

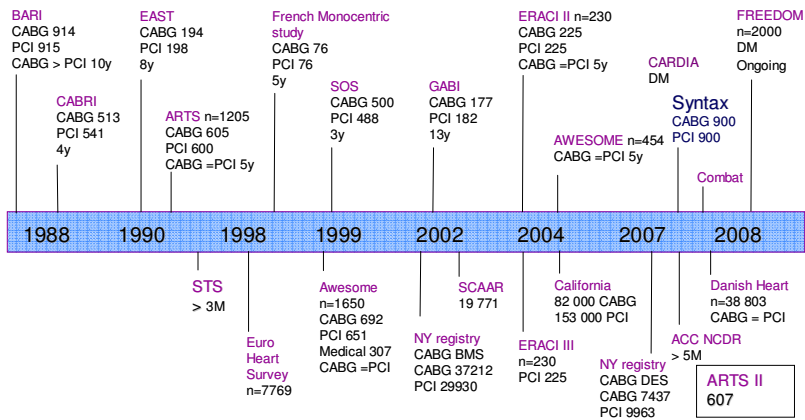
Patients with Multivessel Coronary Artery Disease:

How to Guide Strategy of Revascularization

Jean Fajadet, MD, FESC
Clinique Pasteur, Toulouse, France

MVD: Is current data sufficient?

Randomized Controlled Trials



Revascularisation of patients with MVD

PCI (BMS) vs CABG

RCTs: ARTS, ERACI II, MASS II, SOS

Registries: New York state

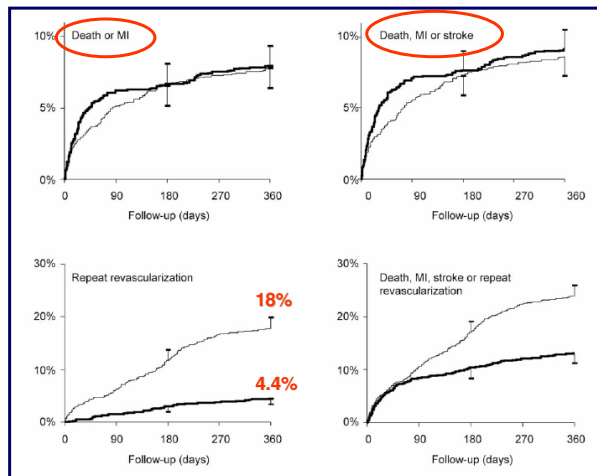
One-year outcomes of CABG versus PCI with multiple stenting for multisystem disease: *A meta-analysis of individual patient data from randomized clinical trials*

4 trials:

ARTS,
SOS,
ERACI II,
MASS II

CABG: n= 1533

PCI (BMS): n= 1518



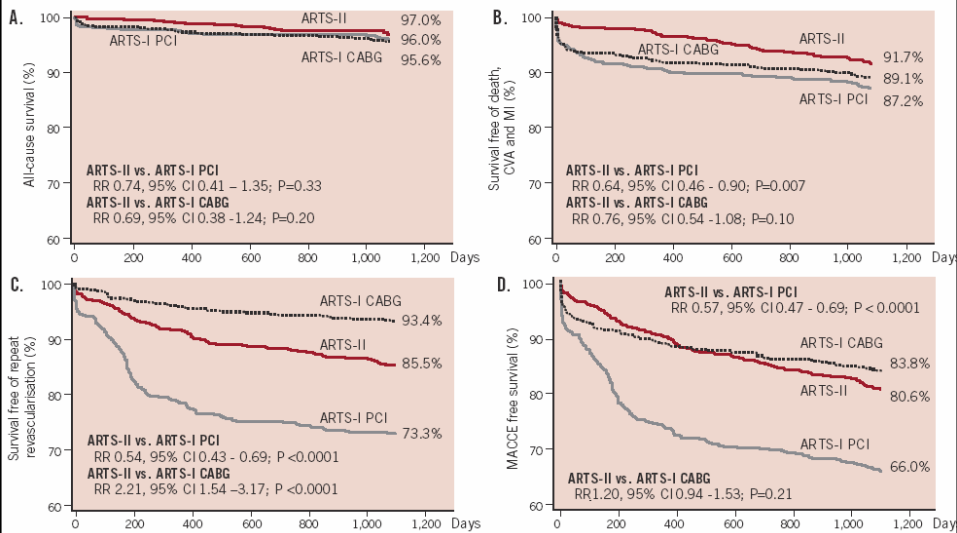
Revascularisation of patients with MVD

PCI (DES) vs CABG

RCTs: SYNTAX, CARDIA

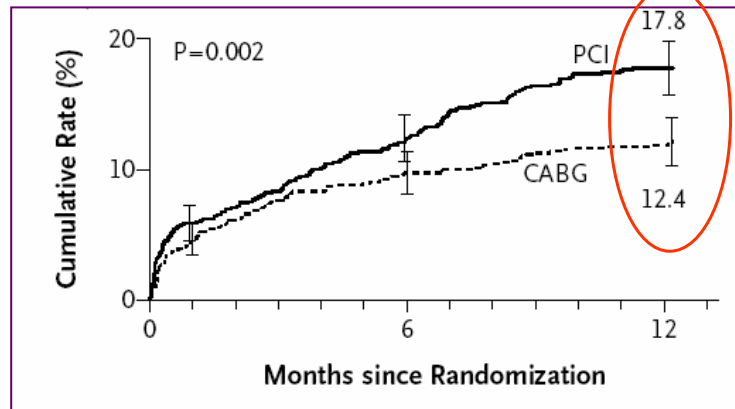
Registries: ARTS II, ERACI III, New York state

Three-year follow-up of the ARTS II



Percutaneous Coronary Intervention versus Coronary-Artery Bypass Grafting for Severe Coronary Artery Disease (SYNTAX)

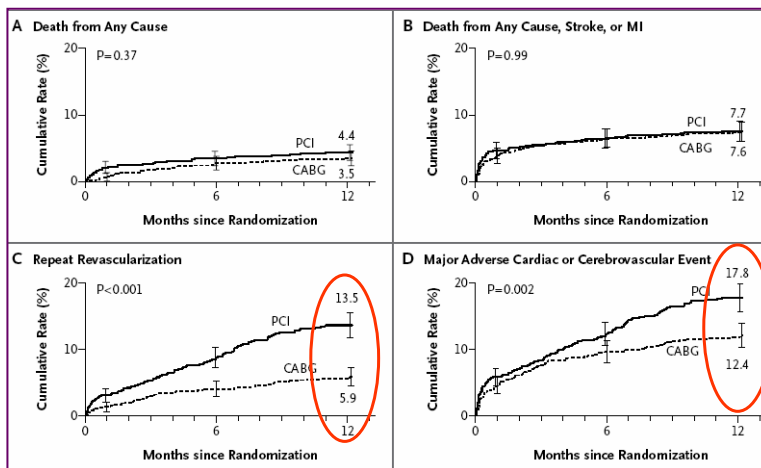
Major Adverse Cardiac or Cerebrovascular Events at one year



Serruys et al. N Engl J Med 2009;360:961-72.

Percutaneous Coronary Intervention versus Coronary-Artery Bypass Grafting for Severe Coronary Artery Disease (SYNTAX)

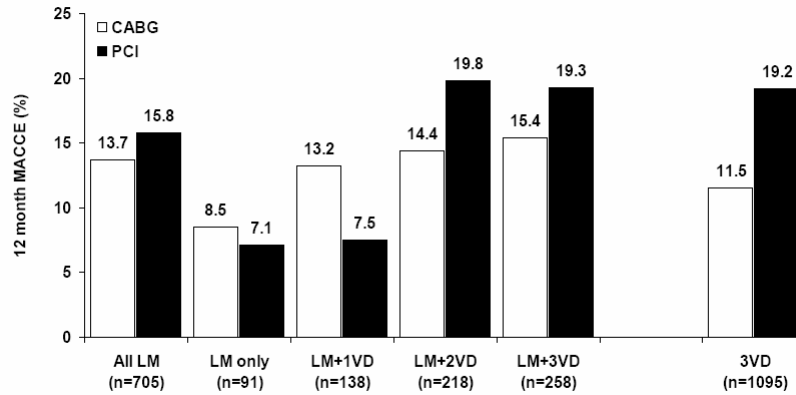
Clinical outcome at one year



Serruys et al. N Engl J Med 2009;360:961-72.

Percutaneous Coronary Intervention versus Coronary-Artery Bypass Grafting for Severe Coronary Artery Disease (SYNTAX)

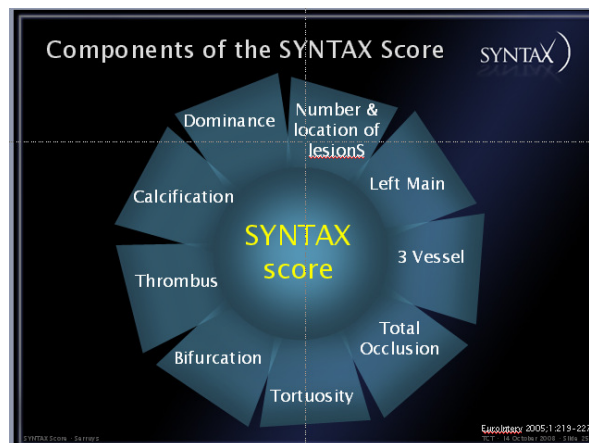
MACCE rates in LM and 3VD subgroups.



Serruys et al. N Engl J Med 2009;360:961-72.

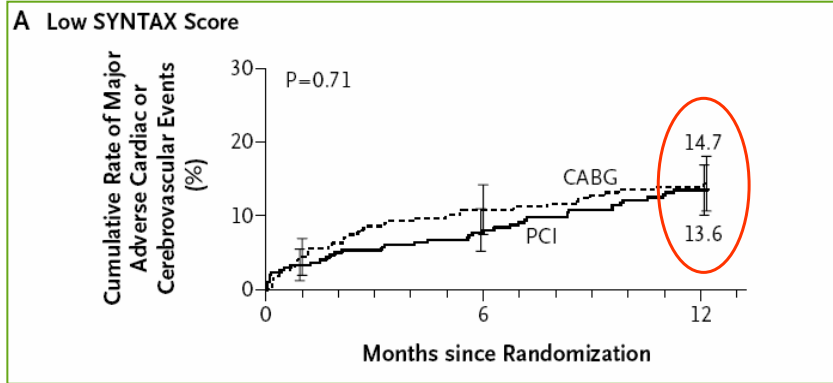
MVD: PCI with DES vs CABG

Impact of lesion complexity



Percutaneous Coronary Intervention versus Coronary-Artery Bypass Grafting for Severe Coronary Artery Disease (SYNTAX)

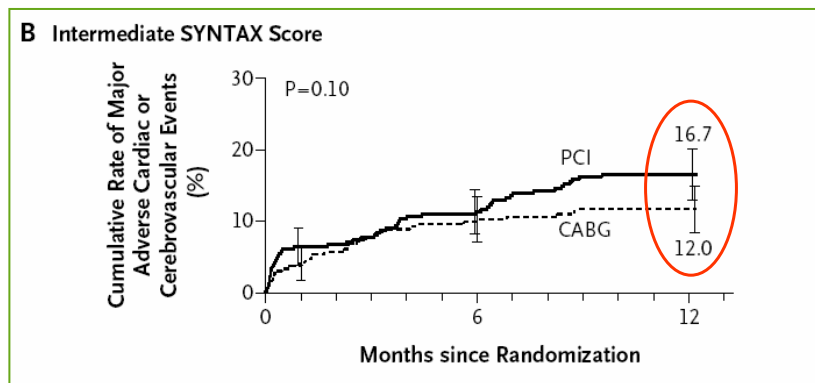
MACCE at one year - SYNTAX score: ≤ 22



Serruys et al. N Engl J Med 2009;360:961-72.

Percutaneous Coronary Intervention versus Coronary-Artery Bypass Grafting for Severe Coronary Artery Disease (SYNTAX)

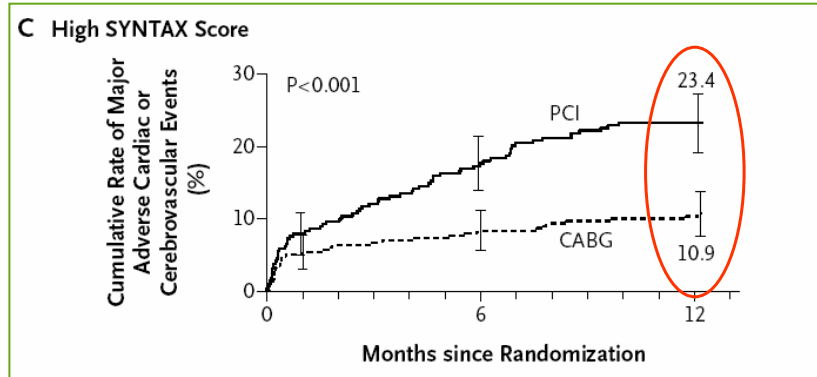
MACCE at one year - SYNTAX score: 23 to 32



Serruys et al. N Engl J Med 2009;360:961-72.

Percutaneous Coronary Intervention versus Coronary-Artery Bypass Grafting for Severe Coronary Artery Disease (SYNTAX)

MACCE at one year - SYNTAX score: ≥ 32



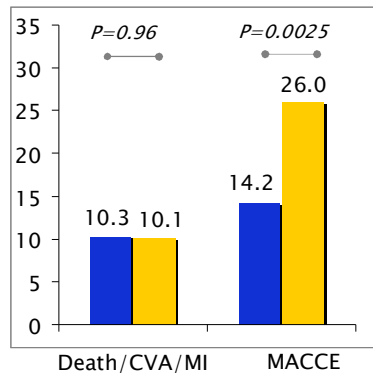
Serruys et al. N Engl J Med 2009;360:961-72.

MVD: PCI with DES vs CABG

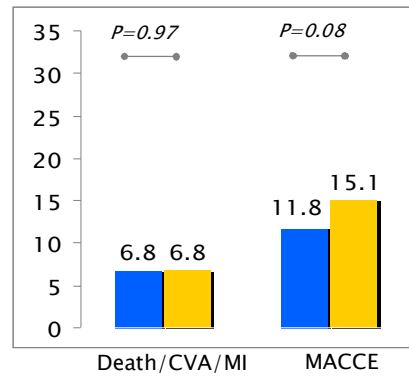
Impact of Diabetes

Outcome according to Diabetic Status

■ CABG ■ TAXUS



Diabetic (Medical Treatment)
N=452



Non-Diabetic
N=1348

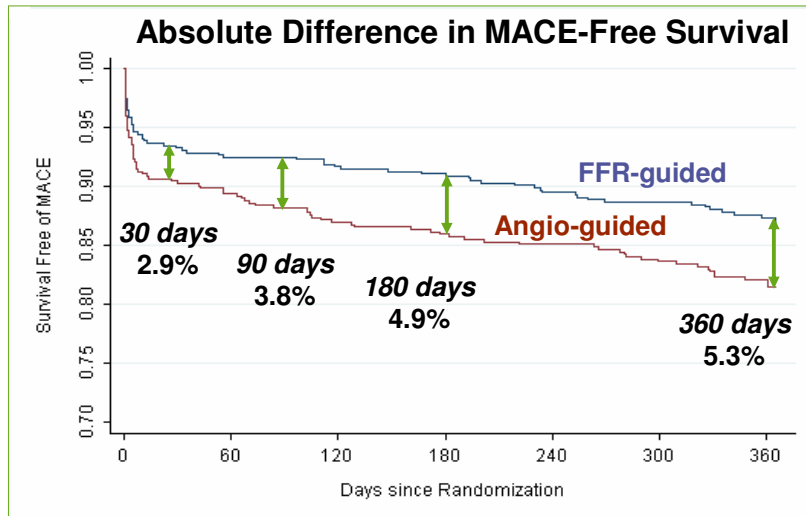
Impact of FFR (FAME study)

Better definition of

**Significant lesion
MVD**

Functionally Complete revascularisation

FAME study: Event-free Survival



FAME study: CONCLUSIONS

Routine measurement of FFR during DES-stenting in patients with multivessel disease is superior to current angiography guided treatment.

It improves outcome of PCI significantly

It supports the evolving paradigm of

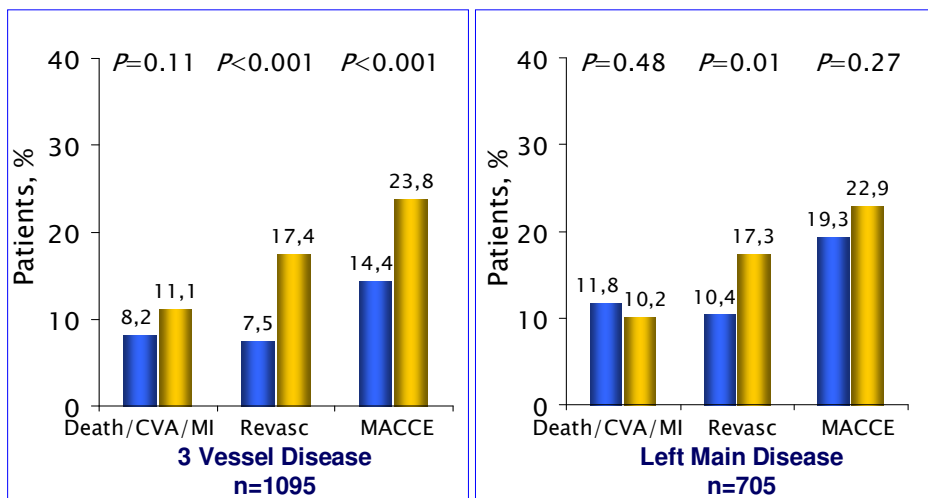
“Functionally Complete Revascularization”,

i.e. stenting of ischemic lesions and medical treatment of non-ischemic ones.

Impact of length of follow-up

2 Year Outcomes in 3VD and LM Subgroups

■ CABG ■ TAXUS

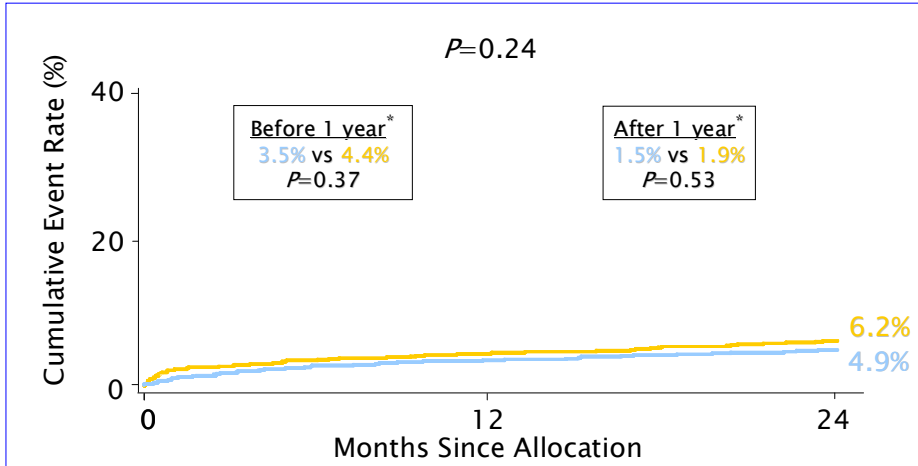


Time-to-Event; Log-rank Pvalue

ITT population

All-Cause Death to 2 Years

CABG (N=897) TAXUS (N=903)

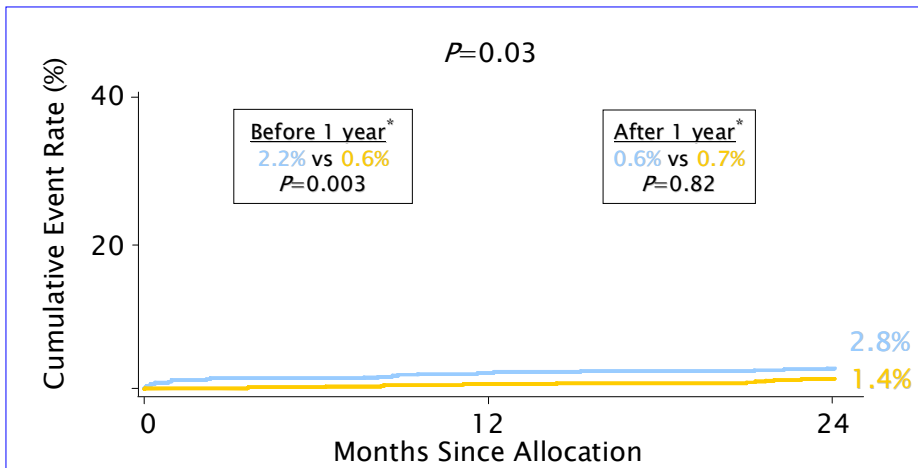


Cumulative KM Event Rate \pm 1.5 SE; log-rank Pvalue; *Binary rates

ITT population

CVA to 2 Years

CABG (N=897) TAXUS (N=903)

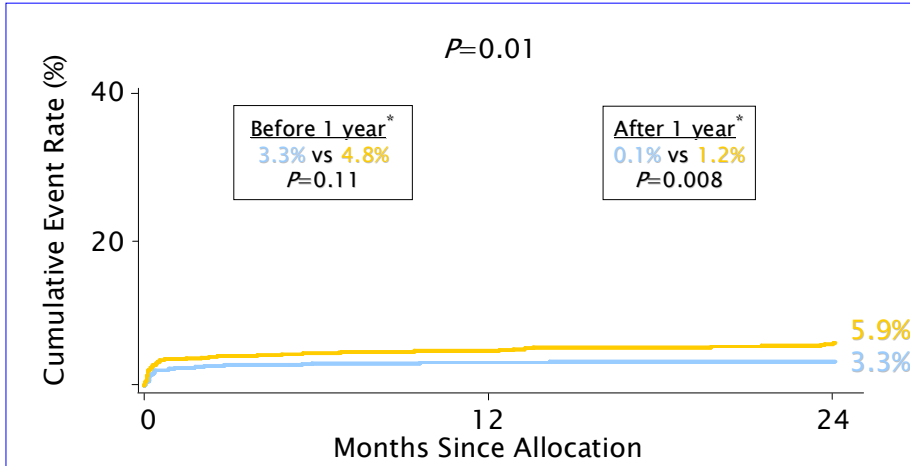


Cumulative KM Event Rate \pm 1.5 SE; log-rank Pvalue; *Binary rates

ITT population

Myocardial Infarction to 2 Years

CABG (N=897) TAXUS (N=903)

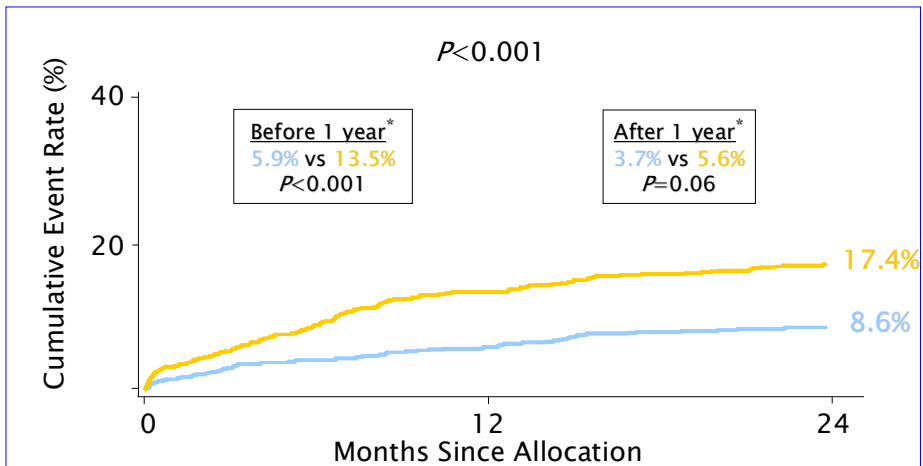


Cumulative KM Event Rate \pm 1.5 SE; log-rank Pvalue; *Binary rates

ITT population

Repeat Revascularization to 2 Years

CABG (N=897) TAXUS (N=903)

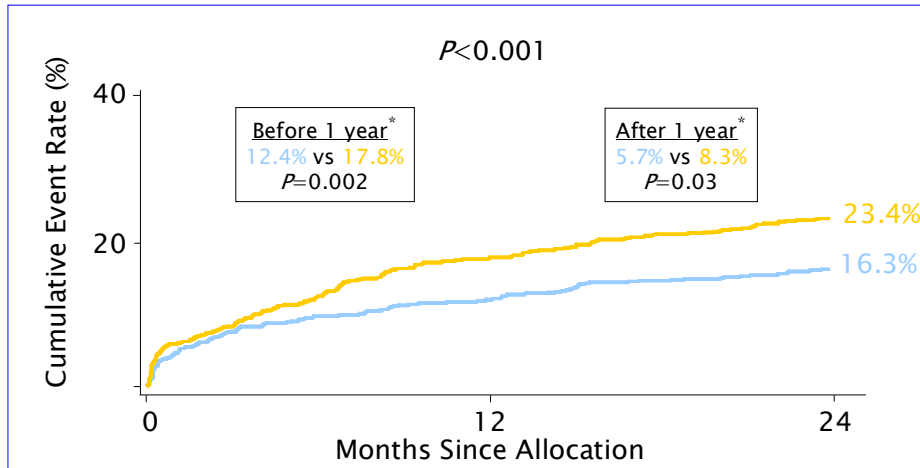


Cumulative KM Event Rate \pm 1.5 SE; log-rank Pvalue; *Binary rates

ITT population

MACCE to 2 Years

■ CABG (N=897) ■ TAXUS (N=903)



Cumulative KM Event Rate \pm 1.5 SE; log-rank Pvalue; *Binary rates

ITT population

Judgment in integrating EBM

- **Global appraisal:**

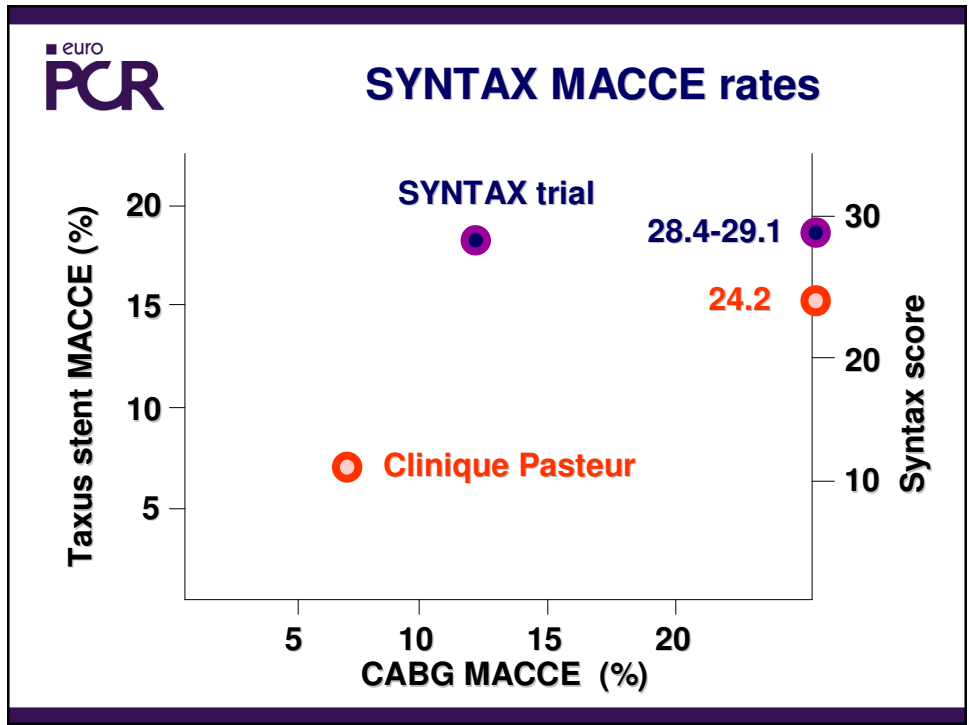
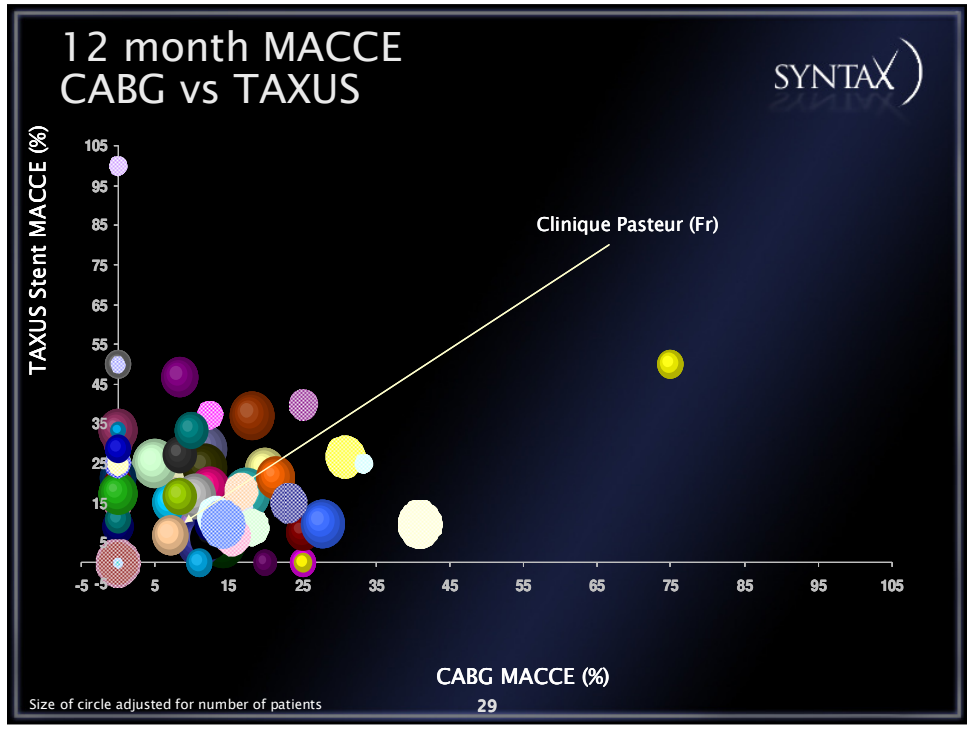
- potential morbidity and mortality
- magnitude of the potential benefit of one procedure over another
- realistic perception of the effect of procedural outcomes on the Q.O.L
- coexisting conditions
- ...biological markers, angio feature....

Feasibility is not an indication!

Ethics of information

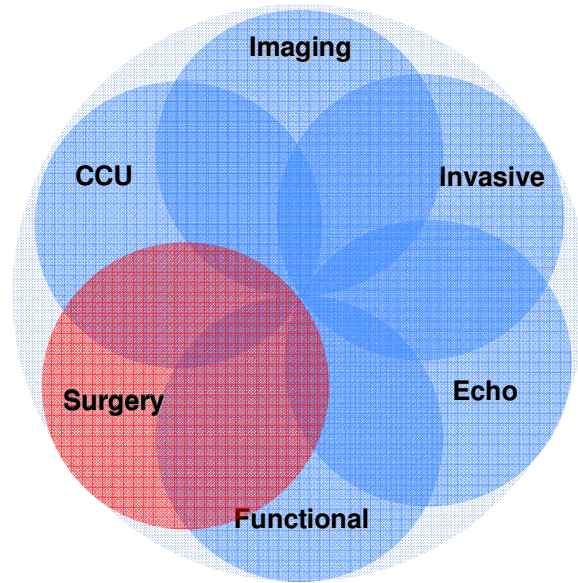
- Excluding all conflict of interest
- Collegiality, "Heart Team":
"Together we achieve more"
- Widespread participation:
 - Non-interventional + interventional cardiologists + cardiac surgeons
- Clear information:
 - Invasiveness vs long-term benefits
 - Precautionary attitude

Thinking like doctors rather than technicians

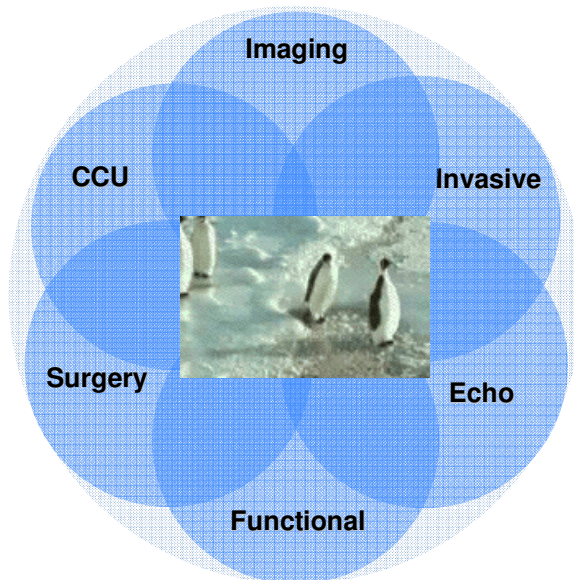




Heart team – Multi disciplinary approach

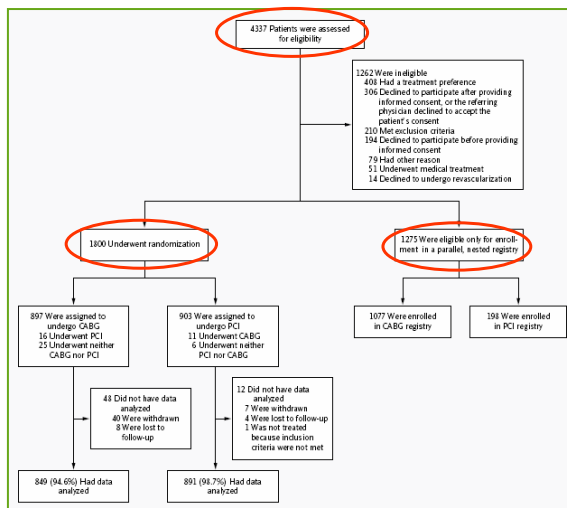


Heart team – Multi disciplinary approach



Together We Achieve More

Percutaneous Coronary Intervention versus Coronary-Artery Bypass Grafting for Severe Coronary Artery Disease (SYNTAX)



Results intention-to-treat analysis

12-mo events	CABG	PCI	Odds ratio (95% CI)	p
Death/MI/stroke	10.2	11.6	1.15 (0.65-2.03)	0.63
Stroke	2.5	0.4	0.16 (0.02-1.33)	0.09
Revascularization	2.0	9.9	5.31 (2.0-14.11)	0.001
Death, MI, stroke, or repeat revascularization	11.0%	17.5%		0.04

Five-Year Outcomes After Coronary Stenting Versus Bypass Surgery for the Treatment of Multivessel Disease. *The Final Analysis of the Arterial Revascularization Therapies Study (ARTS) Randomized Trial*

Table 5. Major Adverse Cardiac Events at 5 Years in Patients Without Diabetes Stratified According to Treatment

	Stent Non-Diabetic n = 488 n% (95%)	Bypass Non-Diabetic n = 509 n% (95%)	Relative Risk (95% CI)	Stent Versus CABG p Value†
Death	33 (6.8)	38 (7.5)	0.91 (0.58-1.42)	0.71
CVA	16 (3.3)	14 (2.8)	1.19 (0.59-2.42)	0.71
MI	38 (7.8)	31 (6.1)	1.28 (0.81-2.02)	0.32
Q-wave MI	31 (6.4)	30 (5.9)	1.08 (0.66-1.75)	0.79
Non-Q-wave MI	8 (1.6)	2 (0.4)	4.17 (0.89-19.55)	0.059
Composite death/CVA/MI	81 (16.6)	71 (13.9)	1.19 (0.89-1.60)	0.25
(re) CABG	46 (9.4)	5 (1.0)	9.60 (3.85-23.95)	<0.001
(re) PTCA	105 (21.5)	41 (8.1)	2.67 (1.90-3.75)	<0.001
Any revascularization	134 (27.5)	43 (8.4)	3.25 (2.36-4.48)	<0.001
Any MACCE	189 (38.7)	108 (21.2)	1.83 (1.49-2.23)	<0.001

*Number of patients and percentage of patients with at least one occurrence of the specified clinical event during the time interval indicated in the table. †p value calculated using the Fisher exact test. Abbreviations as in Table 2.

Five-Year Outcomes After Coronary Stenting Versus Bypass Surgery for the Treatment of Multivessel Disease. *The Final Analysis of the Arterial Revascularization Therapies Study (ARTS) Randomized Trial*

Table 4. Major Adverse Cardiac Events at 5 Years in Patients With Diabetes Stratified According to Treatment

	Stent Diabetes n = 112 n [‡] (%)	Bypass Diabetes n = 96 n [‡] (%)	Relative Risk (95% CI)	Stent Versus CABG p Value [†]
Death	15 (13.4)	8 (8.3)	1.61 (0.71–3.63)	0.27
CVA	7 (6.3)	7 (7.3)	0.86 (0.31–2.36)	0.79
MI	12 (10.7)	7 (7.3)	1.47 (0.60–3.59)	0.47
Q-wave MI	9 (8.0)	4 (4.2)	1.93 (0.61–6.07)	0.39
Non-Q-wave MI	3 (2.7)	3 (3.1)	0.86 (0.18–4.15)	1.00
Composite death/CVA/MI	28 (25.0)	19 (19.8)	1.26 (0.76–2.11)	0.41
(re) CABG	17 (15.2)	2 (2.1)	7.29 (1.73–30.7)	0.001
(re) PTCA	34 (30.4)	9 (9.4)	3.24 (1.64–6.41)	<0.001
Any revascularization	48 (42.9)	10 (10.4)	4.11 (2.20–7.68)	<0.001
Any MACCE	61 (54.5)	24 (25.0)	2.18 (1.48–3.20)	<0.001

[†]Number of patients and percentage of patients with at least one occurrence of the specified clinical event during the time interval indicated in the table. [‡]p value calculated using the Fisher exact test. Abbreviations as in Table 2.