703

5-year Survival (all pts)

Study, year	Surviving patients/all patients: PCI	CABG
BARI, 1996	790/915	816/914
EAST, 2000	153/174	161/177
GABI, 2005	164/177	157/165
RITA, 1998	483/510	474/501
French Monocentric Study, 1997	66/76	68/76
Balloon overall	1,656/1,852	1,676/1,833
ARTS, 2005	542/590	538/584
AWESOME, 2001	30/38	19/26
ERACI II, 2005	209/225	199/225
MASS II, 2006	177/205	171/203
BMS overall	958/1,058	927/1,038
MVD overall	2,614/2,910	2,603/2,871

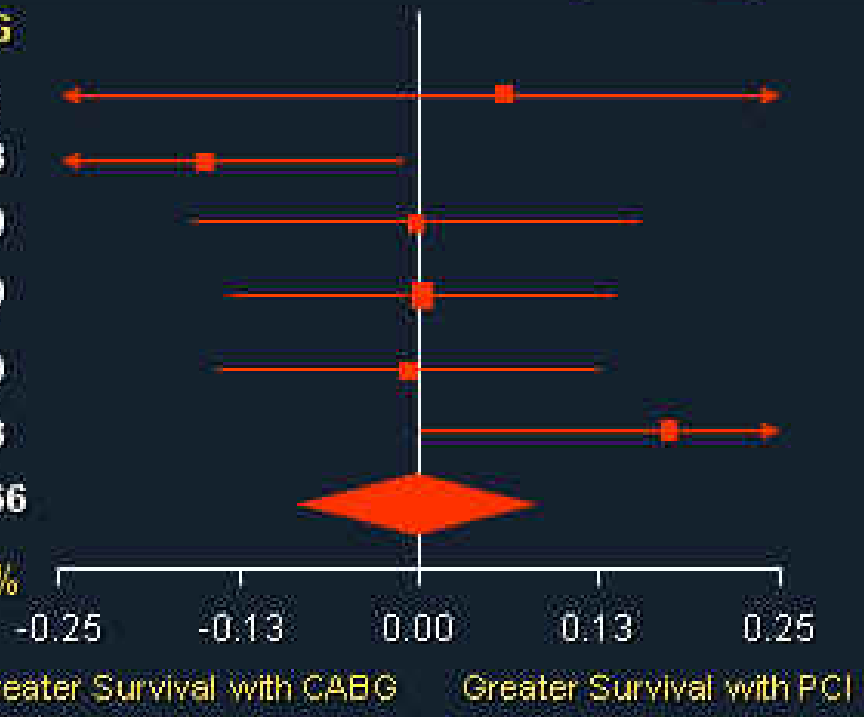


Bravata DM et al. *Ann Intern Med.* 2007;147:703

Meta Analysis of all Reported Results

5 Year Survival in Diabetics

Study, Year	Surviving Patients/ All Patients n/n PCI	CABG
AWESOME, 2002)	8/11	8/12
BARI, 1997, 1996	45/69	75/93
EAST, 2000	26/29	27/30
ERACI II, 2005	35/39	35/39
MASS II, 2006	47/56	50/59
RITA, 1998	27/29	25/33
Overall	188/233	220/266
Percentage alive	80.7%	82.7%



Bravata DM et al. *Ann Intern Med.* 2007;147:703

Systematic Review of PCI vs. CABG Trials

Conclusions

1. In 23 RCTs, over 10 years of follow-up; difference in survival after PCI or CABG was <1%
2. Survival did not differ between PCI and CABG for patients with diabetes
3. Angina relief greater after CABG than PCI; risk differences 5-8% at 1-5 yr (P<0.001)
4. Procedural-related strokes are more common after CABG than after PCI (1.2% vs 0.6%; P=0.002)

Bravata DM et al. *Ann Intern Med.* 2007;147:703

BMS vs. CABG in MVD

Long-Term Safety and Efficacy of Percutaneous Coronary Intervention With Stenting and Coronary Artery Bypass Surgery for Multivessel Coronary Artery Disease

A Meta-Analysis With 5-Year Patient-Level Data From the ARTS, ERACI-II, MASS-II, and SoS Trials

Joost Daemen, MD; Eric Boersma, PhD; Marcus Flather, MBBS; Jean Booth, MSc; Rod Stables, MA, DM, FRCP; Alfredo Rodriguez, MD; Gaston Rodriguez-Granillo, MD, PhD; Whady A. Hueb, MD; Pedro A. Lemos, MD, PhD; Patrick W. Serruys, MD, PhD

- A patient level meta-analysis of CABG vs BMS trials (ARTS, SoS, ERACI-II and MASS-II) demonstrated:
  - BMS had similar rates of death and combined safety (death/stroke/MI) to that of CABG
  - Repeat revascularization rates were increased in BMS patients leading to increased overall MACCE at 5 years

Circulation 2008; 118: 1146-1154

PCI vs. CABG

Contemporary DES vs. CABG LM Studies

Contemporary Trials of LM PCI vs CABG (> 100 pts, 2000-8)

* Studies with >100 patients per arm reported 2000-2008
ND=no difference; n/a=not available/not reported

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Drug Eluting Stent for LeFT Main (DELFT) Registry

Study population

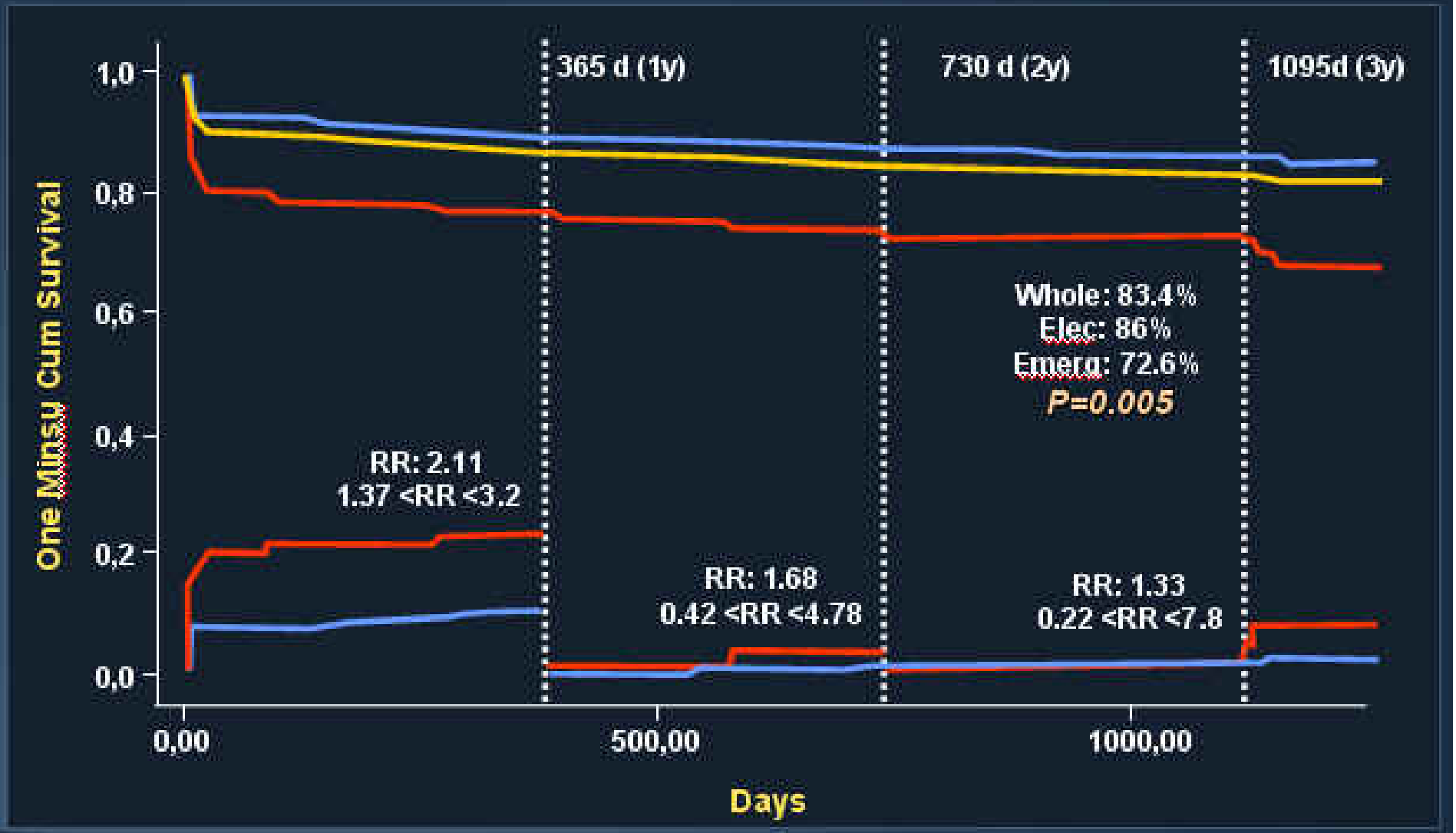
April 2002 → April 2004

358
consecutive patients with
de novo ULMCA disease

SES or PES

Meliga et al *J Am Coll Cardiol.* 2008 Jun 10;51(23):2212-9

DELFT K-M Survival Analysis – Death + MI



~20% emergent treatment

Meliga et al *J Am Coll Cardiol.* 2008 Jun 10;51(23):2212-9

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Left Main Ostial and Shaft Multicenter Registry - 2 year F/U

	n = 147
Death, n (%)	5 (3.4)
Cardiac Death	4 (2.7)
TLR, n (%)	1 (0.7)
TVR, n (%)*	7 (4.7)
MI, n (%)	0
MACE, n (%)	11 (7.4)

Chieffo et al *Circulation* 2007;116(2):158-162

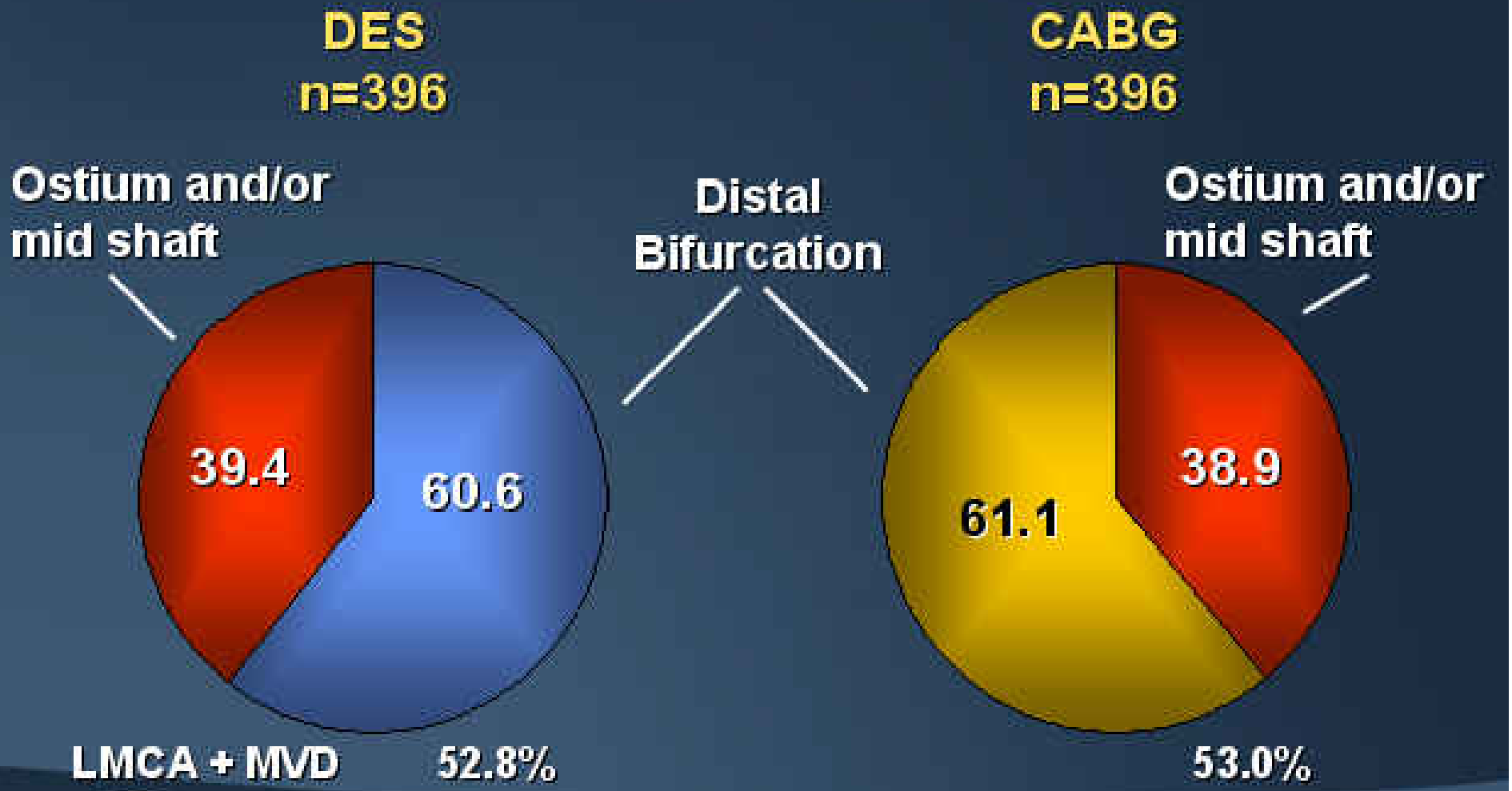
Late and Very Late Stent Thrombosis Multicenter Registry
Stent Thrombosis - ARC Definitions

	n = 731	
Definite Stent Thrombosis	4* (0.54%)	0.9%
Probable Stent Thrombosis	3 (0.4%)	
Possible Stent thrombosis	20 (2.7%)	

* 3 early ST; 1 late ST in a Taxus stent in LAD at 3 mos; none VLST

Chieffo et al *Eur Heart J* 2008 Jun 18

MAIN-COMPARE Study
Lesion Location – Matched Pairs



Seung KB et al: *N Engl J Med* 2008; 358:1781-92

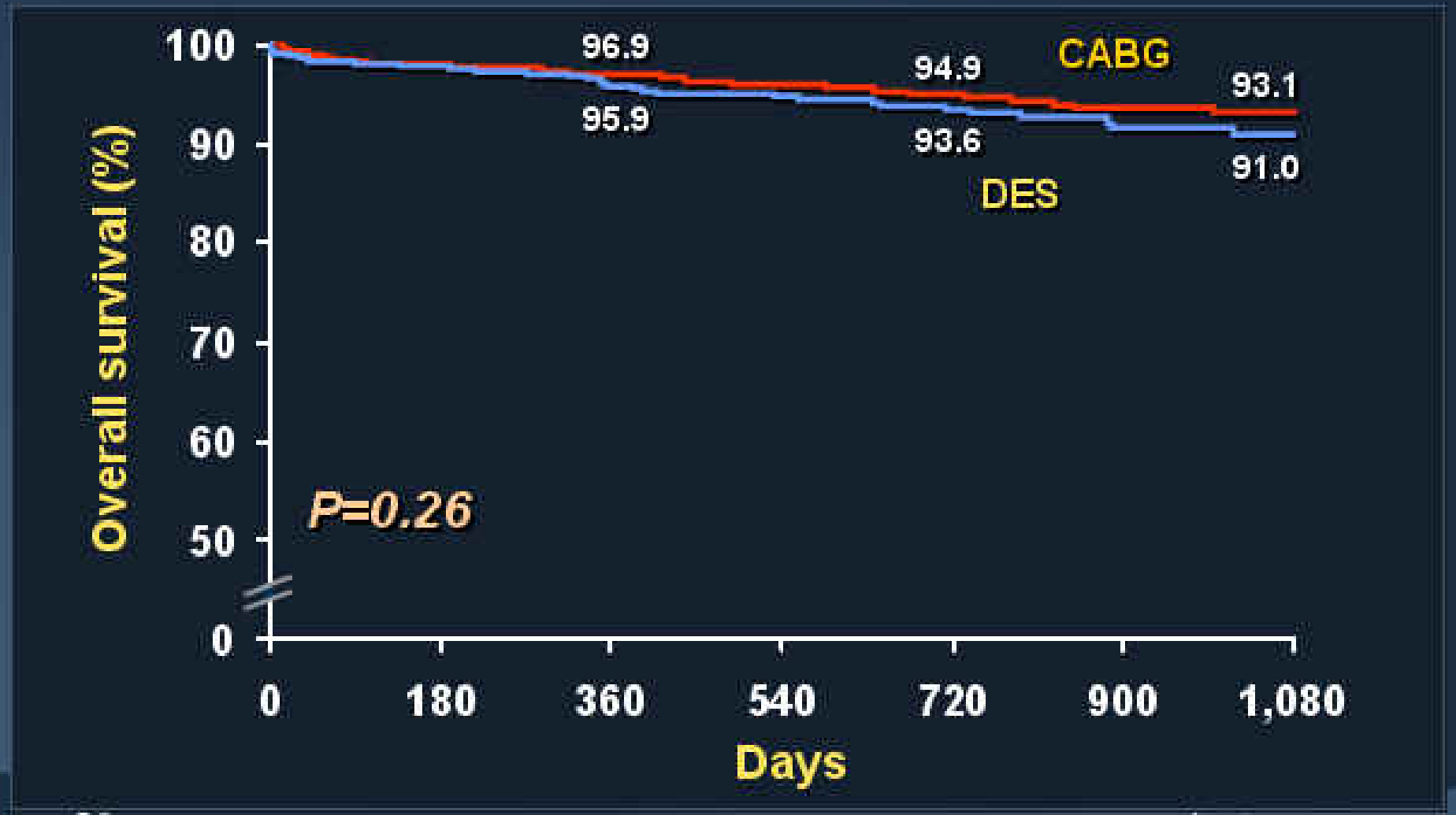
HR for Clinical Outcomes DES vs. Contemporary CABG Matched Cohort: 396 Pairs

Outcome	Wave 2 (396 pairs) Hazard ratio* (95% CI)	P
Death	1.36 (0.80-2.30)	0.26
Composite outcome (death, Q-wave myocardial infarction, or stroke)	1.40 (0.88-2.22)	0.15
Target-vessel revascularization	5.96 (2.51-14.10)	<0.001

* HR are for the stenting group, as compared with CABG group

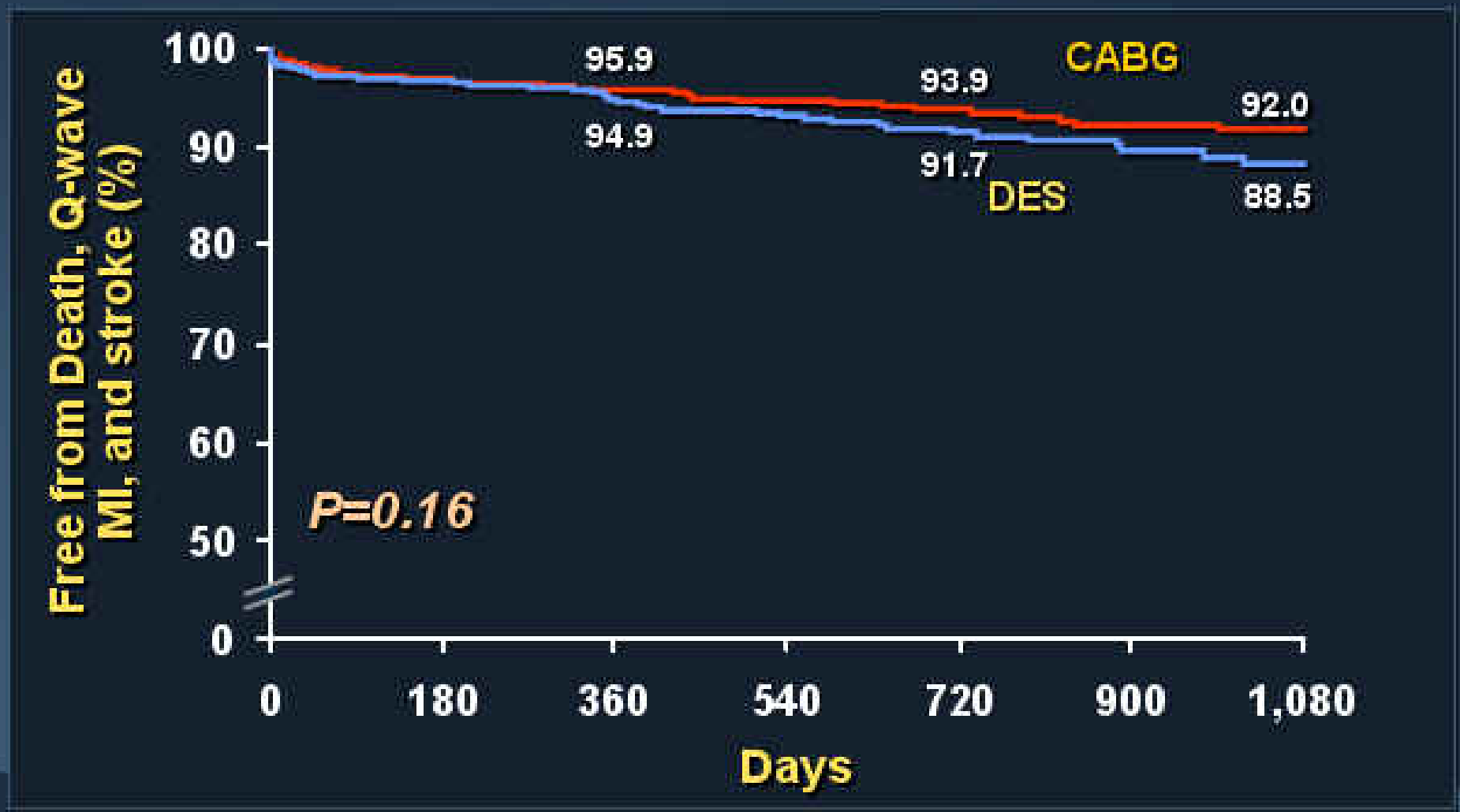
Seung KB et al: *N Engl J Med* 2008; 358:1781-92

Death - DES vs. CABG
Matched Cohort: 396 Pairs



Seung KB et al: *N Engl J Med* 2008; 358:1781-92

D, Q-MI, or Stroke - DES vs. CABG
Matched Cohort: 396 Pairs



Seung KB et al: *N Engl J Med* 2008; 358:1781-92

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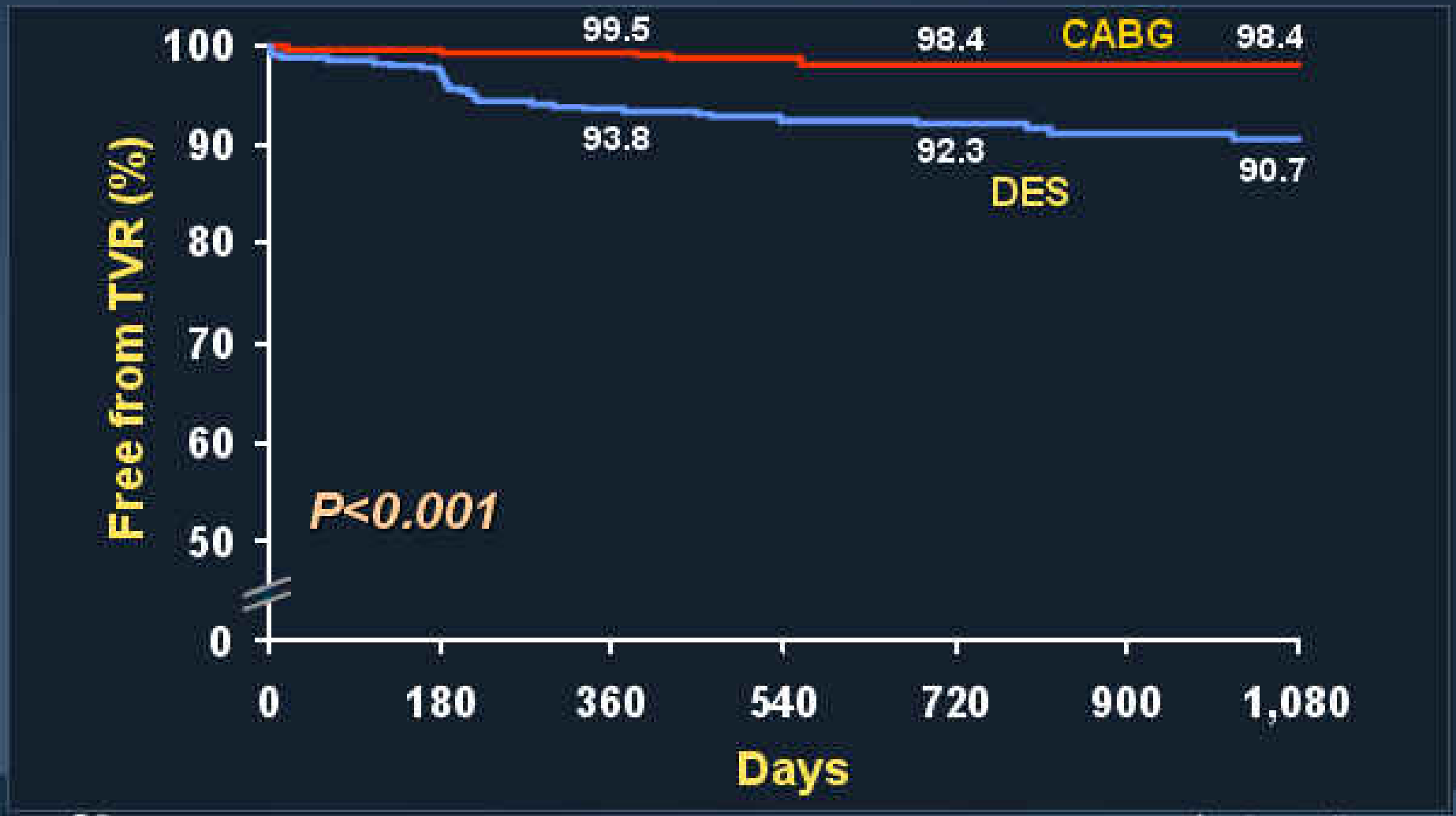
TVR - DES vs. CABG
Matched Cohort: 396 Pairs



Seung KB et al: *N Engl J Med* 2008; 358:1781-92

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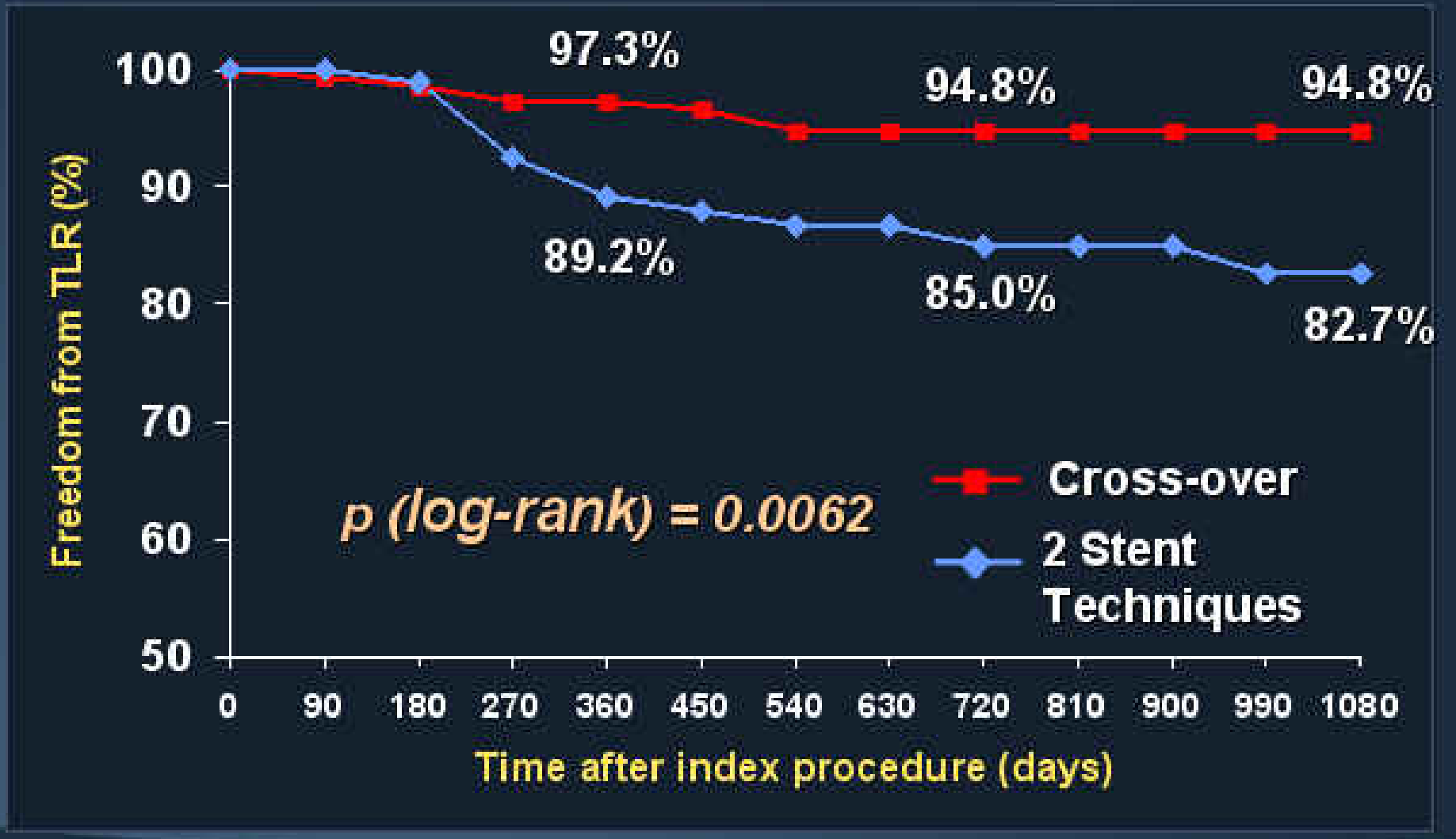
LM: One vs Two Stents @ Distal Bifurcation
EFS from TLR @ 3 yrs



Pooled LM AMC Data Analysis 2007 (n=570)

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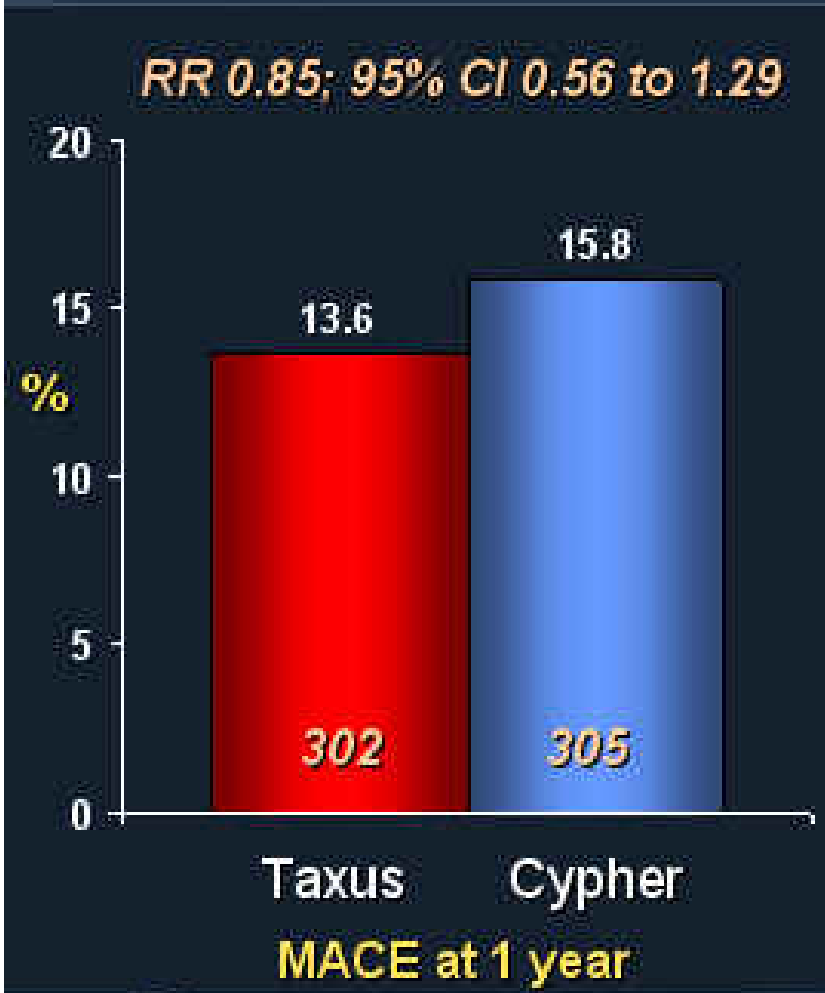
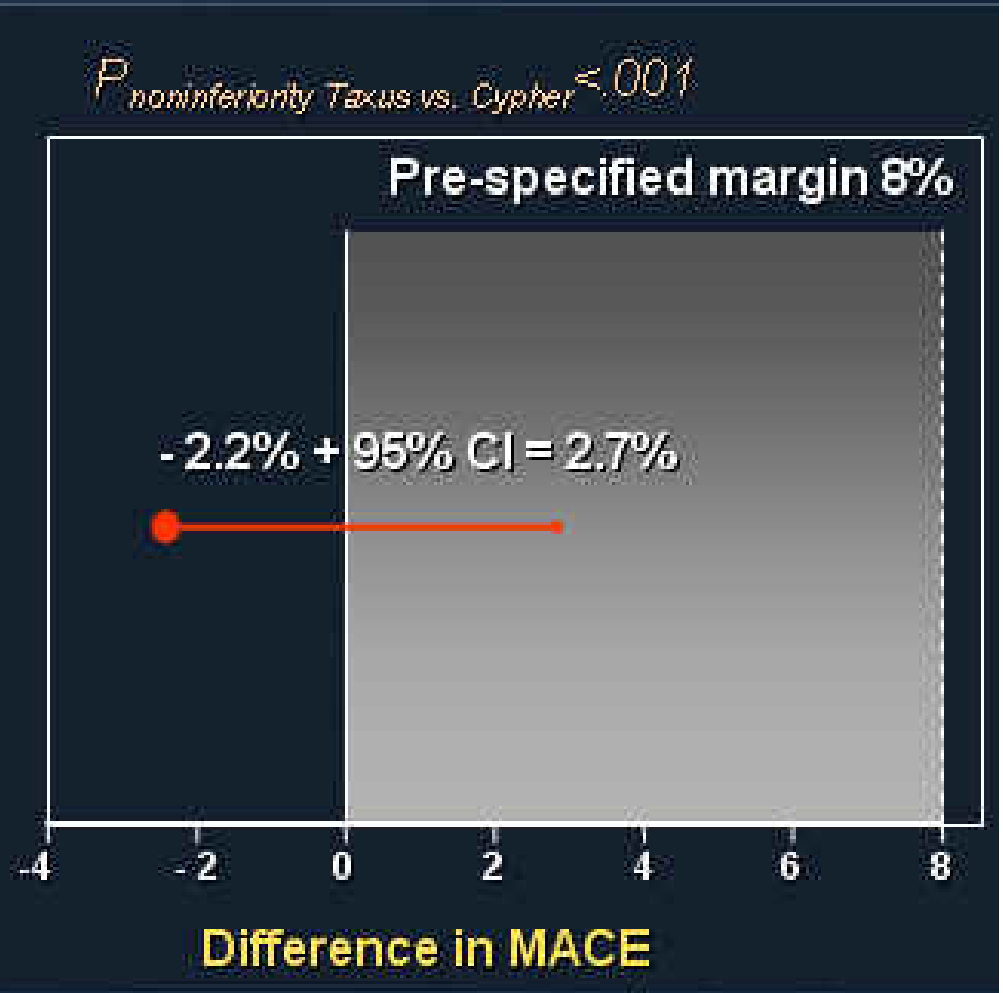
ISAR Left Main
Primary Endpoint: 1-Year MACE





Courtesy of Dr. J Mehilli: TCT 2008

DES vs. CABG for LMCA Disease

Before SYNTAX

Despite society (ACC/AHA/SCAI and ESC) negative recommendations for elective LM PCI (Class IIb or III), recent data with DES indicates…

- **Elective PCI (non-emergent) with DES is associated with favorable clinical outcomes up to 3 yrs**
- **LM ostial and shaft lesions have particularly good clinical outcomes, including low repeat revascularization frequency up to 2 years**
- **Stent thrombosis - esp. late and very late - has been uncommon (rare) in multiple series**

DES vs. CABG for LMCA Disease

Before SYNTAX

- Matched comparisons of DES vs. CABG indicate similar "hard" clinical events (death, MI, stroke) but still higher revascularization rates with DES (Δ ~8% at 3 years FU)
- A simplified 1 stent "crossover" technique is favored with lower repeat revascularization cw more complex 2 stent techniques
- There were no significant differences when comparing SES vs. PES in the treatment of unprotected LM lesions (including repeat revascularization)

PCI vs. CABG

SYNTAX

LM Insights

Procedural Characteristics

CABG Randomized Cohort

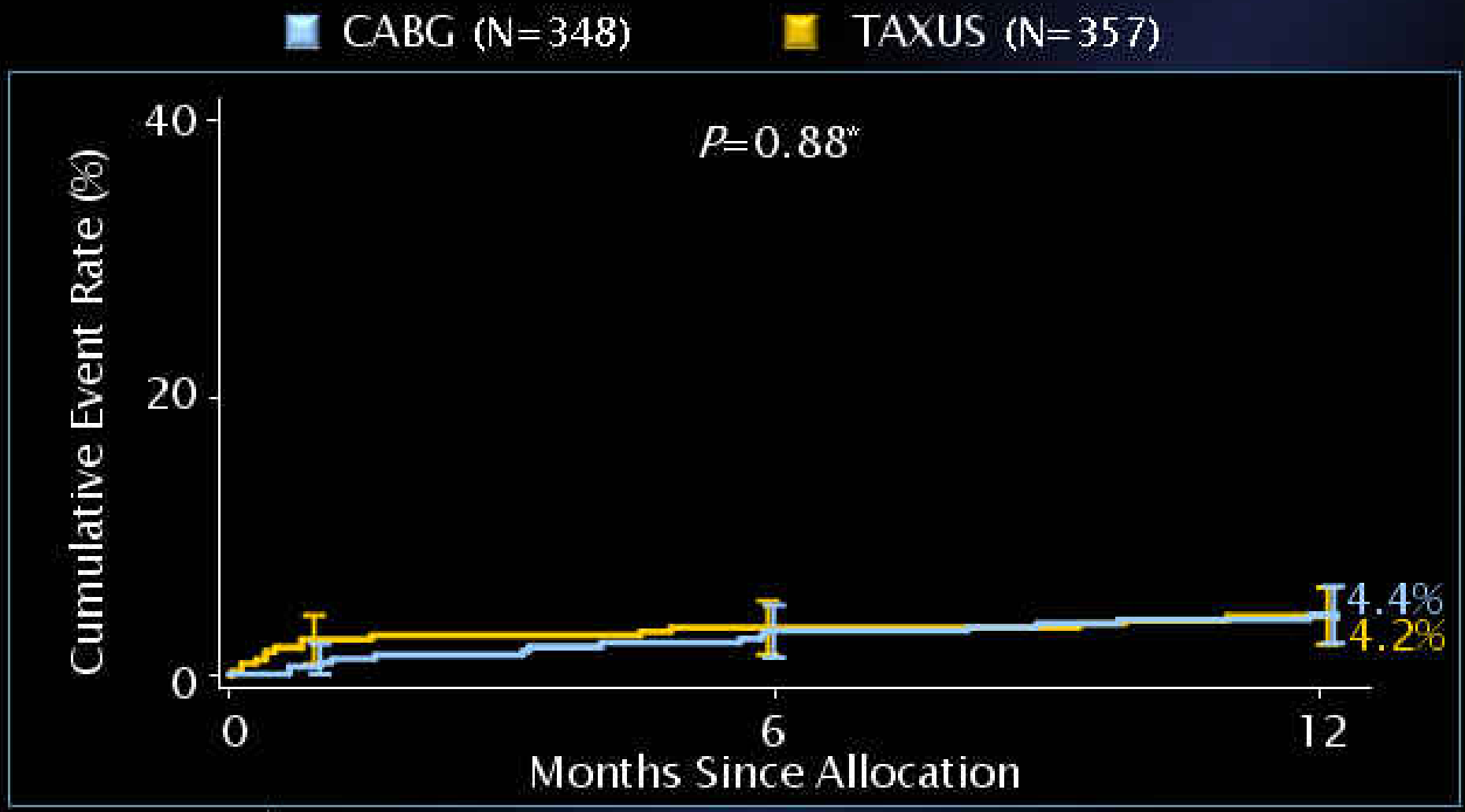
SYNTAX

	CABG N=897
Off-pump surgery, %	15.0
Graft revascularization, %	
At least one arterial graft	97.3
Arterial graft to LAD	95.6
LIMA±venous	78.1
Double LIMA/RIMA	27.6
Complete arterial revascularization	18.9
Radial artery	14.1
Venous graft only	2.6
Grafts per patient, mean ± SD	2.8 ±0.7
Distal anastomosis/pt, mean ± SD	3.2 ±0.9

Death (All-cause) to 12 Months

Left Main Subset

SYNTAX



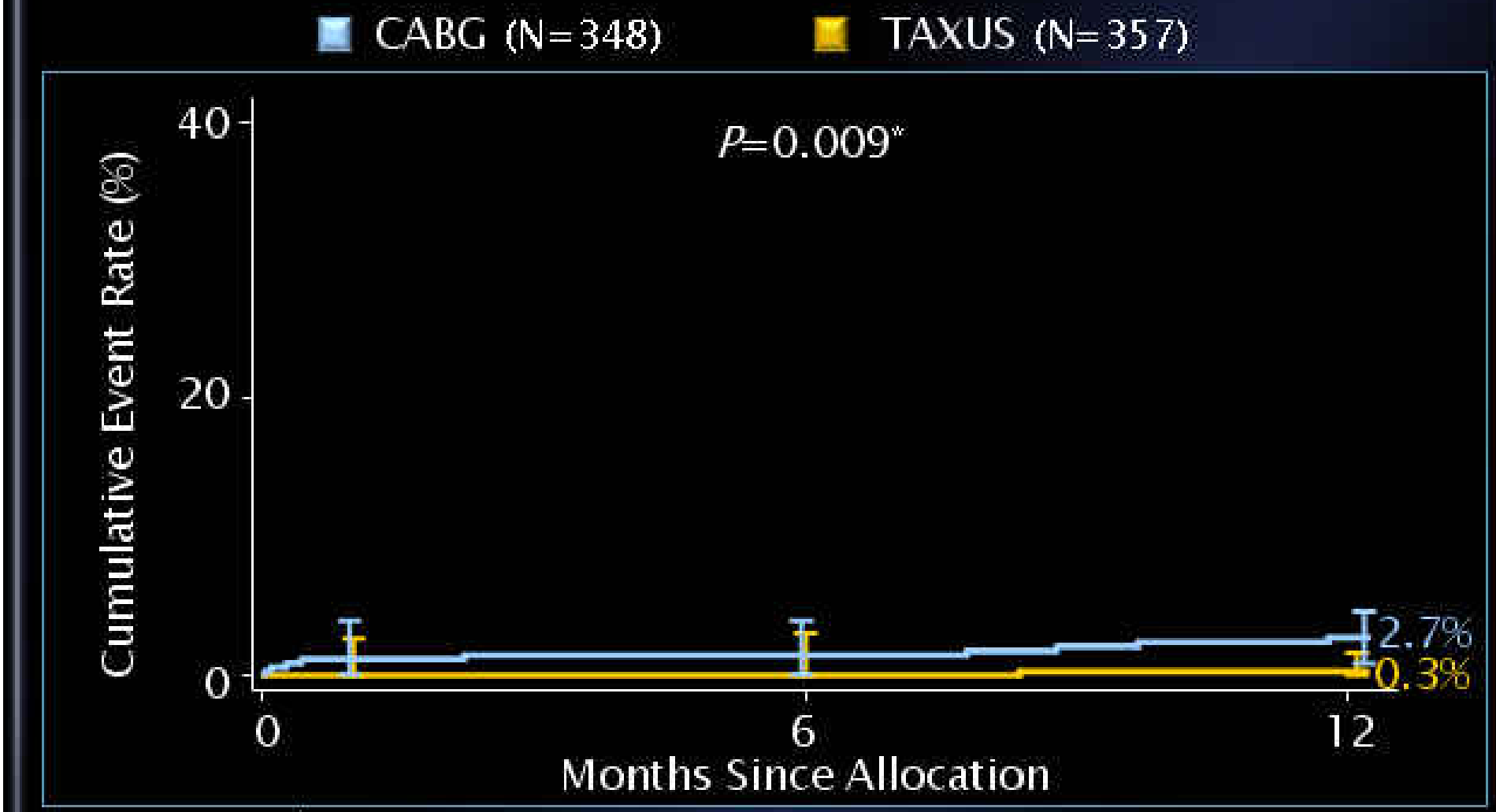
Event rate ± 1.5 SE, *Fisher exact test

ITT population

CVA (Stroke) to 12 Months

Left Main Subset

SYNTAX

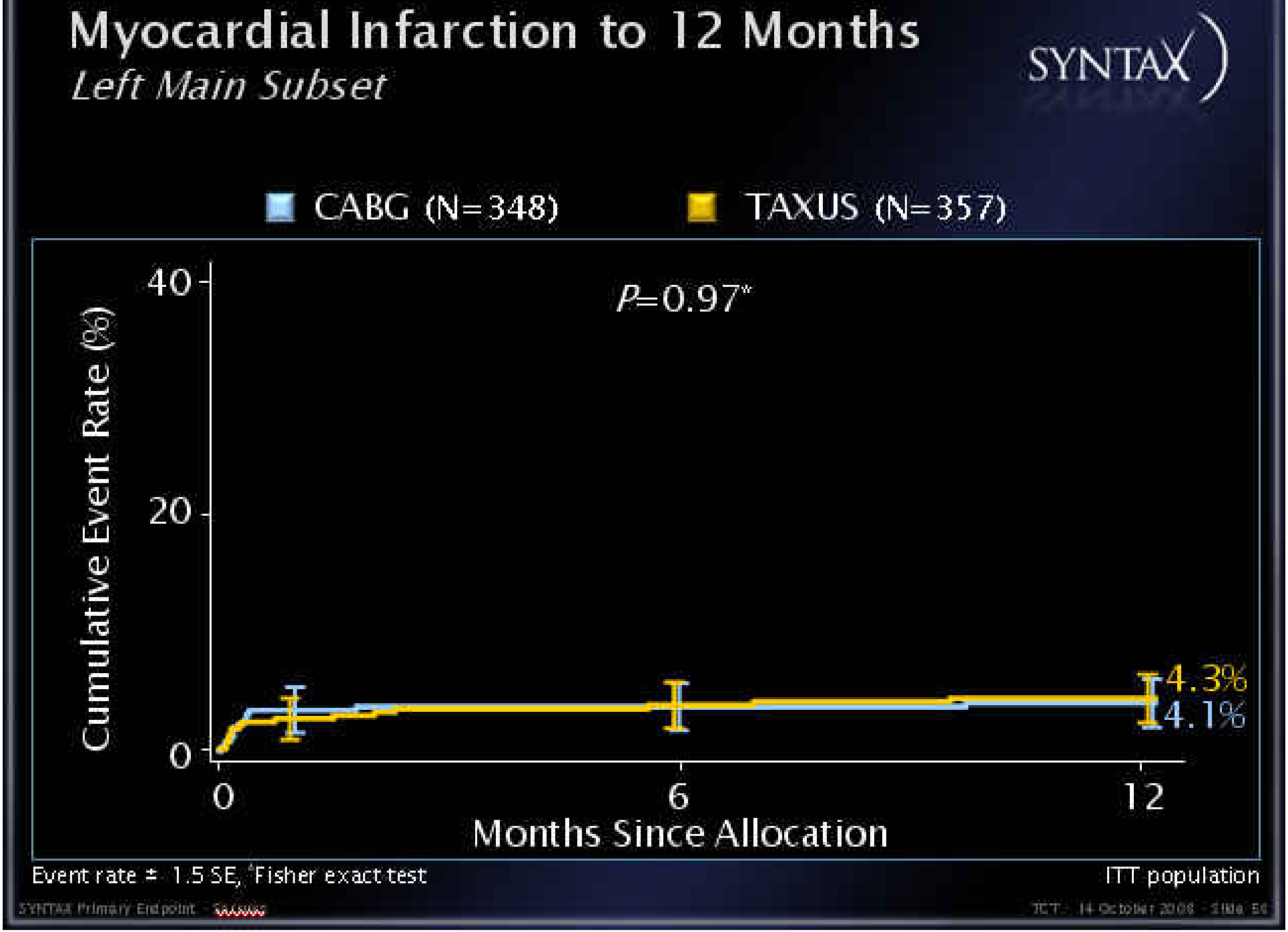


Event rate ± 1.5 SE, *Fisher exact test

ITT population

Myocardial Infarction to 12 Months

Left Main Subset



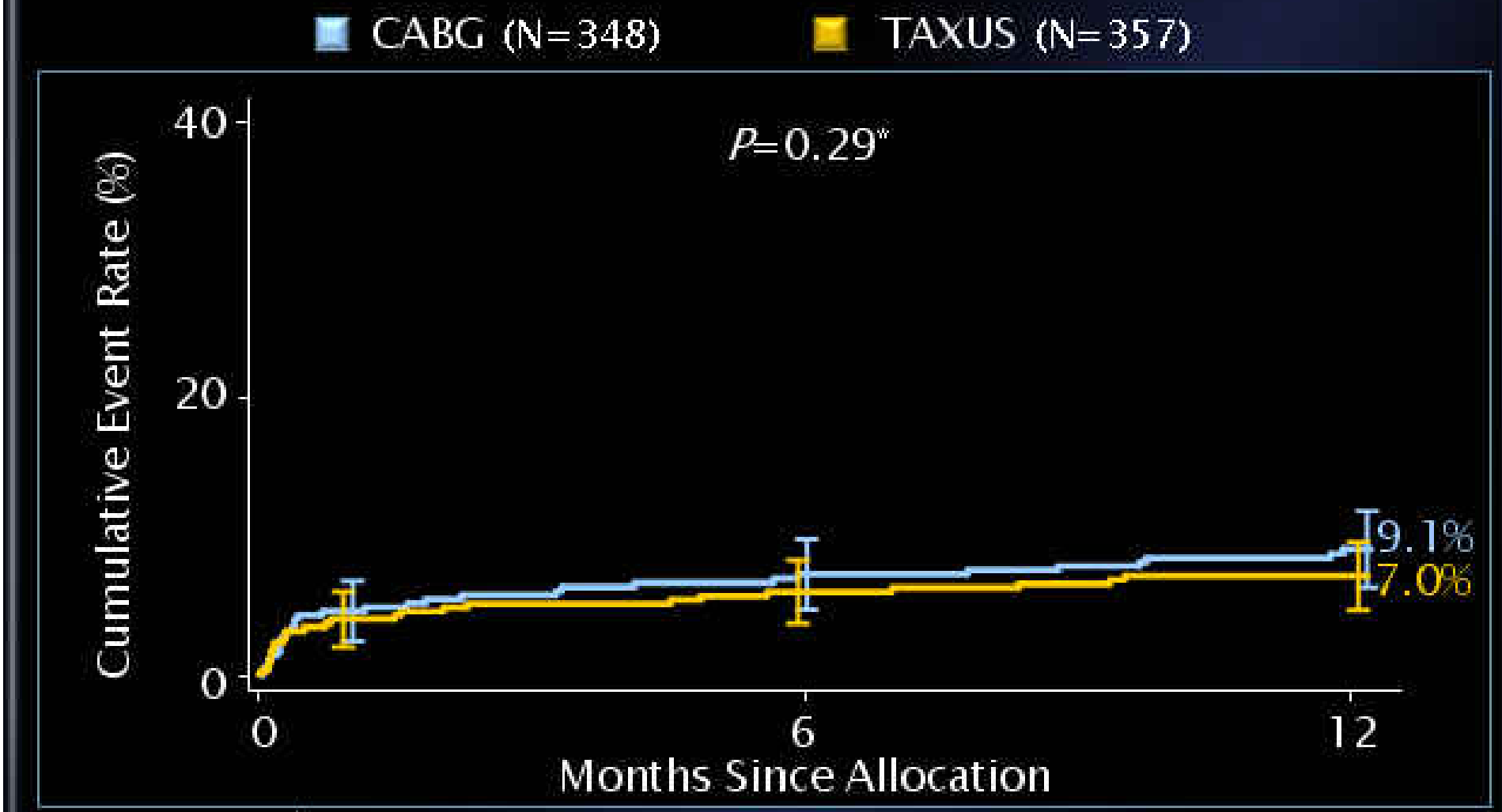
Event rate ± 1.5 SE, *Fisher exact test

ITT population

Death/CVA/MI to 12 Months

Left Main Subset

SYNTAX

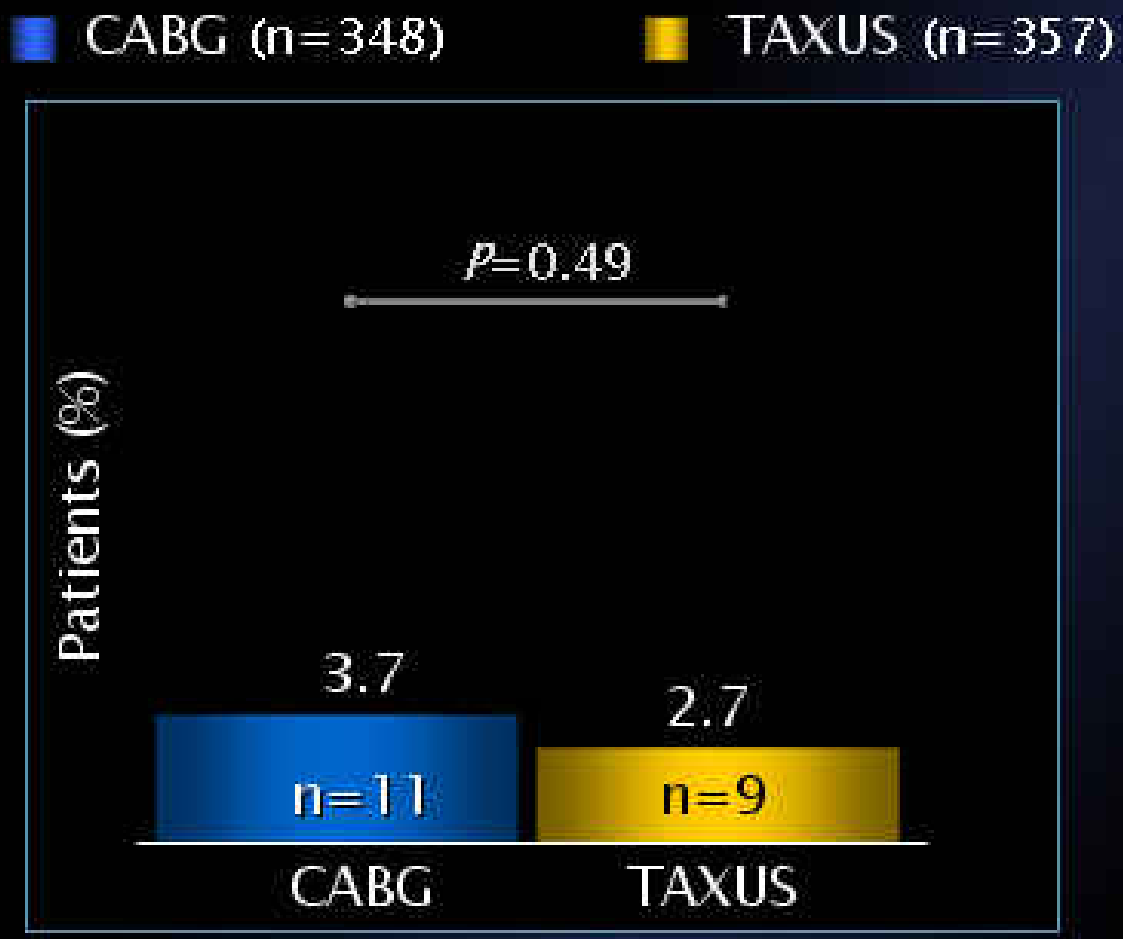


Event rate ± 1.5 SE, *Fisher exact test

ITT population

Symptomatic Graft Occlusion & Stent Thrombosis to 12 Months

Left Main Subset

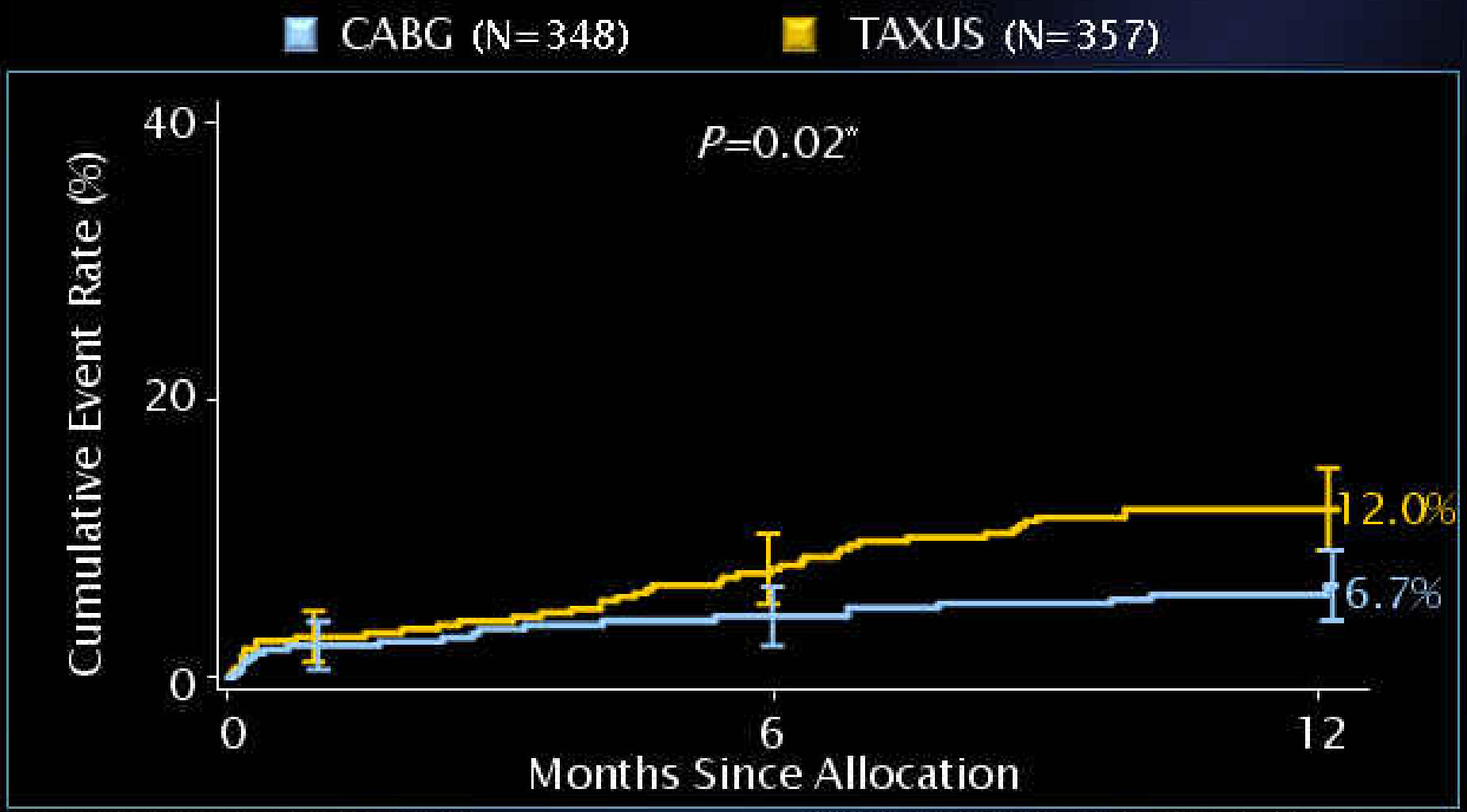


ITT population

Revascularization* to 12 Months

Left Main Subset

SYNTAX

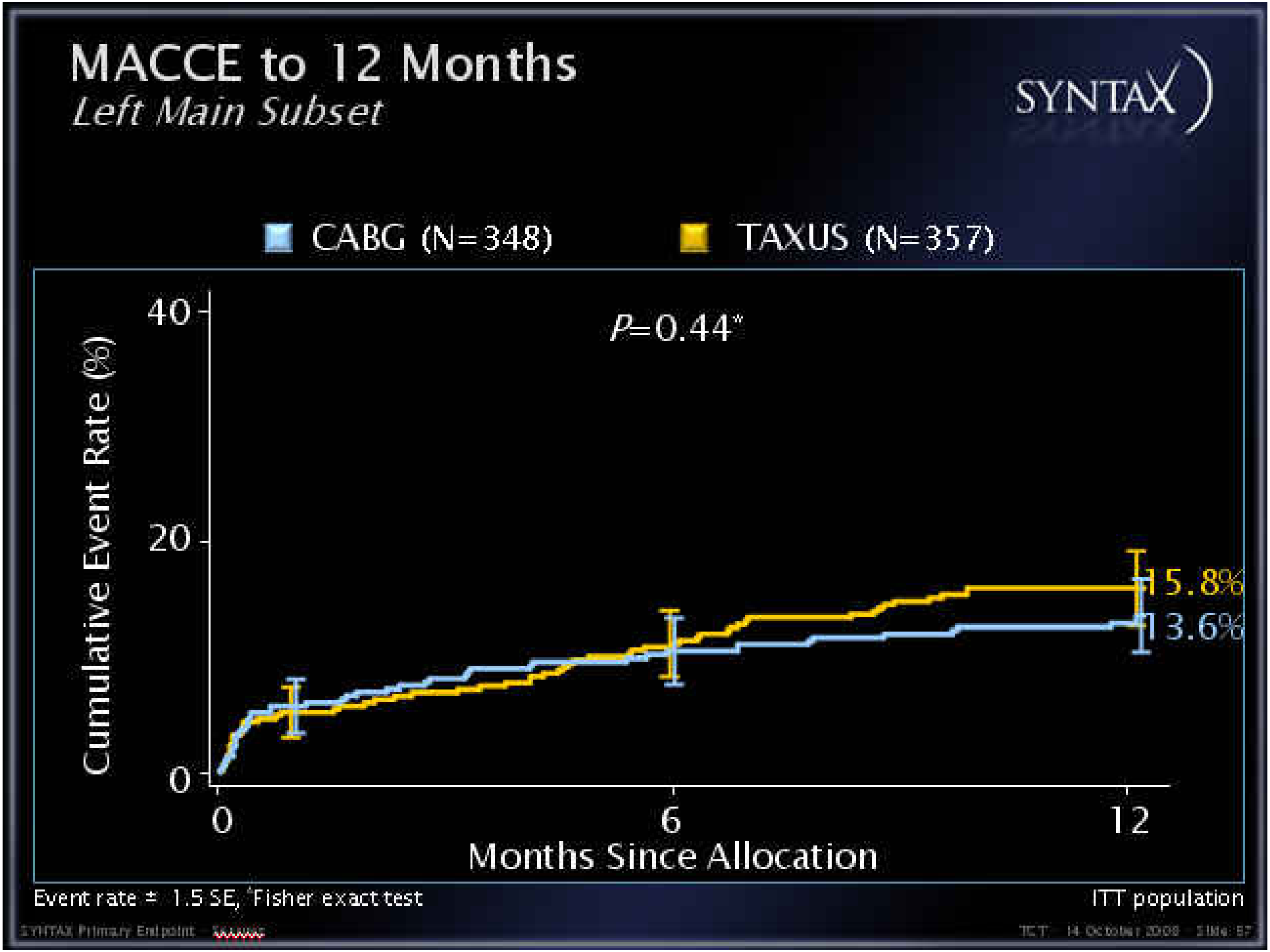


Event rate ± 1.5 SE, *Fisher exact test

*Any revascularization (PCI or CABG); ITT population

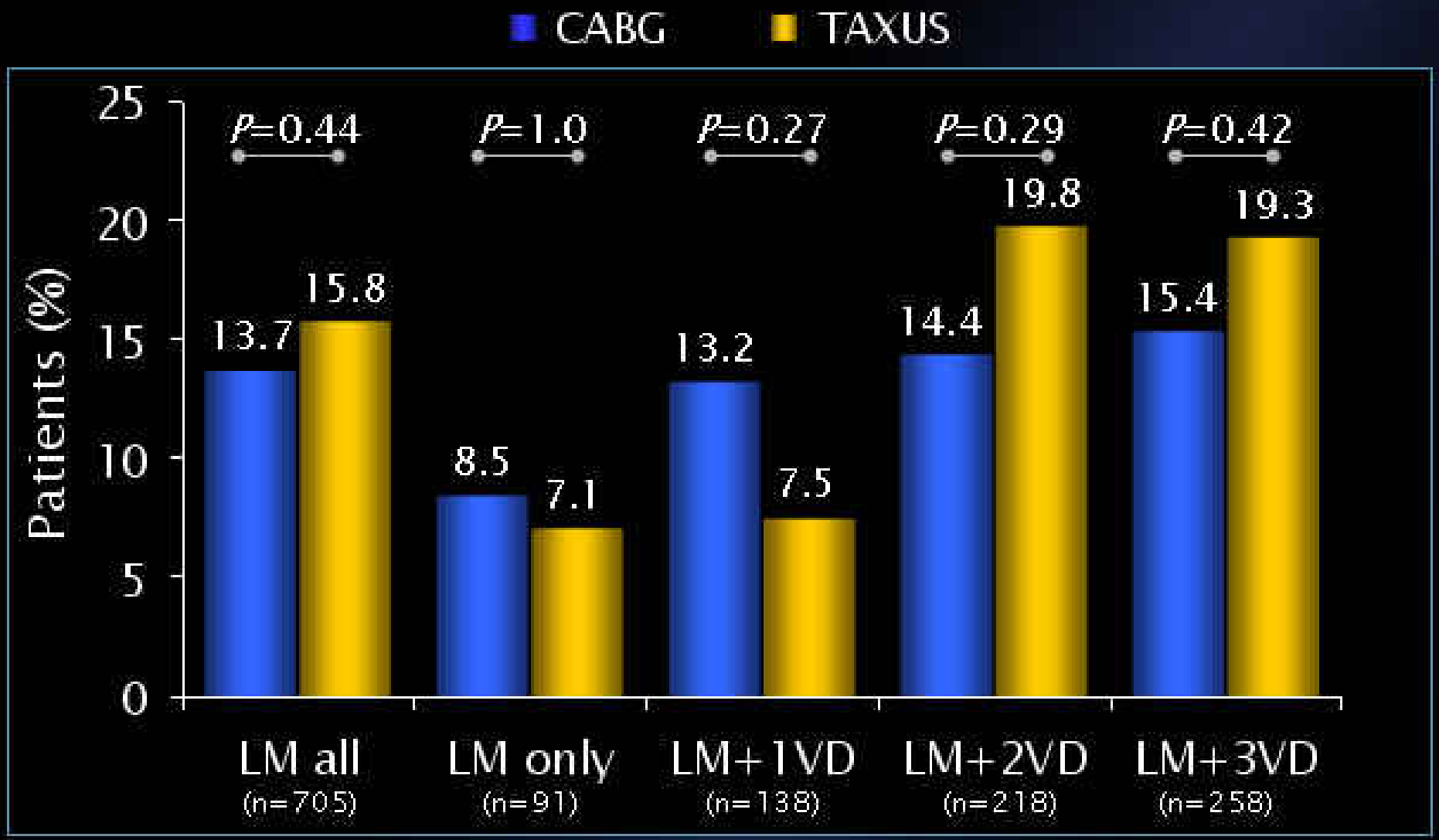
MACCE to 12 Months

Left Main Subset



Overall MACCE at 12 Months

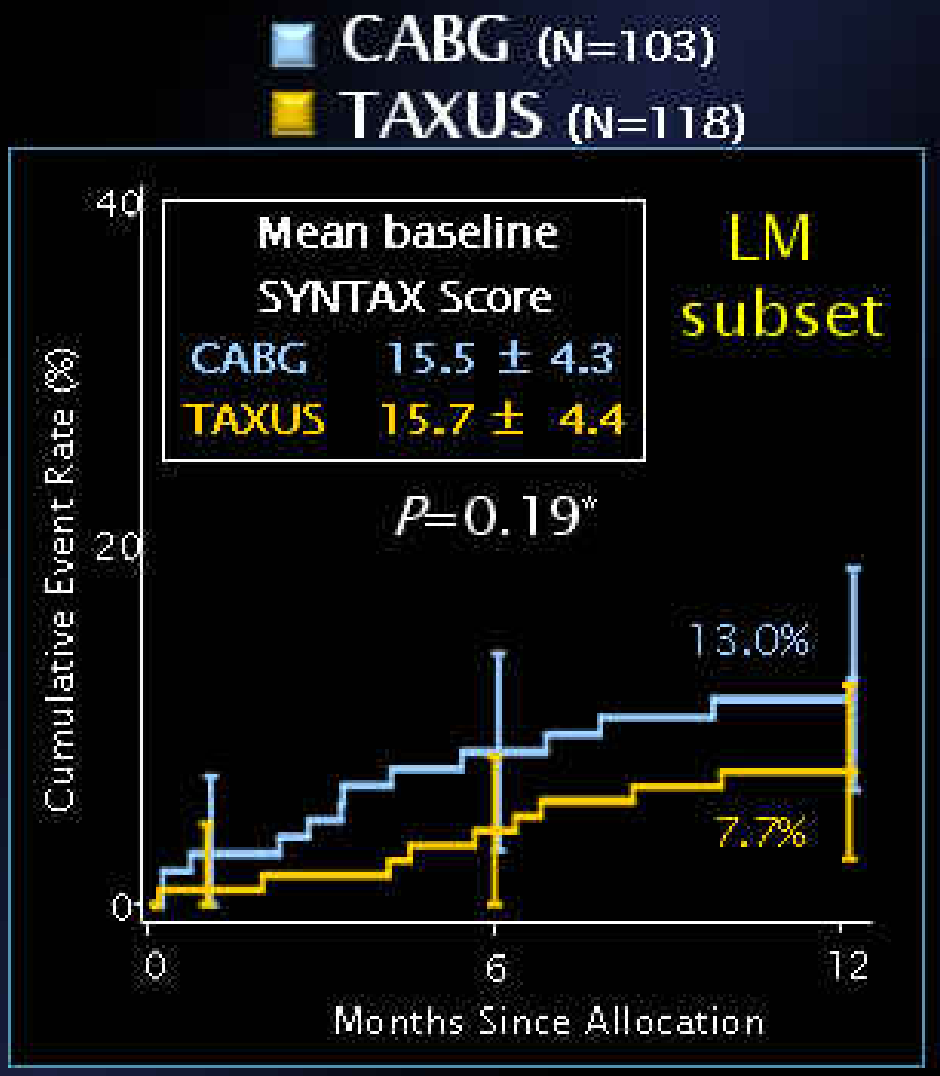
Left Main Subset



ITT population

MACCE to 12 Months by SYNTAX Score Tertile *Low Scores (0–22)*

	CABG	PCI	P-value
Death	3.0	0.9	0.15
CVA	2.0	0.0	0.21
MI	2.0	1.7	1.0
Death, CVA or MI	6.1	1.7	0.15
Revasc.	8.1	7.7	0.22



Event rate ± 1.5 SE, *Fisher exact test

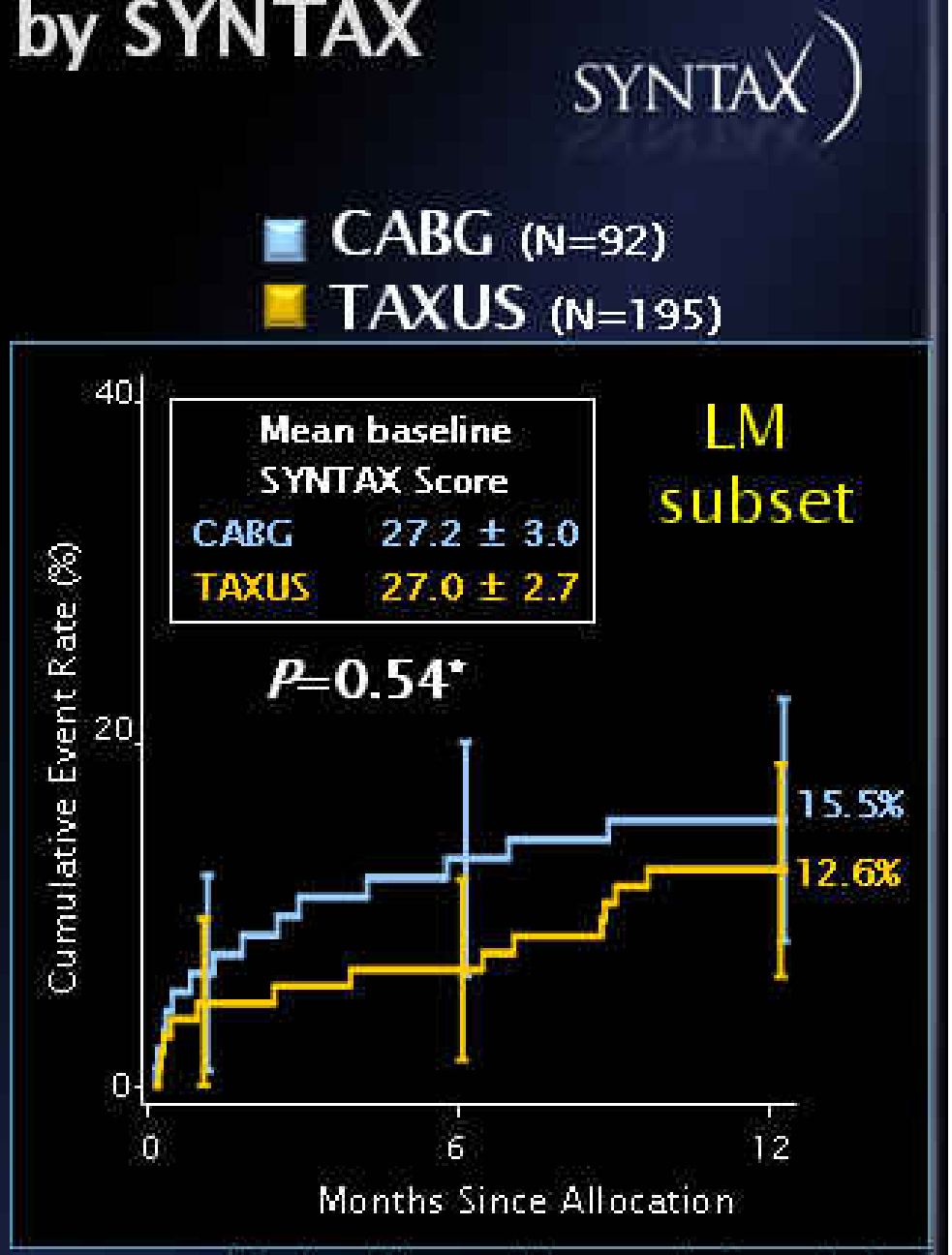
Calculated by core laboratory; ITT population

MACCE to 12 Months by SYNTAX Score Tertile

Intermediate Scores (23–32)

	CABG	PCI	P-value
Death	6.7	1.0	0.051
CVA	2.2	0.0	0.21
MI	3.4	2.9	1.0
Death, CVA or MI	10.1	3.9	0.09
Revasc.	7.9	9.7	0.65

Event Rate ± 1.5 SE, *Fisher exact test



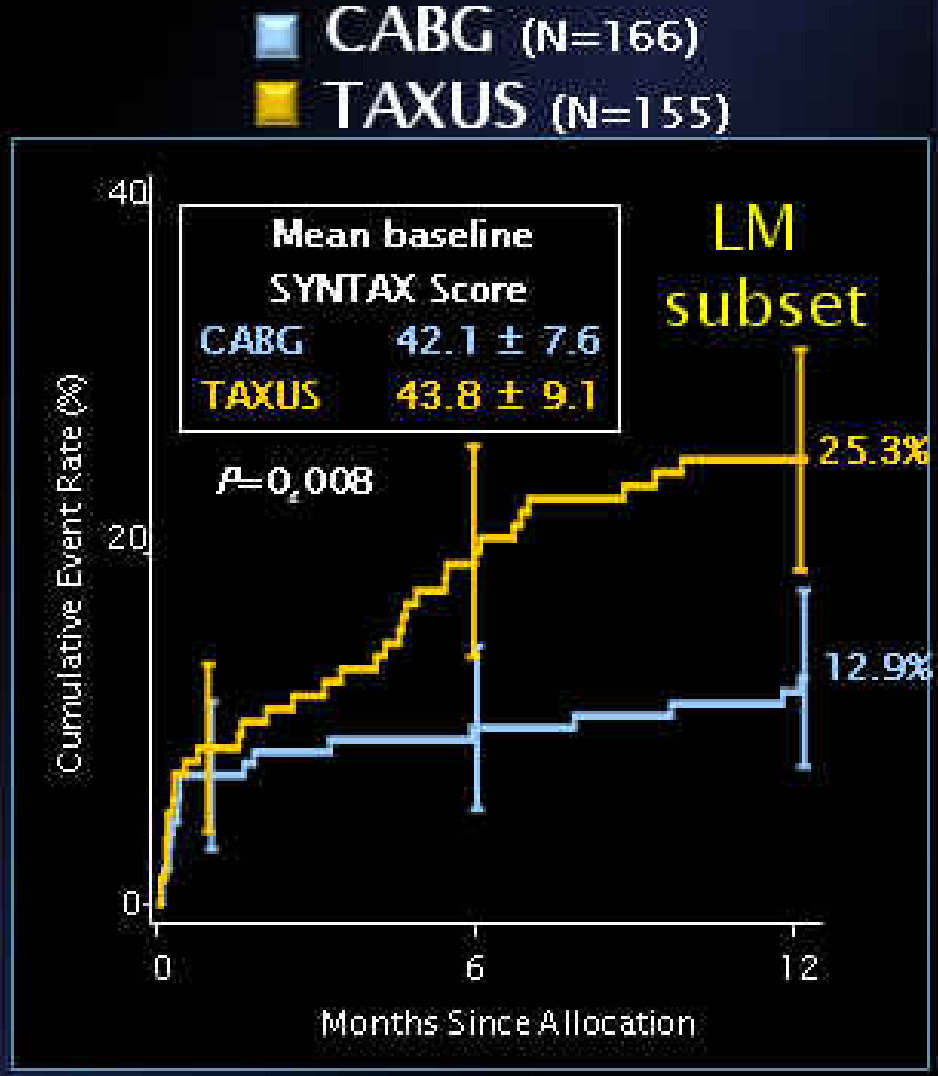
Calculated by core laboratory; ITT population

MACCE to 12 Months by SYNTAX Score Tertile

High Scores (≥33)

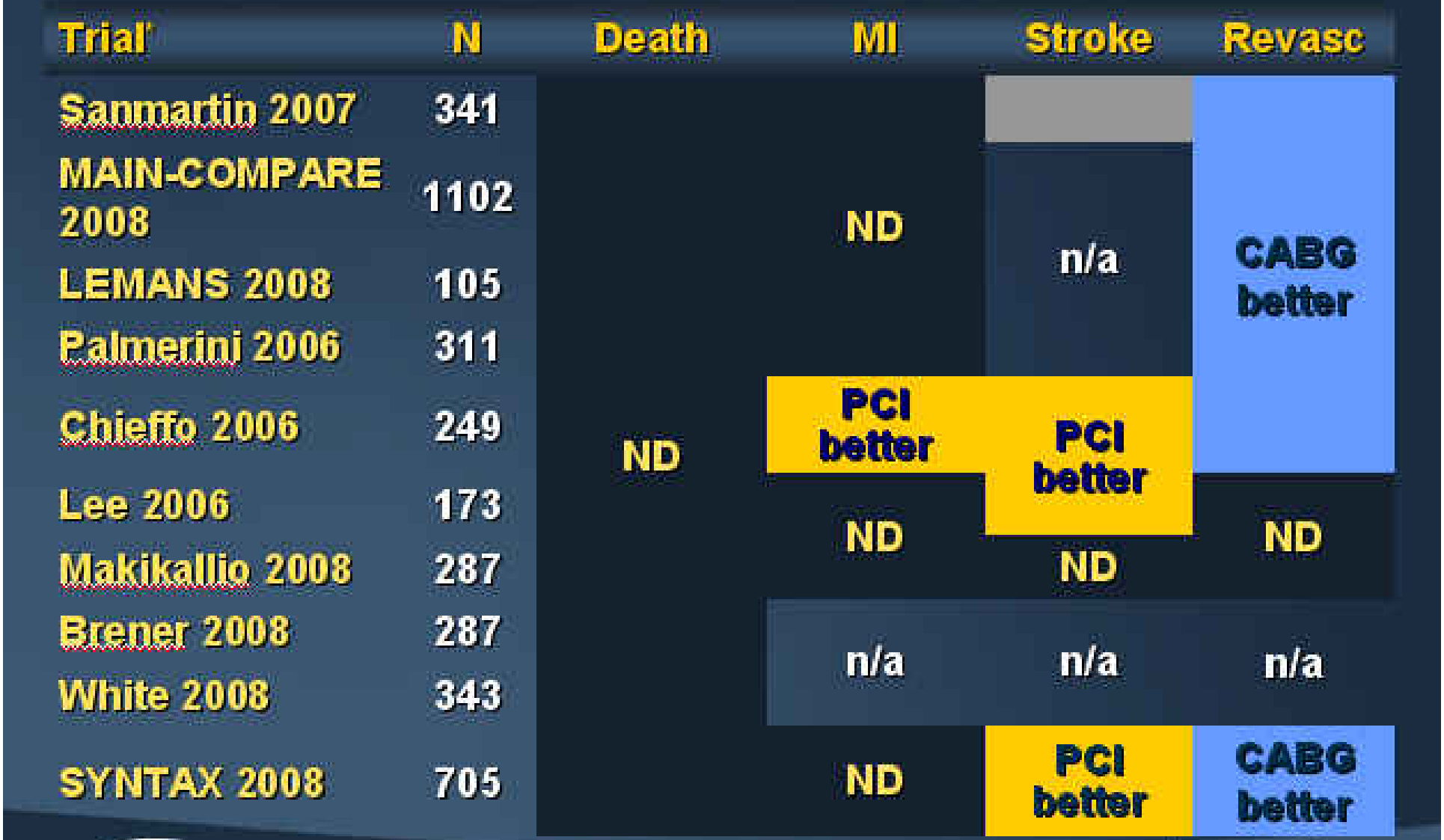
	CABG	PCI	P-value
Death	4.1	9.7	0.06
CVA	3.4	0.7	0.69
MI	6.1	7.5	0.65
Death, CVA or MI	10.9	14.2	0.41
Revasc.	4.8	17.2	<0.01

Event Rate ± 1.5 SE, *Fisher exact test



Calculated by core laboratory; ITT population

Contemporary Trials of LM PCI vs CABG



* Studies with >100 patients per arm reported 2000-2008
ND=no difference; n/a=not available/not reported

Final Thoughts on LM Therapy

DES vs. CABG for LMCA Disease

Beyond SYNTAX

First, there is still some unfinished business from the SYNTAX trial…

- **Late FU beyond one year (critical to assess all late clinical endpoints – death, MI, TVR, and esp. ST) to see if CABG late advantage emerges**
- **Late angiographic FU (subset) in both the PCI and CABG cohorts at 18 months**

DES vs. CABG for LMCA Disease

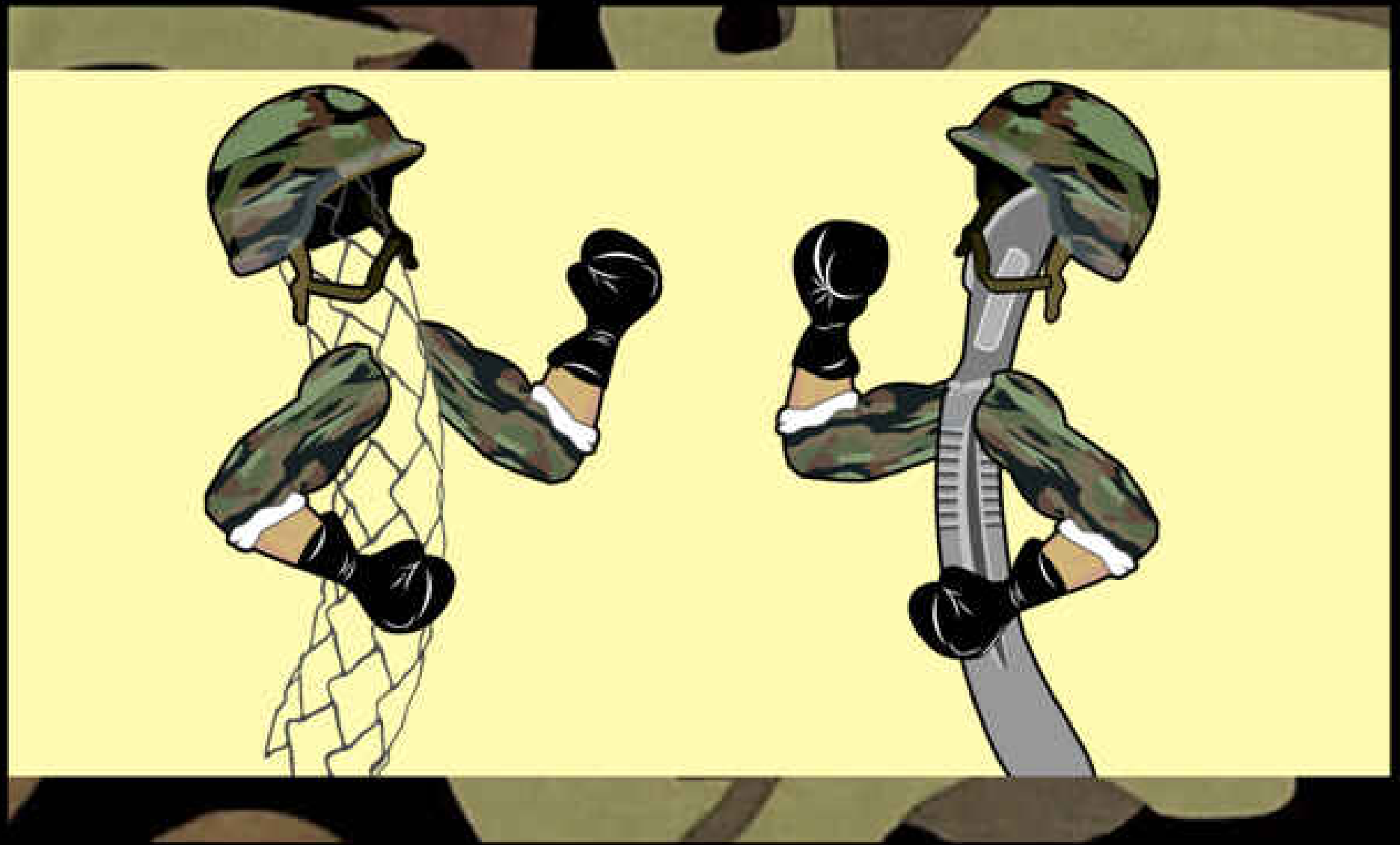
Beyond SYNTAX

Next, there are many unanswered questions after SYNTAX…

- **Will a "definitive" RCT in unprotected LMCA show same outcomes? (requires ~2,500 patients)**
- **Are there patient subsets from SYNTAX (e.g. highest tercile ≥ 33) who should not be candidates for LM PCI therapy?**
- **What is the optimal anti-platelet pharmacotherapy for unprotected LM PCI? …will revised clopidogrel dosing schemes (with platelet responsiveness monitoring) or prasugrel make a difference?**

COMBAT

Randomized COMparison of Bypass Surgery versus AngioplasTy using Sirolimus-Eluting Stent in Patients with Left Main Coronary Artery Disease



DES vs. CABG for LMCA Disease

Beyond SYNTAX

- Does LM lesion location (and morphology) influence clinical outcomes (e.g. ostial/shaft vs. distal)?
- Will a safer (↓ST) or more effective (↓TLR) DES change overall clinical outcomes in a vs. CABG RCT?
- What differences should we expect from the evolving dedicated bifurcation LM stents?
- Is IVUS helpful or necessary in LM stenting?
- What is the optimal technique for distal bifurcation LM stenting - will simple "crossover" 1 stent therapy prevail for most patients in the future?

DES vs. CABG for LMCA Disease

Beyond SYNTAX

In the meantime, what should be the recommendations for unprotected LMCA stenting?

- **The "hard" endpoints of death/MI/stroke are similar between DES and CABG. Certainly, based upon the current data, *change the recommendation for elective unprotected LMCA PCI as an alternative to CABG to Class IIa (B) in pre-specified subsets***
- **Favor ostial/shaft lesions and "simpler" distal bifurcation lesions (treated using single stent provisional "crossover" techniques)**

DES vs. CABG for LMCA Disease

Beyond SYNTAX

- Discourage ultra-complex LM or LM + MVD anatomy (e.g. SYNTAX score $\geq$ 33)
- Patient-focused, case-based decision-making should be emphasized with careful informed consent (I strongly advise all patients to speak with both surgeons and interventionalists before making a choice). Favor PCI in patients with "high risk" surgical profiles, and favor CABG when PCI results may be sub-optimal (↑lesion complexity, ? long-term DAPT, etc.)

DES vs. CABG for LMCA Disease

Sorry David…

- *There will be endless debates among interventional and surgery thought leaders which will be very entertaining, but in the last analysis, PCI will be the preferred and most frequently utilized therapy for unprotected LM lesions in the future!*


David has already
drifted to the “dark side”!