

Surgical or percutaneous coronary revascularisation: which is best?

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No conflicts of interest

What is known now?

- Coronary revascularisation provides relief of angina symptoms
- Revascularisation has been shown to improve prognosis in higher risk patients (e.g. 3VD, LV dysfunction, ACS) compared to medical therapy
- Randomised comparisons of percutaneous and surgical revascularisation in multi-vessel coronary disease provide further information

One-year outcomes of coronary artery
bypass graft surgery versus
percutaneous coronary intervention with
multiple stenting for multisystem disease:
A meta-analysis of individual patient data
from randomized clinical trials

Nestor Mercado, William Wijns, Patrick
Serruys, Ulrich Sigwart, Marcus Flather,
Rodney Stables, William O'Neill, Alfredo
Rodriguez, Pedro Lemos, Whady Hueb,
Bernard Gersh, Jean Booth, and
Eric Boersma

J Thorac Cardiovasc Surg 2005;130:512-9

Methods

- 4 Trials included: ARTS-1, SoS, ERACI-2, MASS-2 (medical)
- Patients enrolled during 1995-2000
- Individual patient level data analysis
- Primary outcome measure: combined rate of death, non-fatal MI or stroke at one year
- Secondary outcomes include repeat revascularisation

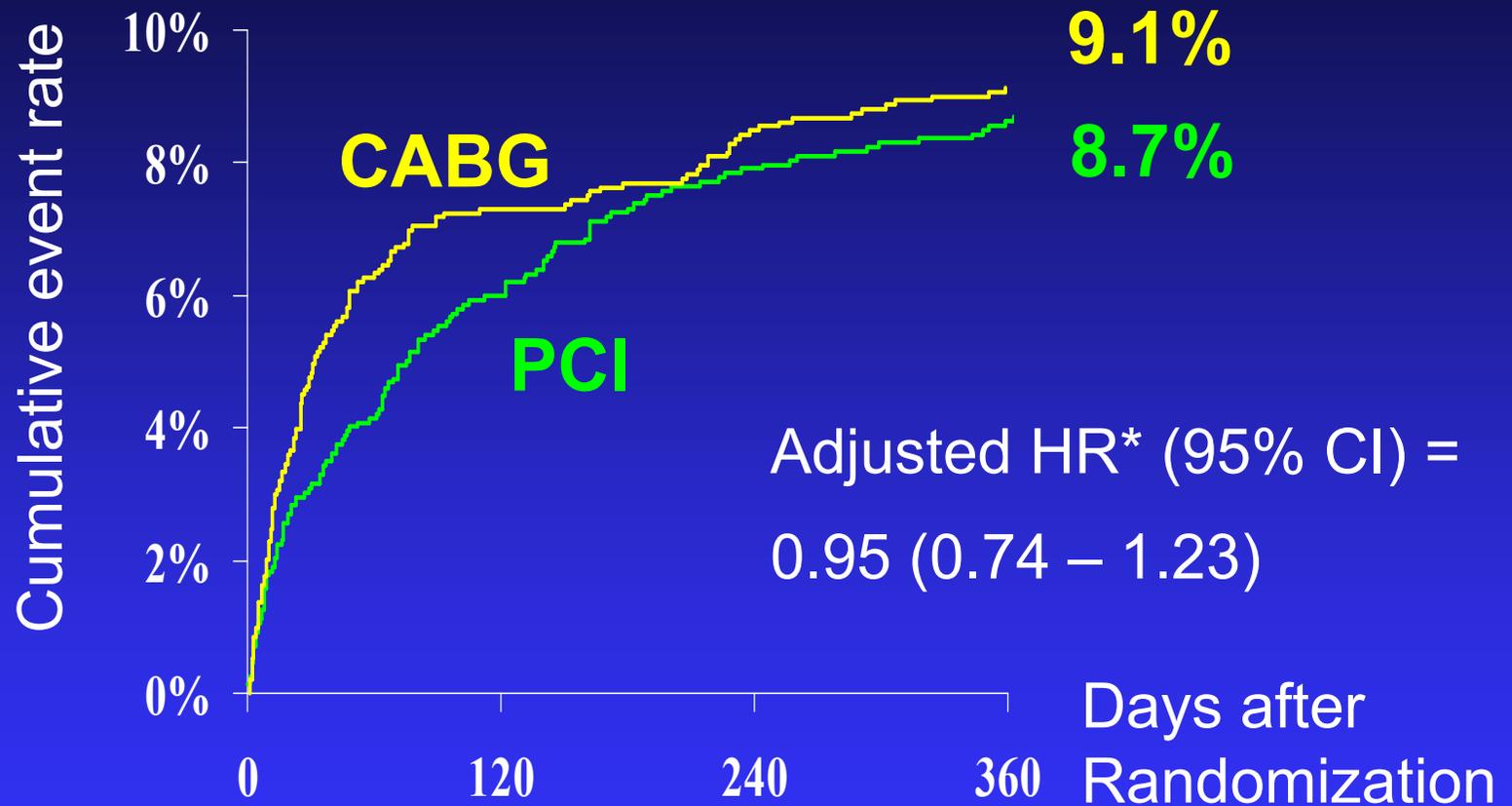
Baseline characteristics/1

	PCI + Stent 1518	Surgery 1533	
Mean Age (yrs ± sd)	61 (53, 68)	61 (54, 68)	
Male gender (%)	76.5	76.6	
Prior MI (%)	43	41	
Diabetes (%)	17.5	18.4	
EF (%)	59±11	59±11	
Unstable angina	28.5	27	
Lesions >50% sten	2.74±0.98	2.79±0.95	
Length of stay	2 (1, 4)	8 (6, 10)	P<0.001

Baseline characteristics/2

	PCI + Stent	Surgery	
Time from rand to treatment (mean \pm SD)	15 \pm 22 days	20 \pm 29 days	P<0.01
Received assigned treatment	98%	96%	
Mean no. of lesions revascularised (\pm SD)	2.4 \pm 1.1	2.7 \pm 0.8	P<0.01
“Complete” Revascularization	54%	82%	P<0.001

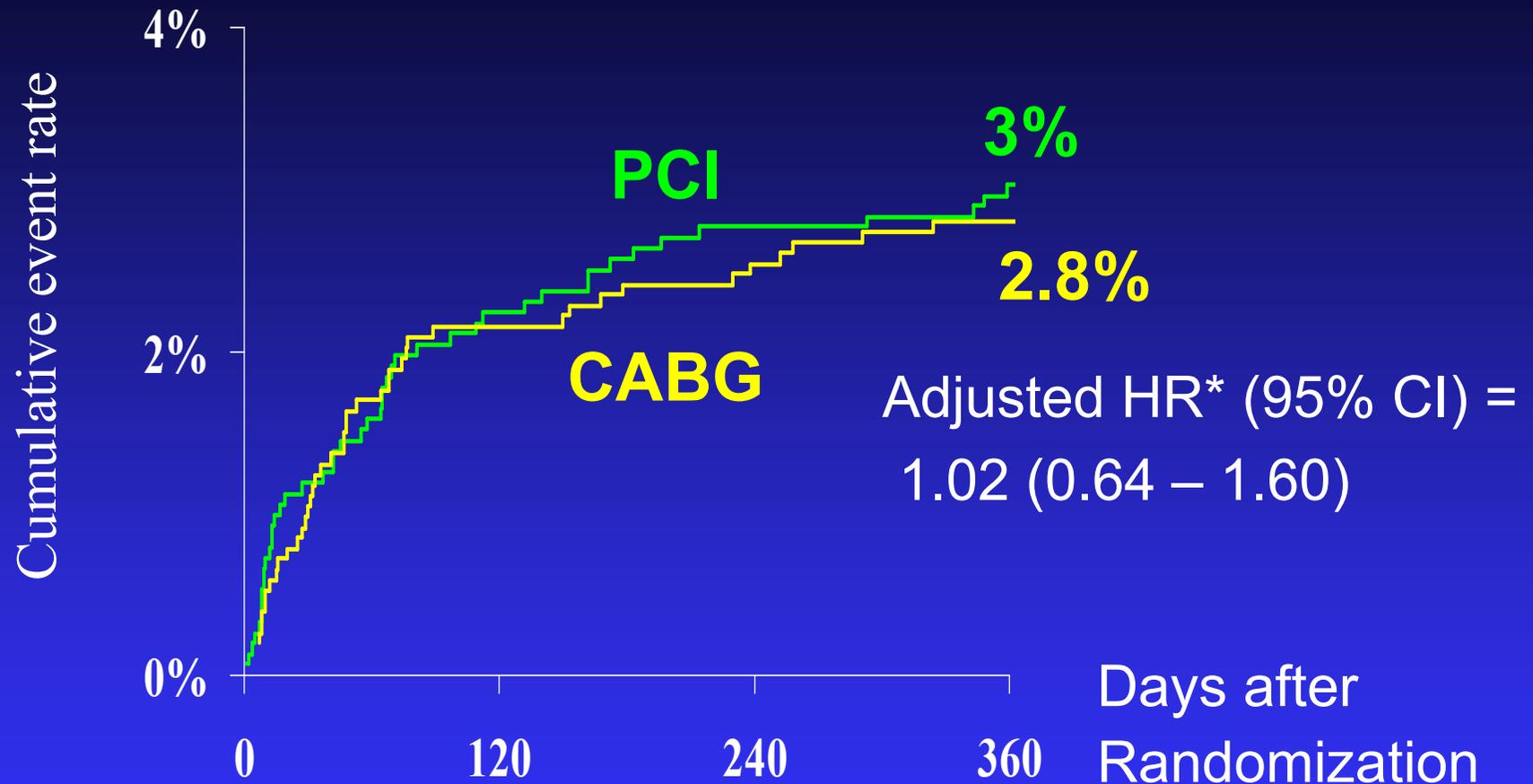
Death, non-fatal myocardial infarction and stroke at one year



Numbers at risk

PCI	1518	1427	1398	1387
CABG	1533	1422	1404	1393

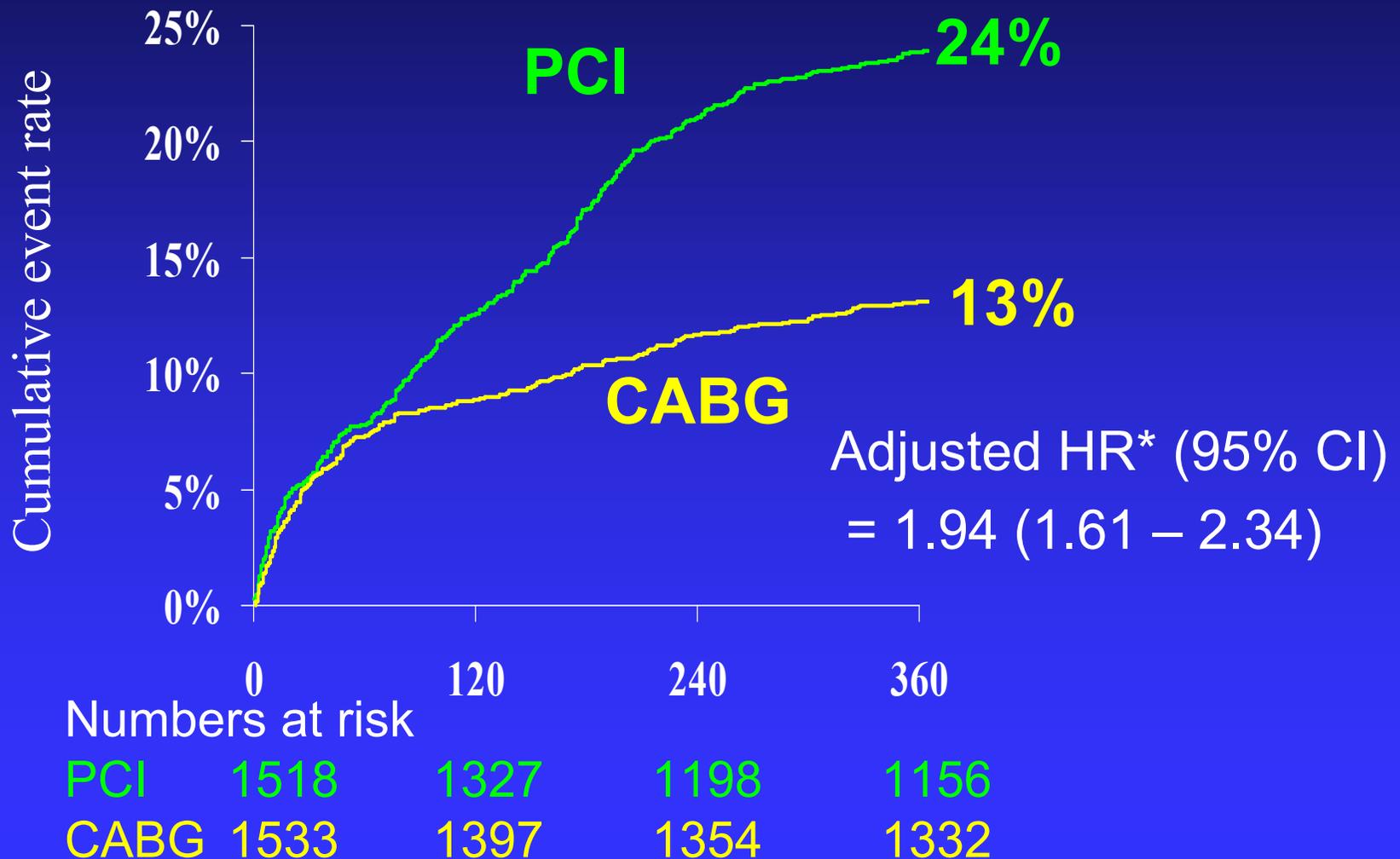
All cause mortality at one year



Numbers at risk

PCI	1518	1484	1476	1472
CABG	1533	1501	1495	1490

Composite MACCE: Death, non-fatal MI, stroke and repeat revascularization procedures



Comments

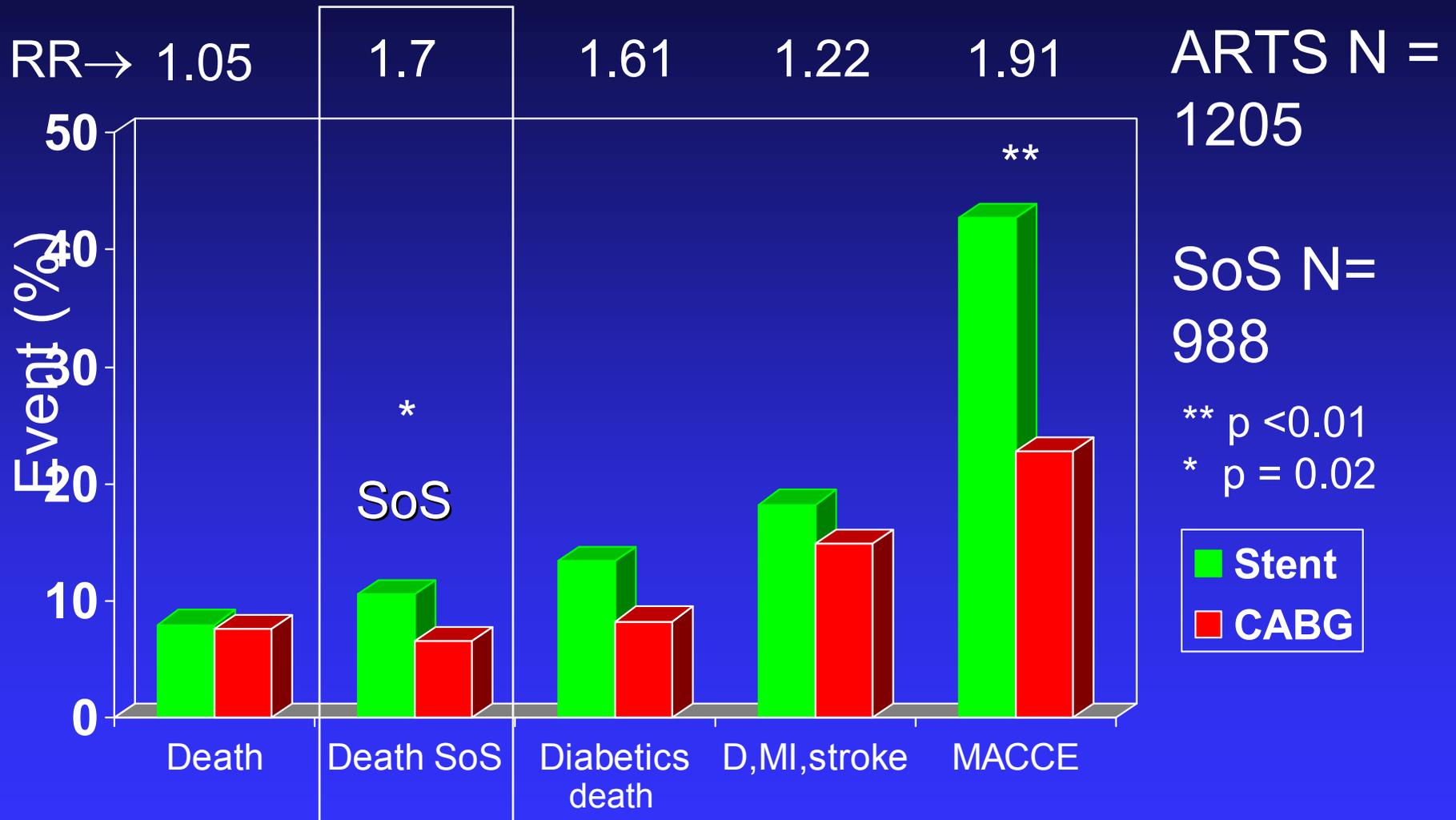
- Diabetics: PCI mortality 5.6% versus CABG 3.5% (HR=1.61 [95%CI 0.72-3.61], p=0.245)
- For moderate risk patients with multi-vessel disease PCI offers a similar clinical outcome to CABG at one year
- Surgery appears to offer more “complete” revascularization and better relief of angina
- Rates of repeat revasc still about 2 times higher in PCI group (although lower than pre-stent era)

Longer term follow-up of ARTS-1 and SoS

Follow-up strategies

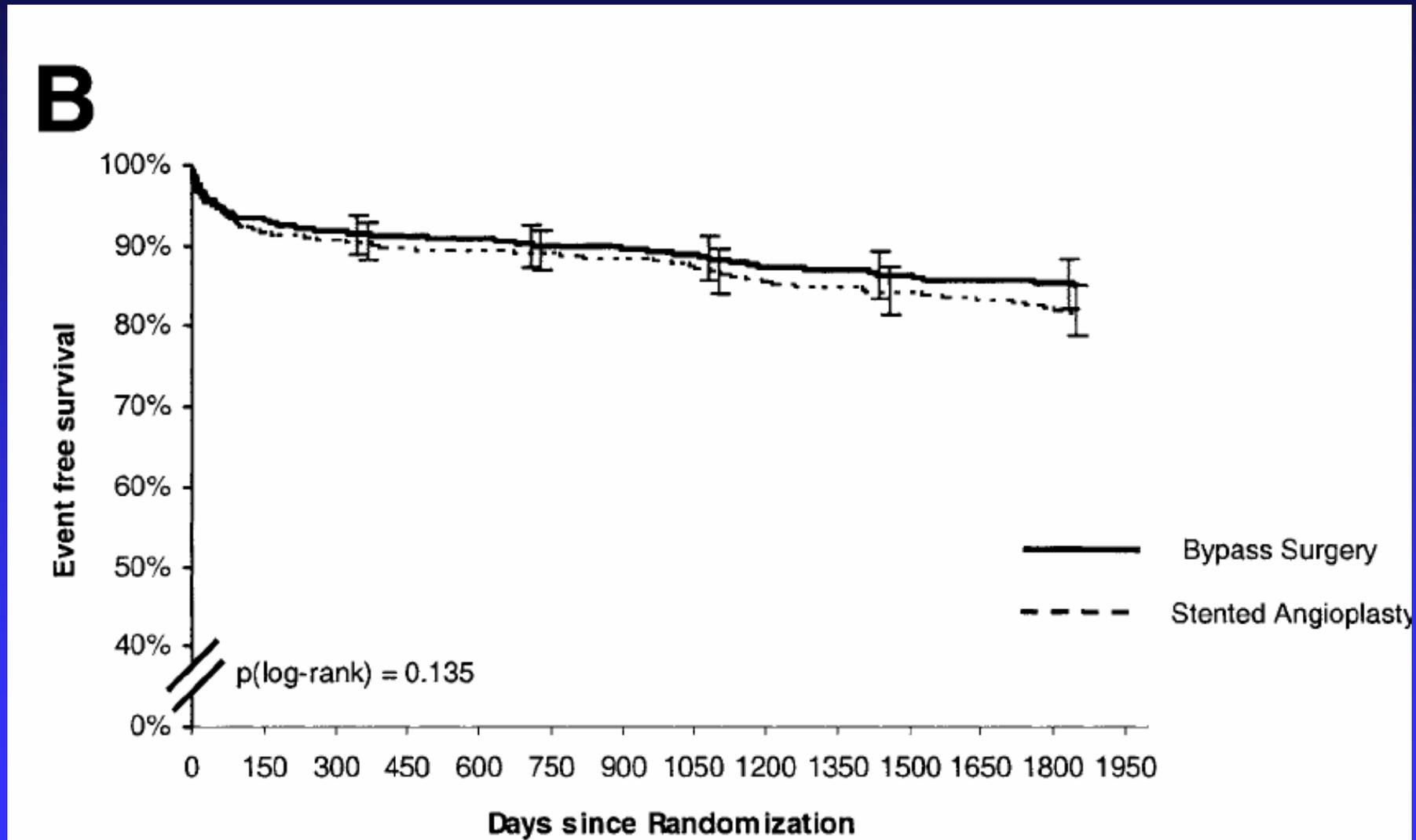
- ARTS-1 followed up for a mean of 5 years for death, composite of death, stroke and MI and repeat revascularisation
- SoS followed up for all cause mortality at a mean of 5 years
- Longer term follow-up from other studies awaited
- Plan to pool data in a 5 year follow-up of individual patient data

5 year follow-up of ARTS-1 and SoS



Serruys et al J Am Coll Cardiol. 2005 Aug 16;46(4):575-81
Booth et al World Congress of Cardiology September 2006

5 Year follow-up of ARTS-1 Death, stroke or MI



Serruys et al J Am Coll Cardiol. 2005 Aug 16;46(4):575-81

Current issues

- Generalisability of PCI vs CABG trials
- Definition of MI post revascularisation
- Best approach in diabetics?
- Impact of DES on reducing restenosis
- Long-term thrombotic risk of DES
- Advances in cardiac surgery (OPCAB, robotic assisted, BIMA etc)
- Is expansion in PCI justified in higher risk cases e.g. 3VD and left main?

Conclusions

- PCI relieves symptoms with low morbidity in single and double vessel disease
- In diabetics and high risk patients with MVD surgery appears the treatment of choice
- In chronic CAD patients with multi-vessel disease (MVD) surgery offers
 - better revascularisation
 - lower rates of repeat revascularisation
 - probably better outcomes
- Future trials (SYNTAX, FREEDOM, CARDia) will provide more information on growing role of PCI in the DES era in higher risk patients

