

STEMI : stratégie thérapeutique

Quelle place pour les stents non actifs?

Luc Maillard, MD, PhD

Aix-en-Provence

The Balance of Safety versus Efficacy

BMS

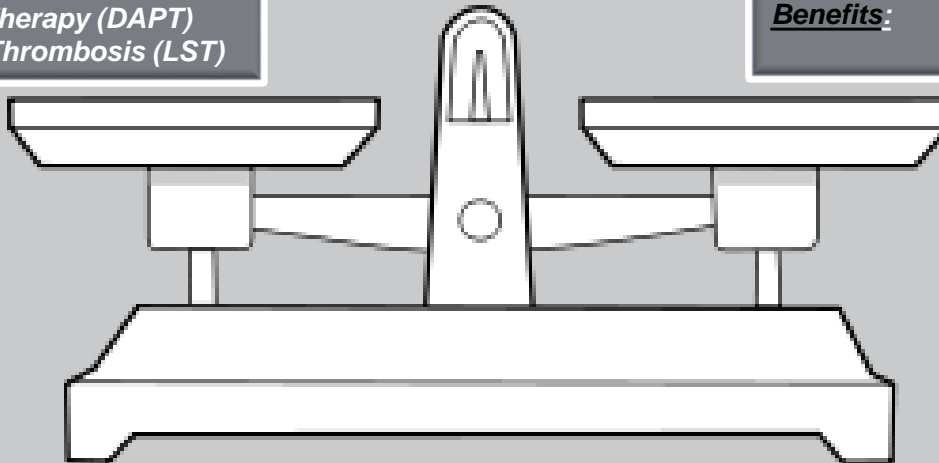
Limitations: Higher TLR and MACE rates
Higher Late Loss (LL)

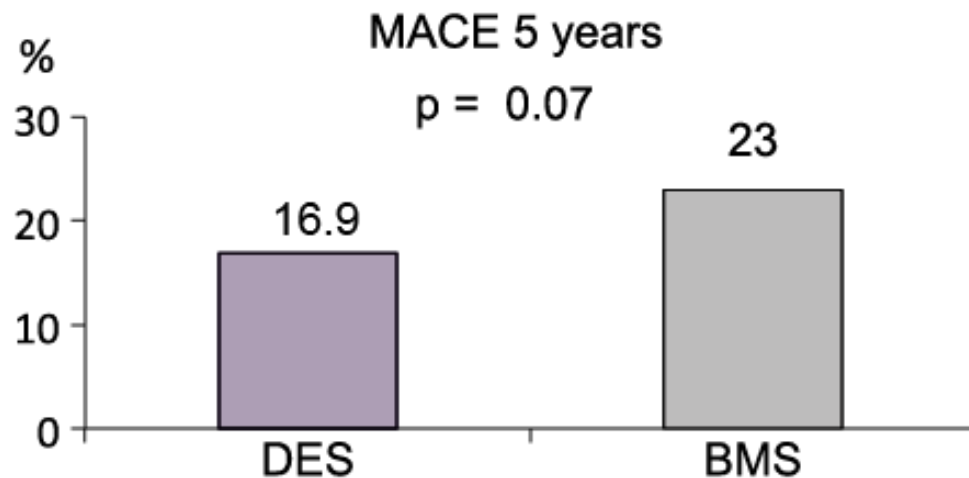
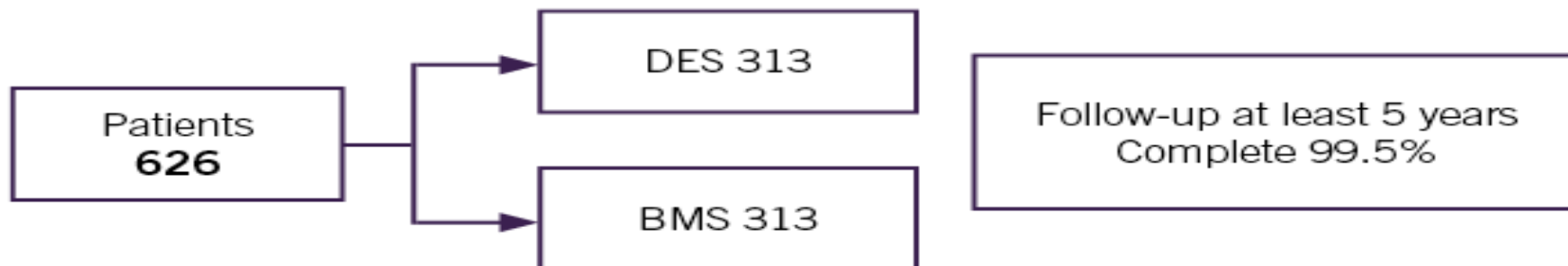
Benefits: Only 1 month
Dual Antiplatelet Therapy (DAPT)
Lower Late Stent Thrombosis (LST)

DES

Limitations: Late Stent Thrombosis (LST)
Long Term (12 months or greater)
Dual Antiplatelet Therapy (DAPT)

Benefits: Lower TLR and MACE rates
Lower Late Loss



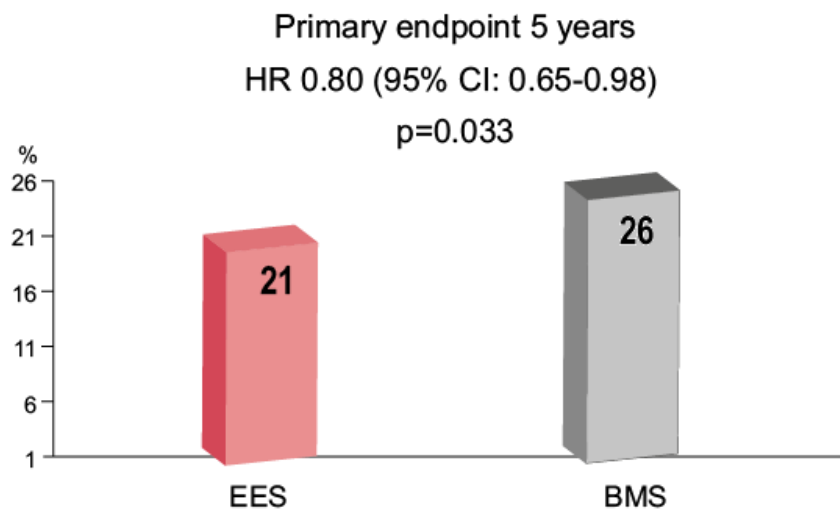
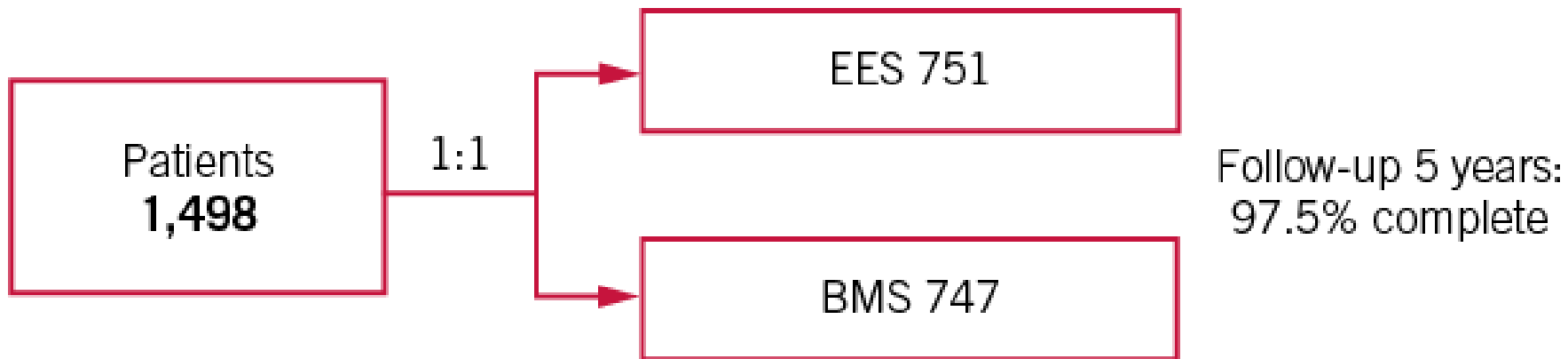


First Generation

DES vs BMS		
TLR	6.7% vs 16.6%	$p < 0.001$
Cardiac death	7.7% vs 3.2%	$p = 0.02$
MI	5.4% vs 7.3%	$p = 0.041$

DES vs BMS for STEMI – 5-year outcome: DEDICATION

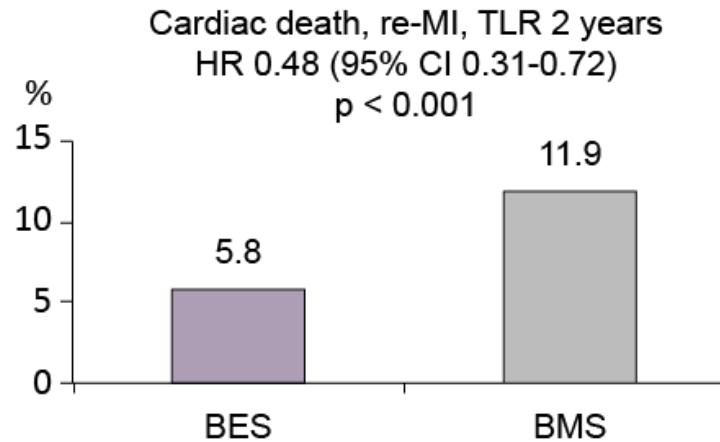
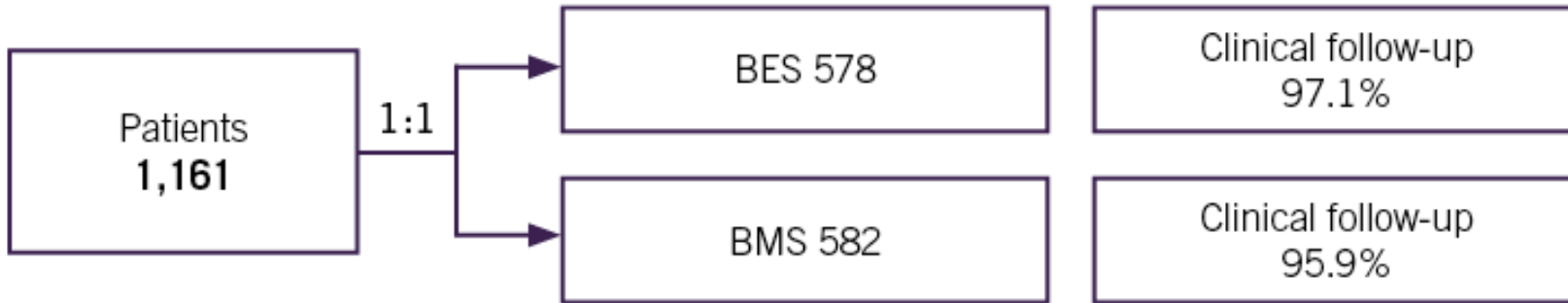
Holmvang et al. JACC Cardiovasc Interv 2013;6:548-53



Second Generation

5 years	EES	BMS	p-value
all-cause mortality	9.0%	12%	0.047

Everolimus eluting stents vs BMS for STEMI: EXAMINATION 5 years *Sabaté et al. Lancet 2015 pii: S0140-6736:00548-6*



Second Generation

TLR at 2 years
 BES 3.1% vs BMS 8.2%
 HR 0.36 (95% CI 0.27-0.69)
 p < 0.001

[Arq Bras Cardiol.](#) 2014 Jun; 102(6): 529–538.
doi: [[10.5935/abc.20140070](#)]

PMCID: PMC4079016
PMID: [25004414](#)

Long-term Outcomes of Drug-eluting versus Bare-metal stent for
ST-elevation Myocardial Infarction

[Liping Wang](#), [Hongyun Wang](#), [Pingshuan Dong](#), [Zhuanzhen Li](#),
[Yanyu Wang](#), [Nana Duan](#), [Yuwei Zhao](#), and [Shaoxin Wang](#)

The evidence emanated from these trials supported the indication for second-generation DES in STEMI in the 2014 myocardial revascularization European guidelines.

Consequently, BMS should be used only in patients with a clear contraindication to DES use, such as patients who need chronic oral anticoagulation or urgent major surgery.

Authors/Task Force members, Windecker S, Kolh P, Alfonso F, Collet JP, Cremer J, Falk V, Filippatos G, Hamm C, Head SJ, Jüni P, Kappetein AP, Kastrati A, Knuuti J, Landmesser U, Laufer G, Neumann FJ, Richter DJ, Schauerte P, Sousa Uva M, Stefanini GG, Taggart DP, Torracca L, Valgimigli M, Wijns W, Witkowski A. 2014 ESC/EACTS Guidelines on myocardial revascularization: The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS) Developed with the special contribution of the European Association of Percutaneous Cardiovascular Interventions (EAPCI). *Eur Heart J.* 2014;35:2541-619.

LEADERS FREE ACS

Objectives

2015 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation

Task Force for the Management of Acute Coronary Syndromes in Patients Presenting without Persistent ST-Segment Elevation of the European Society of Cardiology (ESC)

Authors/Task Force Members: Marco Roffi* (Chairperson) (Switzerland), Carlo Patrono* (Co-Chairperson) (Italy), Jean-Philippe Collet† (France),

P2Y₁₂ inhibitor administration for a shorter duration of 3–6 months after DES implantation may be considered in patients deemed at high bleeding risk.

IIb

A

187–
189,
192

187: RESET, Kim BK et al, JACC 2012; 60: 1340

188: OPTIMIZE, Feres F et al, JAMA 2013; 310: 2510

189: EXCELLENT: Gwon HC et al, Circ 2012; 125: 505

192: ISAR-SAFE: Schulz-Schupke S et al, EHJ 2015; 36: 1252

E-ZES

3 months DAPT

E-ZES

3 months DAPT

DES

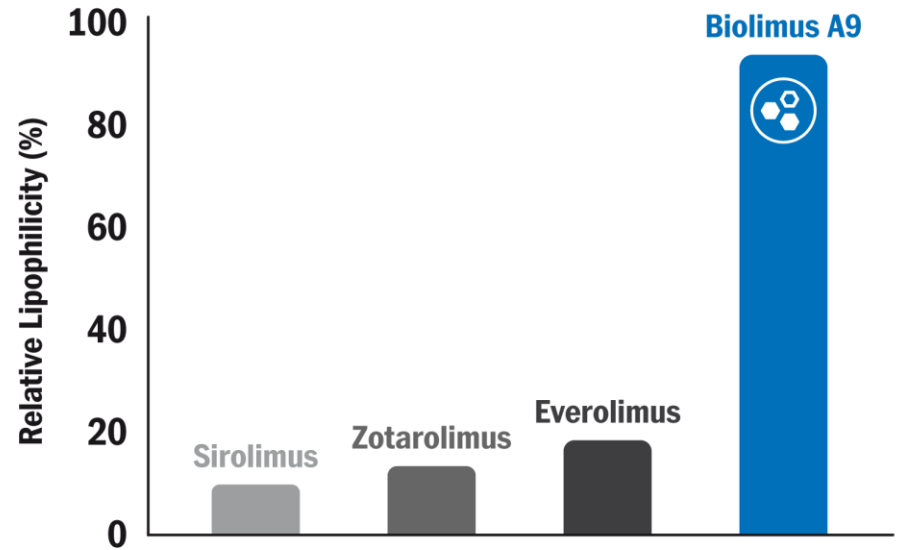
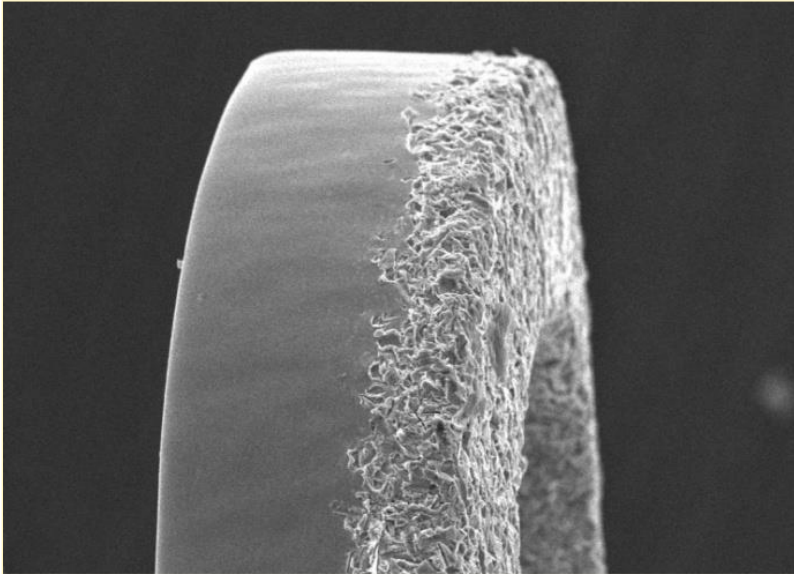
6 months DAPT

DES

6 months DAPT

BioFreedom™

Drug Coated Stent (DCS)



+/- 2.8% (valid for all drugs tested). Data on file at Biosensors.

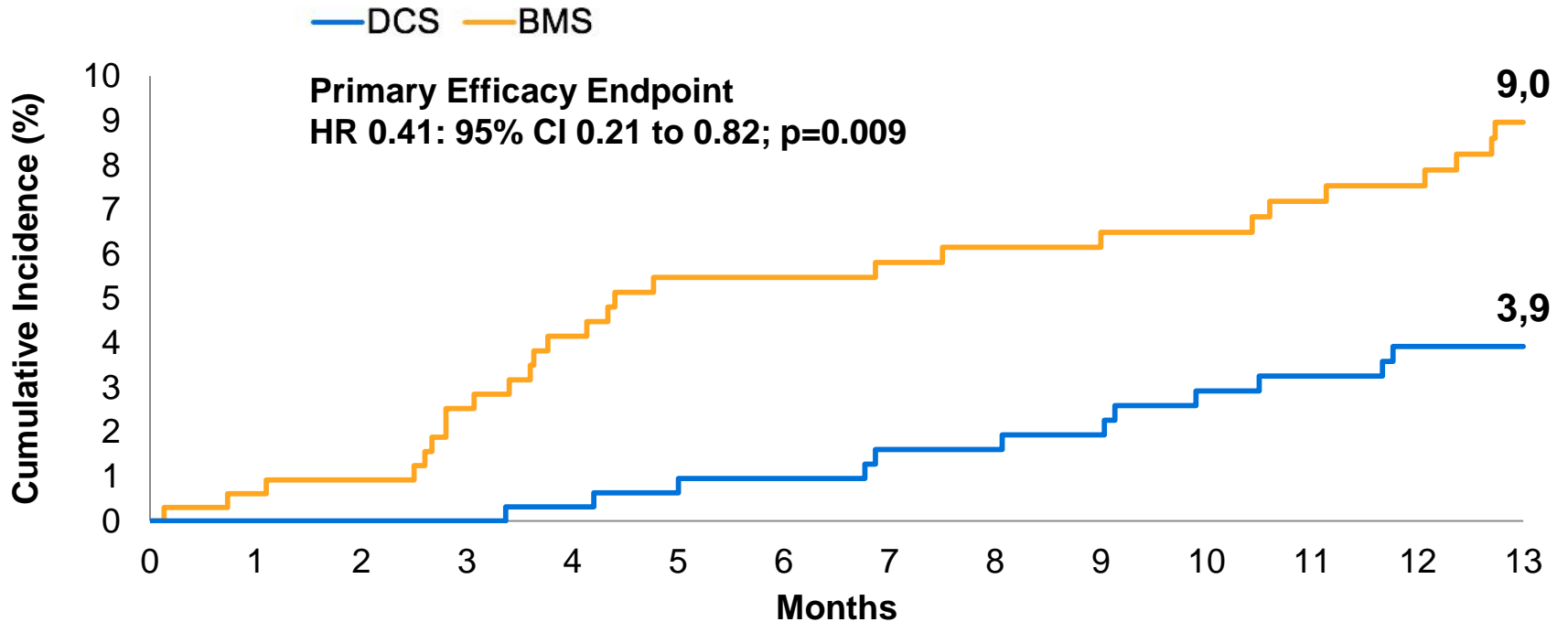
Potential Advantages:

- ✓ Avoid any possible polymer-related adverse effects
- ✓ Rapid drug transfer to vessel wall (98% within one month²)
- ✓ Safe to shorten DAPT?

1. Data on file at Biosensors Intl;
2. Tada et al., Circ Cardiovasc Interv 2010;3;174-183

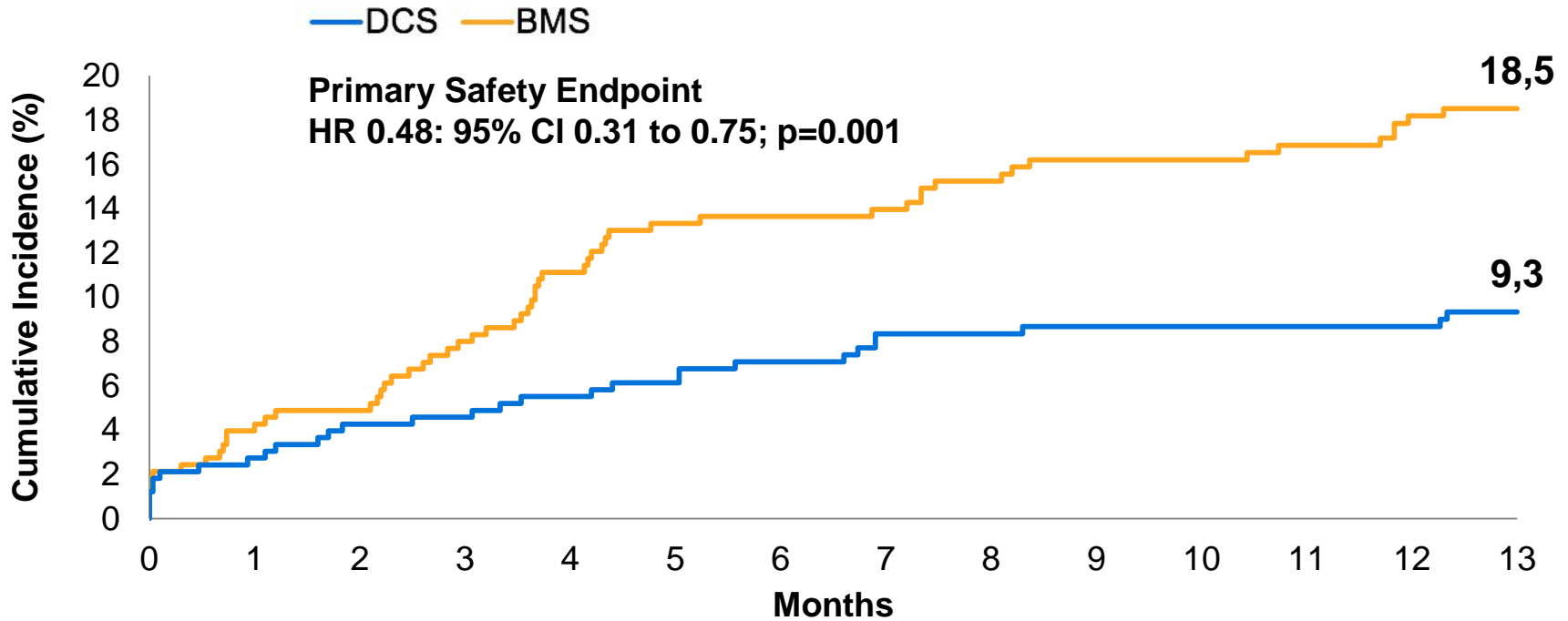
LEADERS FREE ACS

Clinically-driven Target Lesion Revascularization - 12 Month FU



LEADERS FREE ACS

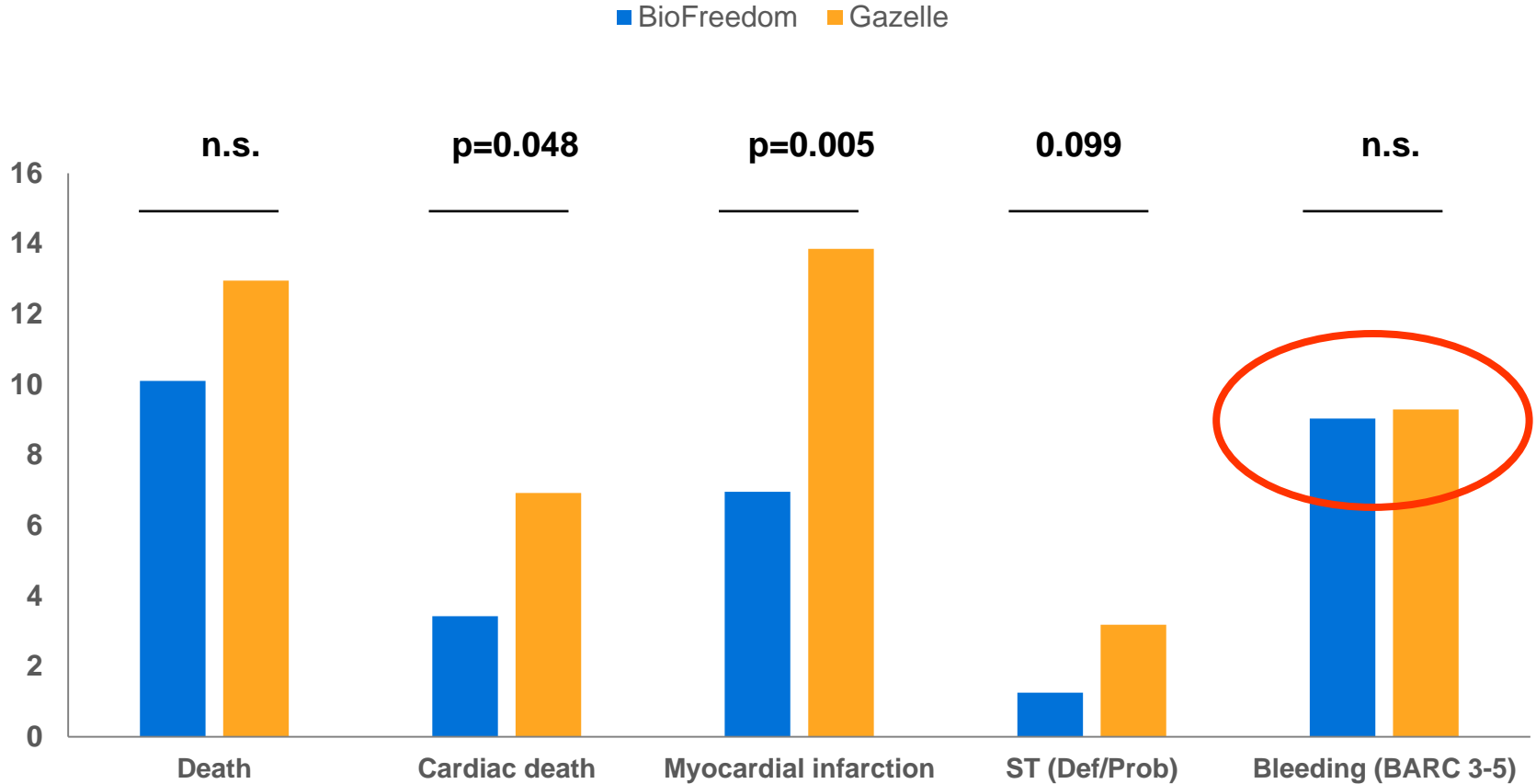
Cardiac Death, MI, or Def / Prob ST- 12 Month FU



329	312	307	295	283	274	272	269	265	260	258	254	247	245
330	319	310	308	303	299	294	288	285	284	284	281	279	275

LEADERS FREE ACS

12 Month Follow-up



- In ACS patients with HBR a polymer-free BA9-DCS combined with 1-month DAPT displays significantly better efficacy and safety than a BMS, the latter driven by significantly lower cardiac mortality and MI.
- Current guidelines should be reconsidered for high bleeding risk patients presenting with ACS:
 - BMS can no longer be recommended
 - Data on DES with shortened DAPT are scarce
 - BioFreedom™ BA9-DCS has strongest evidence in these patients.

So WHAT?

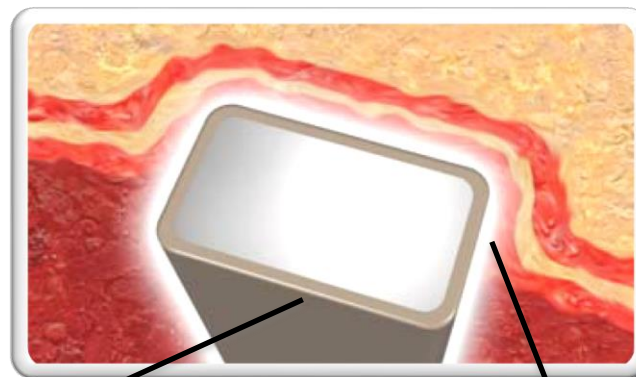


Titanium-Nitride-Oxide coated BAS

Ideal stent for ACS?



Hexacath, France



Active Coating

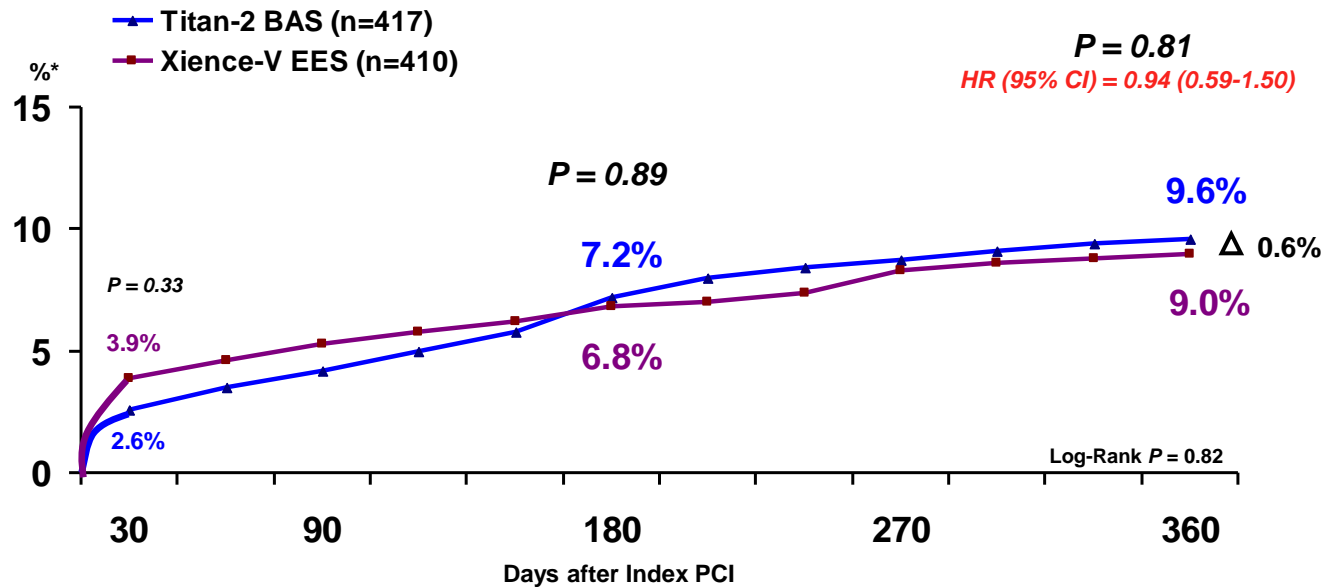
Biological Effect

- Inhibits Platelet Aggregation
- Minimizes Fibrin Growth
- Minimizes Thrombus Formation
- Reduce Inflammation
- Promotes Endothelial Healing

Windecker et al. *Circulation* 2001
Zhang et al. *Journal of Biomedical Material* 1998

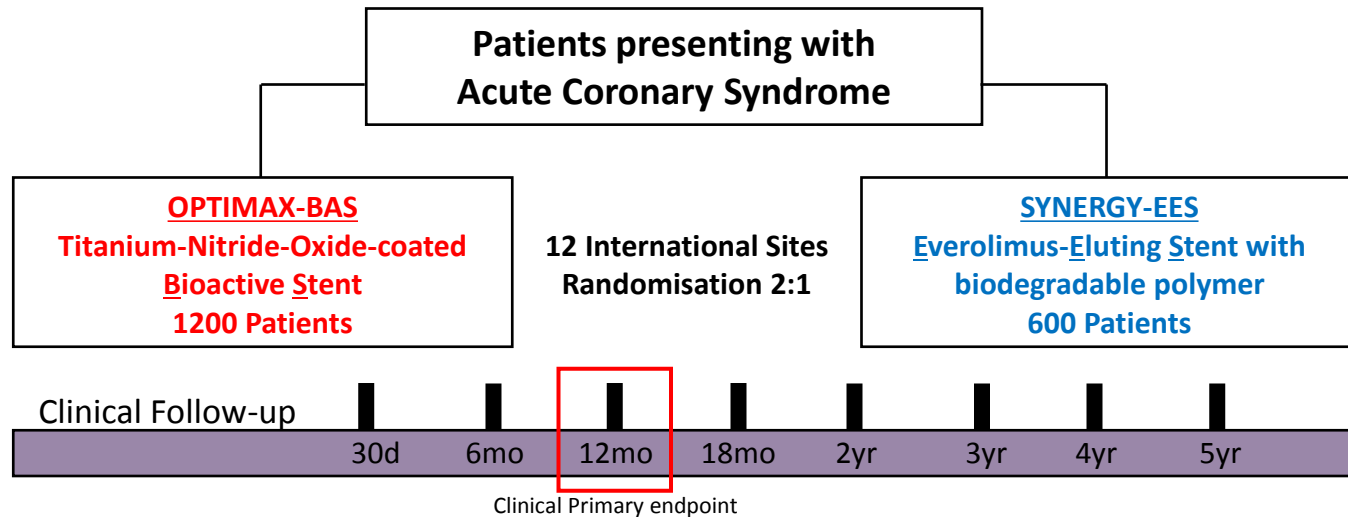
BASE-ACS

MACE at 12 months



Karjalainen, EuroIntervention, 2012

TIDES-ACS



Primary Endpoint: MACE (Cardiac death, MI, and TLR) at 12 months

PI P Karjalainen (FIN)

Co-PI K Kervinen (FIN), J van Der Heyden (NED), H Romppanen (FIN), P Tonino (NED)

CEC: J Marco (FRA), A de Belder (UK), R Wiseth (NOR), J Gomez-Hospital (SPA), D Formigli (ITA)

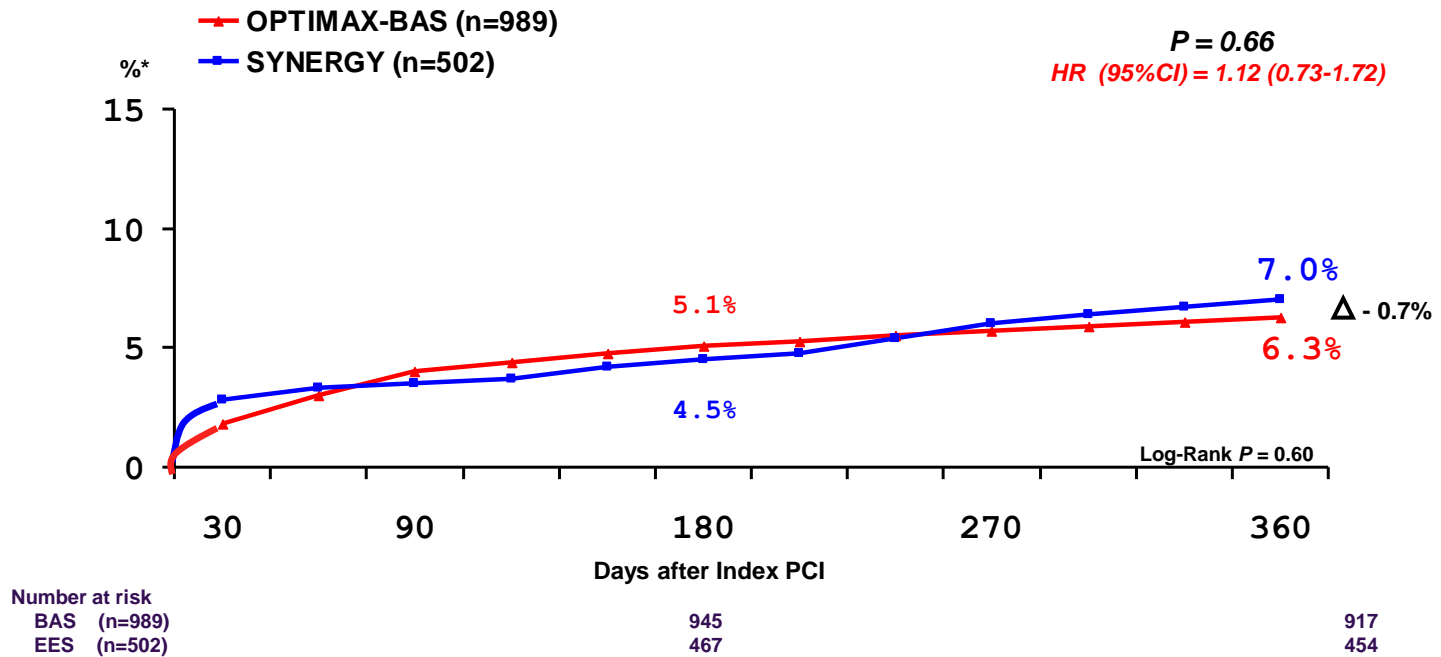
ClinicalTrials.gov: NCT02049229

Minerva Cardioangiol. 2015;63:21-9.

TIDES-ACS

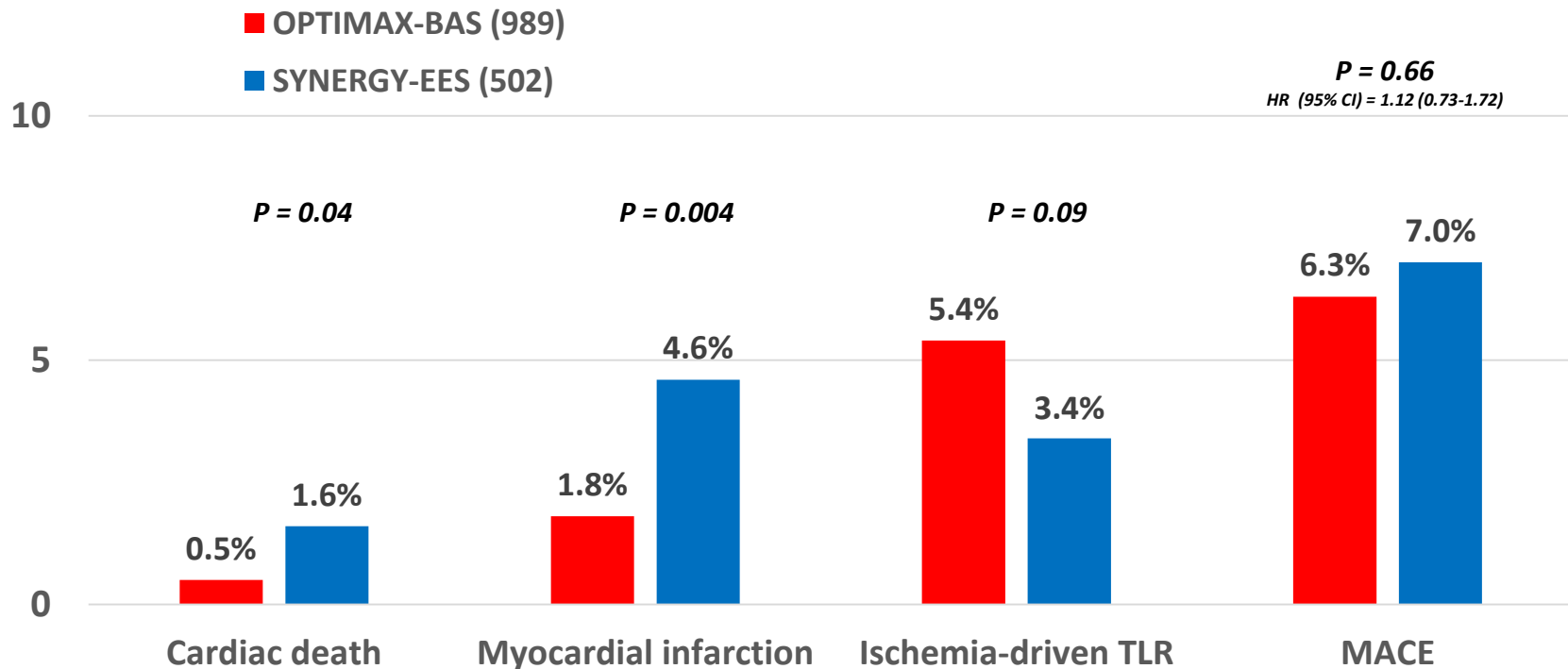
MACE at 12 months

* Cumulative incidence of events (%)



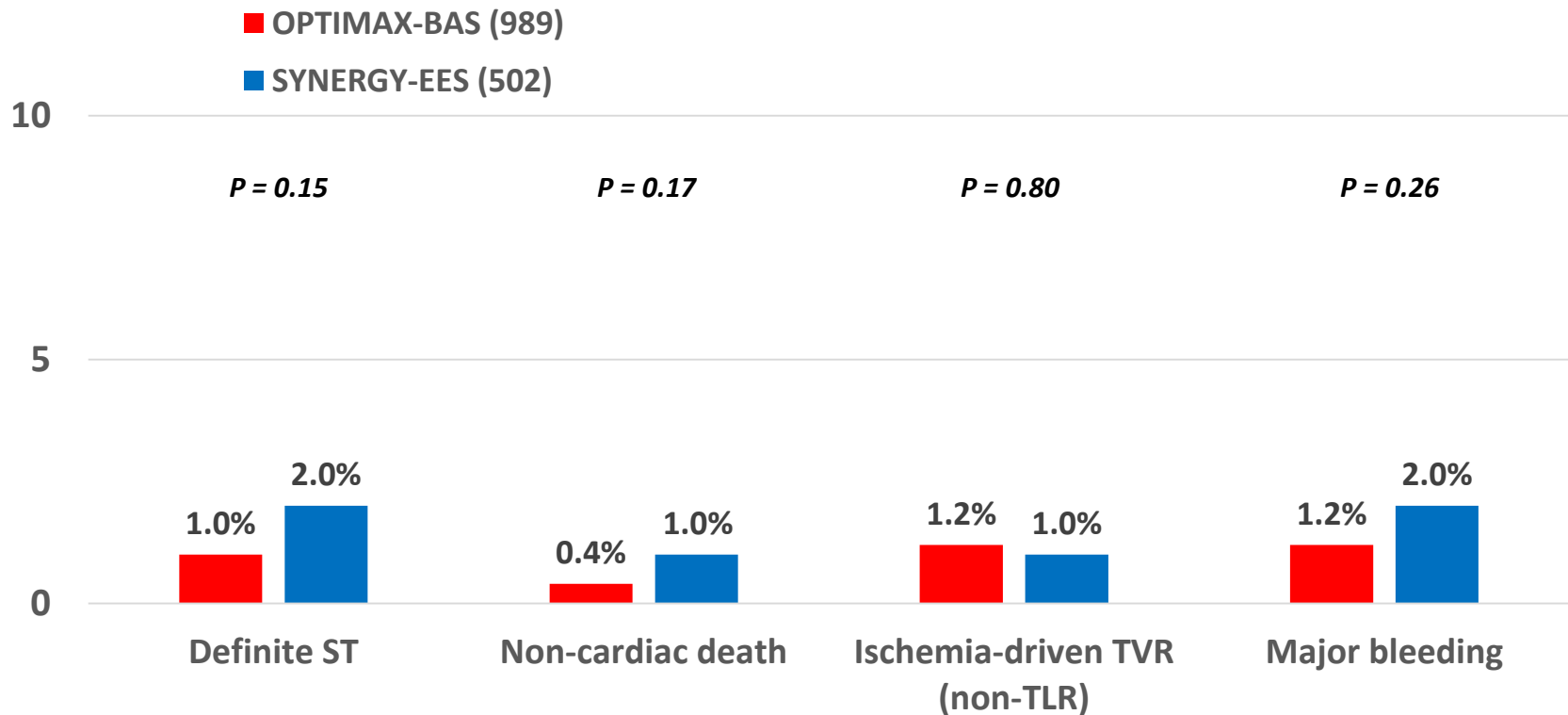
TIDES-ACS MACE at 12 months

Event rate (%)



TIDES-ACS other events at 12 months

Event rate (%)



The Balance of Safety versus Efficacy

NCS

Benefits:
1 month DAPT
Lower Late Stent Thrombosis (LST)
Lower TLR and MACE rates
Lower Late Loss than BMS

BMS

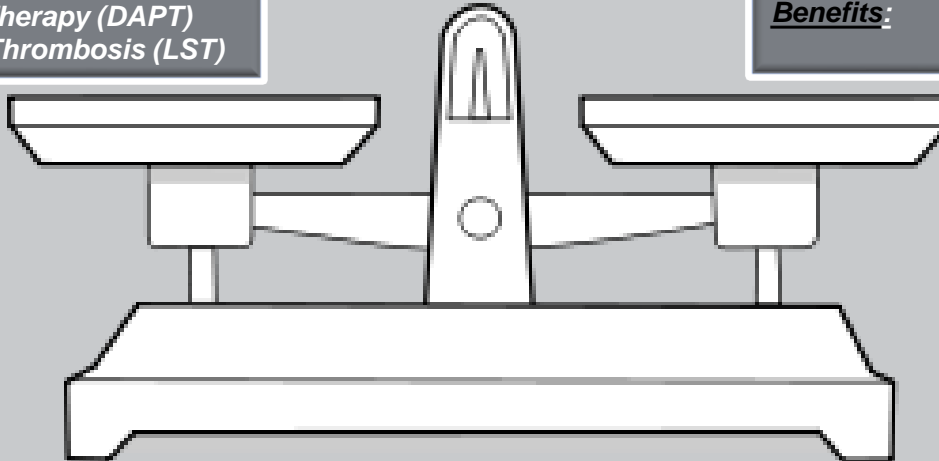
Limitations: Higher TLR and MACE rates
Higher Late Loss (LL)

Benefits: Only 1 month
Dual Antiplatelet Therapy (DAPT)
Lower Late Stent Thrombosis (LST)

DES

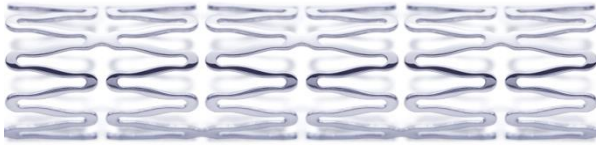
Limitations: Late Stent Thrombosis (LST)
Long Term (12 months or greater)
Dual Antiplatelet Therapy (DAPT)

Benefits: Lower TLR and MACE rates
Lower Late Loss



COBRA PzF™

CeloNova's New Generation Coronary Stent

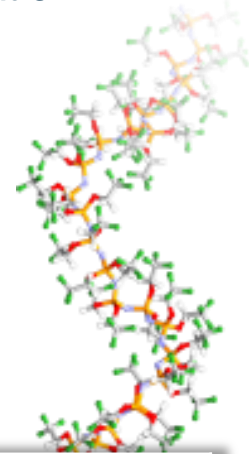
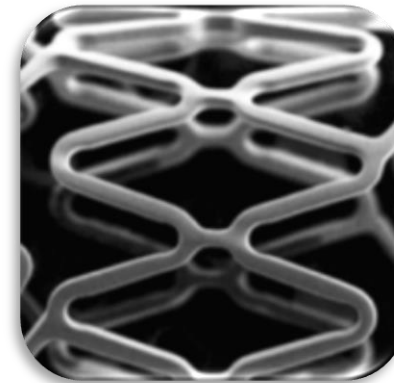


71um Thin Strut Cobalt Chromium Coronary Stent



FDA APPROVED

Polyzene®-F
Surface Modification

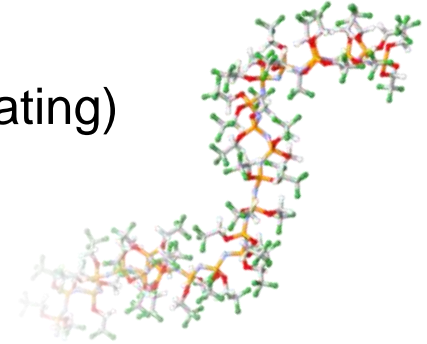


The COBRA PzF NanoCoated Coronary Stent System

Strut Material	Strut Thickness	Crossing Profile (3.0 diameter)	Nano-Coating (Polyzene-F) Thickness
CoCr	71 µm	0.89 mm	≤0.05 µm
Diameters (mm): 2.5, 2.75, 3.0, 3.5, 4.0			
Length (mm): 8, 12, 15, 18, 24, 30			

POLYZENE[®]-F Nano-Coating

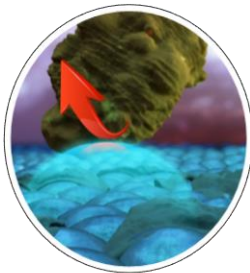
- Nano-coating thickness:
 - **0.05 μm thin** (100 times thinner than DES coating)
- Imparts:
 - Thrombo-resistance
 - Reduced inflammation
 - Rapid and more natural healing



Seconds...

Resists Platelets

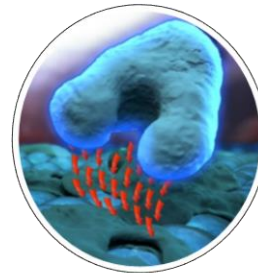
Platelets &
Fibrinogen



Minutes...

***Binds Albumin & Less Affinity
to Fibrinogen***

Albumin

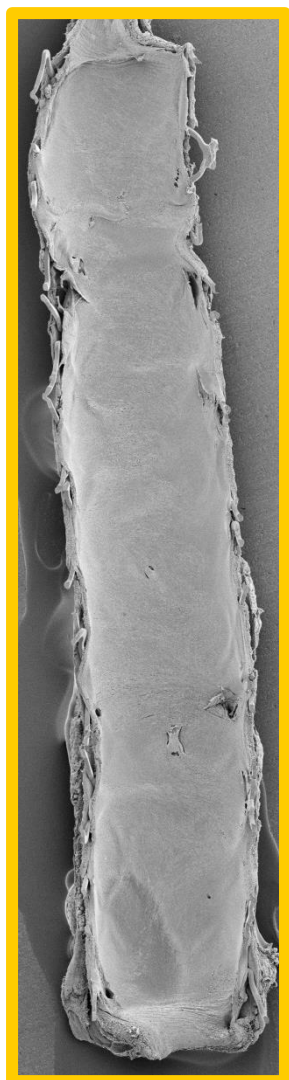


Days...

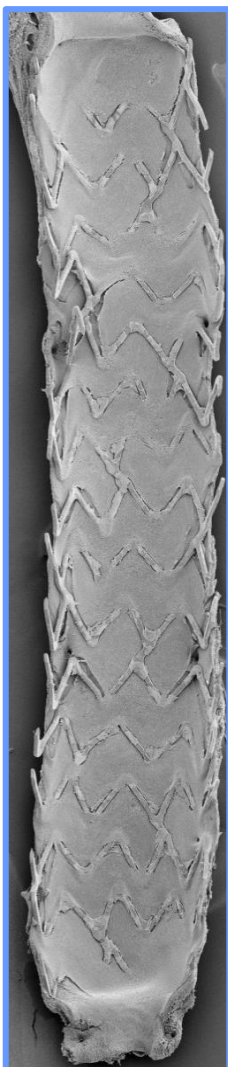
Rapid Endothelialization



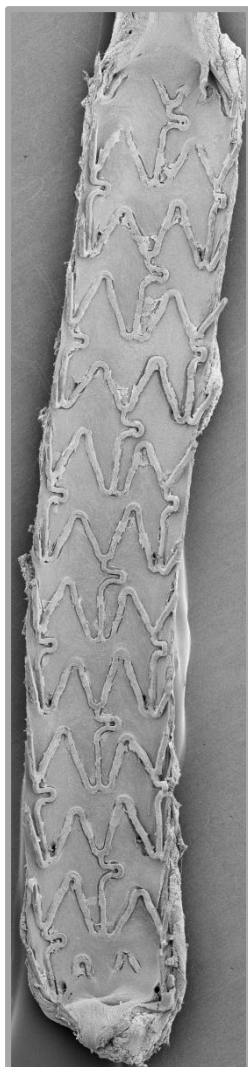
Strut Coverage Rate (SEM) was Significantly Greater in COBRA PzF NCS (in rabbit model at 14 days)



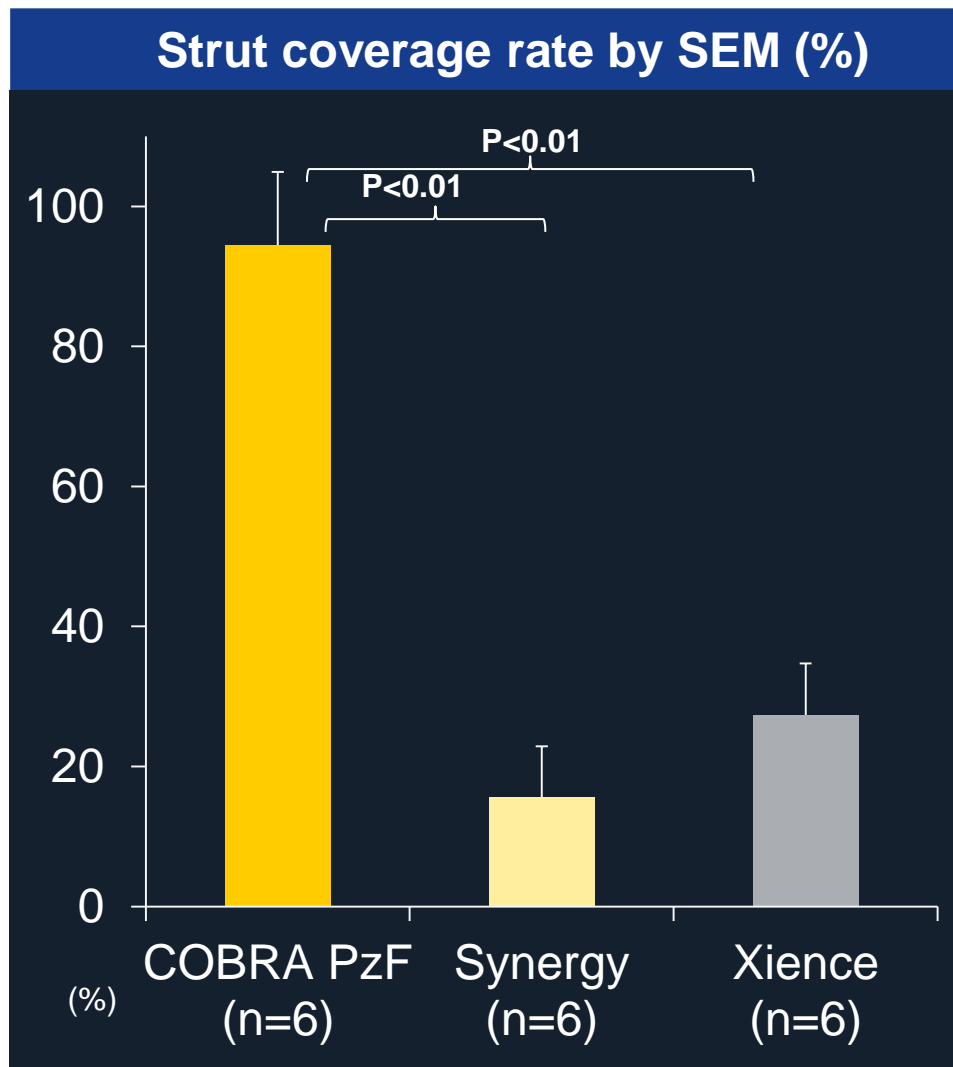
COBRA PzF



Synergy



Xience



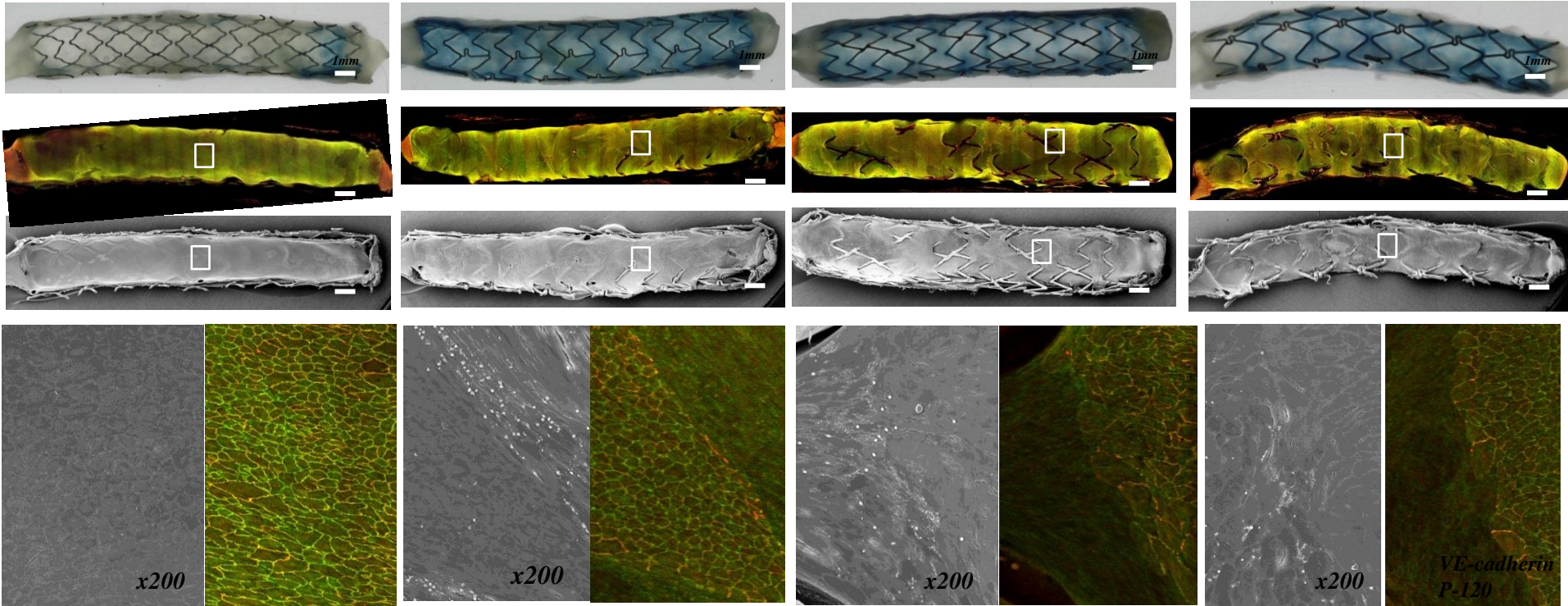
Results of 28-Day In-Life

Cobra PzF

Xience

Synergy

BioFreedom



(%) *Evans blue uptake*

* $p < 0.05$ vs *CobraPzF*,

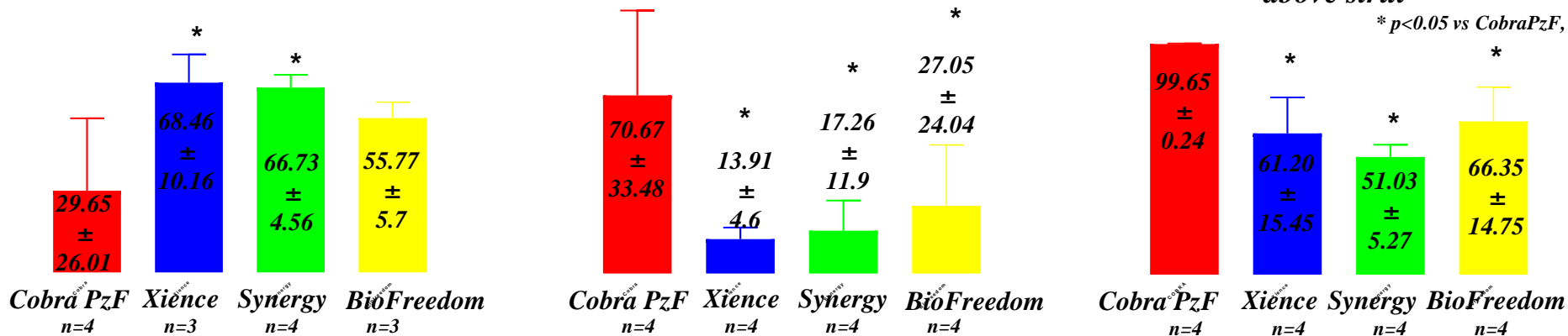
(%) *EC Barrier Protein above strut*

* $p < 0.05$ vs *CobraPzF*,

(%) *Endothelial Coverage in SEM*

above strut

* $p < 0.05$ vs *CobraPzF*,



16140 PTCA
(17 sites)

Screening



13354 PTCA
With ≥ 1 DES (83%)

2786 PTCA
Without DES (17%)

720 PTCA
Without stent (26%)

1039 PTCA
With a BMS (37%)

1026 PTCA
With a Cobra (37%)

86 PTCA with Cobra + another stent

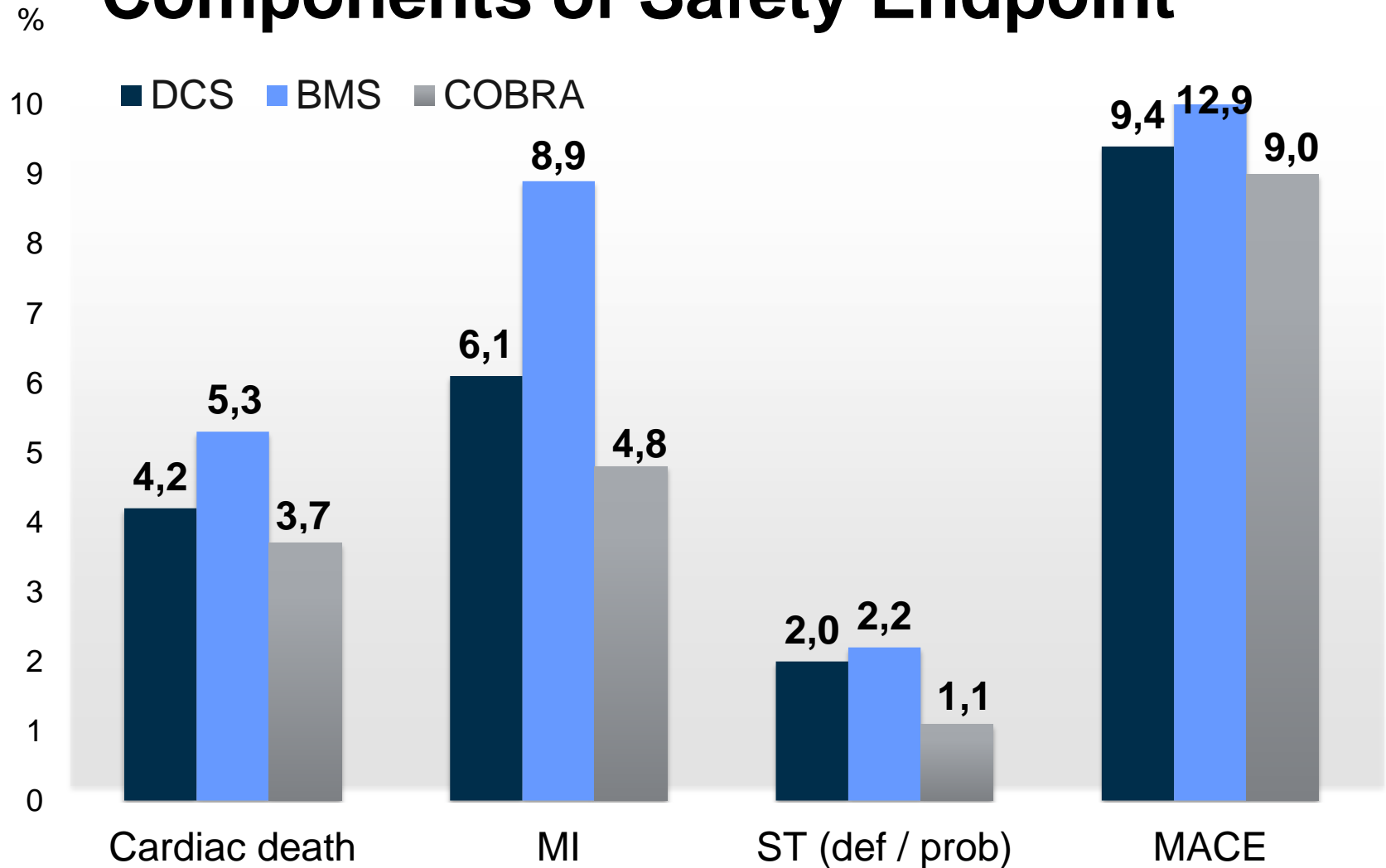
940 PTCA with Cobra alone

443 ACS (STEMI & NSTEMI tropo+)

497 non ACS (Unstable Angina tropo- & Stable)

Leaders FREE Vs *e*-COBRA

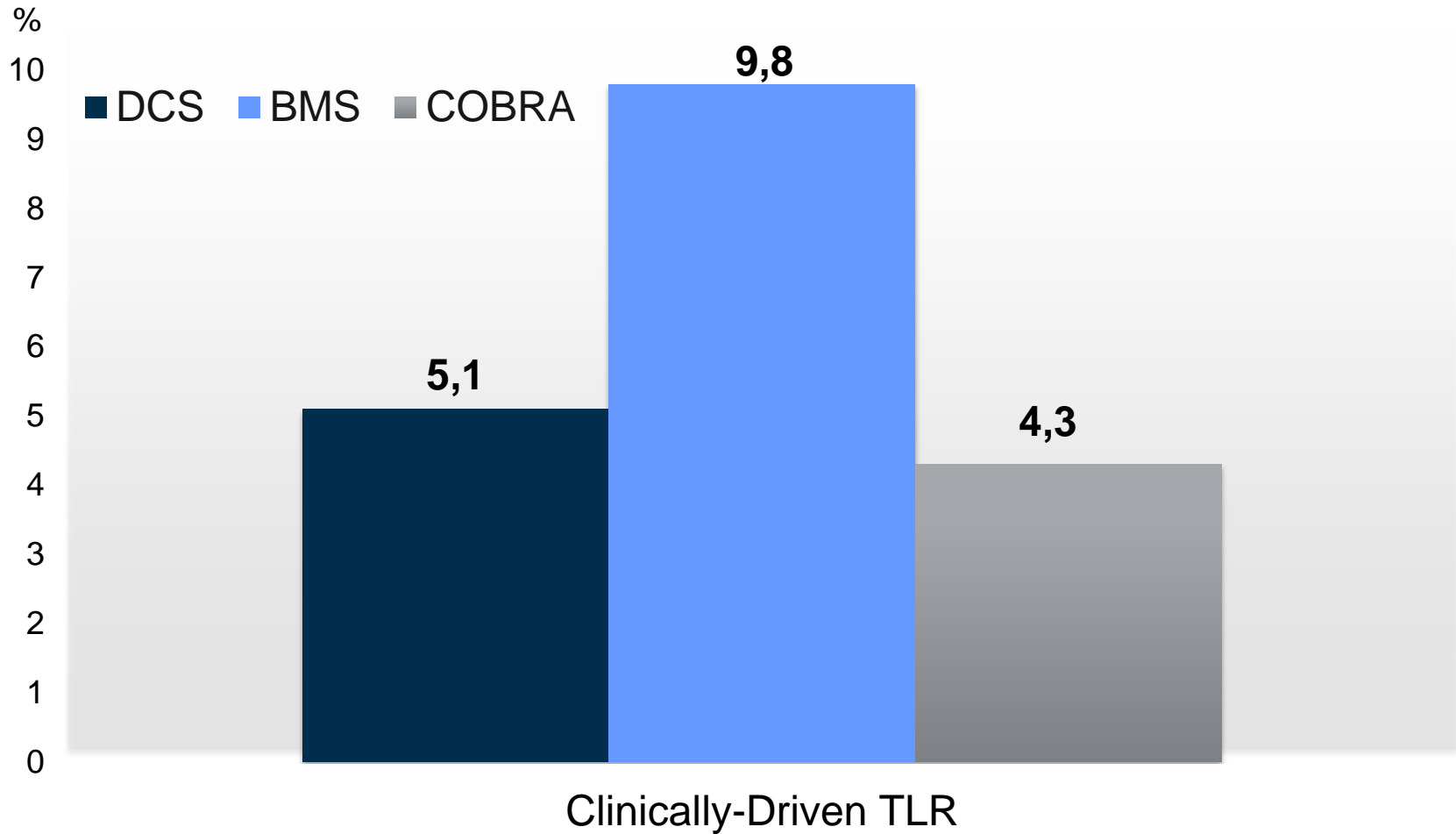
Components of Safety Endpoint



One Year analysis

Leaders FREE Vs **e**-COBRA

Components of Efficacy Endpoint



One Year analysis

Conclusions

Which stent for STEMI?

DES second generation > BMS
BMS can no longer be recommended

Data on DES with shortened DAPT are scarce
BioFreedom™ BA9-DCS for one month DAPT

Titanium-Nitride-Oxide coated BAS demonstrated
solid data versus second generation of DES.

COBRA PzF NCS For a short DAPT or SAPT