Metallic DES Are All Equivalent
Insights from RCT, Meta-Analysis, and Registry

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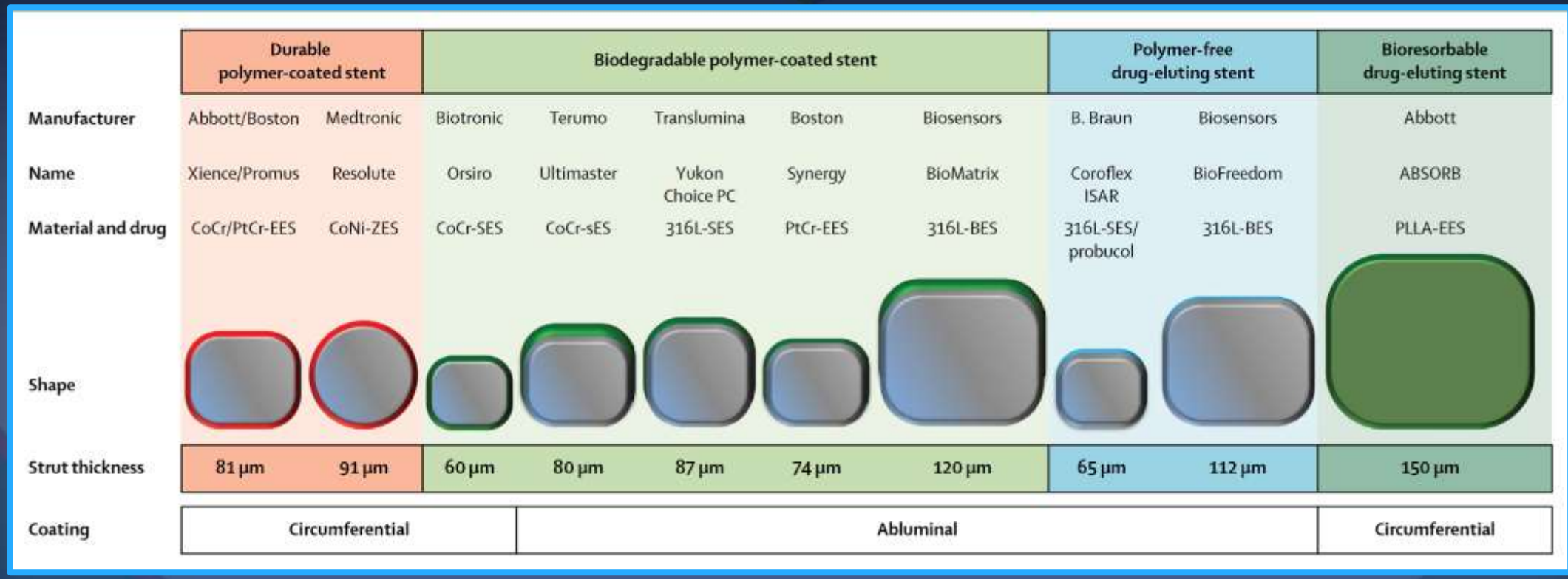
Second-Generation DES



Robert A Byrne et al. Lancet 2017; 390: 781–92

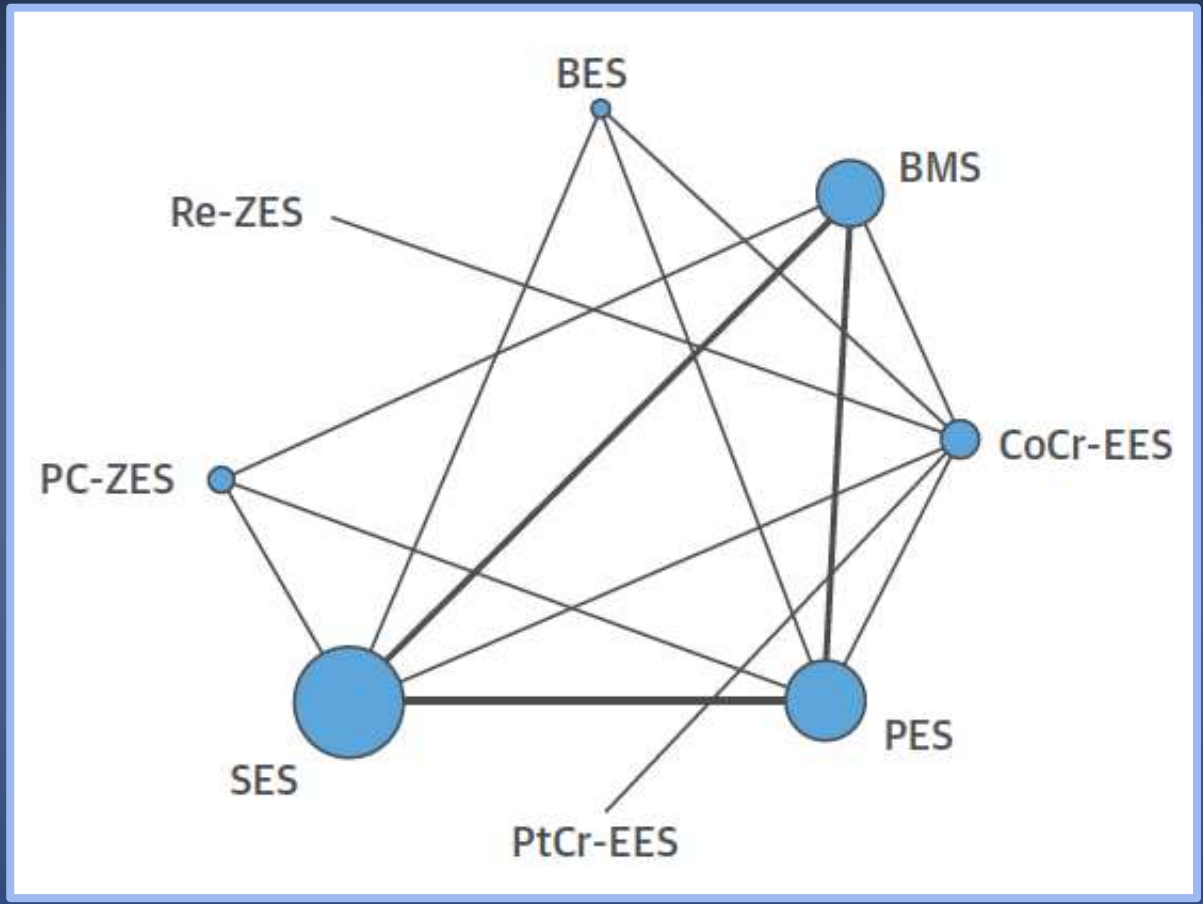
?? Difference in Outcomes Among Contemporary DES: Individual RCT

	Devices*	Total number of patients	Latest follow-up	Primary endpoint	Primary result (hazard ratio or risk difference, 95% CI)	p value
RESOLUTE AC[37]	ZES vs EES	2292	5 years	TLF	No difference (0·9%, -2·2 to 3·9)	0·61
ISAR-TEST 5[38]	SES (PF) vs ZES	3002	5 years	TLF	No difference (0·98, 0·84–1·15)	0·80
PLATINUM[39]	EES vs EES	1530	3 years	TLF	No difference (0·84, 0·56–1·26)	0·40
NEXT[40]	BES (BP) vs EES	3235	3 years	Composite of death and MI (safety), or TLR (efficacy)	No difference in death and MI (0·96, 0·77–1·19) or TLR (1·03, 0·8–1·34)	0·70 (death and MI), 0·80 (TLR)
COMPARE II[41]	BES (BP) vs EES	2707	5 years	Composite of cardiac death, MI, or TVR	No difference (1·11, 0·92–1·33)	0·26
BIOSCIENCE[42]	SES (BP) vs EES	2119	2 years	TLF	No difference (1·00, 0·77–1·31)	0·98
DUTCH PEERS[43]	ZES vs EES	1811	2 years	Composite of cardiac death, MI, or TVR	No difference (1·10, 0·81–1·50)	0·55
BASKET-PROVE II[34]†	BES (BP) vs EES	1530	2 years	Composite of death, MI, or any revascularisation	No difference (1·11, 0·77–1·62)	0·58
SORT OUT VI[44]	BES (BP) vs ZES	2999	3 years	TLF	No difference (0·90, 0·71–1·14)	0·36

Robert A Byrne et al. Lancet 2017; 390: 781–92

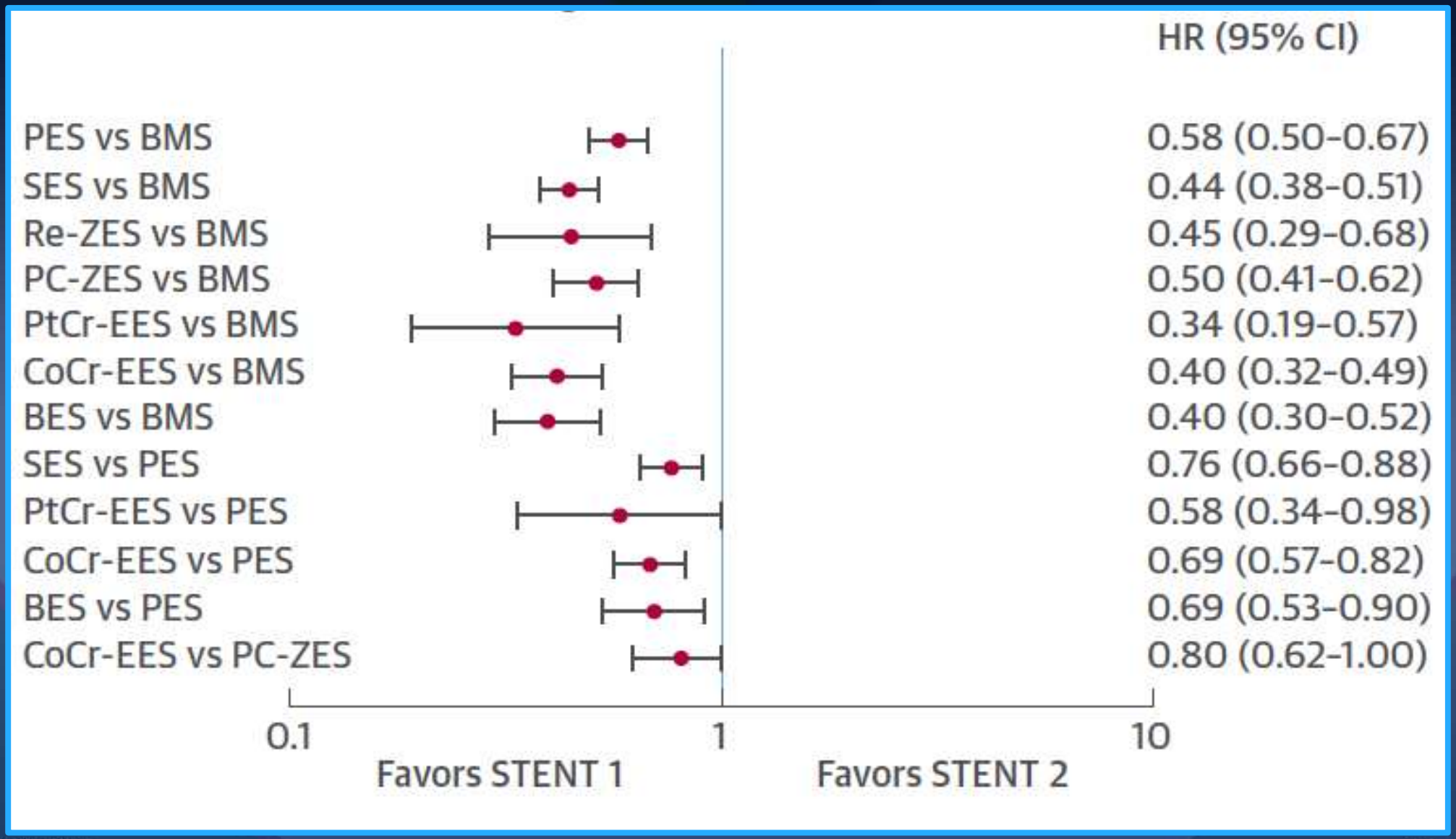
Updated Network Meta-Analysis including RCT with at least 3 year FU

51 RCTs; 52,158 patients (median 3.8 yr FU)



Palmerini et al. J AmColl Cardiol 2015;65:2496–507

Efficacy; TVR



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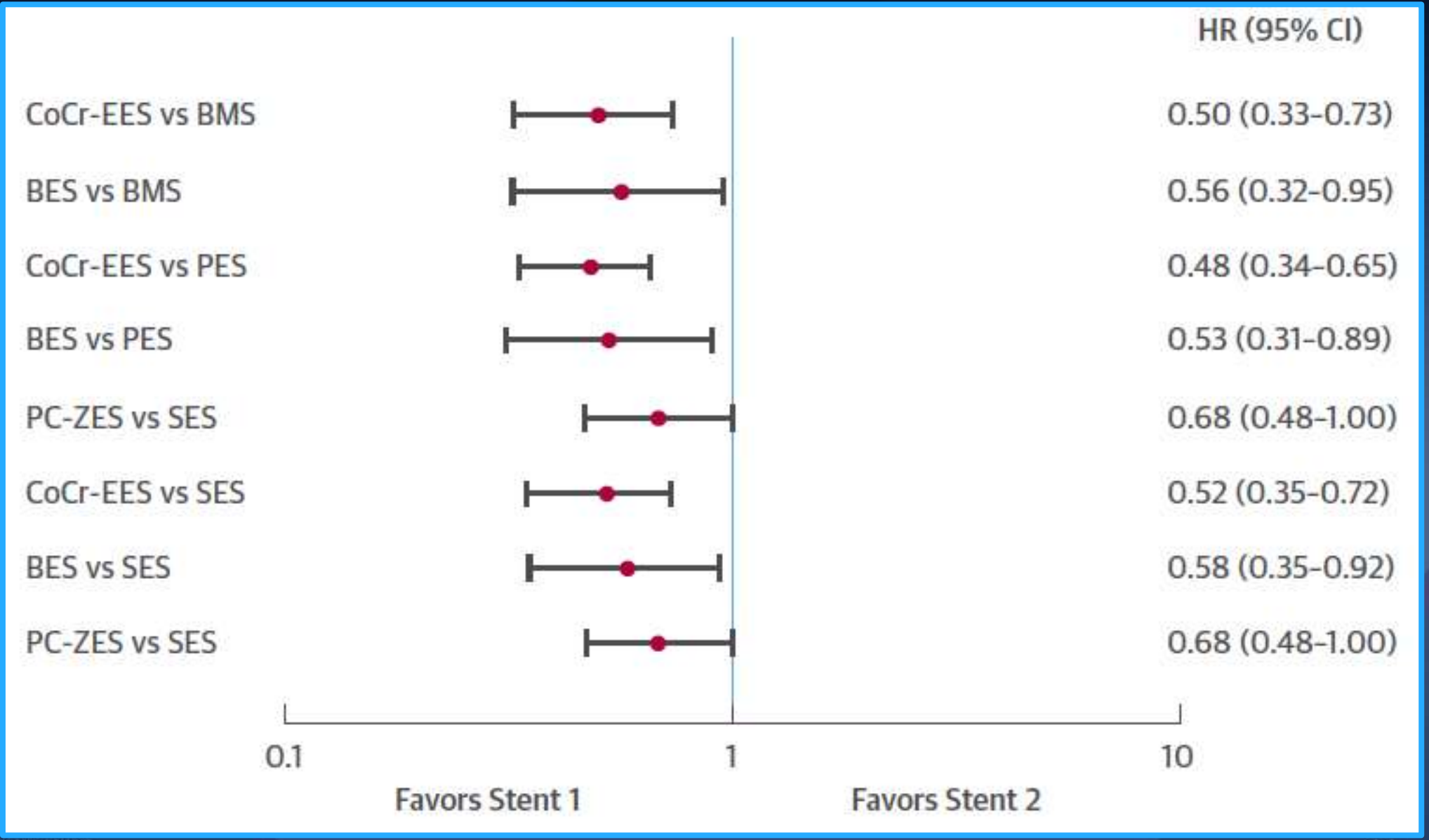
Safety; Definite or Probable ST



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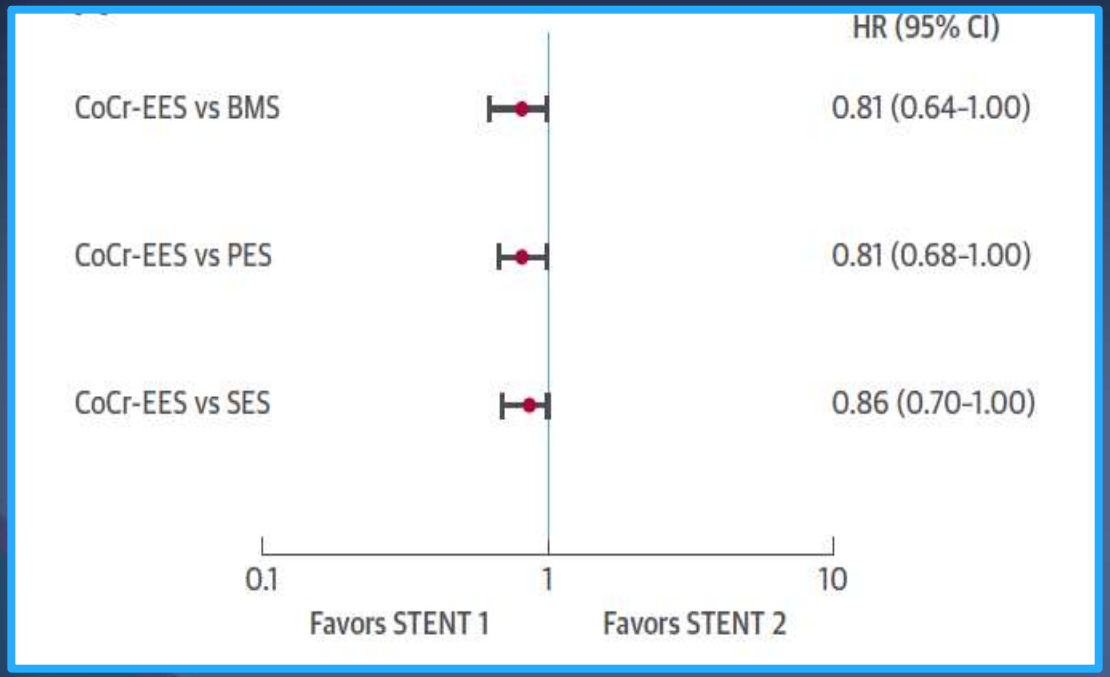
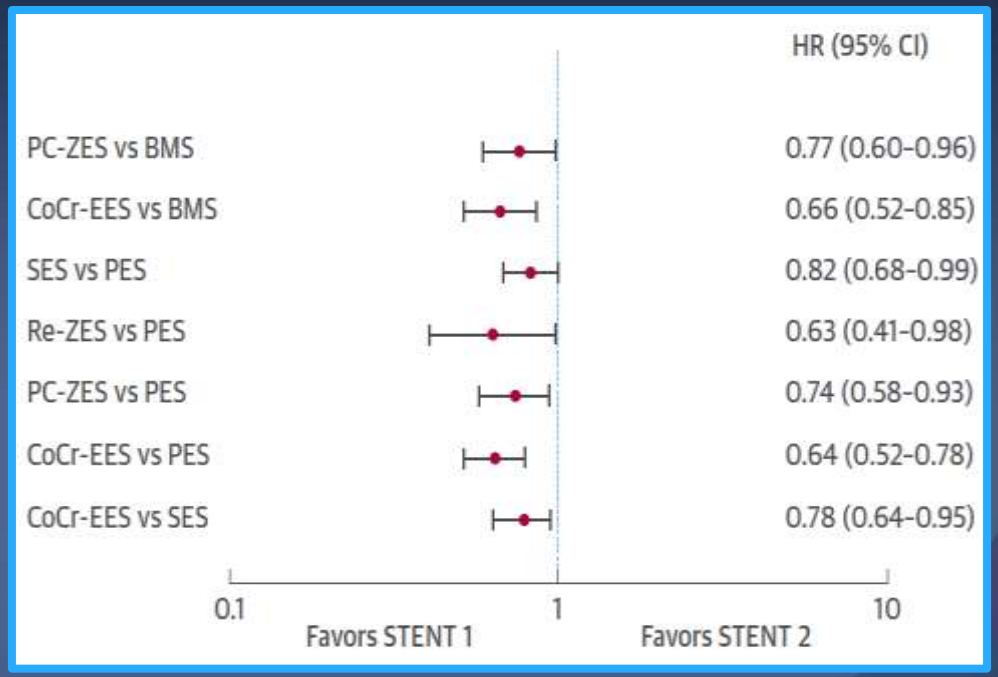
Hard Clinical Endpoints

Death



MI



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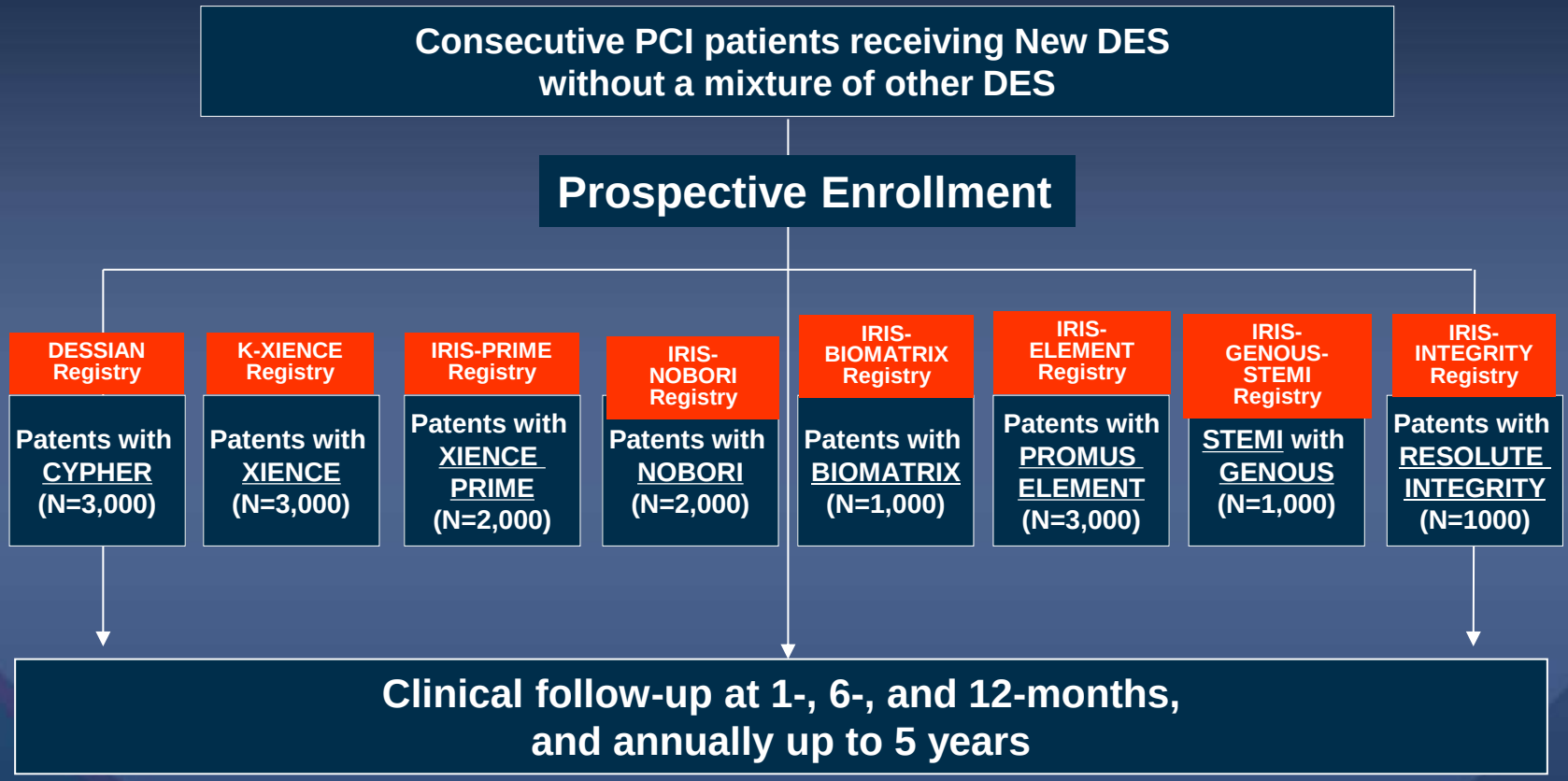
Are There Any MAJOR Differences in Clinical Outcomes Between the Most Widely Used Contemporary Metallic DES?

Difference in RCT and Registry?

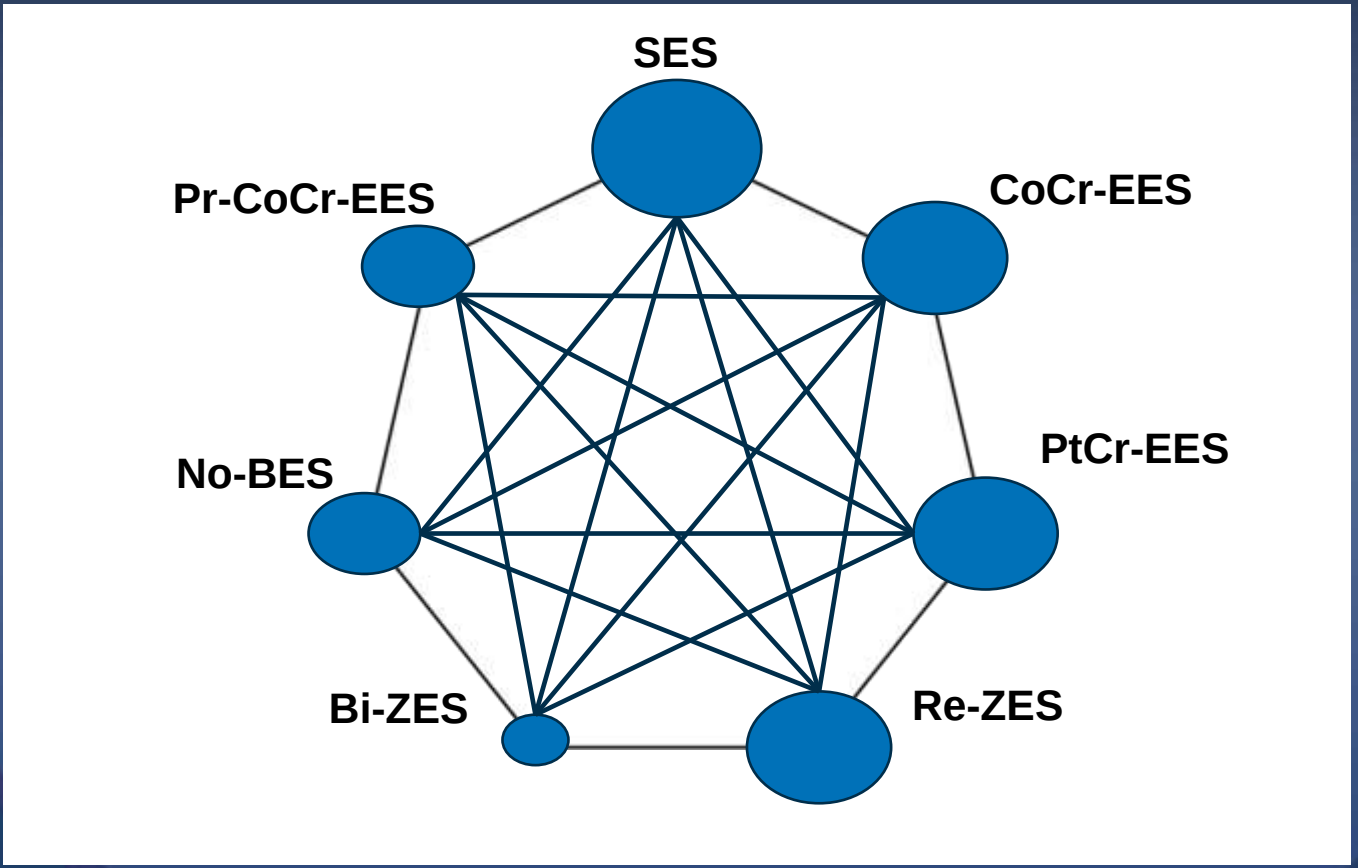
Evaluation of Effectiveness and Safety of the First, Second, and Newer Drug-Eluting Stents in Routine Clinical Practice;

IRIS-DES Registry



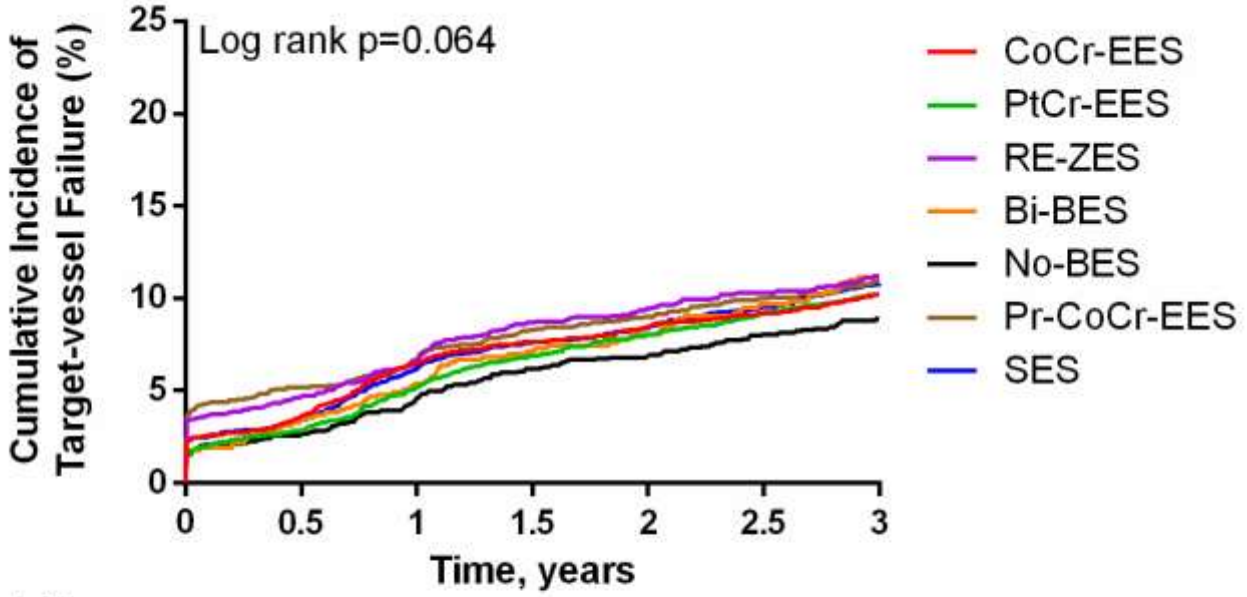
Updated Meta-Analysis of IRIS-DES Registry

7 registry; 17,196 patients, median 3.3 years



K-M Curves of Primary End Point

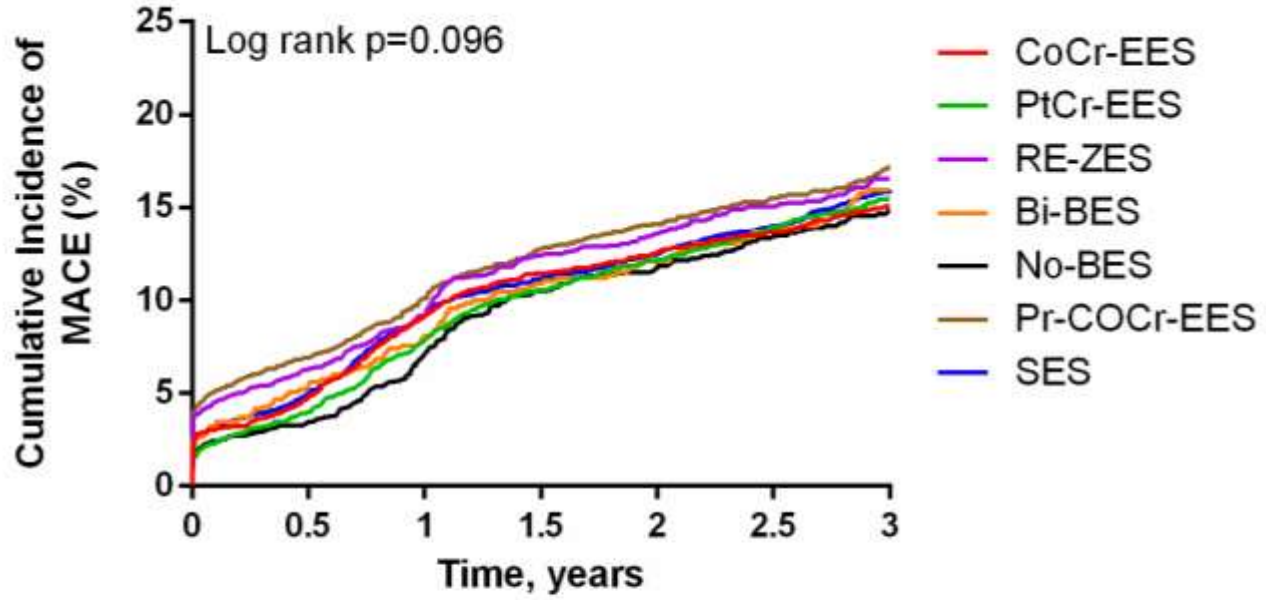
Target-Vessel Failure (CV death, target-vessel MI, or TVR)



No. at risk				
SES	3570	3210	2989	2474
CoCr-EES	3053	2743	2563	2396
PtCr-EES	2985	2667	2454	2185
RE-ZES	2922	2245	1626	831
Bi-BES	789	659	586	500
No-BES	1907	1615	1340	971
Pr-CoCr-EES	1970	1712	1585	1197

K-M Curves of Secondary End Point

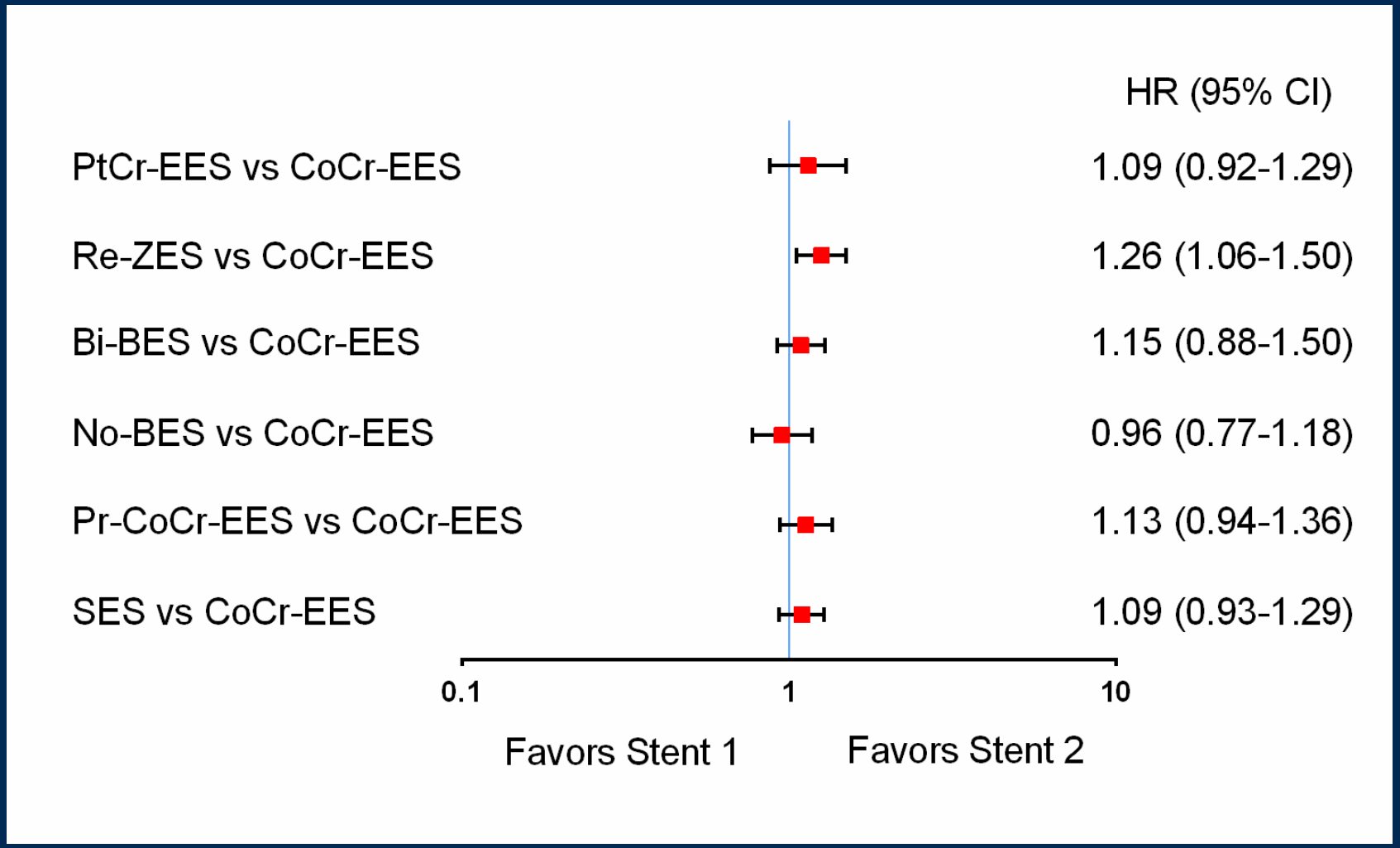
Major Adverse Cardiac Event (all-cause death, any MI, any revascularization)



No. at risk				
SES	3570	3135	2892	2378
CoCr-EES	3053	2678	2482	2310
PtCr-EES	2985	2616	2376	2100
RE-ZES	2922	2199	1568	799
Bi-BES	789	648	570	485
No-BES	1907	1582	1283	916
Pr-CoCr-EES	1970	1661	1518	1138

Adjusted HR with TWANG Methods

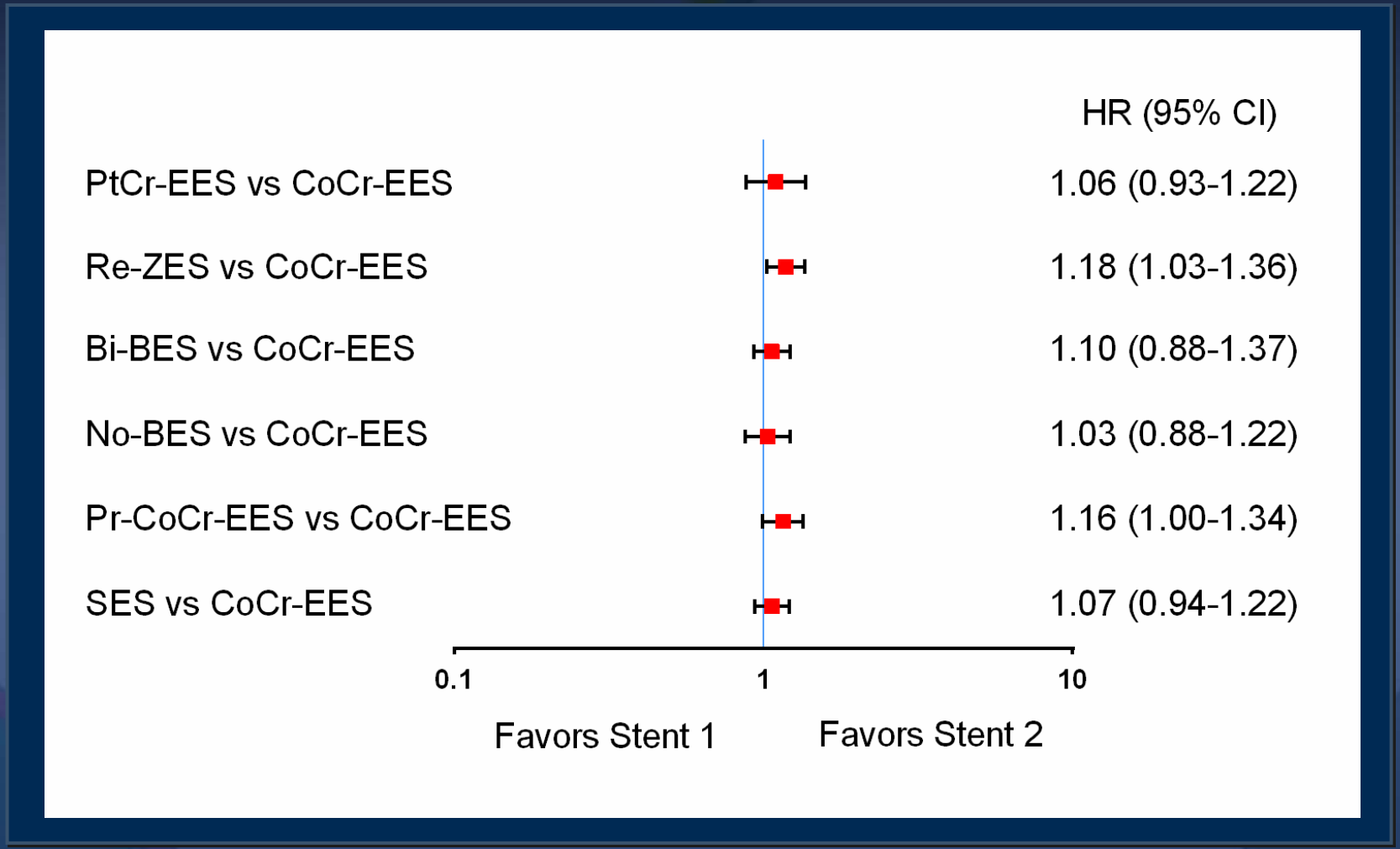
Target-Vessel Failure (CV death, target-vessel MI, or TVR)



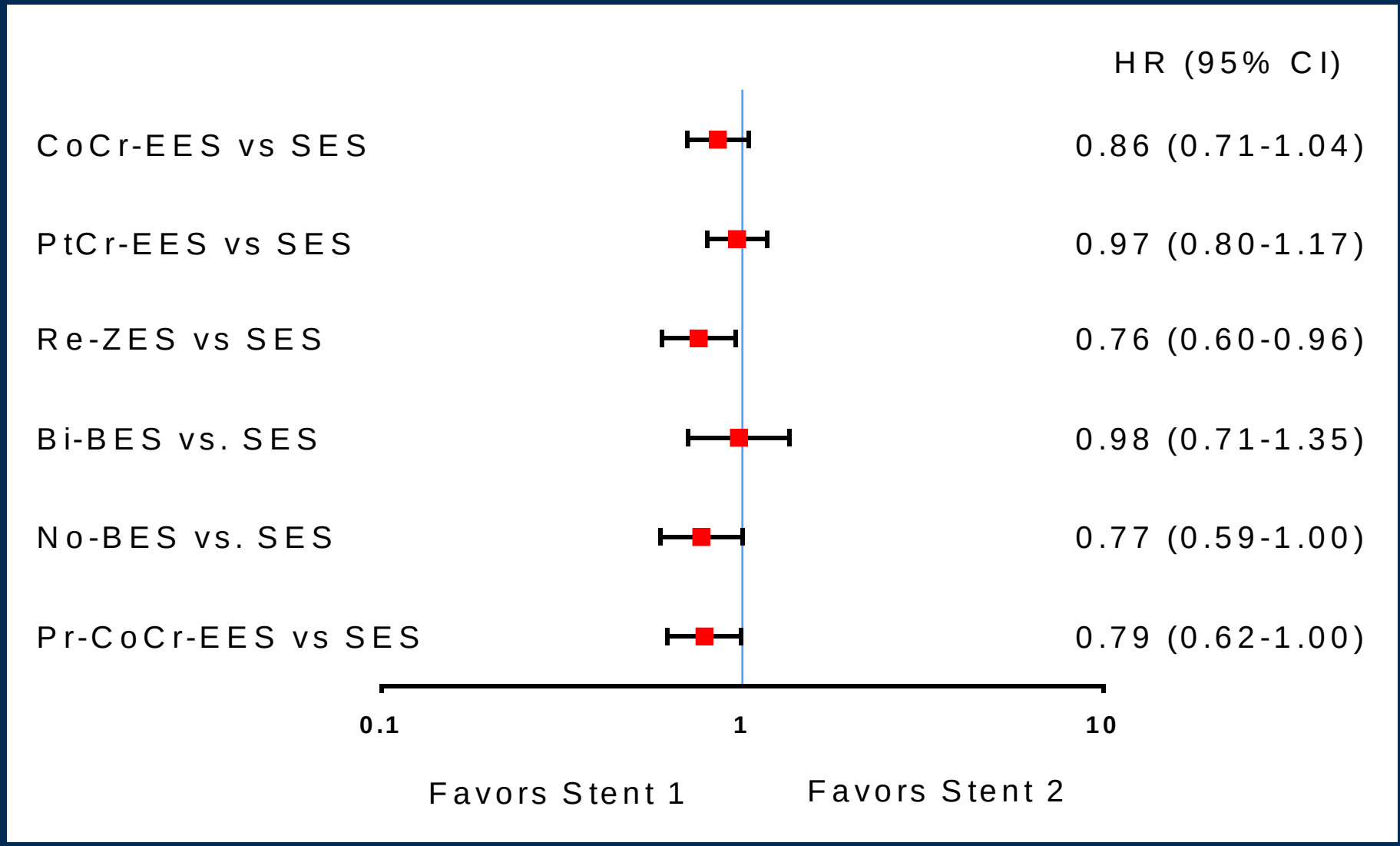
Multiple treatment-group propensity scores using the TWANG method

Adjusted HR of Secondary End Point

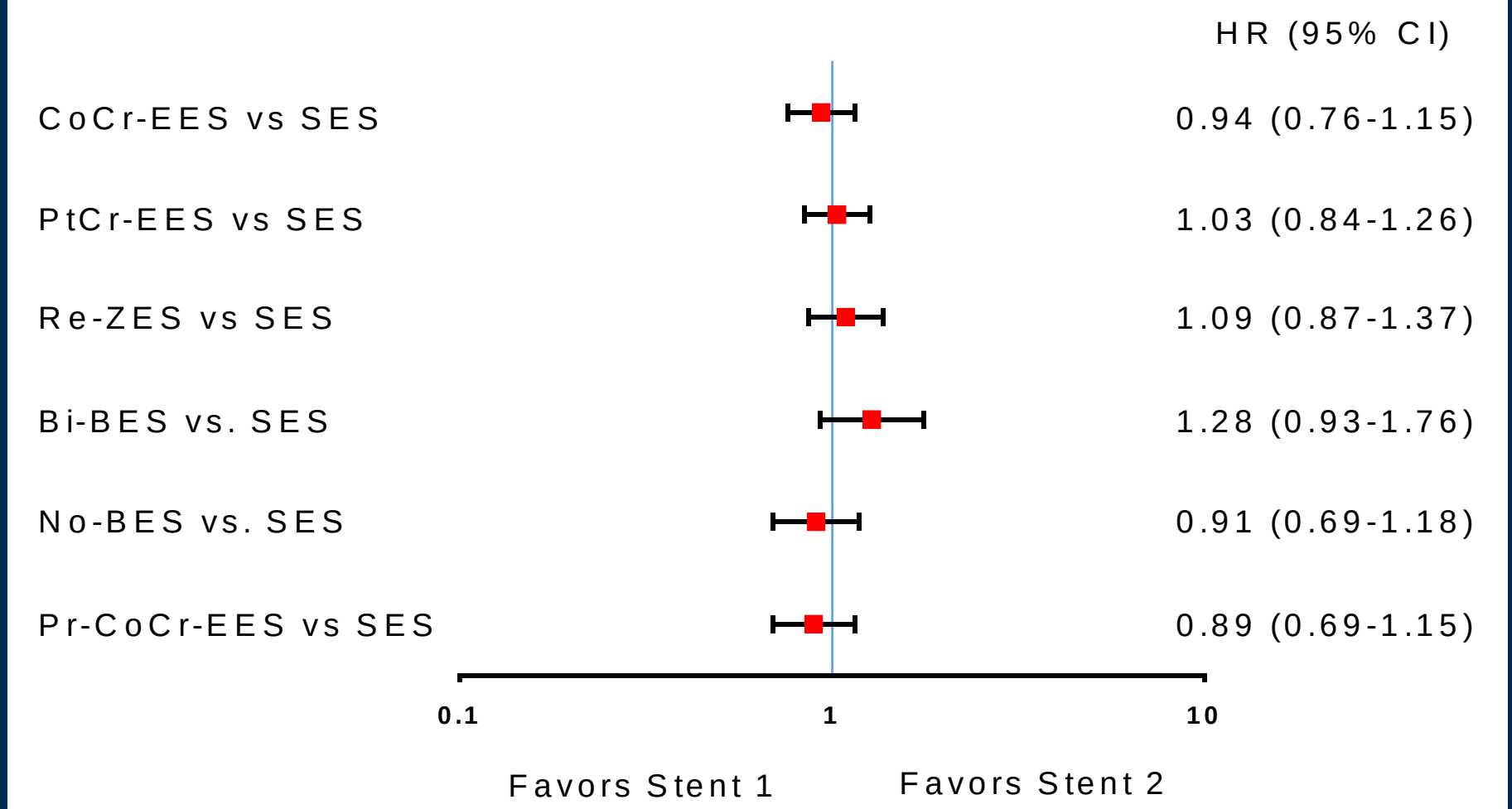
Major Adverse Cardiac Event (all-cause death, any MI, any revascularization)



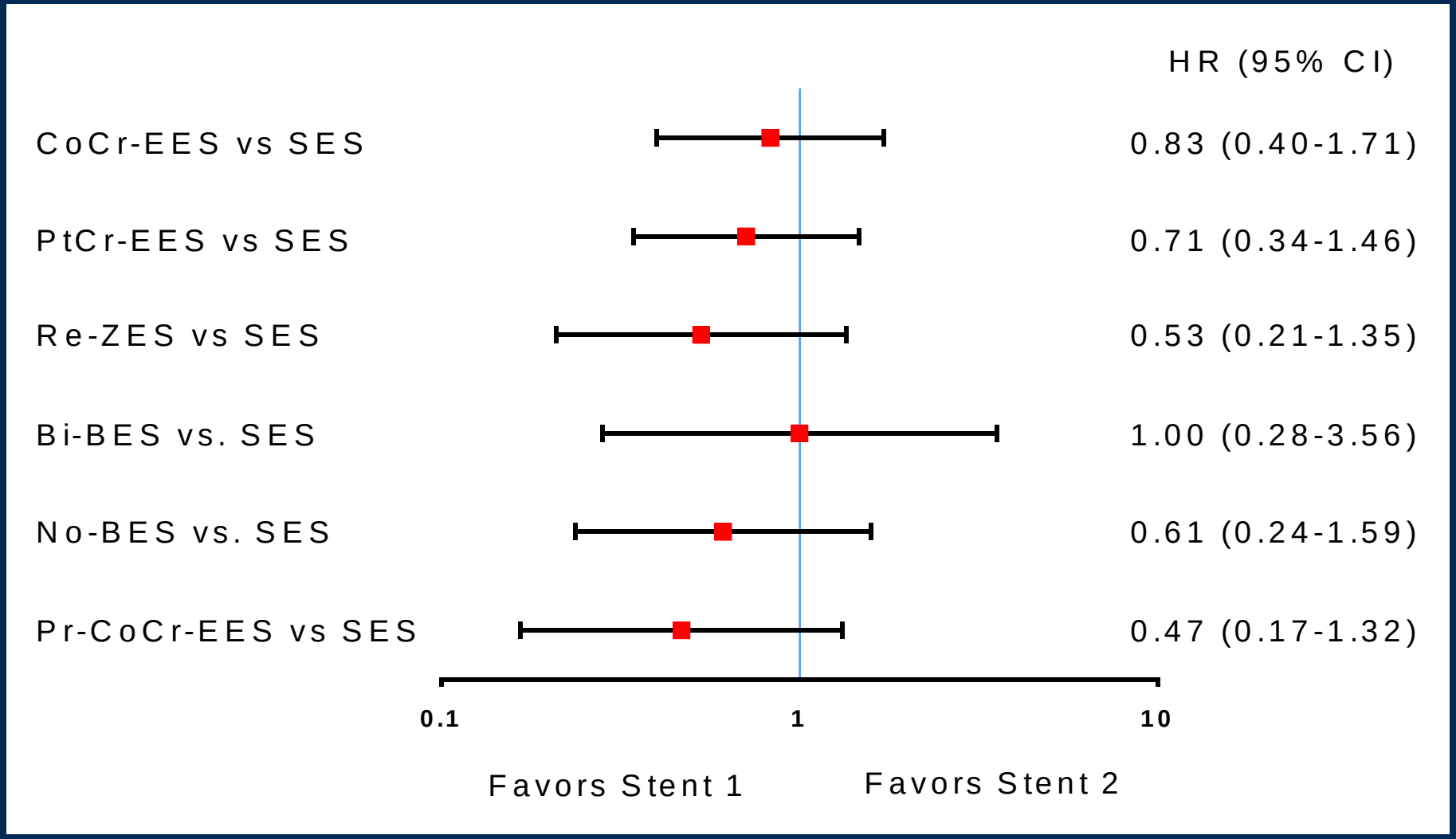
Adjusted HR: All-cause death



Adjusted HR: TVR



Adjusted HR: Definite or Probable ST



IRIS-DES Registry:
Different Contemporary DES

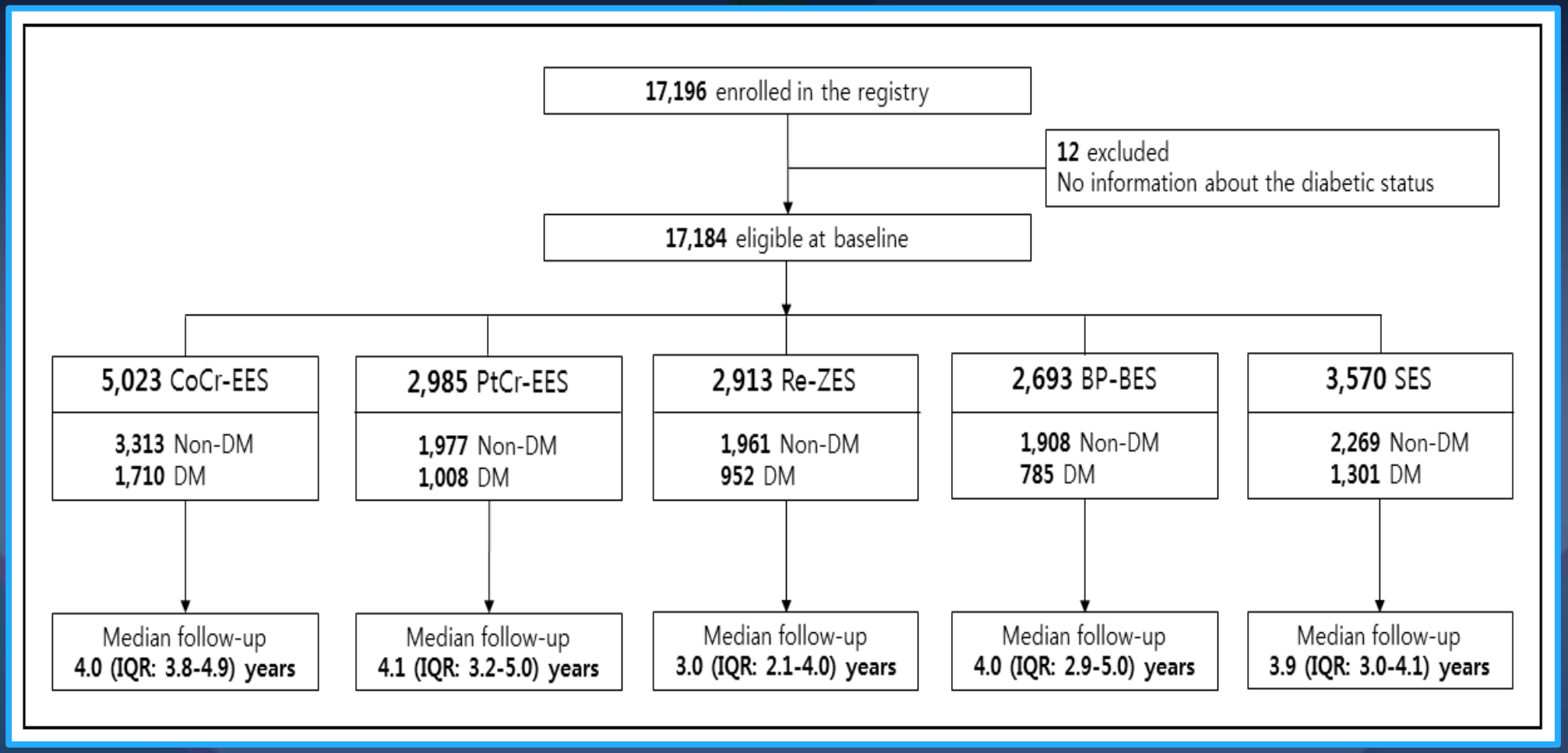
- In contemporary DES era, there was no remarkable between-stent difference with respect to clinically relevant efficacy and safety outcomes
- We can choose any contemporary DES on the basis of clinical and lesion subsets and combined with the physician's preference.

Kwon OS, Park DW, Park SJ et al. Revision Process

Contemporary DES for Complex Patients or Lesions: Is There Difference?

Diabetes
Left Main Disease

IRIS-DES Registry: DM vs. NON-DM



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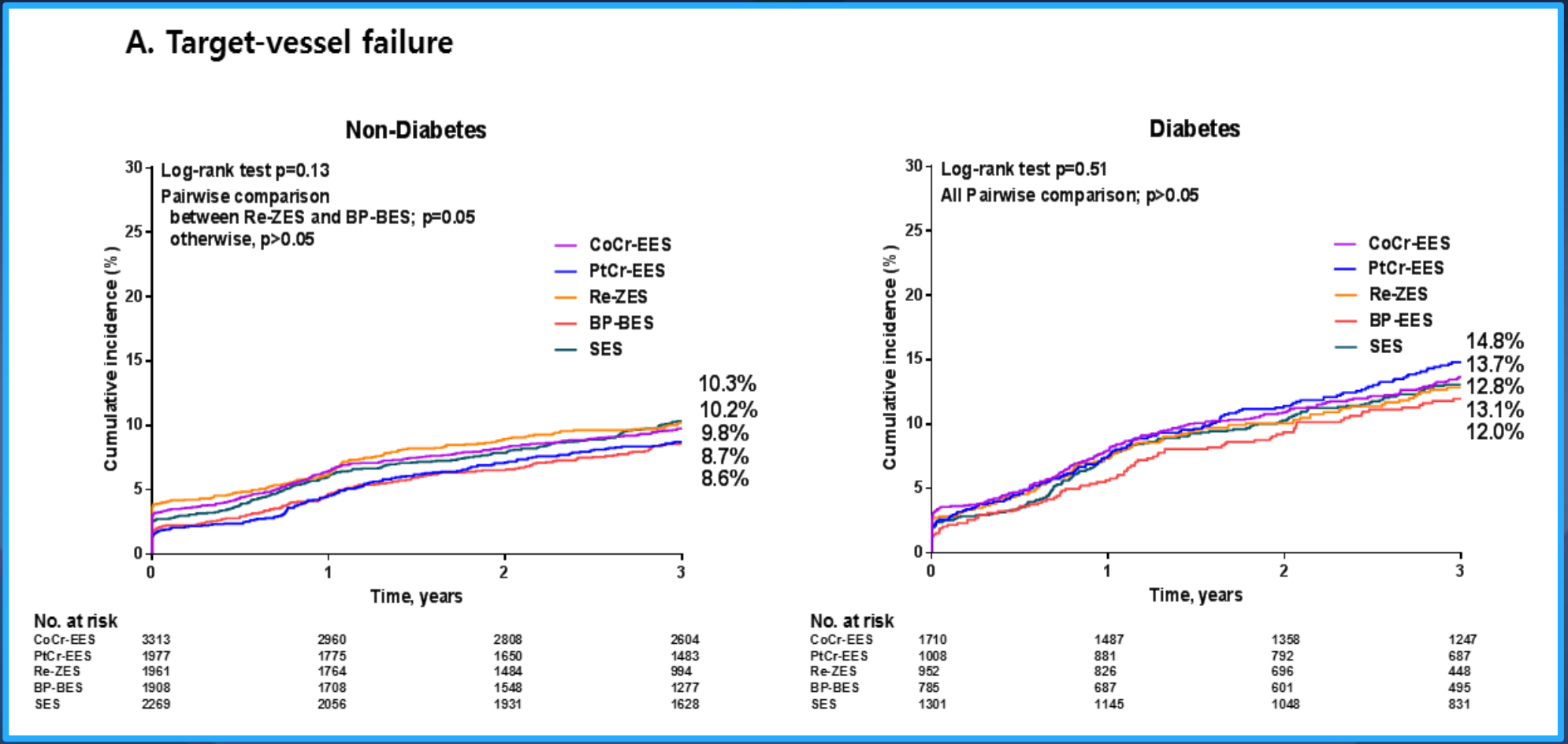
K-M Curves of Primary End Point

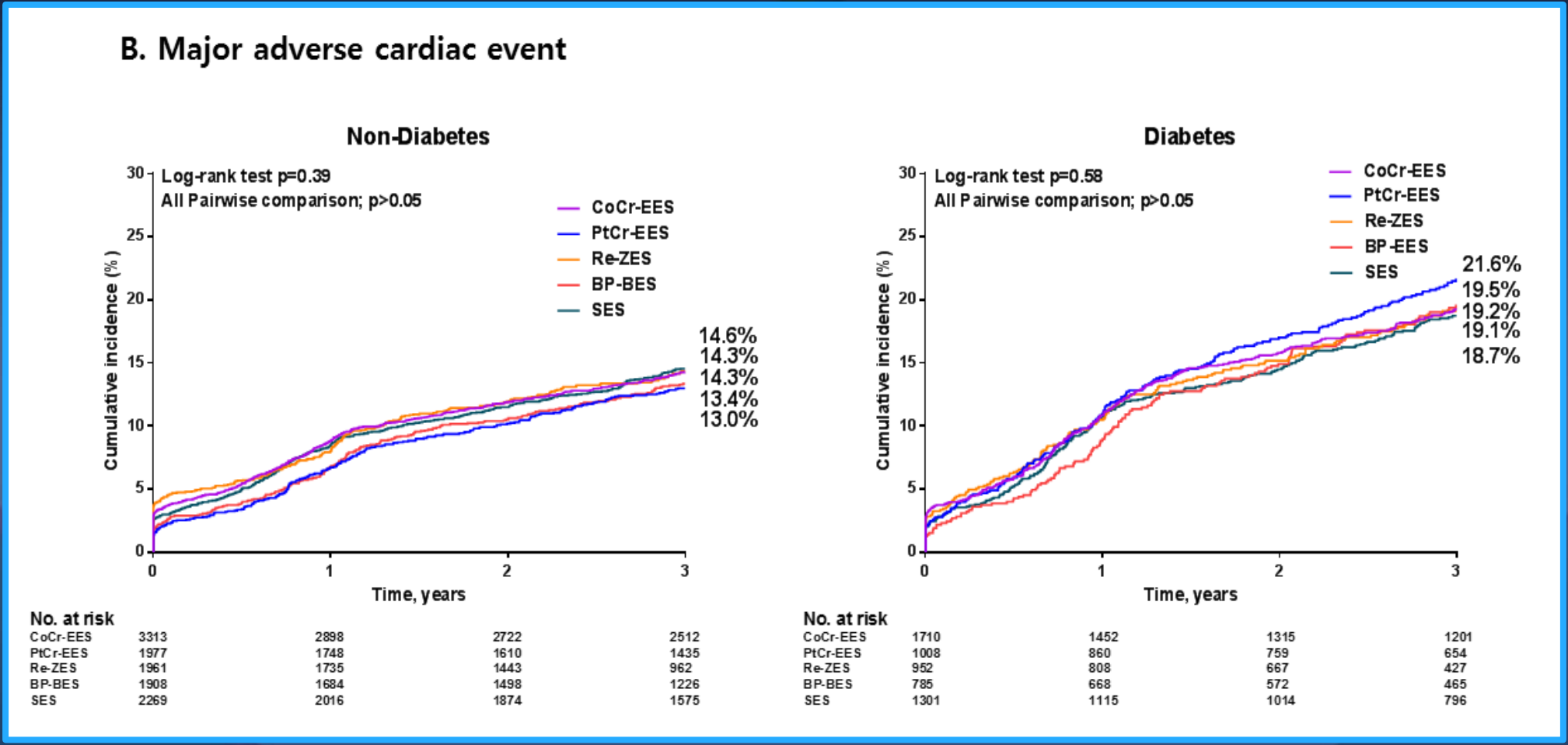
Target-Vessel Failure (CV death, target-vessel MI, or TVR)



Kwon OS, Park DW, Park SJ et al. Revision Process

K-M Curves of Secondary End Point

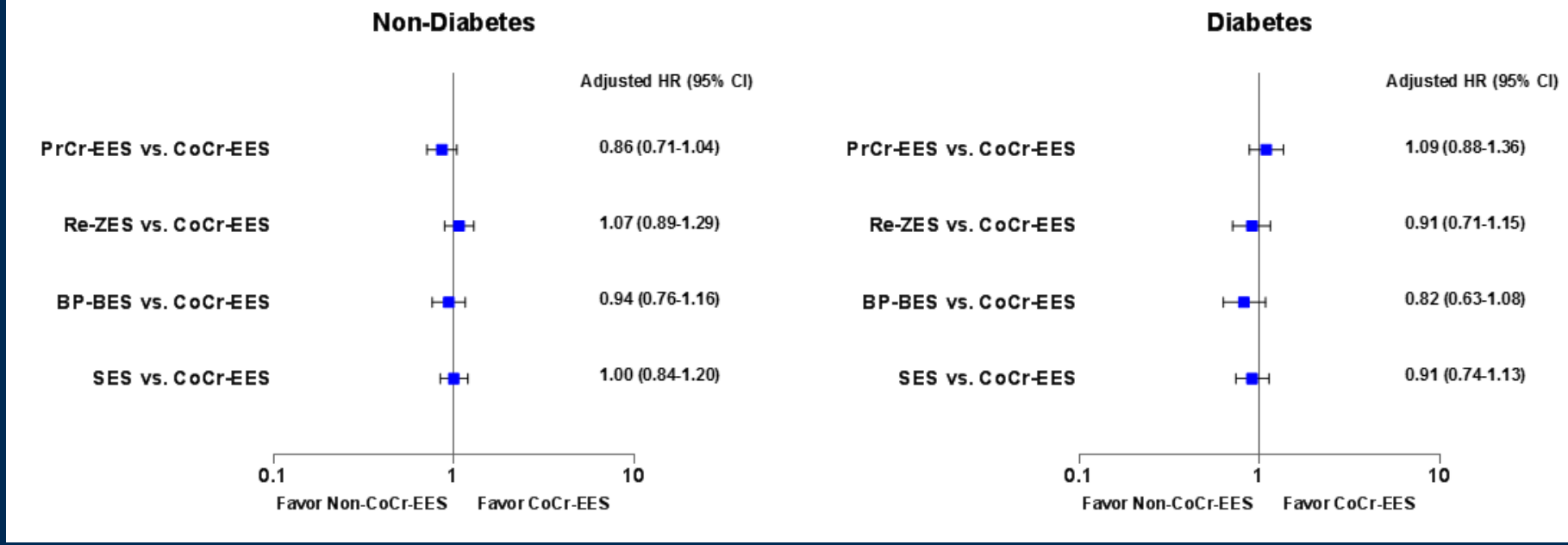
Major Adverse Cardiac Event (all-cause death, any MI, any revascularization)



Kwon OS, Park DW, Park SJ et al. Revision Process

Adjusted HR in the Multigroup Propensity-Score Analyses (TWANG Method)

Target-vessel Failure



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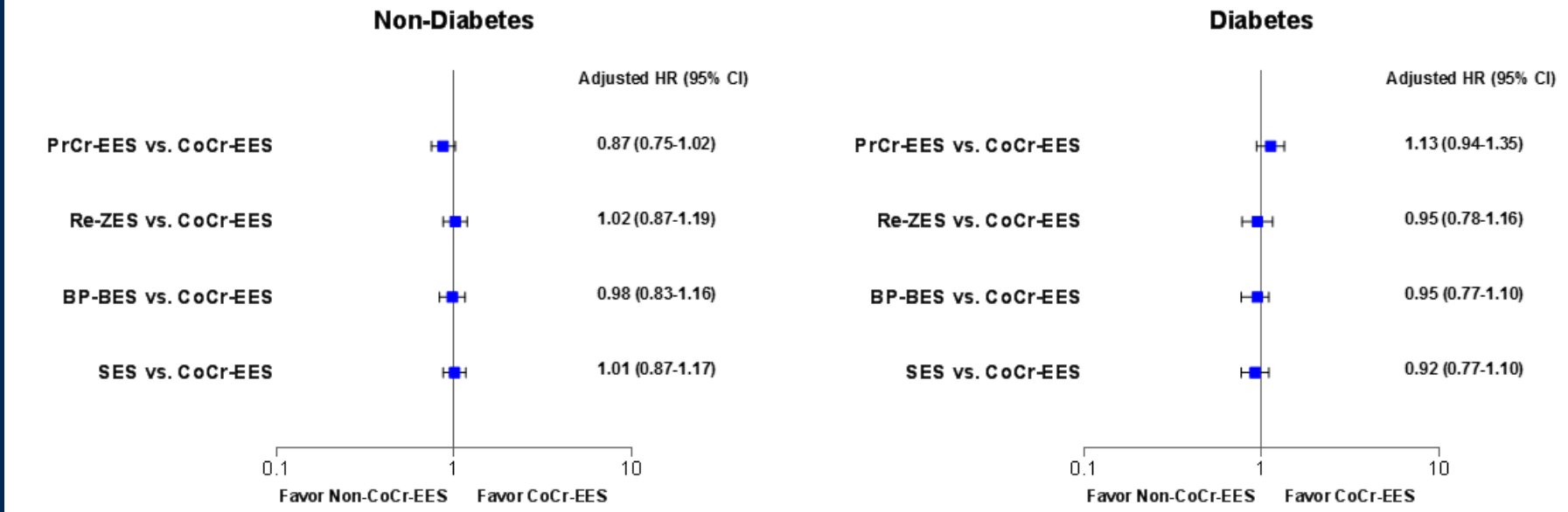
Major Adverse Cardiac Event



Kwon OS, Park DW, Park SJ et al. Revision Process

IRIS-DES Registry: DM vs. NON-DM

- This a pairwise comparison of contemporary DES stratified by DM suggested that the 3-year rates of TVF and MACE were similar among different types of contemporary DES.
- We did not therefore identify any differential impact of diabetes mellitus on the relative clinical outcomes of several types of contemporary DES.

Kwon OS, Park DW, Park SJ et al. Revision Process

Contemporary DES for Complex Patients or Lesions: Is There Difference?

Diabetes

Left Main Disease

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PUBLISHED BY ELSEVIER

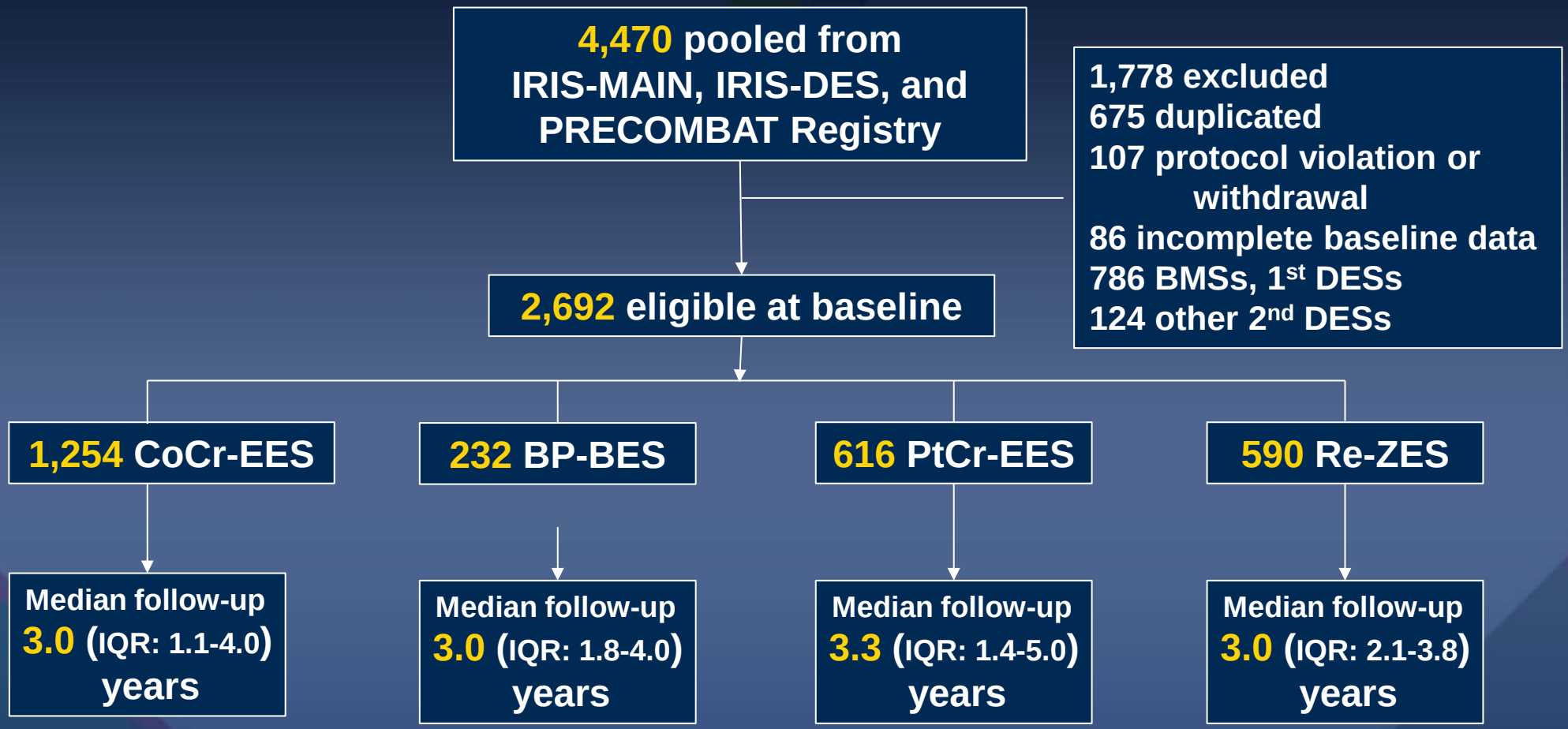
Safety and Effectiveness of Second-Generation Drug-Eluting Stents in Patients With Left Main Coronary Artery Disease

Pil Hyung Lee, MD,[a] Osung Kwon, MD,[a] Jung-Min Ahn, MD,[a] Cheol Hyun Lee, MD,[a] Do-Yoon Kang, MD,[a] Jung-Bok Lee, PhD,[b] Soo-Jin Kang, MD, PhD,[a] Seung-Whan Lee, MD, PhD,[a] Young-Hak Kim, MD, PhD,[a] Cheol Whan Lee, MD, PhD,[a] Seong-Wook Park, MD, PhD,[a] Duk-Woo Park, MD, PhD,[a] Seung-Jung Park, MD, PhD[a]

A total of 4,470 patients with unprotected LMCA disease from a pooled analysis of 3 prospective, multi-center, clinical-practice registries.

Lee PH, Park DW, Park SJ et al. J Am Coll Cardiol 2018;71:832–41

Study Flow



Lee PH, Park DW, Park SJ et al. J Am Coll Cardiol 2018;71:832–41

Statistical Analysis

- Chi-Square or Fisher exact test
- Kaplan-Meier estimates and compared with the log-rank test.
- **Multiple treatment propensity scores** using the TWANG method and corresponding inverse probabilities of treatment weight with generalized boosted models through an iterative estimation procedure.
- PROC SURVEYPHREG procedure of SAS was used to correctly interpret weights as probability weights.

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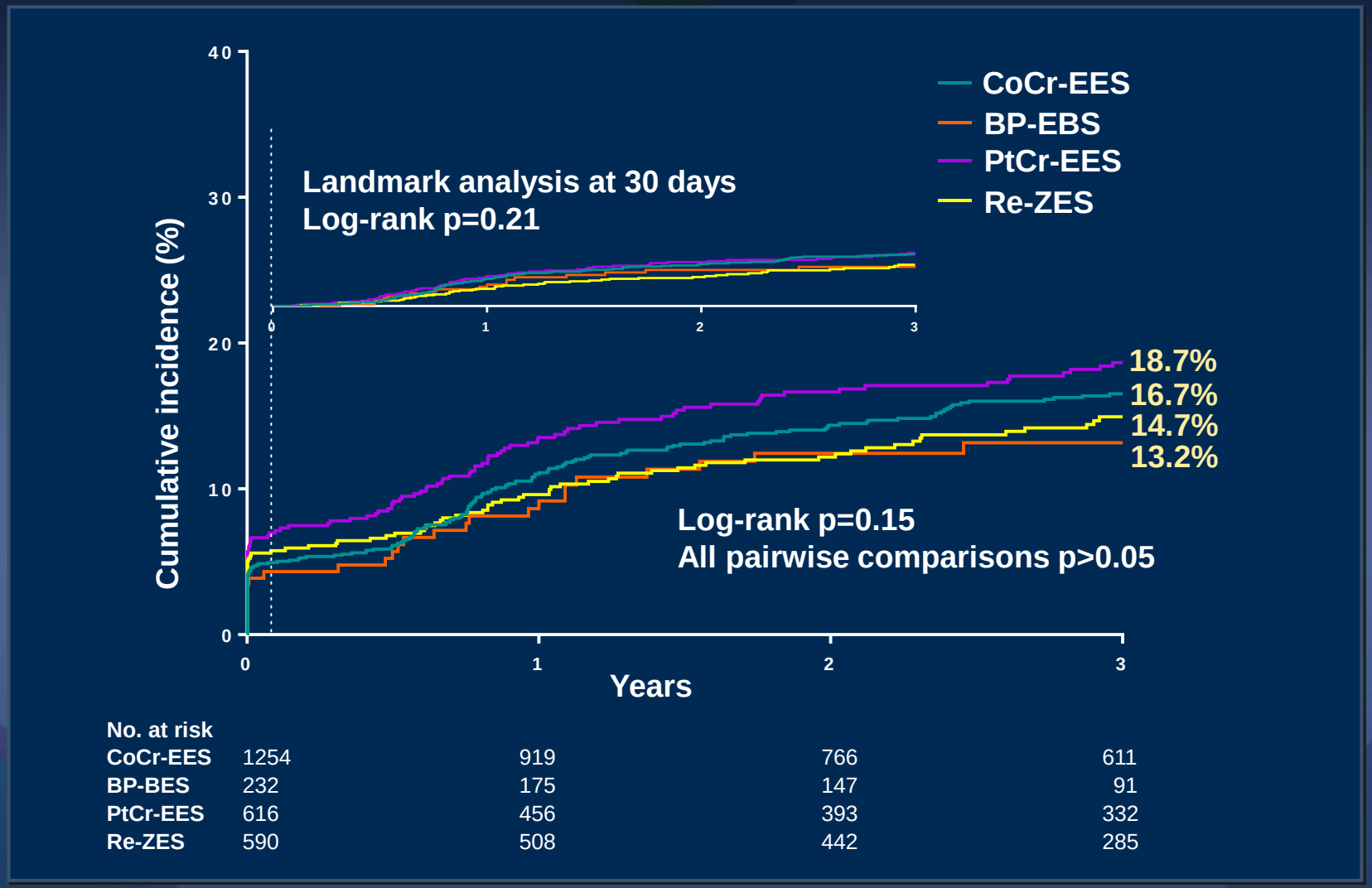

No. at risk				
CoCr-EES	1254	919	766	611
BP-BES	232	175	147	91
PtCr-EES	616	456	393	332
Re-ZES	590	508	442	285

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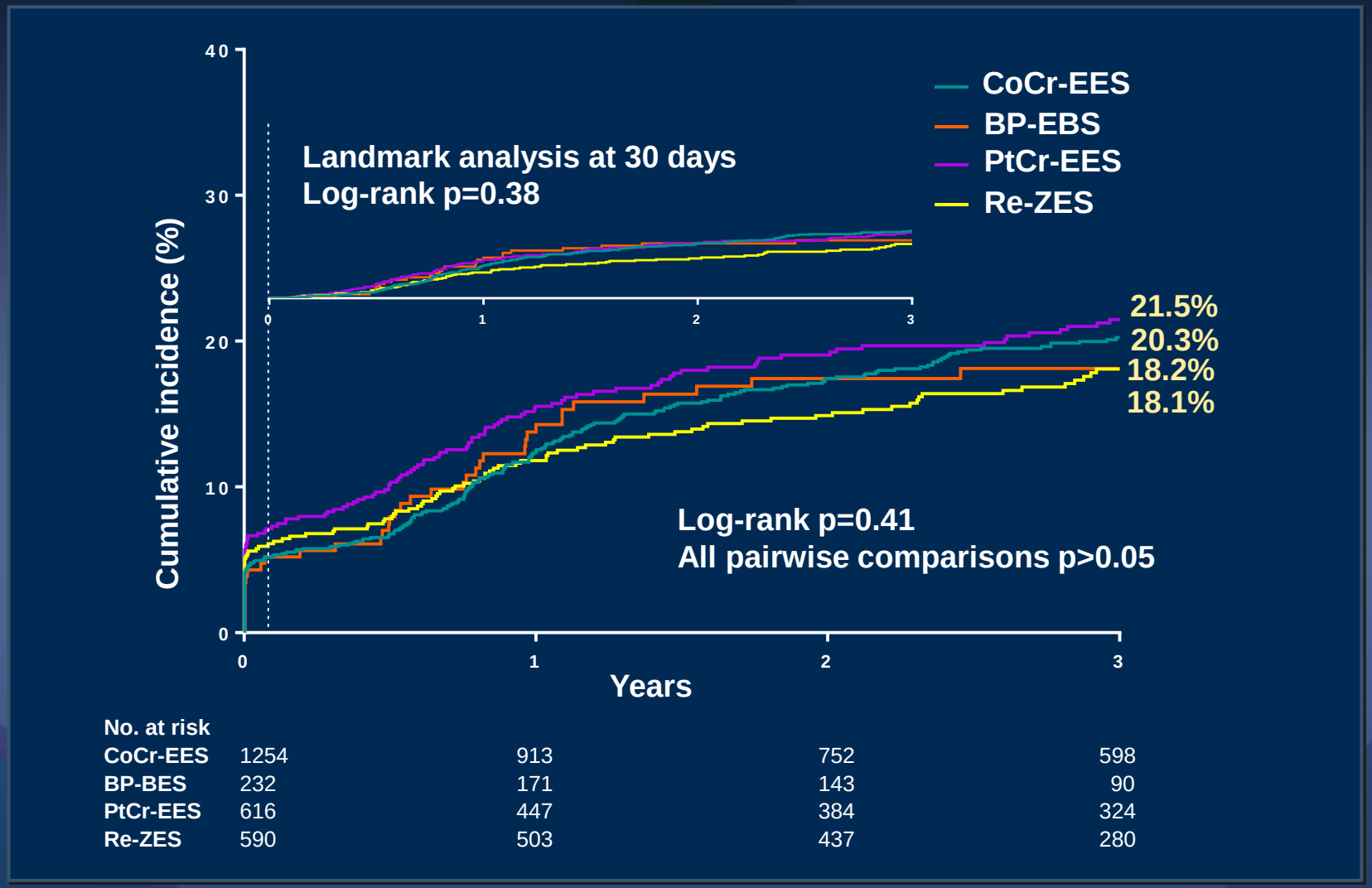
K-M Curves of Secondary End Point

Major Adverse Cardiac Event (all-cause death, any MI, any revascularization)



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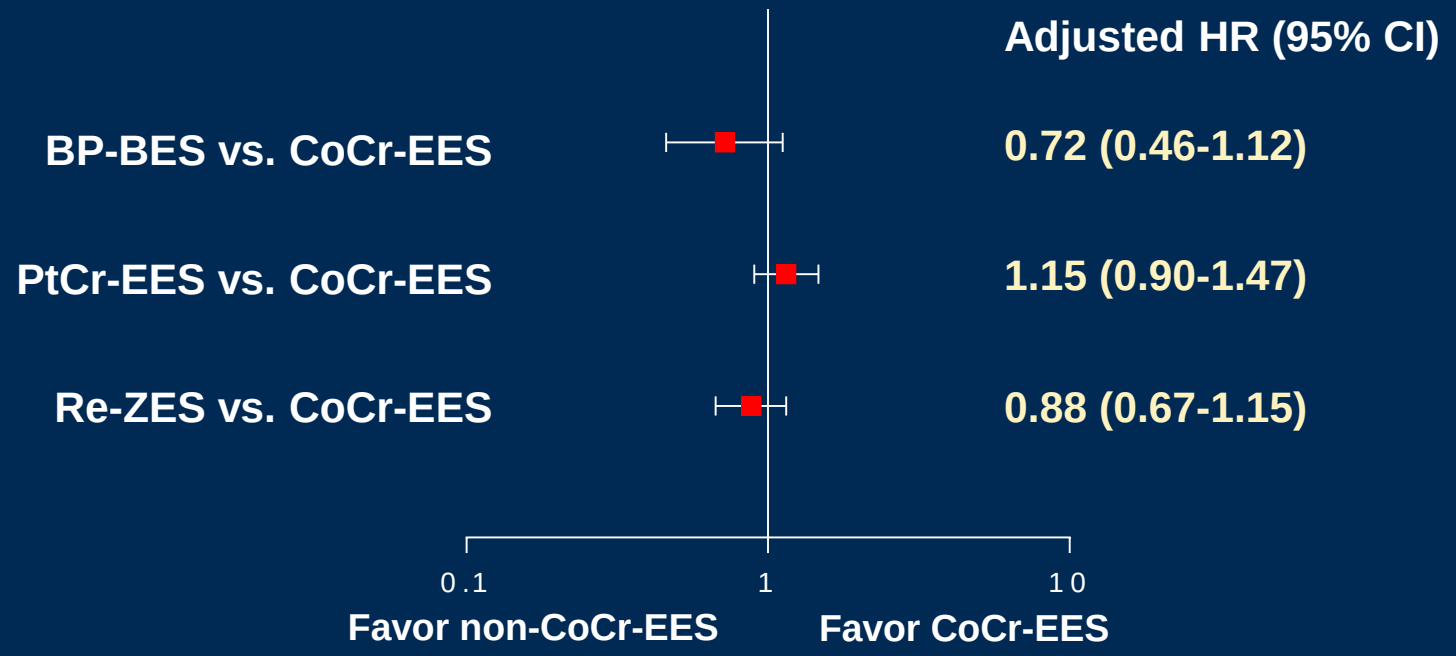

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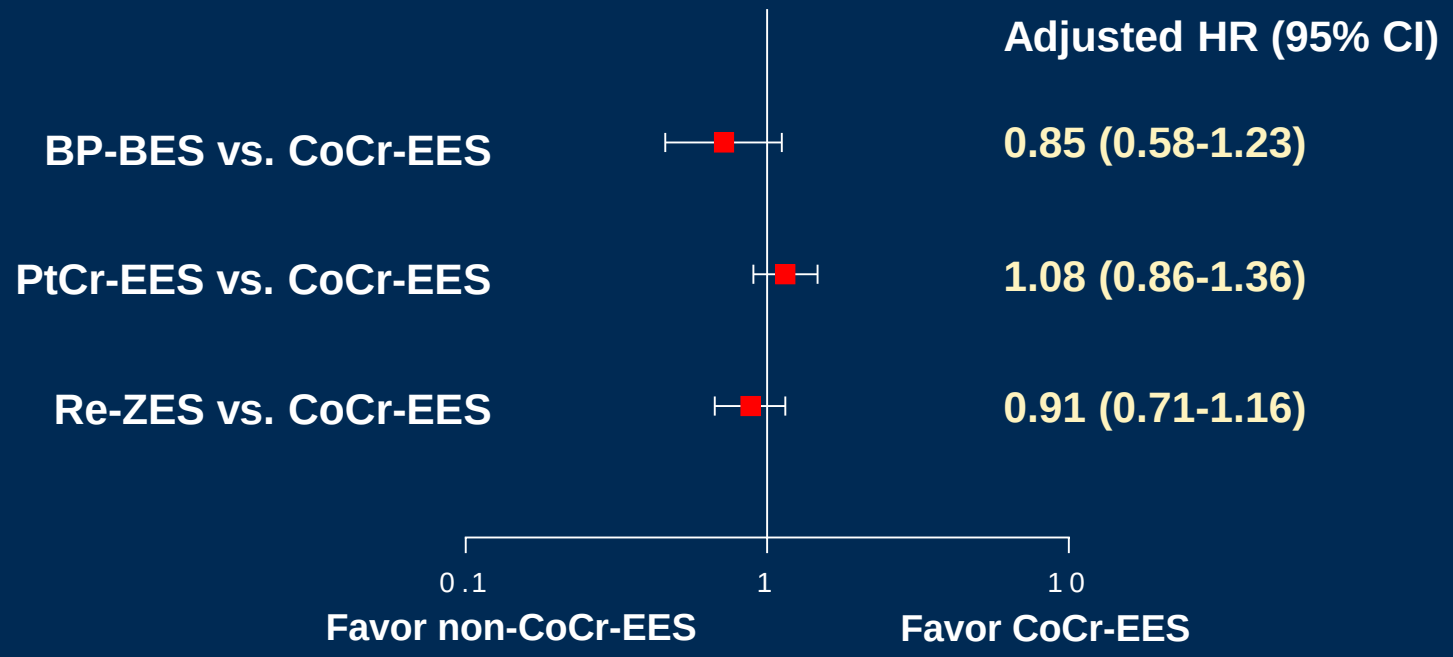

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Contemporary DES for Left Main disease

- In this pooled analysis of 3 prospective registries involving unrestricted use of various second-generation DES for Left Main disease, we found no significant between-group differences in 3-year risk of target-vessel failure.

- We can choose any contemporary DES for left main stenting on the basis of clinical and lesion subsets (os/shaft, distal bifurcation, 1 vs. 2-stent) and combined with the physician's preference.

DES 2018:

Why Do We Need Better DES?

- We now have reached a matured milestone in PCI with contemporary DES.

- To further reduce restenosis and early and late stent thrombosis.
- To improve lifelong integrity and patency of DES.
- To reduce long-term dependency on DAPT.

“When technology stops continued innovation”, “The Knowledge will also stops”