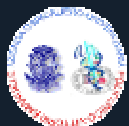




Updated guidelines for LM revascularization

Corrado Tamburino, MD, PhD

Full Professor of Cardiology, Director of Postgraduate School of Cardiology
Chief Cardiovascular Department, Director Cardiology Division, Interventional Cardiology and
Heart Failure Unit, University of Catania, Ferrarotto Hospital, Catania, Italy

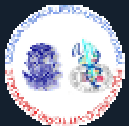


Ferrarotto Hospital
University of Catania



Disclosure Statement of Financial Interest

I, **Corrado Tamburino**, DO NOT have a financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation



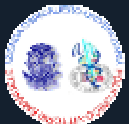
The latest guidelines for LM revascularization

Guidelines on myocardial revascularization 2010

The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

2011 ACCF/AHA/SCAI Guideline for Percutaneous Coronary Intervention

A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines and the Society for Cardiovascular Angiography and Interventions



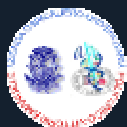
Ferrarotto Hospital
University of Catania



2010 ESC/EATCS Guidelines on Myocardial Revascularization

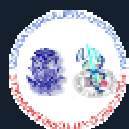
Indications in stable patients with lesions suitable for both procedures and **low predicted surgical mortality**

Subset of CAD by anatomy	Favours CABG	Favours PCI
Left main (isolated or 1VD, ostium/shaft)	I A	IIa B
Left main (isolated or 1VD, bifurcation)	I A	IIb B
Left main + 2VD or 3VD, SYNTAX score ≤ 32	I A	IIb B
Left main + 2VD or 3VD, SYNTAX score ≥ 33	I A	III B



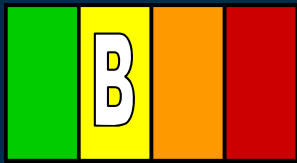
Recommended risk stratification scores to be used in candidates for PCI or CABG

Score	Calculation	Number of variables used to calculate risk		Validated outcomes	Class ^a /level ^b		Ref. ^c
		Clinical	Angiographic		PCI	CABG	
EuroSCORE	www.euroscore.org/calc.html	17	0	Short- and long-term mortality	IIb B	I B	2, 3, 6
SYNTAX score	www.syntaxscore.com	0	11 (per lesion)	Quantify coronary artery disease complexity	IIa B	III B	4
Mayo Clinic Risk Score	(7, 8)	7	0	MACE and procedural death	IIb C	III C	—
NCDR CathPCI	(5)	8	0	In-hospital mortality	IIb B	—	5
Parsonnet score	(9)	16	0	30-day mortality	—	III B	9
STS score ^d	http://209.220.160.181/STSWebRiskCalc261/	40	2	Operative mortality, stroke, renal failure, prolonged ventilation, deep sternal infection, re-operation, morbidity, length of stay <6 or >14 days	—	I B	10
ACEF score	[Age/ejection fraction (%)] + 1 (if creatinine >2 mg/dL)(11)	2	0	Mortality in elective CABG	—	IIb C	—



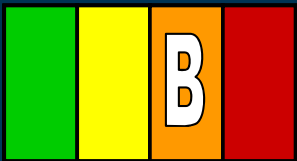
2011 ACC/AHA/SCAI SYNTAX score-based recommendations for LM PCI plus surgical risk

I IIa IIb III



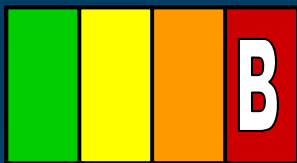
- Anatomy at low risk of PCI procedural complications (e.g., a low SYNTAX score of 22, ostial/trunk) and clinical characteristics that predict a significantly increased risk of adverse surgical outcomes (e.g., STS-predicted risk of operative mortality >5%)

I IIa IIb III

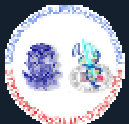


- Anatomy at low to intermediate risk of PCI procedural complications (e.g., low-intermediate SYNTAX score of <33, bifurcation LM) clinical characteristics that predict a significantly increased risk of adverse surgical outcomes (e.g., STS-predicted risk of operative mortality >2%)

I IIa IIb III

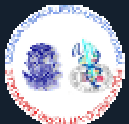


- Unfavorable anatomy for PCI in good candidates for CABG

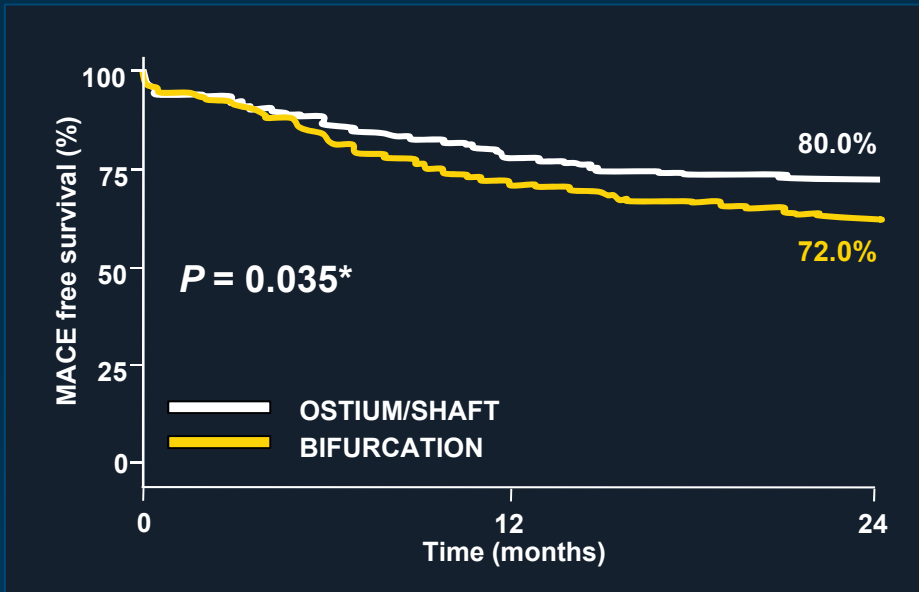


LM PCI: current state of the art supporting these guidelines

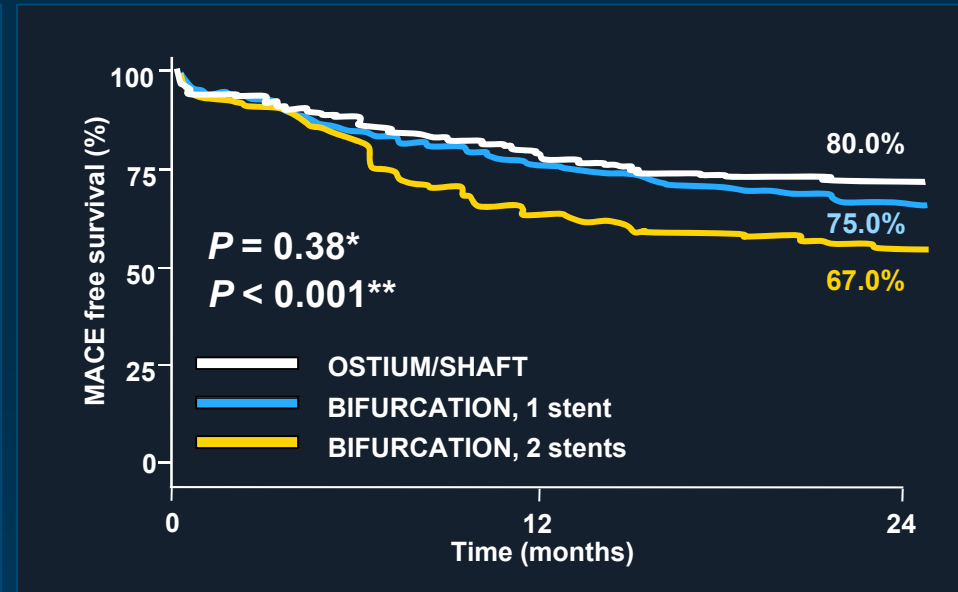
- **Impact of LM lesion location**
- **Impact of extent of MV disease**
- **Long-term clinical Outcomes: overall and by classes of Risk**



LM PCI: Impact of lesion location and stent technique



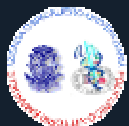
* log rank test for ostium/shaft versus bifurcation



* log rank test for ostium/shaft versus bifurcation 1 stent

** log rank test for ostium/shaft versus bifurcation 2 stents

GISE/SICI Registry (n = 1,111)

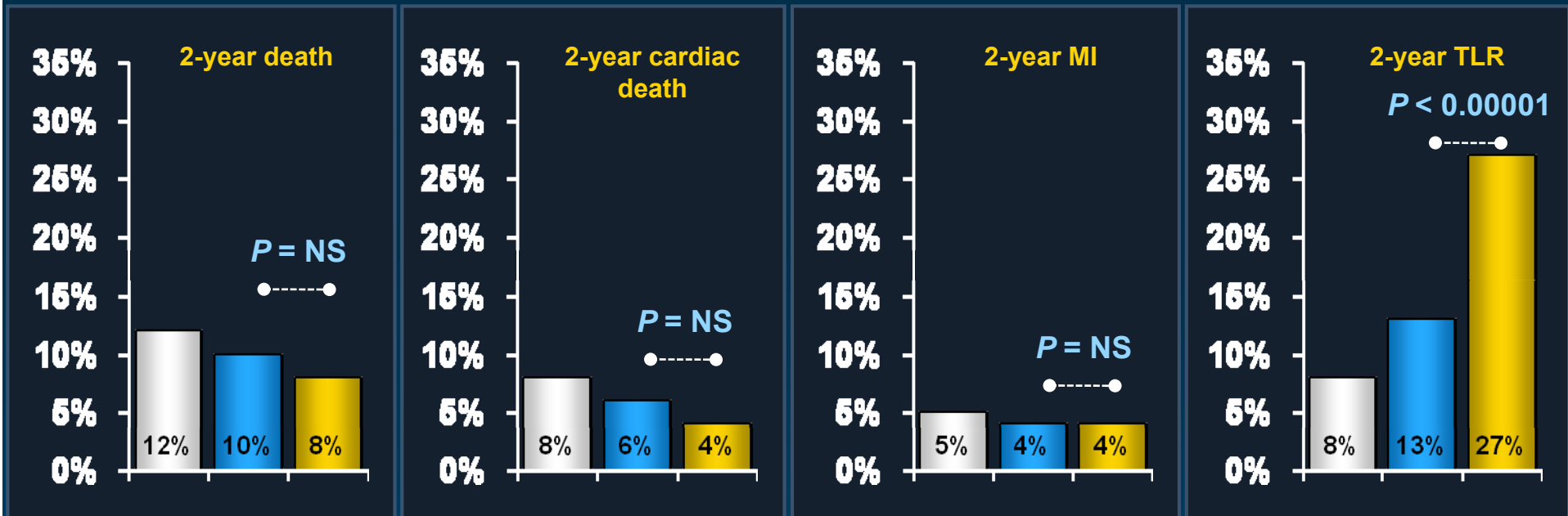


Ferrarotto Hospital
University of Catania

Palmerini et al. Eur Heart J 2010;30:2087-94

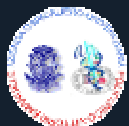


Worse outcomes of bifurcation LM PCI are driven by need for revascularization, but only in patients receiving 2 stents



- OSTIUM/SHAFT
- BIFURCATION, 1 stent
- BIFURCATION, 2 stents

GISE/SICI Registry (n = 1,111)



Ferrarotto Hospital
University of Catania

Palmerini et al. Eur Heart J 2010;30:2087-94

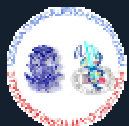


Patients with distal left main disease have significant coronary disease downstream from the left main vessel *



	Distal (n = 229)	Non-Distal (n = 128)	p value
Total SYNTAX score	31.4 ± 12.3	22.1 ± 10.1	< 0.001
LM only, %	7.4	19.5	< 0.001
LM + 1VD, %	13.5	28.1	< 0.001
LM + 2VD, %	36.2	22.7	0.008
LM + 3VD, %	42.8	29.7	0.01
Procedural success, %	82.5	92.7	0.008

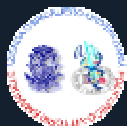
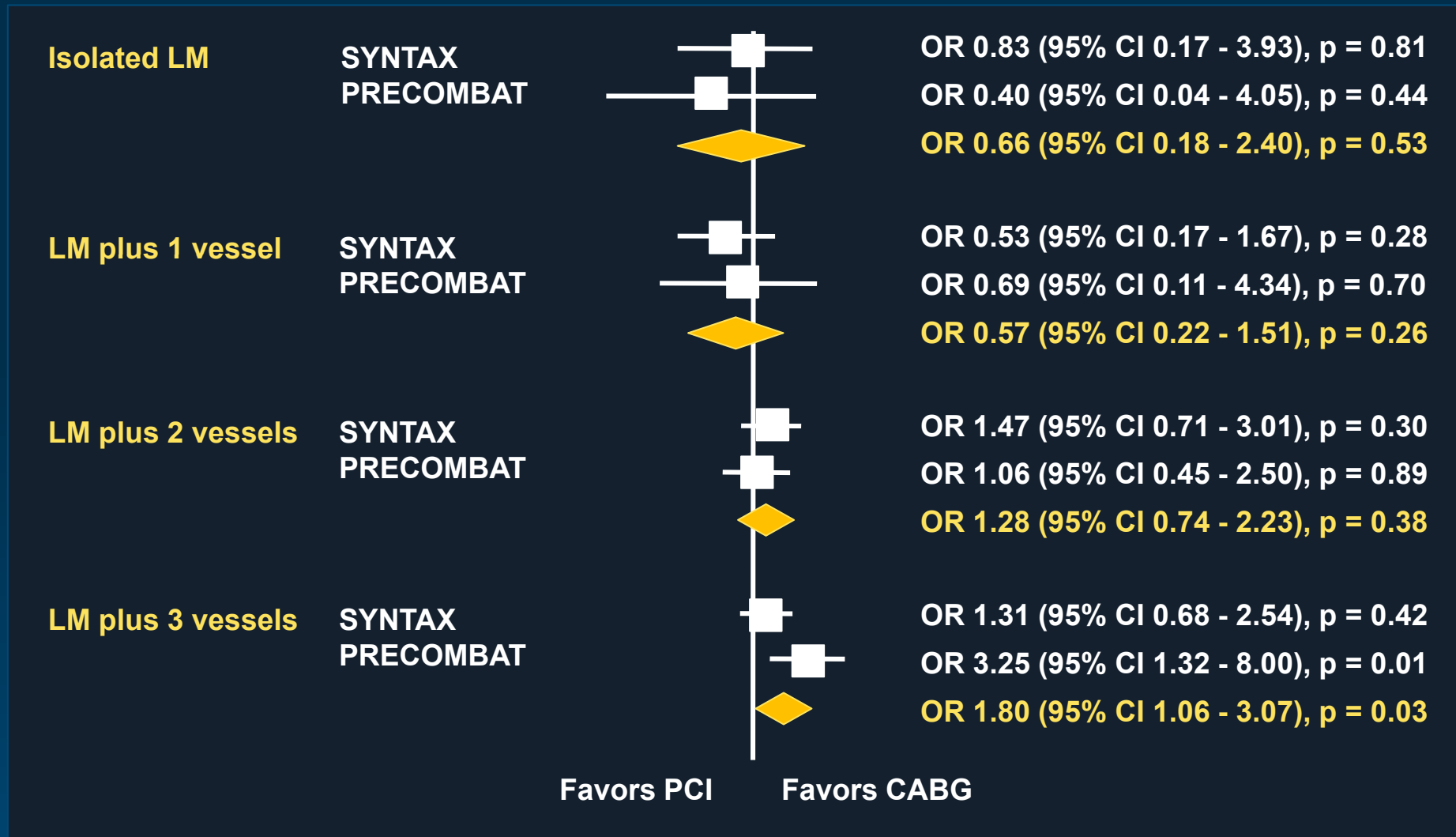
* Data from the SYNTAX LM PCI Cohort



Ferrarotto Hospital
University of Catania

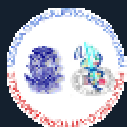


LM PCI: impact of extent of concomitant non LM disease. 1-Year MACCE stratified by burden of CAD



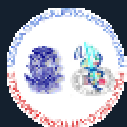
LM in the SYNTAX trial: 1- and 4-Year Outcomes

Endpoint	CABG (%)			PCI (%)			P value
	1 Year	Δ^{1-4} Yrs	4 Year	1 Year	Δ^{1-4} Yrs	4 Year	
Death	4.4			4.2			
CVA	2.7			0.3			
MI	4.1			4.3			
Revascularization	6.7			12.0			
Death/CVA/MI	9.1			7.0			
MACCE	13.6			15.8			



LM in the SYNTAX trial: 1- and 4-Year Outcomes

Endpoint	CABG (%)			PCI (%)			P value
	1 Year	Δ^{1-4} Yrs	4 Year	1 Year	Δ^{1-4} Yrs	4 Year	
Death	4.4	6.8	11.2	4.2	7.2	11.4	0.94
CVA	2.7	1.6	4.3	0.3	1.2	1.5	0.03
MI	4.1	0.7	4.8	4.3	2.9	7.2	0.20
Revascularization	6.7	7.9	14.6	12.0	11.5	23.5	0.003
Death/CVA/MI	9.1	8.6	17.7	7.0	10.1	17.1	0.79
MACCE	13.6	14.2	27.8	15.8	17.4	33.2	0.14



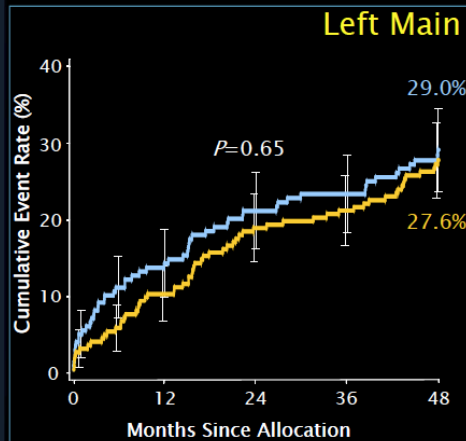
4-Year Outcomes by SYNTAX score

Low to intermediate SXScore

MACCE to 4 Years by SYNTAX Score Tercile *Low to Intermediate Scores (0-32)*

SYNTAX

■ CABG (N=196)
■ TAXUS (N=221)



	CABG	PCI	Pvalue
Death	11.8%	7.5%	0.12
CVA	3.9%	1.4%	0.11
MI	3.8%	5.1%	0.55
Death, CVA or MI	17.1%	13.5%	0.25
Revasc.	16.9%	19.1%	0.57

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

SYNTAX 4-year Outcomes in the LM Subgroup - TCT 2011 - November 2011 - Serruys - Slide 21

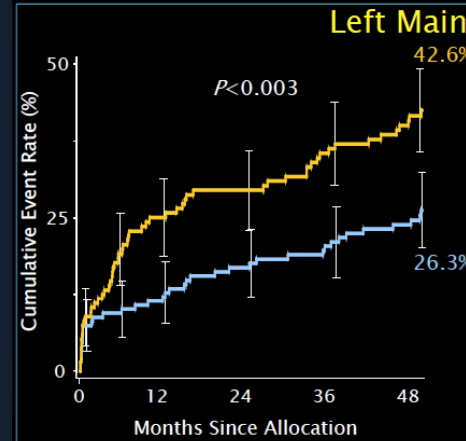
Site-reported Data; ITT population

High SXScore

MACCE to 4 Years by SYNTAX Score Tercile *High Scores (≥ 33)*

SYNTAX

■ CABG (N=149)
■ TAXUS (N=135)

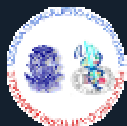


	CABG	PCI	Pvalue
Death	10.5%	17.9%	0.06
CVA	4.9%	1.6%	0.14
MI	6.1%	10.9%	0.18
Death, CVA or MI	18.5%	23.1%	0.33
Revasc.	11.8%	31.3%	<0.001

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

SYNTAX 4-year Outcomes in the LM Subgroup - TCT 2011 - November 2011 - Serruys - Slide 22

Site-reported Data; ITT population



Ferrarotto Hospital
University of Catania

Serruys et al., TCT 2011



2012 US Appropriateness criteria for LM revascularization

ACCF/SCAI/STS/AATS/AHA/ASNC/HFSA/SCCT

PCI

CABG

Isolated left main stenosis

U

A

Left main stenosis and additional CAD with low CAD burden (i.e., 1- to 2-vessel additional involvement, low SYNTAX score)

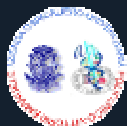
U

A

Left main stenosis and additional CAD with intermediate to high CAD burden (i.e., 3-vessel involvement, presence of CTO, or high SYNTAX score)

I

A



EXCEL: trial design

~ 3600 patients with left main disease

SYNTAX score ≤ 32

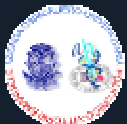
Consensus agreement by the Heart Team

Yes
N ~ 2600

R

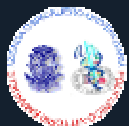
Xience

CABG



Trial design of SYNTAX and EXCEL

	SYNTAX	EXCEL
All-comers	Yes	No
Patient population	LM/3VD	LM
Syntax score	Any	≤ 32
Primary endpoint	Death/MI/CVA/TVR	Death/MI/CVA
Follow up	1 year	3 year
IVUS/FFR guidance	Infrequent	Recommended
Stent	PES	EES
Angio FU	At operator's discretion	Not recommended
Status	Completed	Ongoing



Key remarks on updated guidelines for LM PCI

- **European guidelines: based on lesion location and SXscore in low surgical risk patients**
- **American guidelines: based on SXscore plus STS score and on lesion location.**
- **Excluding angiographically complex patients, testing a harder primary endpoint, the use of EES and IVUS/FFR guidance are expected to further improve the outcomes of LM PCI in the EXCEL trial.**
- **More accurate risk stratification is needed in order to drive decision-making for LM revascularization.**

