La Maladie Coronaire Stable et les Recommandations

Dr Y Cottin

Dijon

« Dans la vie, rien n'est à craindre,
tout est à comprendre »

Marie Curie

Liens d’intérêt

- Novartis, Boehringer-Ingelheim, Bayer, BMS, Pfizer
- Astra-Zeneca, Servier, Vifor, Servier, Sanofi, Exeltis

Post-SCA

Contrôle des Facteurs de risque
Education Thérapeutique

Optimisation pharmacologique
IEC/ARA II-Bétabloquants-Statine

FA

Réduire le Risque Résiduel

FE VG

Individualisation du risque

Anti-aggrégation Anticoagulation

Prolongation :
- de Bithérapie anti-aggrégante
- Ticagrelor ?

Introduction AOD :
Rivaroxaban

Lipides

LDL-Cs :
- Ezetrol
- PCSK9

Hpertrigycléridémie :
- Icosapent éthyle

Lp (a) :
-inhibiteur LP (a)

Diabétique

Agonistes :
- GLP-1

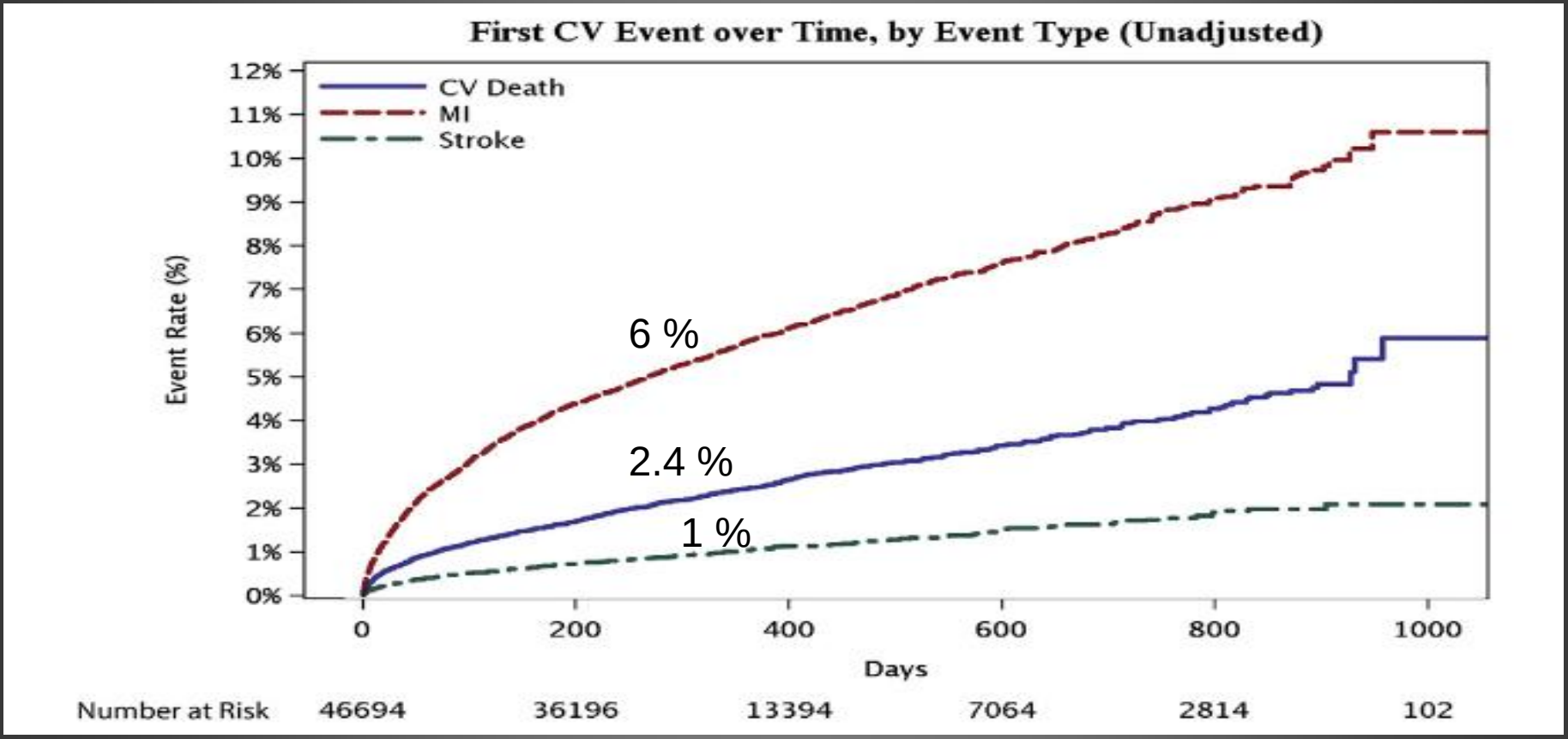
Inhibiteurs :
- SGLT-2

Voie Inflammatoire CRP us

Canakinumab
Colchicine

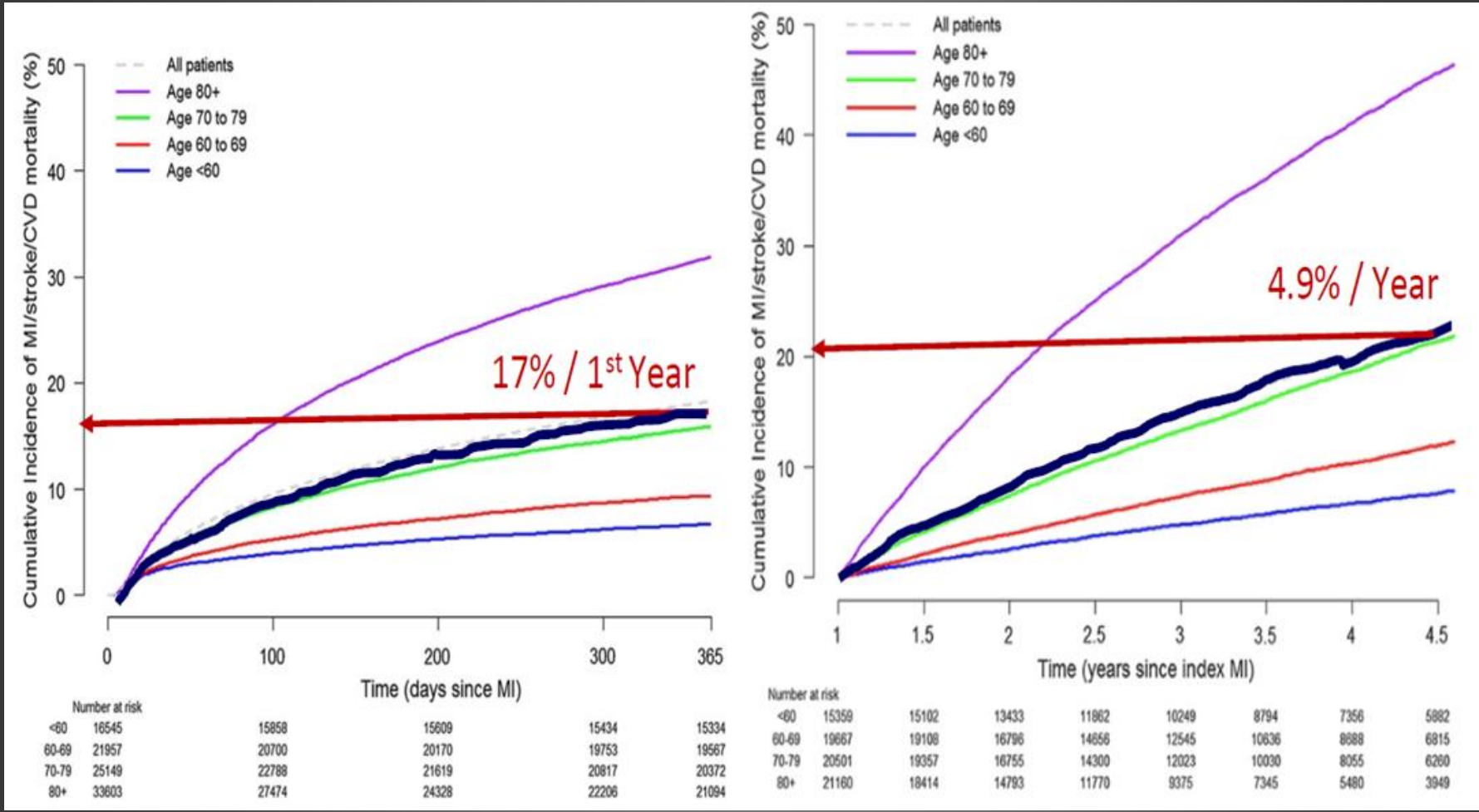
Differential occurrence, profile, and impact of first recurrent cardiovascular events after an acute coronary syndrome

Among 46,694 patients with a median follow-up of 358 (25th, 75th percentiles 262, 486) days, a first ischemic event occurred in 4,307 patients (9.2%) as follows:
1/ MI in 5.8% (n = 2,690), 2/ stroke in 1.0% (n = 477), 3/ and CV-death in 2.4% (n = 1,140).



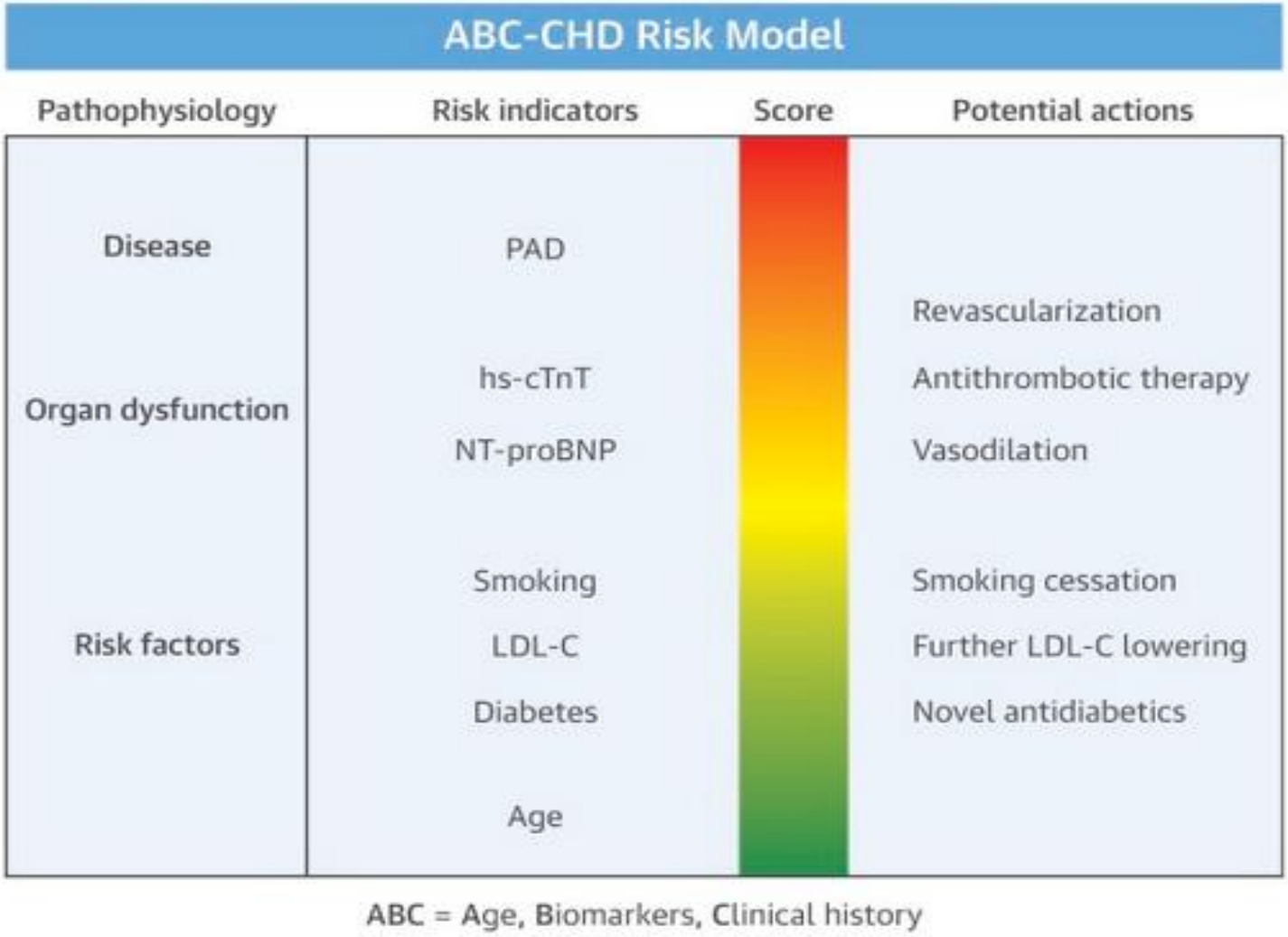
Hess CN, et al. Am Heart J. 2017;187:194-203.

Cardiovascular risk in post-myocardial infarction patients: nationwide real world data demonstrate the importance of a long-term perspective



Jernberg T, et al. Eur Heart J. 2015;36:1163-70.

Biomarker-Based Risk Model to Predict Cardiovascular Mortality in Patients With Stable Coronary Disease



Lindholm D, et al. J Am Coll Cardiol. 2017;70:813-826.

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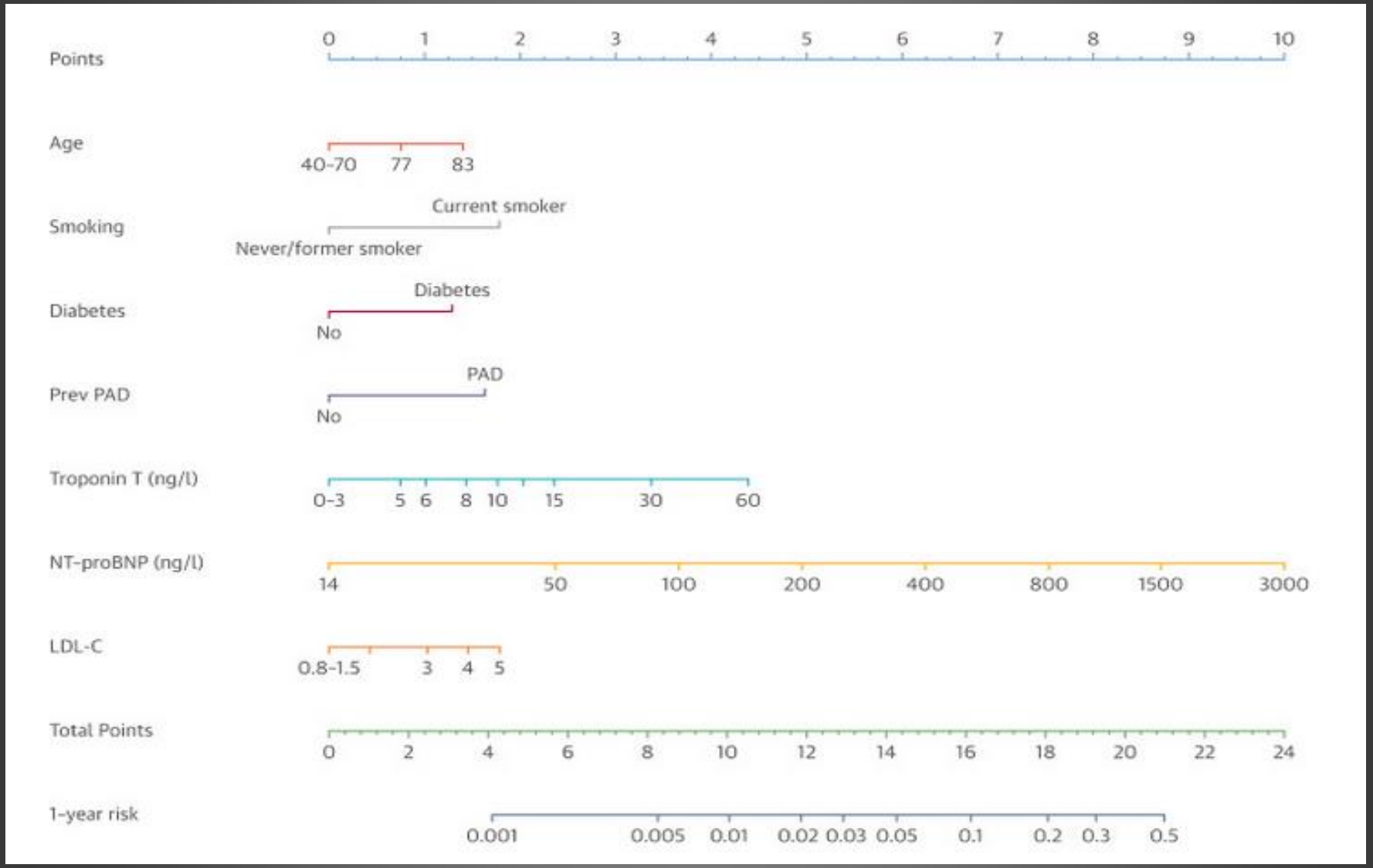

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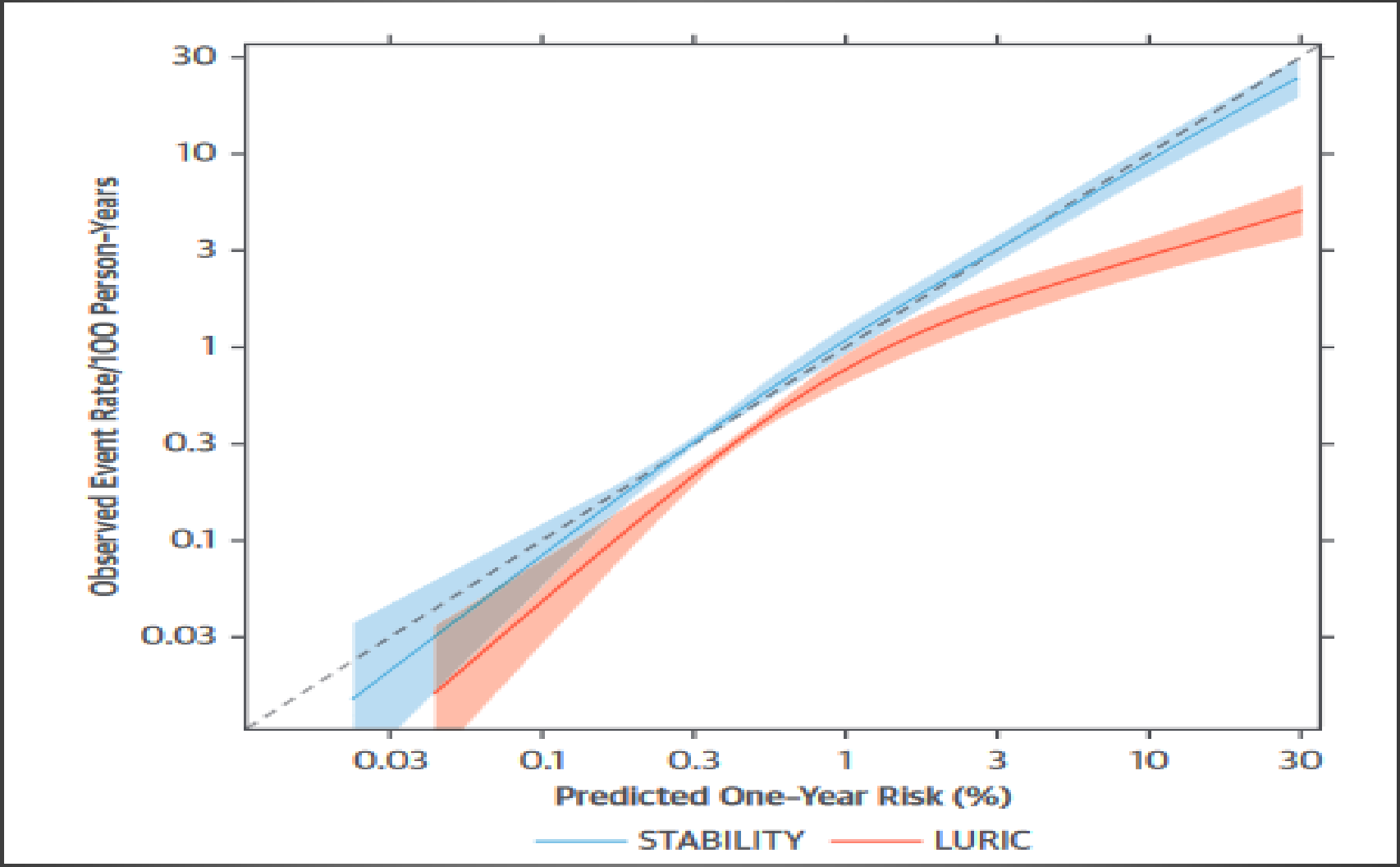


Lindholm D, et al. J Am Coll Cardiol. 2017;70:813-826.

Personal Risk Profile

SMART risk score

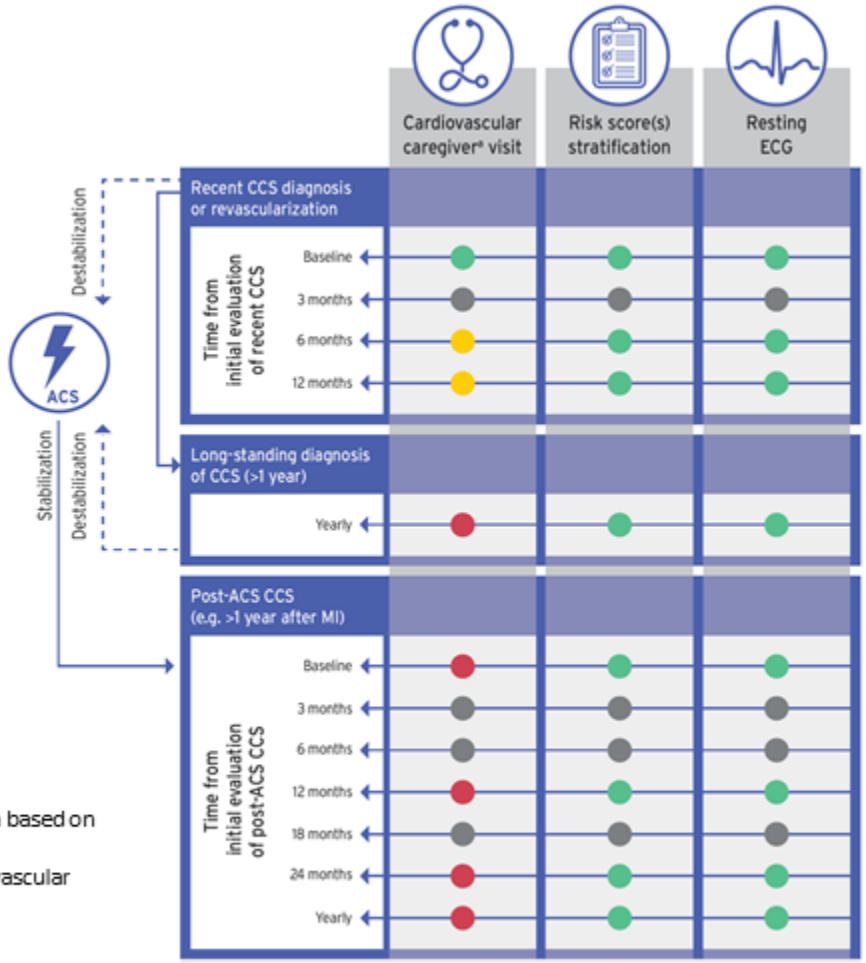
Gender	Male	Female
Age	30 - 90	years
Current smoking		
Years since first cardiovascular event	0 - 30	years
Type(s) of atherosclerotic vascular disease	Coronary artery disease	Cerebrovascular disease
	Peripheral artery disease	Aortic Aneurysm
Diabetes mellitus		
Systolic blood pressure	70 - 200	mmHg
Creatinin	50 - 200	umol/L
High Sensitivity CRP	0.1 - 15	mg/L

	mmol/L	mg/dL
Total cholesterol	2.5 - 8	mmol/L
HDL-cholesterol	0.6 - 2.5	mmol/L
LDL-cholesterol	0.1 - 8	mmol/L

Antithrombotic treatment

CALCULATE

Patients with a long-standing diagnosis of chronic coronary syndromes
Follow-up (1)



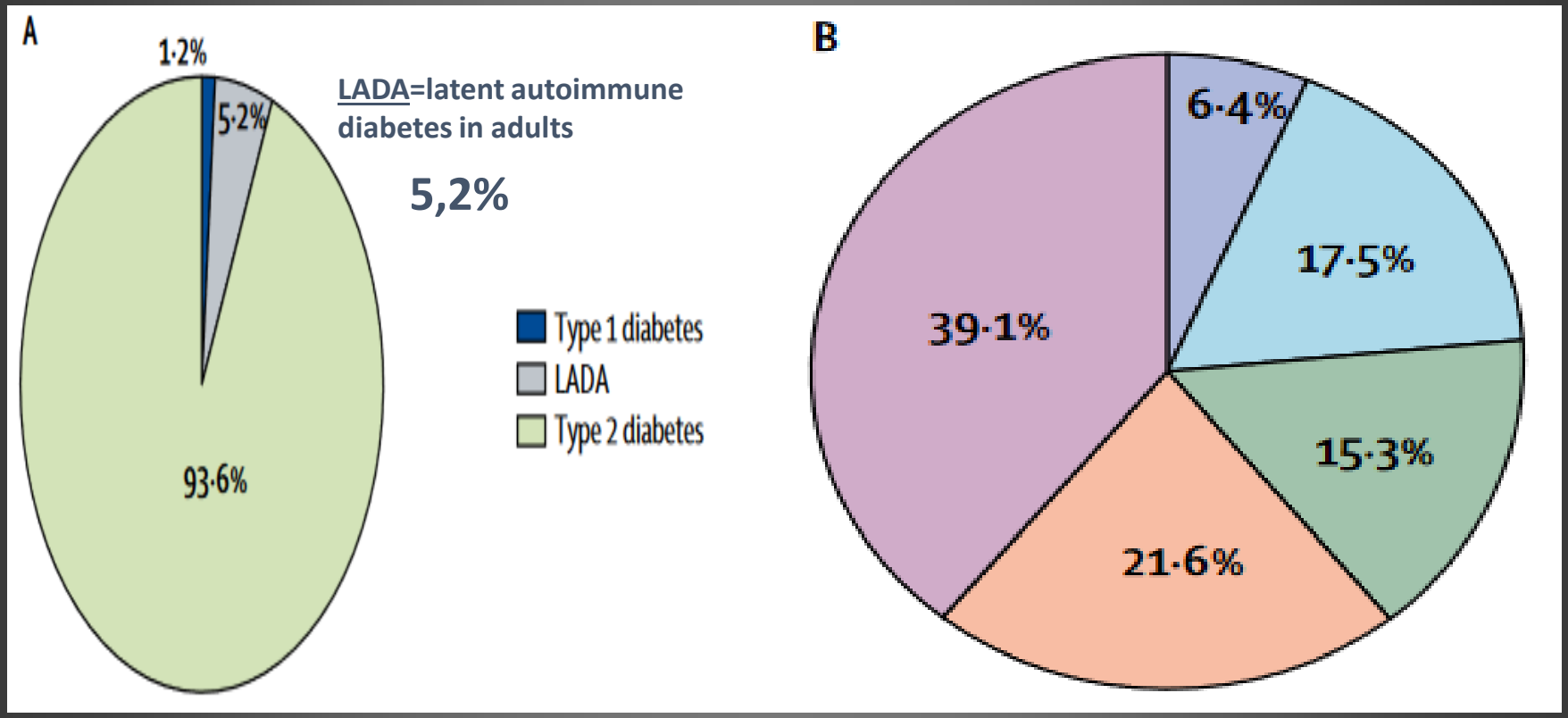
- Time for decision making on optional dual antithrombotic therapy
- Time for decision making on DAPT continuation in PCI patients
- Advisable timepoint
- Optional timepoint

The frequency of follow-up may be subject to variation based on clinical judgement.
[a] Cardiologist, internist, general practitioner, or cardiovascular nurse.

ESC European Society of Cardiology

ESC Guidelines on the diagnosis and management of chronic coronary syndromes (European Heart Journal 2019; 10.1093/eurheartj/ehz425)

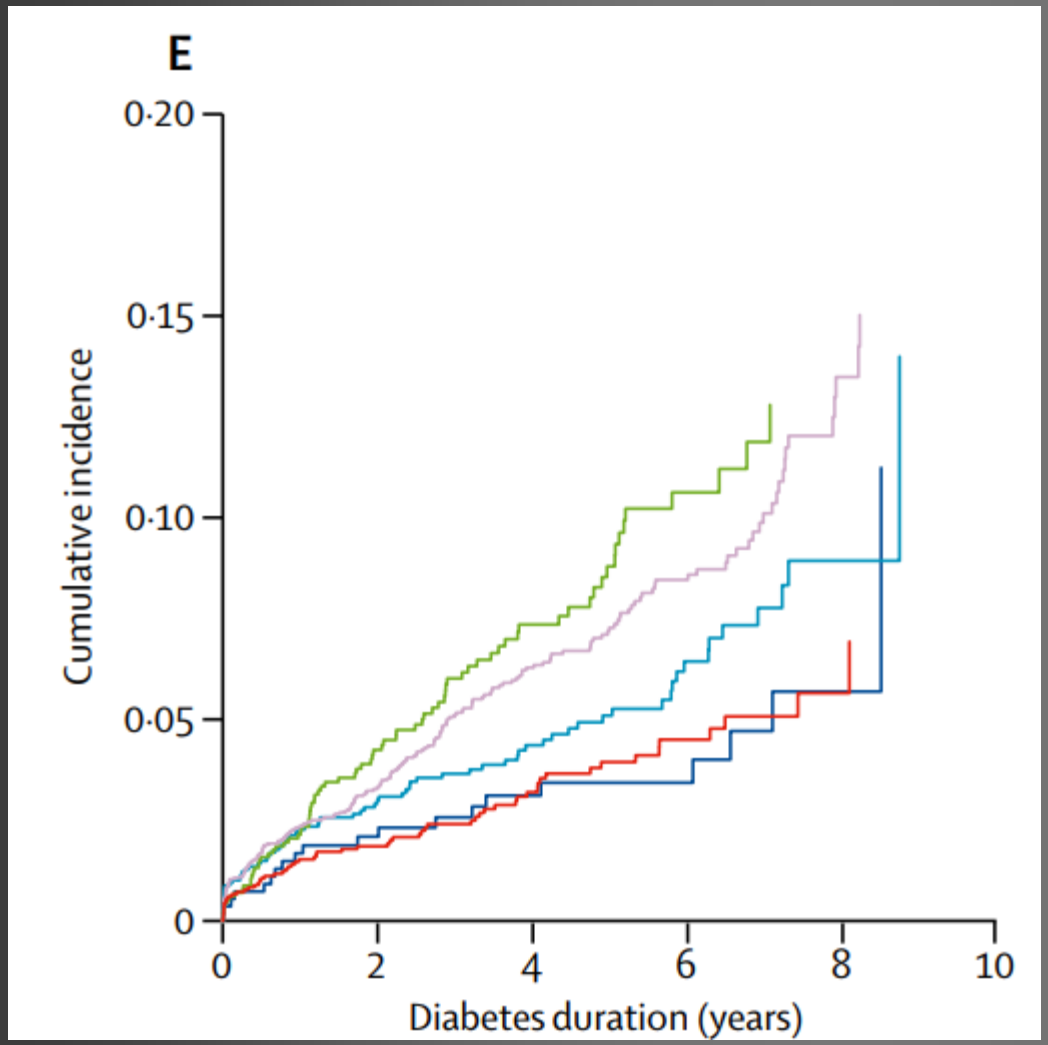
Novel subgroups of adult-onset diabetes and their association with outcomes: a data-driven cluster analysis of six variables



SAID=severe autoimmune diabetes.
SIDD=severe insulin-deficient diabetes.
SIRD=severe insulin-resistant diabetes.
MOD=mild obesity-related diabetes.
MARD=mild age-related diabetes

Ahlqvist E, et al. Lancet Diabetes Endocrinol. 2018; 6: 361–69.

Novel subgroups of adult-onset diabetes and their association with outcomes: a data-driven cluster analysis of six variables



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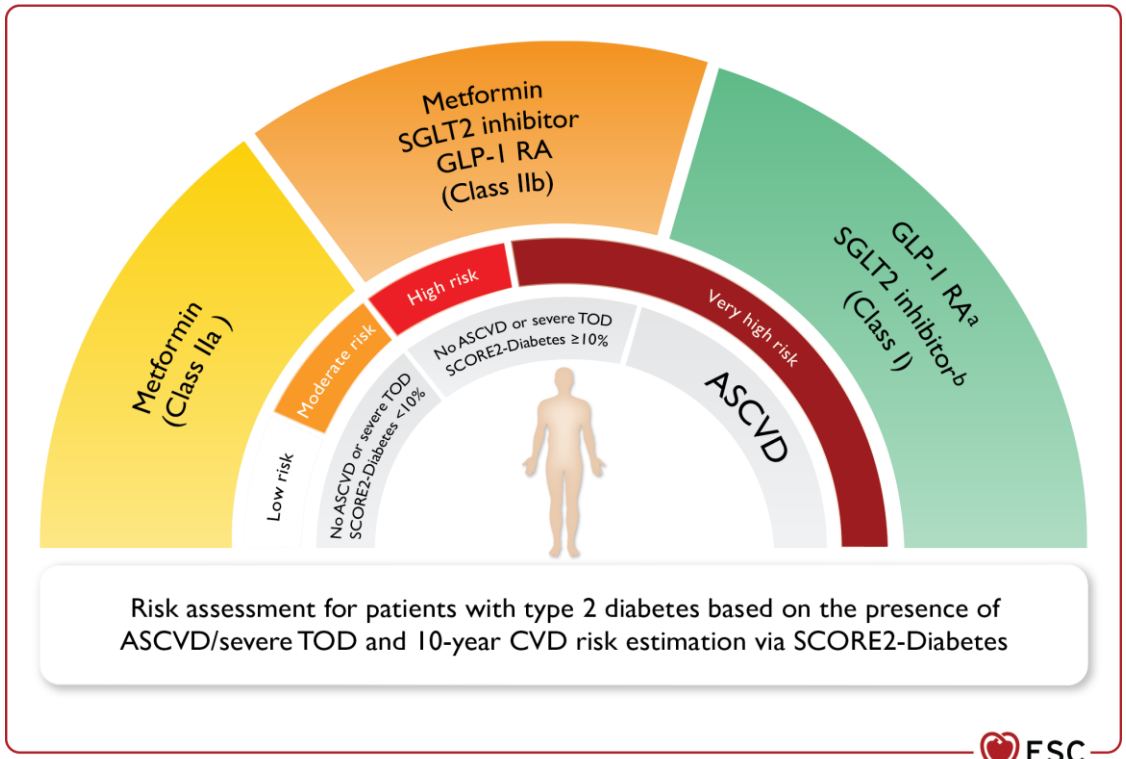
Ahlqvist E, et al. Lancet Diabetes Endocrinol. 2018; 6: 361–69.

Figure 7

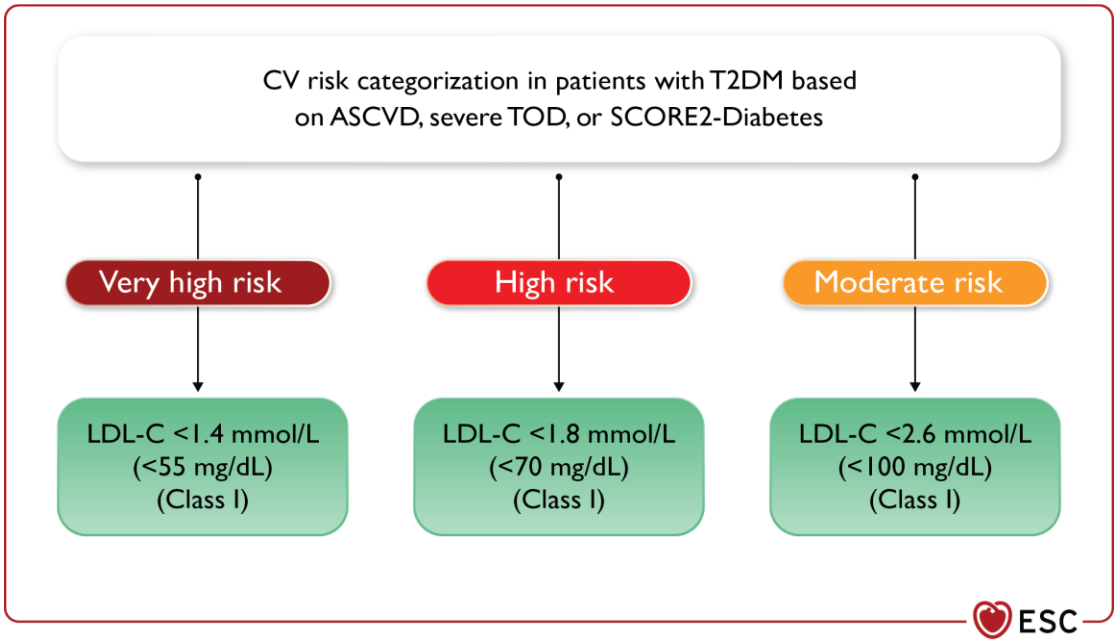
Glucose-lowering treatment for patients with type 2 diabetes to reduce cardiovascular risk based on the presence of ASCVD/severe target-organ damage and 10-year cardiovascular disease risk estimation via SCORE2-Diabetes



2023 ESC Guidelines for the management of cardiovascular disease in patients with diabetes
(European Heart Journal; 2023 – doi:10.1093/eurheartj/ehad192)

Figure 10

Recommended low-density lipoprotein-cholesterol targets by cardiovascular risk categories in patients with type 2 diabetes



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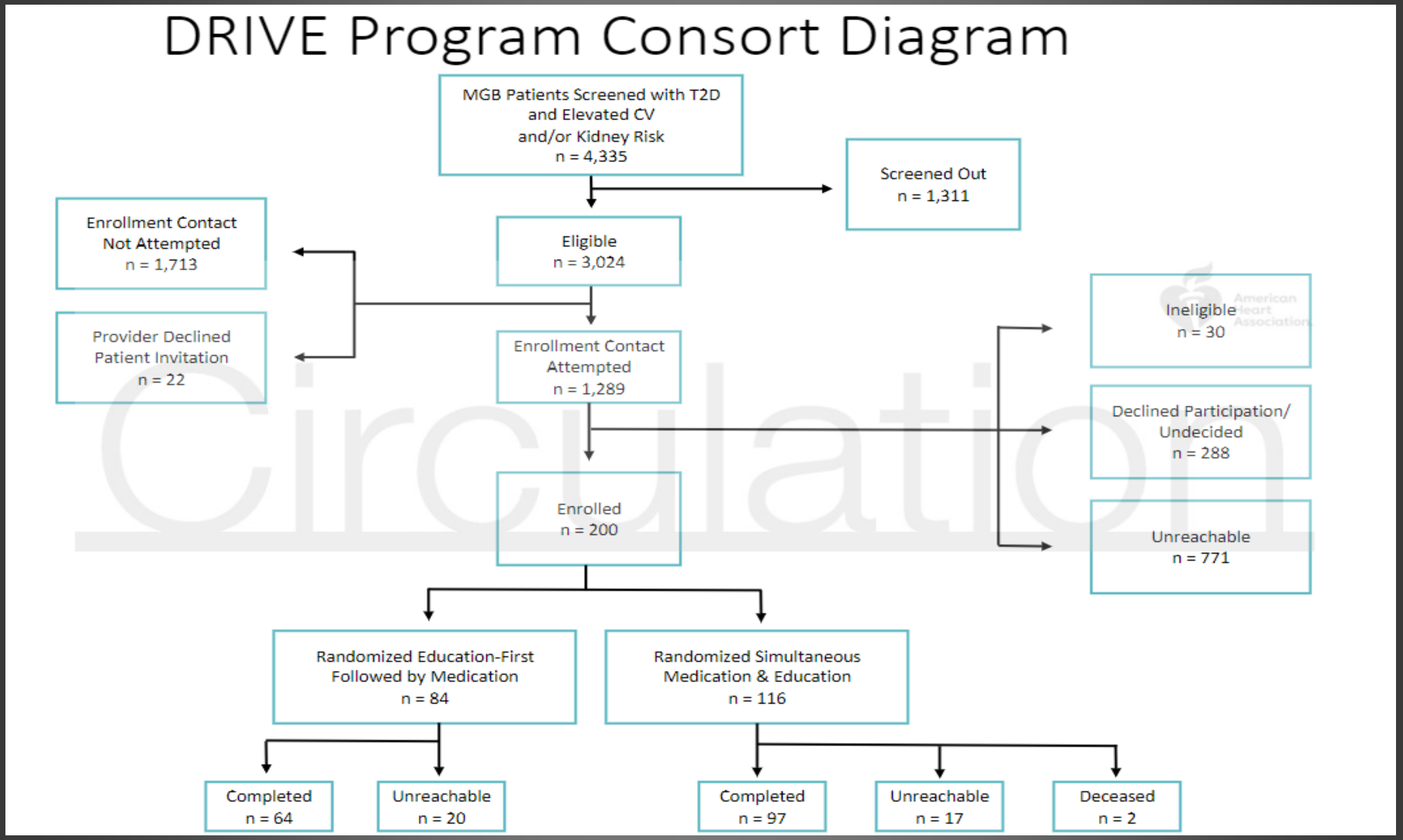
Randomized Evaluation of a Remote Management Program to Improve Guideline-directed Medical Therapy: The Diabetes Remote Intervention to Improve Use of Evidence-based Medications (DRIVE) Trial



Blood AJ, et al. Circulation. 2024: In press.

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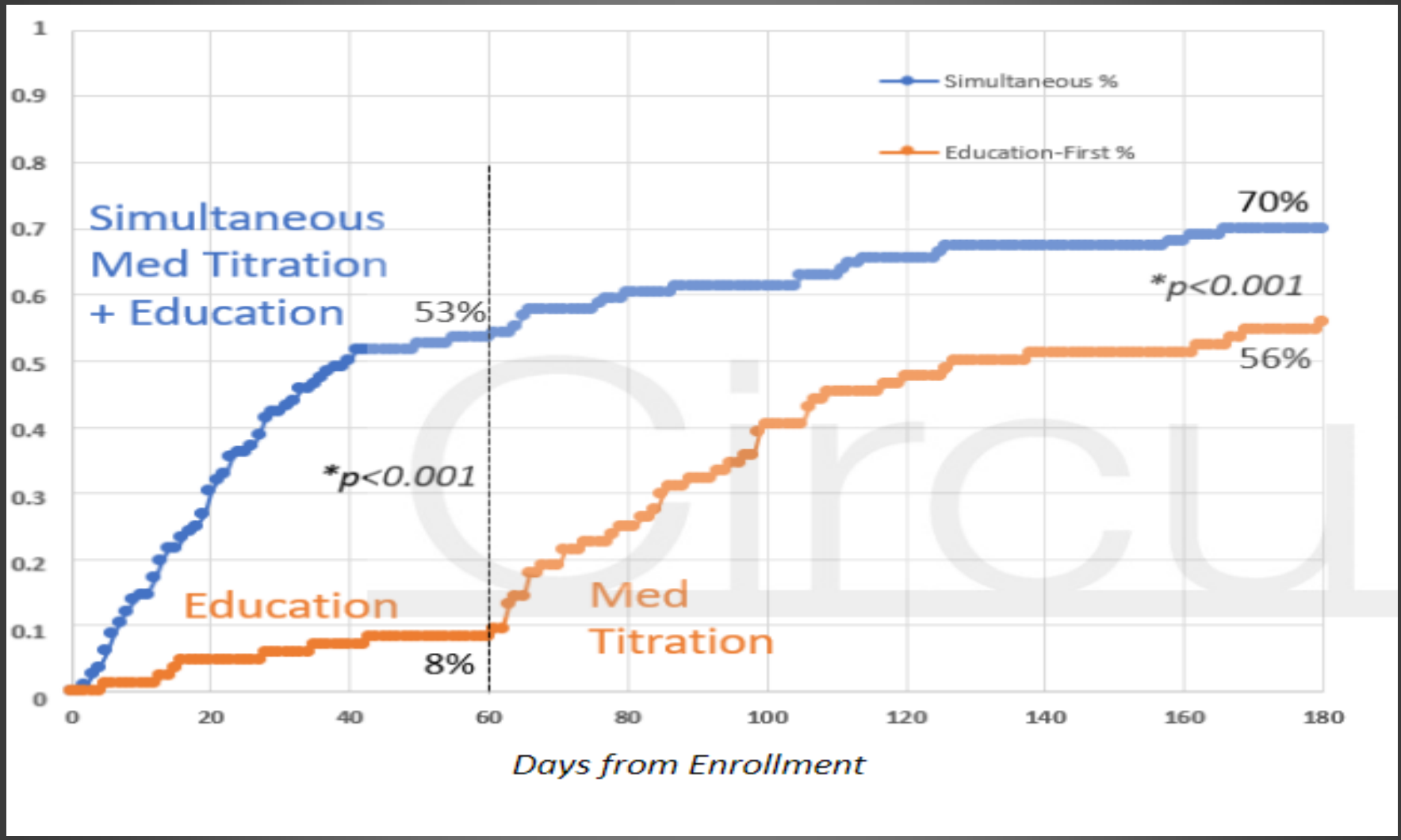

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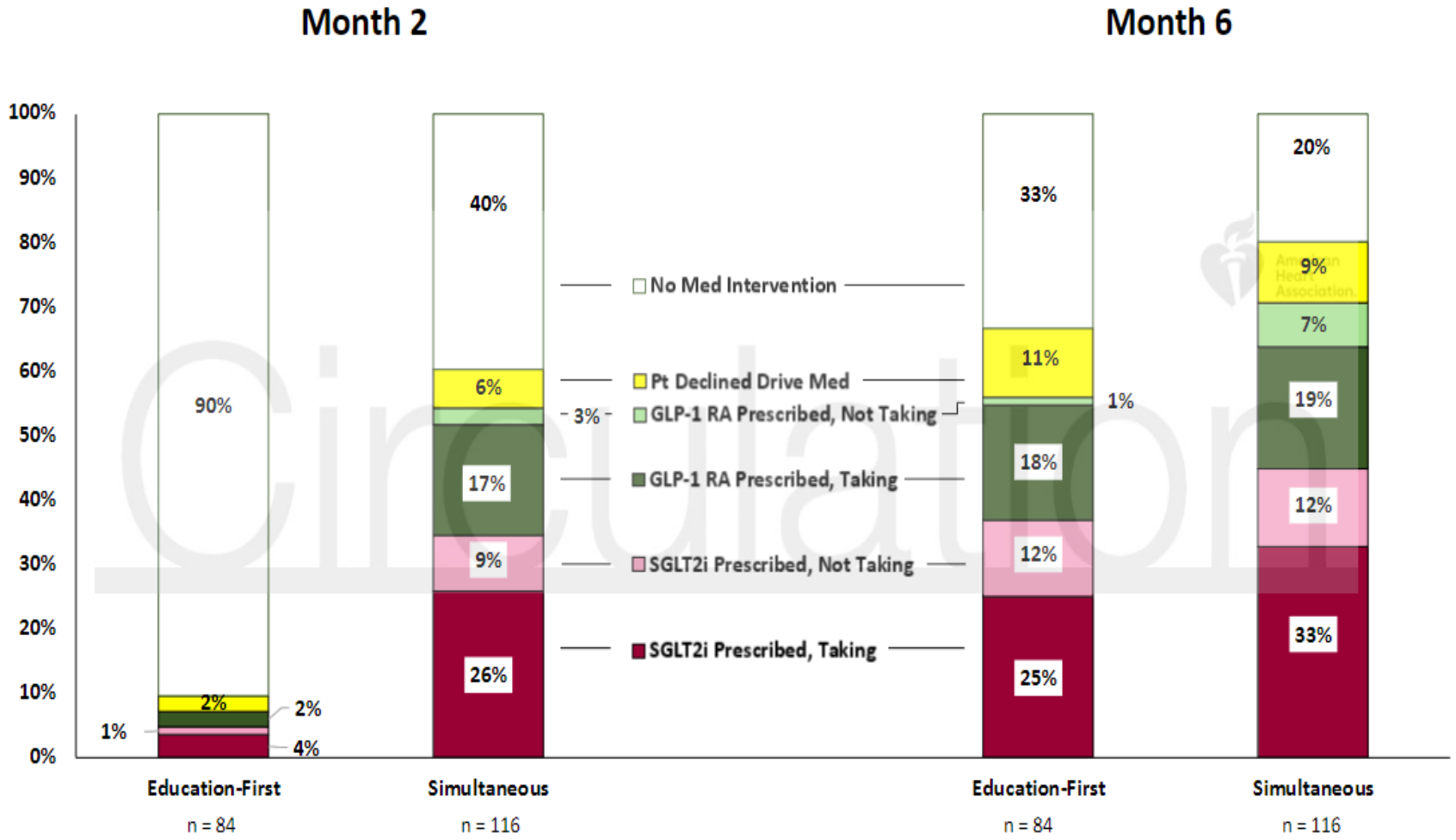
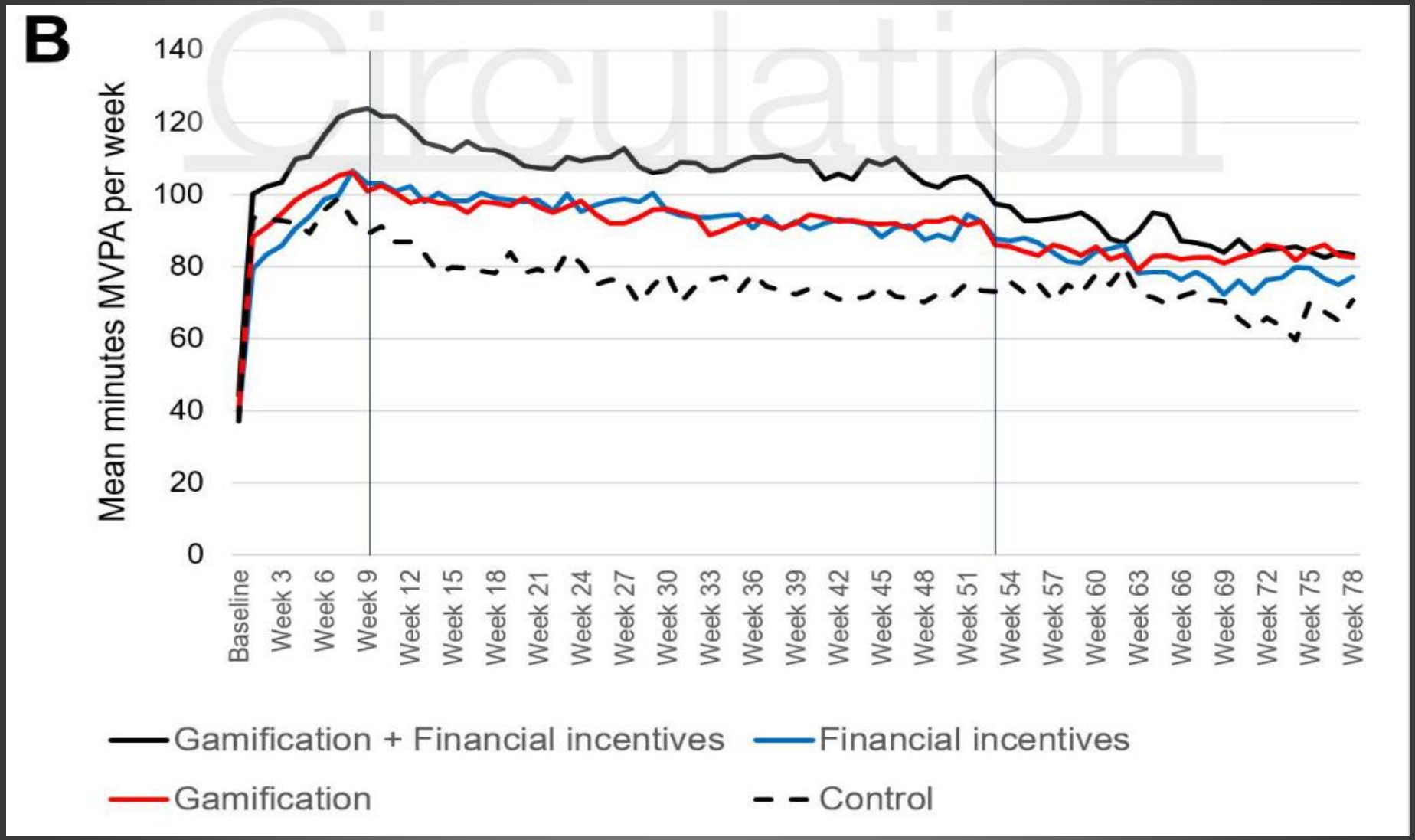


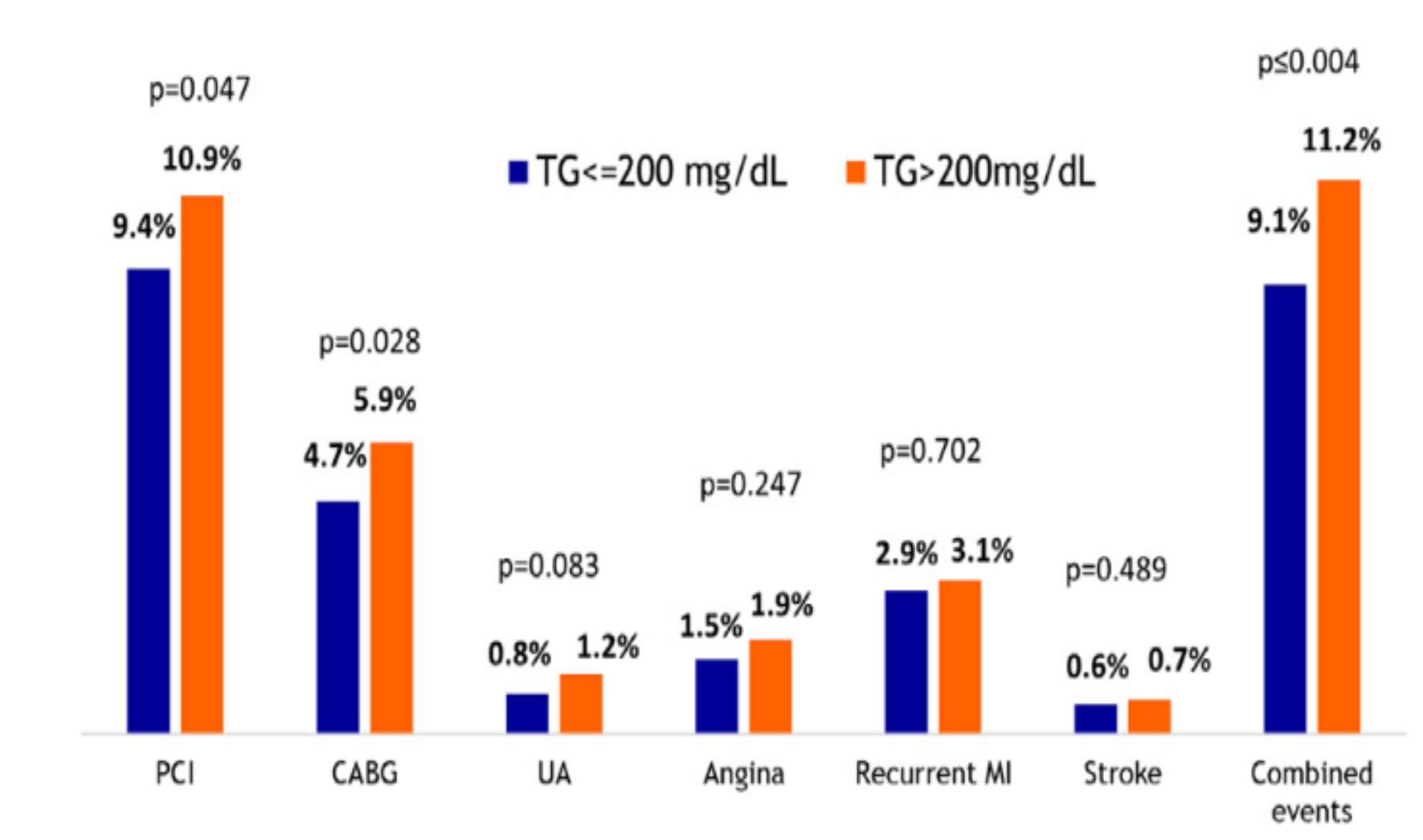
Blood AJ, et al. Circulation. 2024:In press.

Effect of Gamification, Financial Incentives, or Both to Increase Physical Activity Among Patients at High Risk of Cardiovascular Events: The BE ACTIVE Randomized Controlled Trial



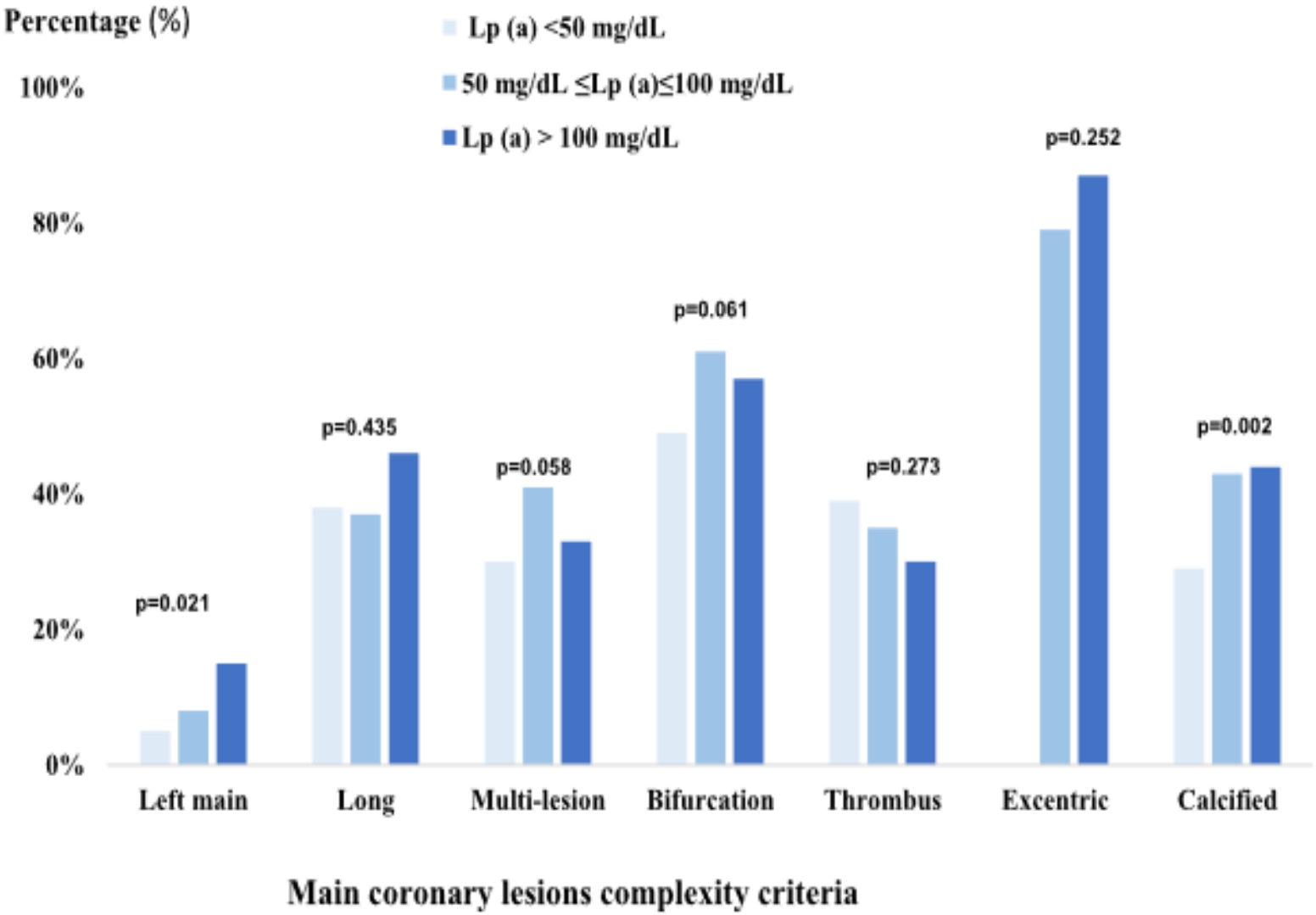
Fanaroff AC, *et al.* Circulation. 2024:In press.

Characteristics and prognosis of patients with elevated triglycerides in acute myocardial infarction: observational data from a large database over a 17-year period: High triglycerides in acute myocardial infarction



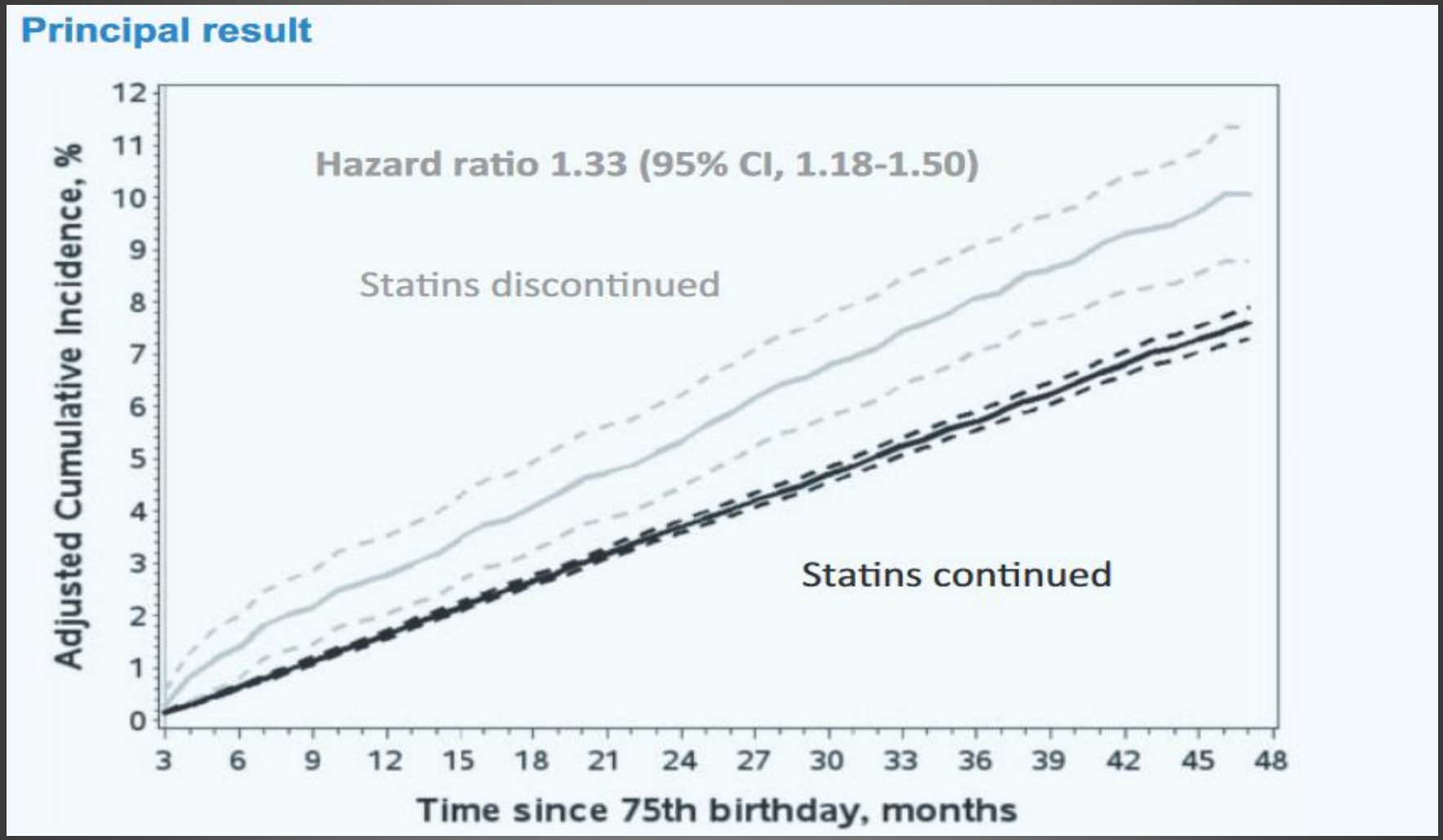
Zeller M, et al. J Clin Lipidol. 2023:S1933-2874(23)00335-5.

Effect of lipoprotein(a) levels on coronary lesion complexity in patients with acute myocardial infarction: data from the French RICO survey



Kouame I, et al. European Journal of Preventive Cardiology (2023) 30, e81–e83.

Cardiovascular effect of discontinuing statins for primary prevention at the age of 75 years: a nationwide population-based cohort study in France



Giral P, et al. Eur Heart J. 2019;40:3516-3525.

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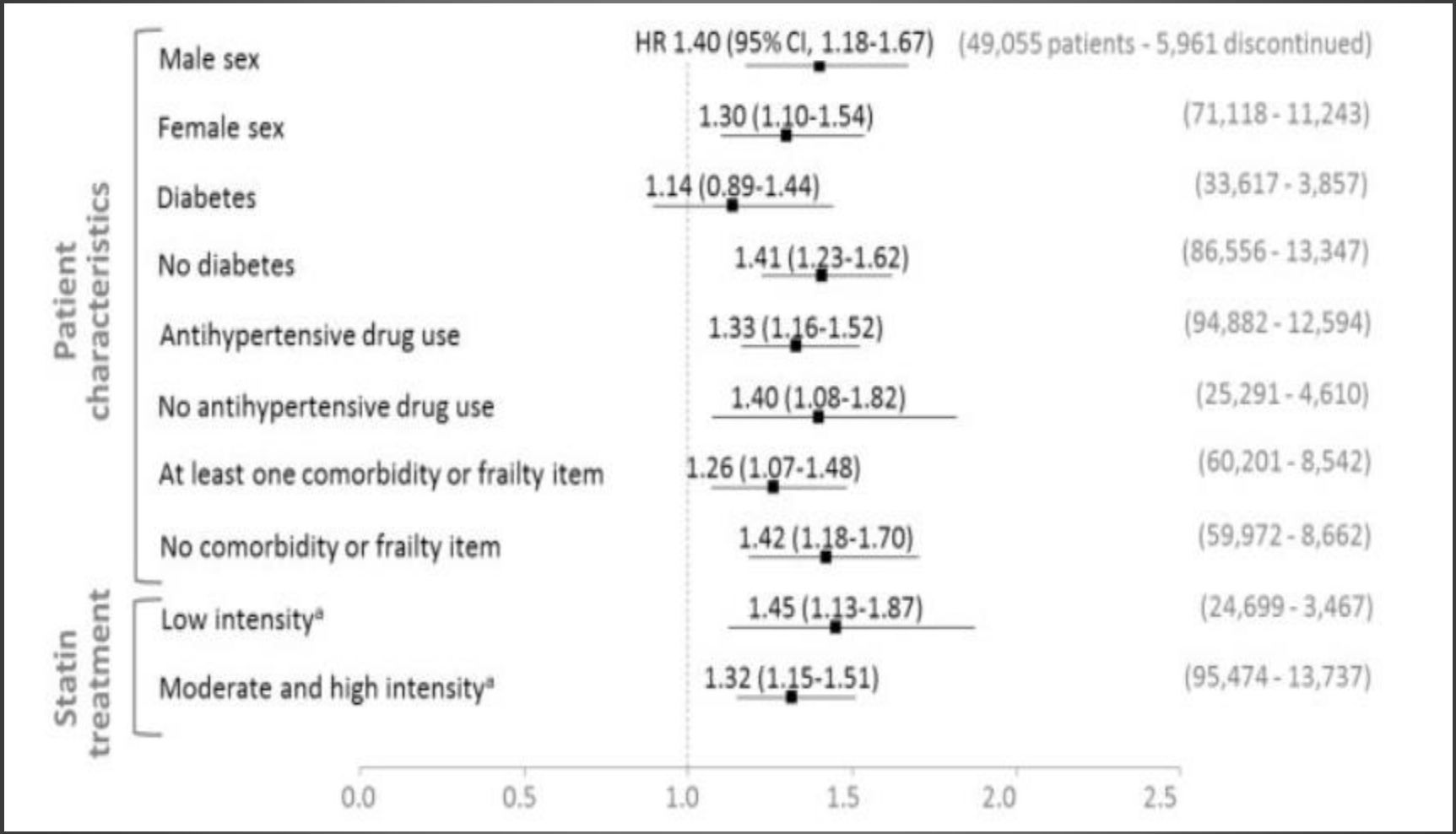
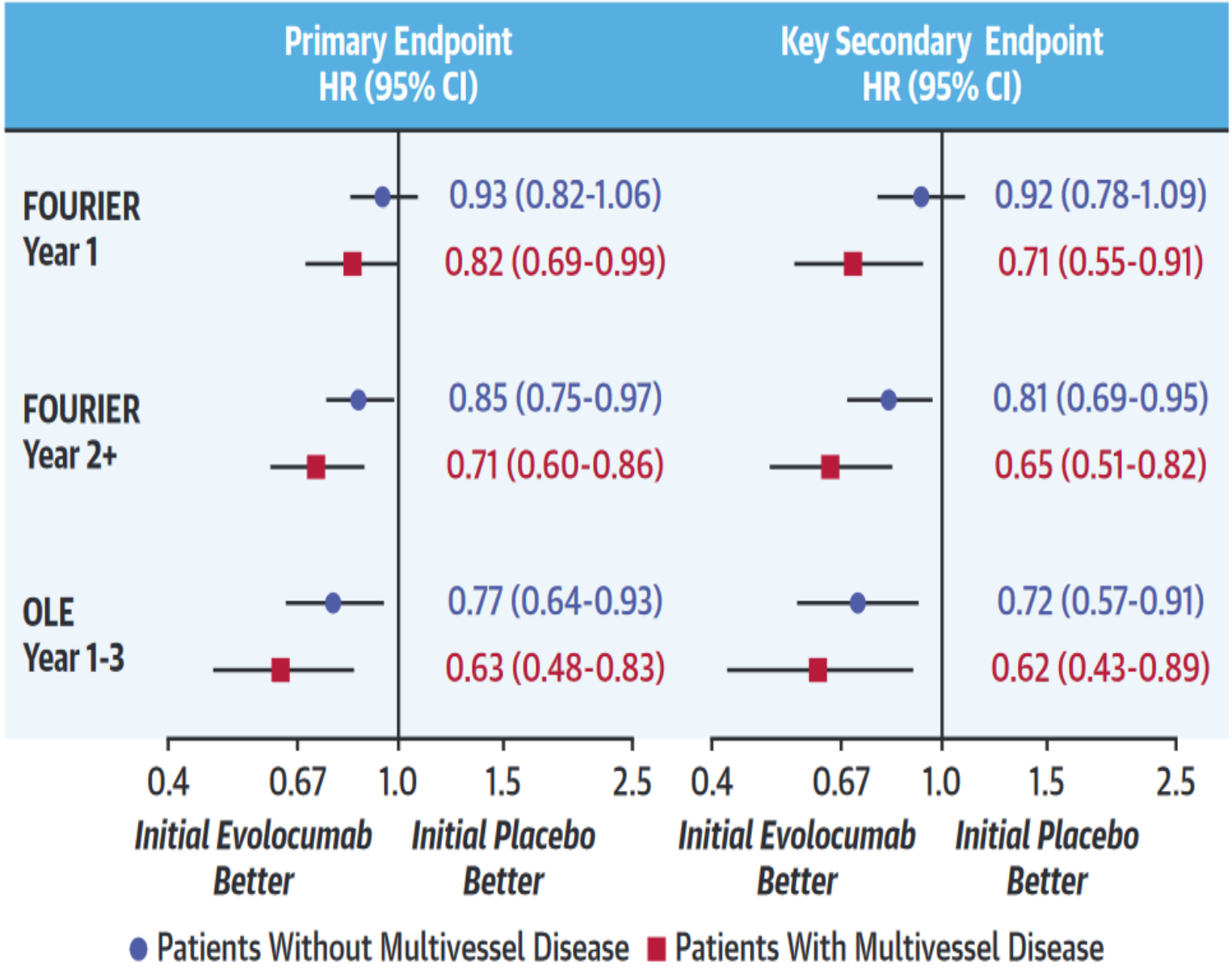


Giral P, et al. Eur Heart J. 2019;40:3516-3525.

CENTRAL ILLUSTRATION **Effect of Initial Allocation to Evolocumab by Time Period and Multivessel Disease**



McClintick DJ, et al. J Am Coll Cardiol. 2024;83(6):652-664.

Healthy lifestyle, lipoprotein (a) levels and the risk of coronary artery disease

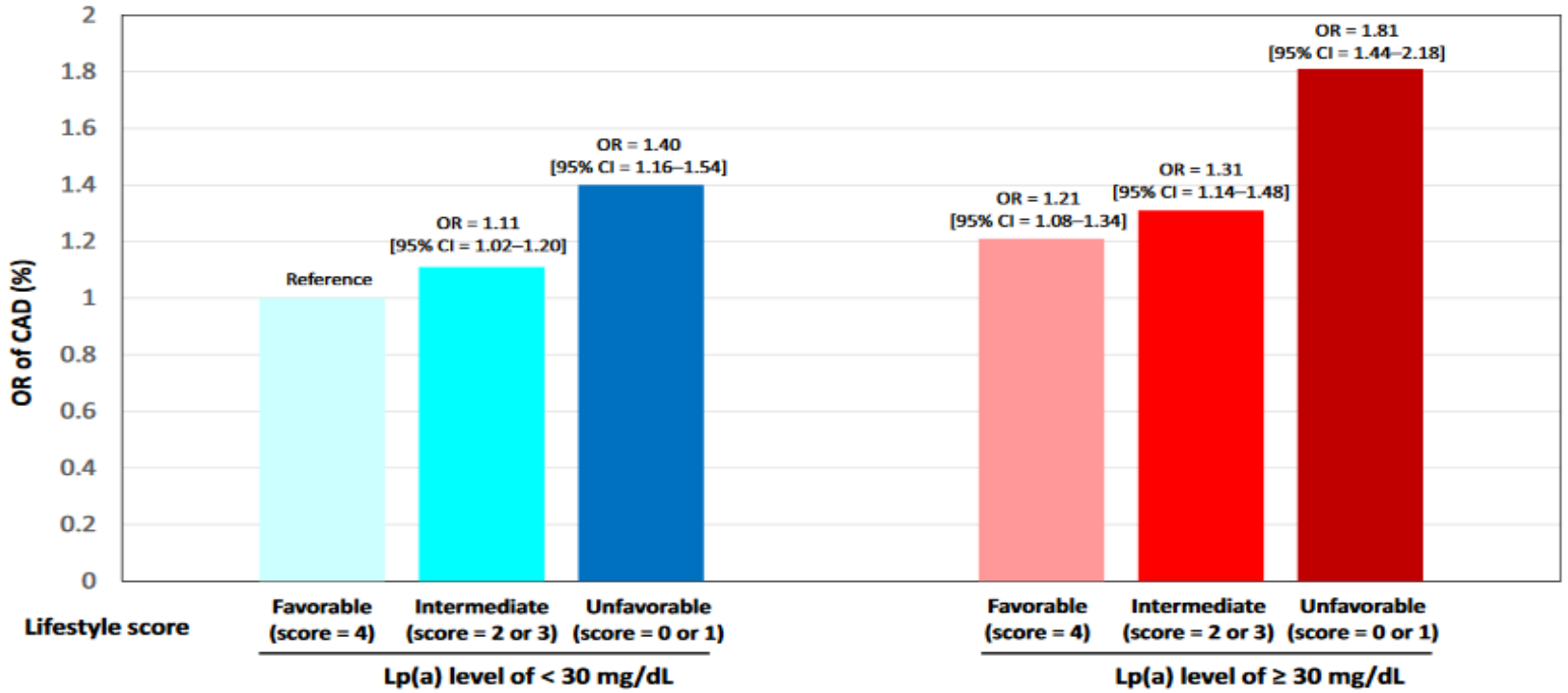
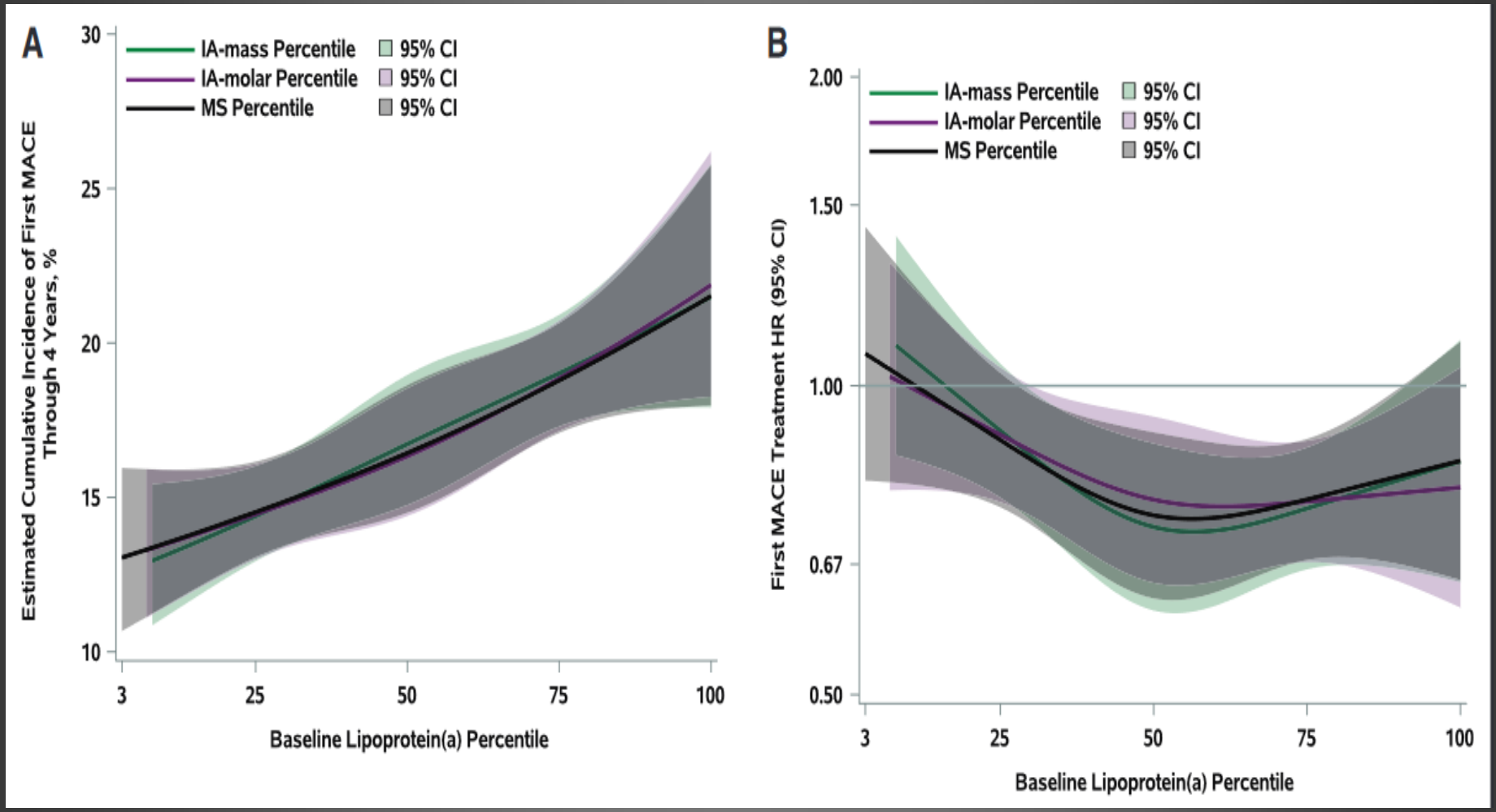


FIGURE 2 Odds ratio (ORs) for coronary artery disease (CAD) according to healthy lifestyle habits and lipoprotein [Lp(a)] levels. The Y-axis represents the OR for CAD. The ORs were calculated after adjusting for age, sex, hypertension, diabetes and low-density lipoprotein (LDL) cholesterol levels. The light blue colour indicates patients with an Lp(a) level of <30 mg/dL and a favourable lifestyle. The blue colour represents patients with an Lp(a) level of <30 mg/dL and an intermediate lifestyle habit. The dark blue illustrates patients with an Lp(a) level of <30 mg/dL and an unfavourable lifestyle. The light red colour indicates patients with an Lp(a) level of ≥30 mg/dL and a favourable lifestyle habit. The red colour represents patients with an Lp(a) level of ≥30 mg/dL and an intermediate lifestyle. The dark red illustrates patients with an Lp(a) level of ≥30 mg/dL and an unfavourable lifestyle.

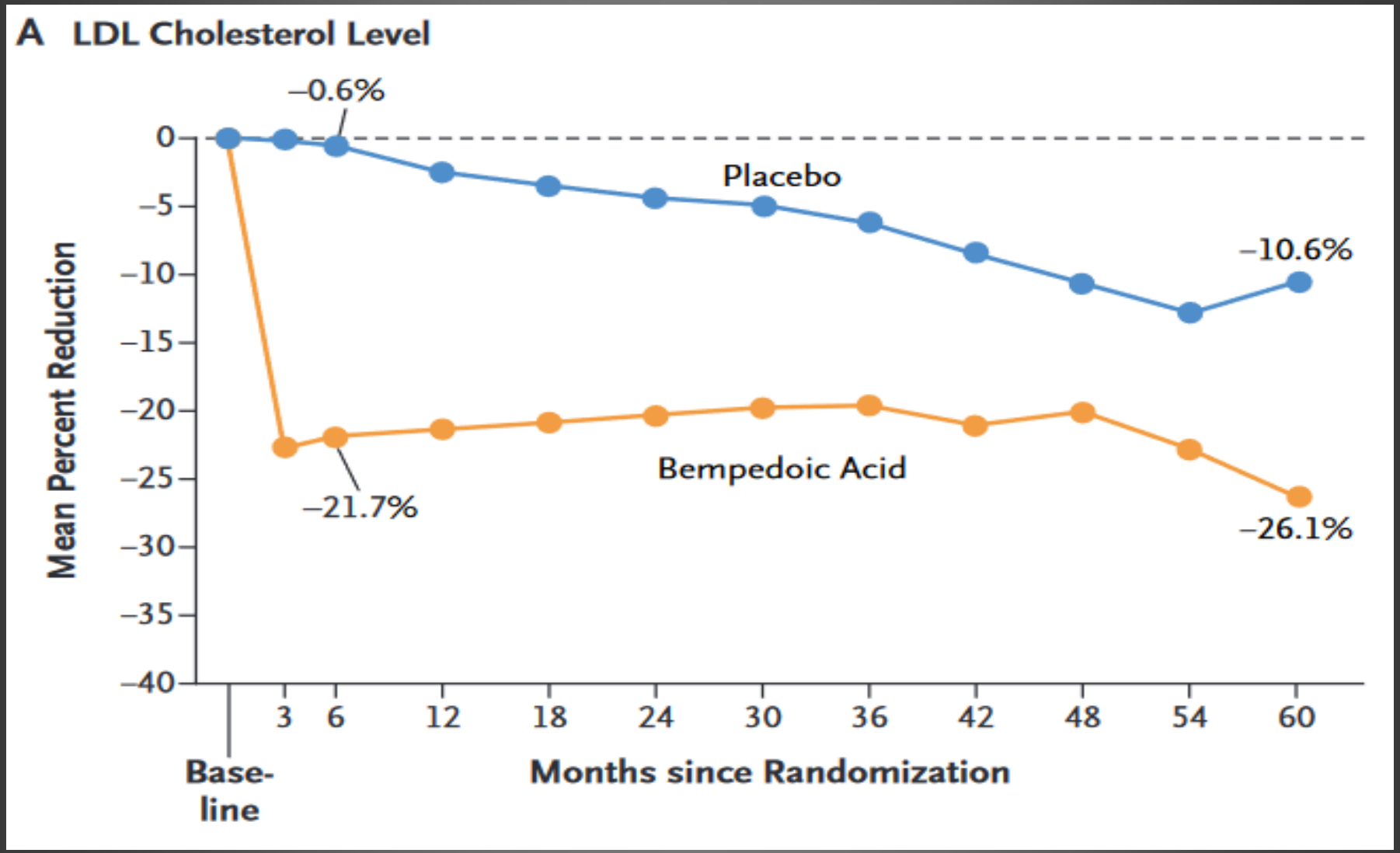
Tada H, et al. Eur J Clin Invest. 2024;54(1):e14093.

Relating Lipoprotein(a) Concentrations to Cardiovascular Event Risk After Acute Coronary Syndrome: A Comparison of 3 Tests



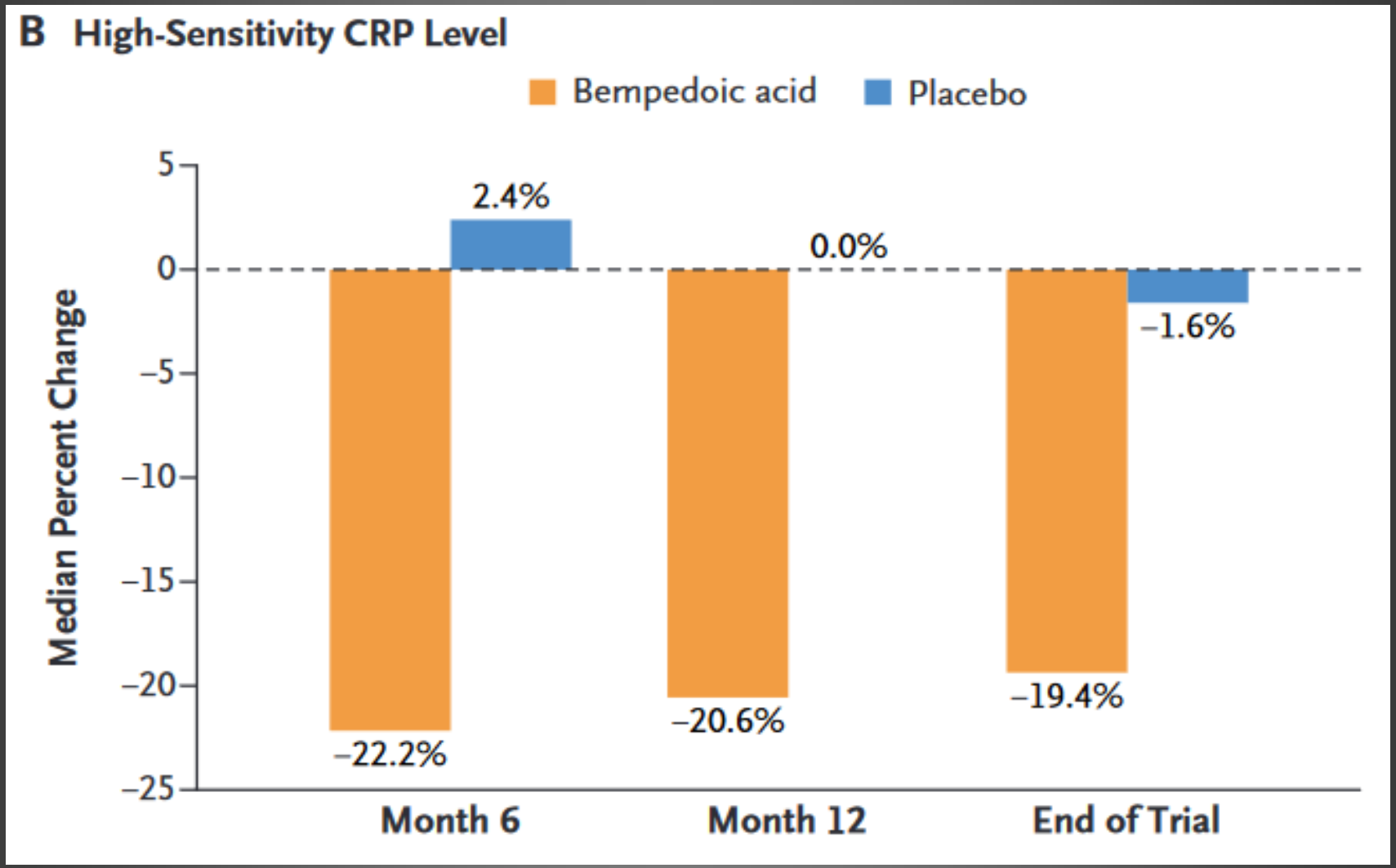
Szarek M, et al. Circulation. 2024;149:192-203.

Bempedoic acid and cardiovascular outcomes in statin-intolerant patients



Nissen SE, et al. N Engl J Med 2023; 388: 1353–64.

Bempedoic acid and cardiovascular outcomes in statin-intolerant patients



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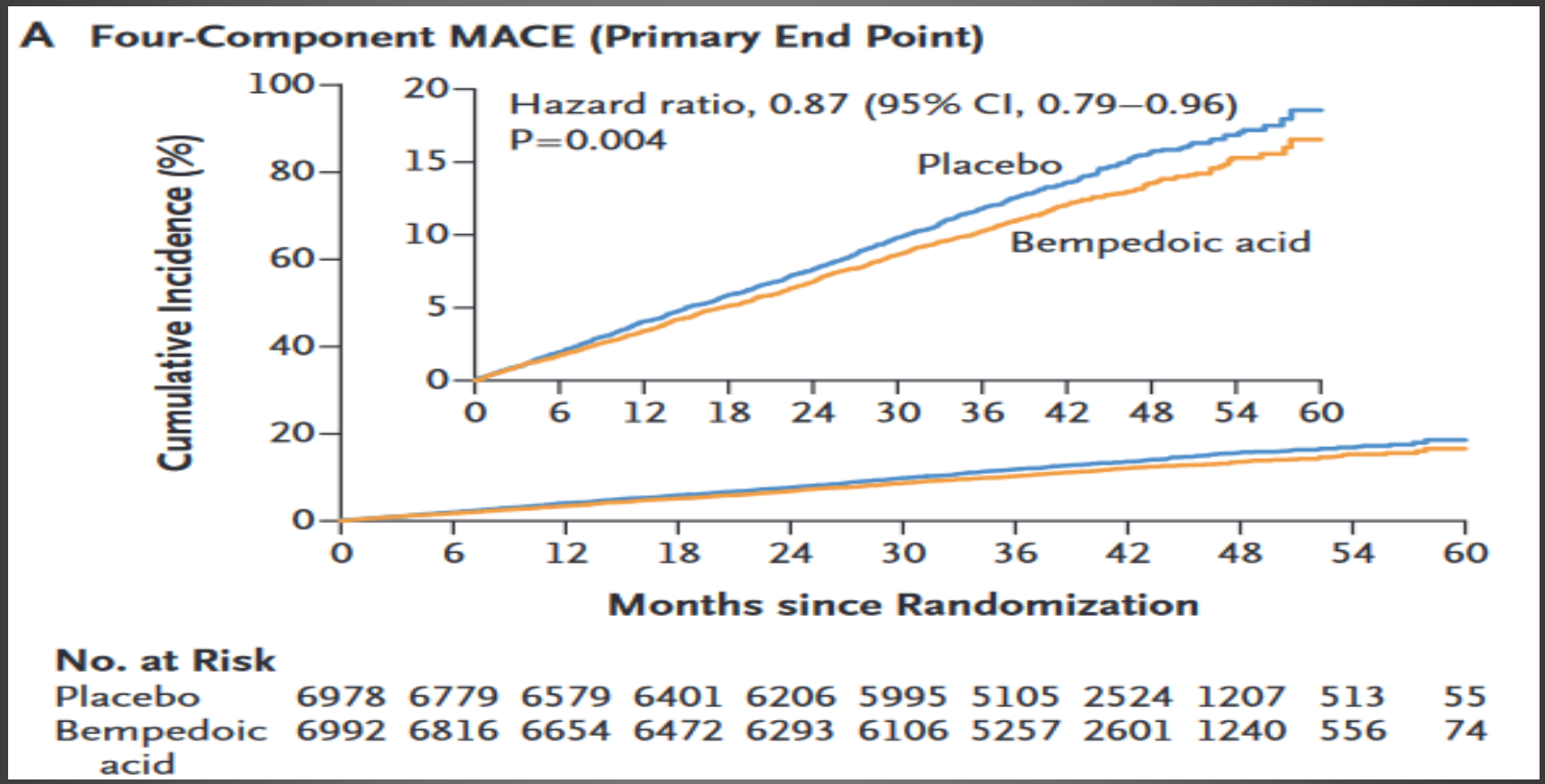
MACE : death from cardiovascular causes,nonfatal myocardial infarction, nonfatal stroke, or coronary revascularization.



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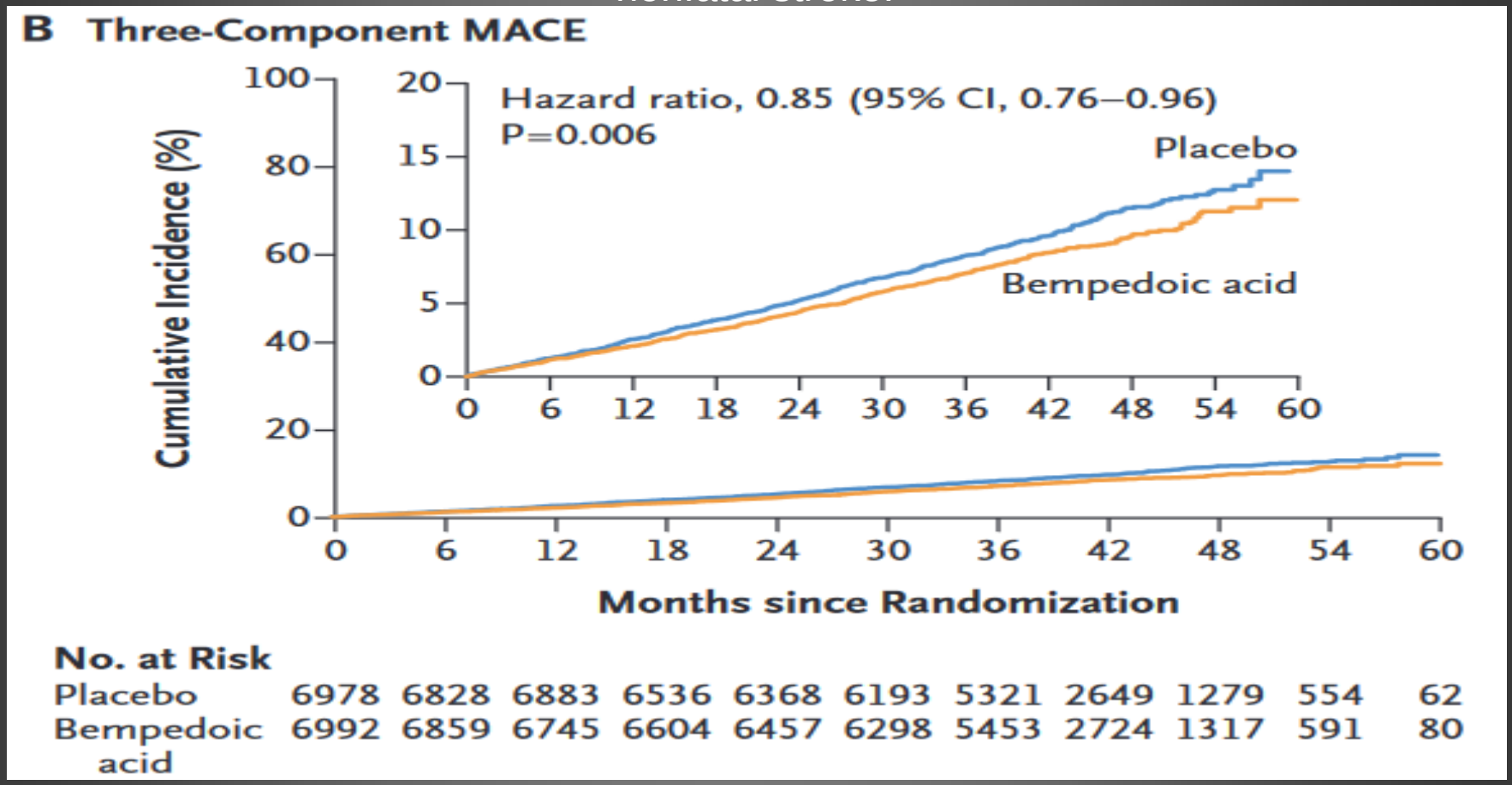

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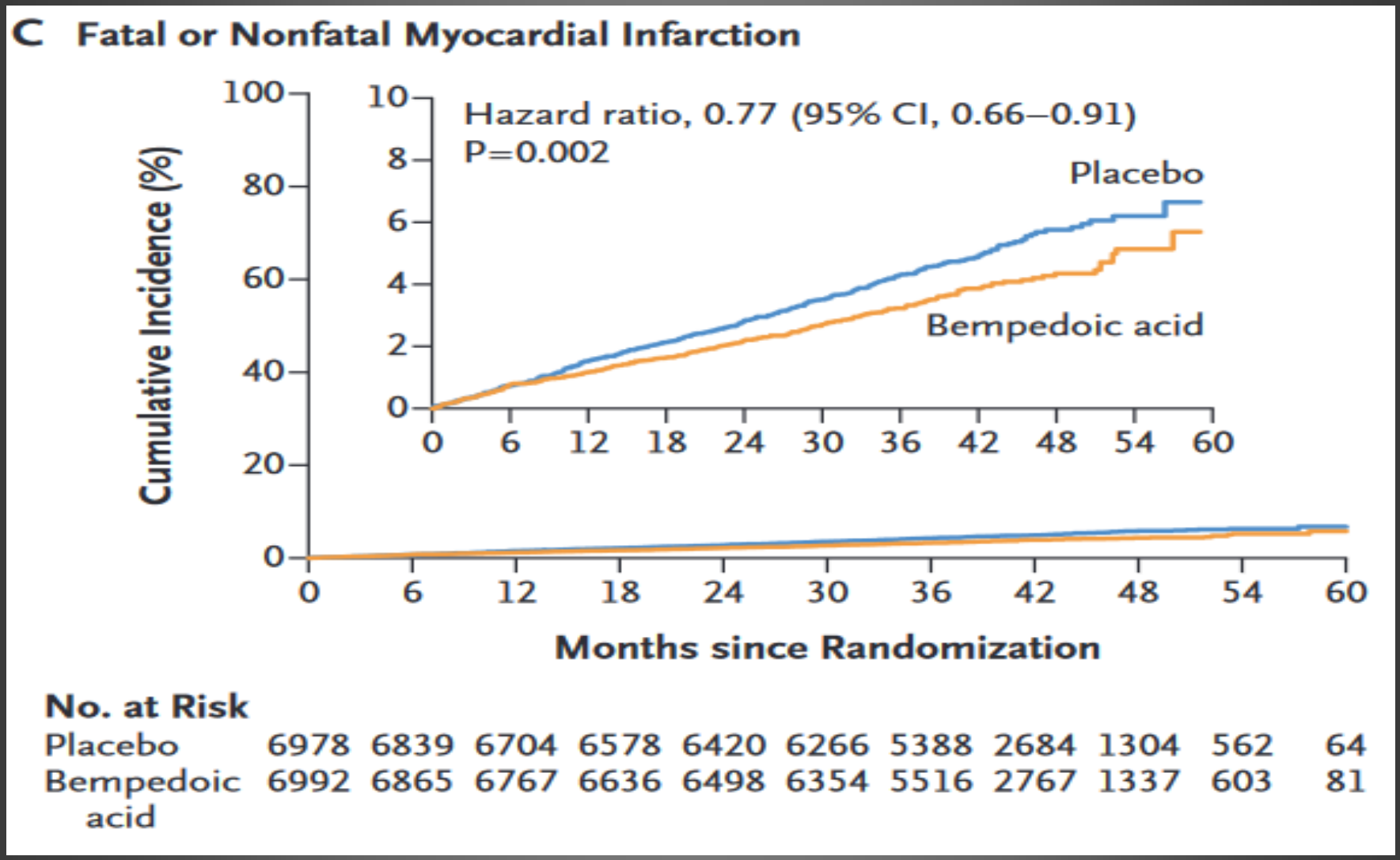

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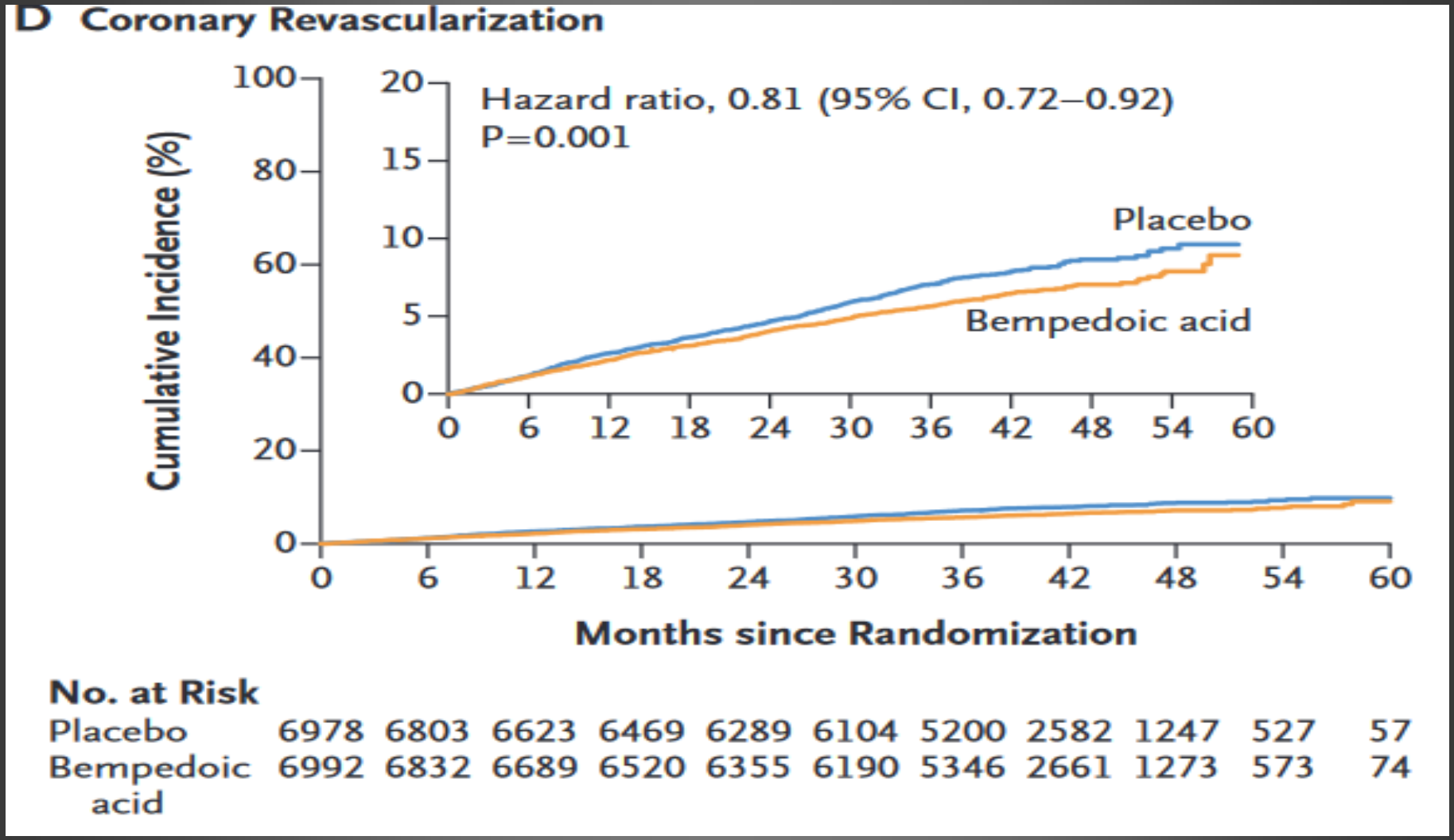
Bempedoic acid and cardiovascular outcomes in statin-intolerant patients



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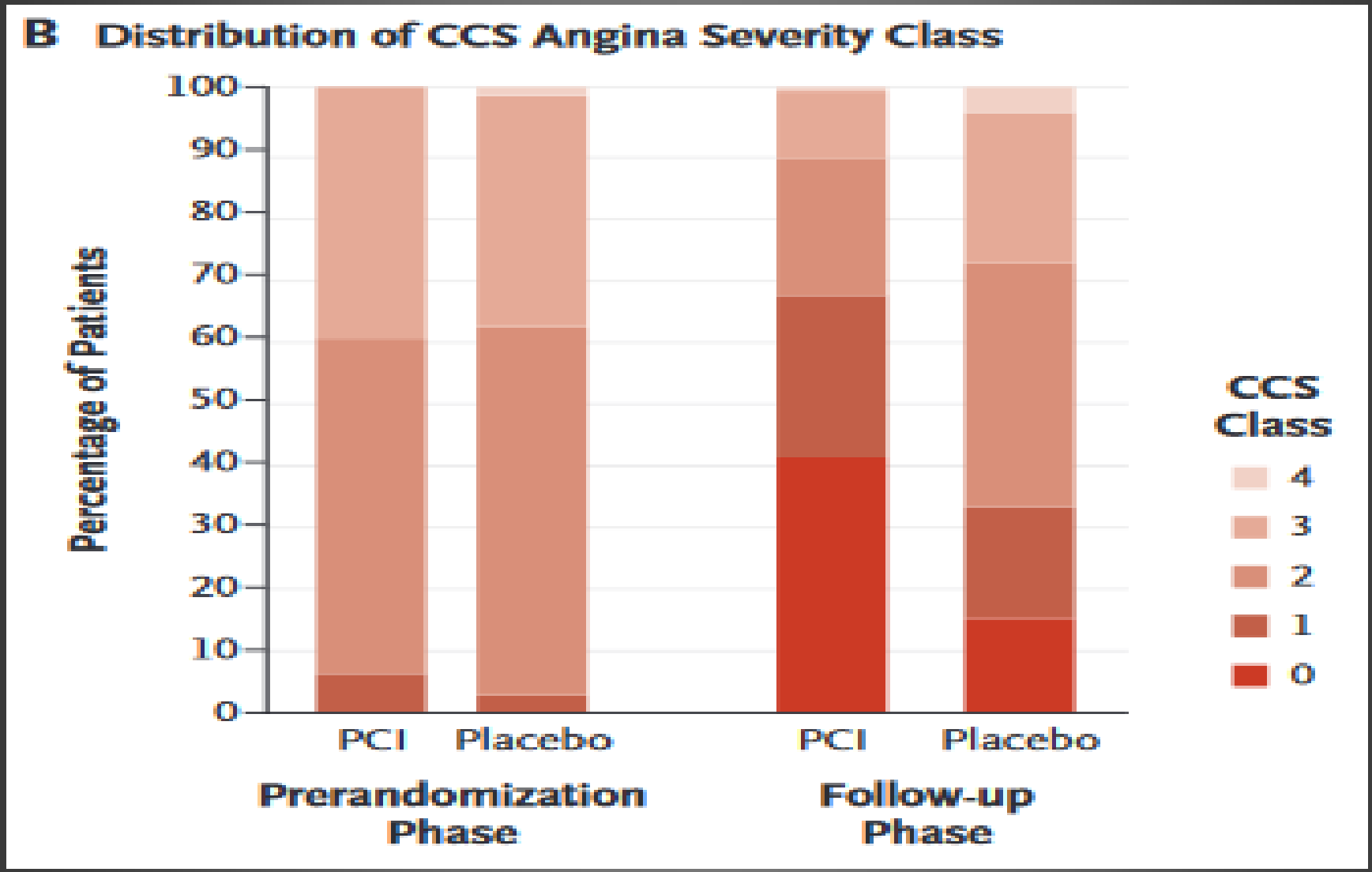
Bempedoic acid and cardiovascular outcomes in statin-intolerant patients

Table 3. Investigator-Reported Adverse Events and Laboratory Safety-Related Findings in the Safety Population.*

Event	Bempedoic Acid (N=7001)	Placebo (N=6964)
Any adverse event that started or worsened after the first dose of a trial agent — no. (%)	6040 (86.3)	5919 (85.0)
Serious adverse event that started or worsened after the first dose of a trial agent — no. (%)	1767 (25.2)	1733 (24.9)
Adverse event leading to discontinuation of the trial regimen — no. (%)	759 (10.8)	722 (10.4)
Prespecified adverse events of special interest		
Myalgia — no. (%)	393 (5.6)	471 (6.8)
Discontinuation of the trial regimen because of myalgia — no. (%)	124 (1.8)	129 (1.9)
New-onset diabetes in patients without diabetes at baseline — no./total no. (%)	621/3856 (16.1)	640/3740 (17.1)
New-onset diabetes in patients with prediabetes at baseline — no./total no. (%)†	569/2918 (19.5)	586/2877 (20.4)
New-onset diabetes in patients with normoglycemia at baseline — no./total no. (%)†	52/938 (5.5)	54/863 (6.3)

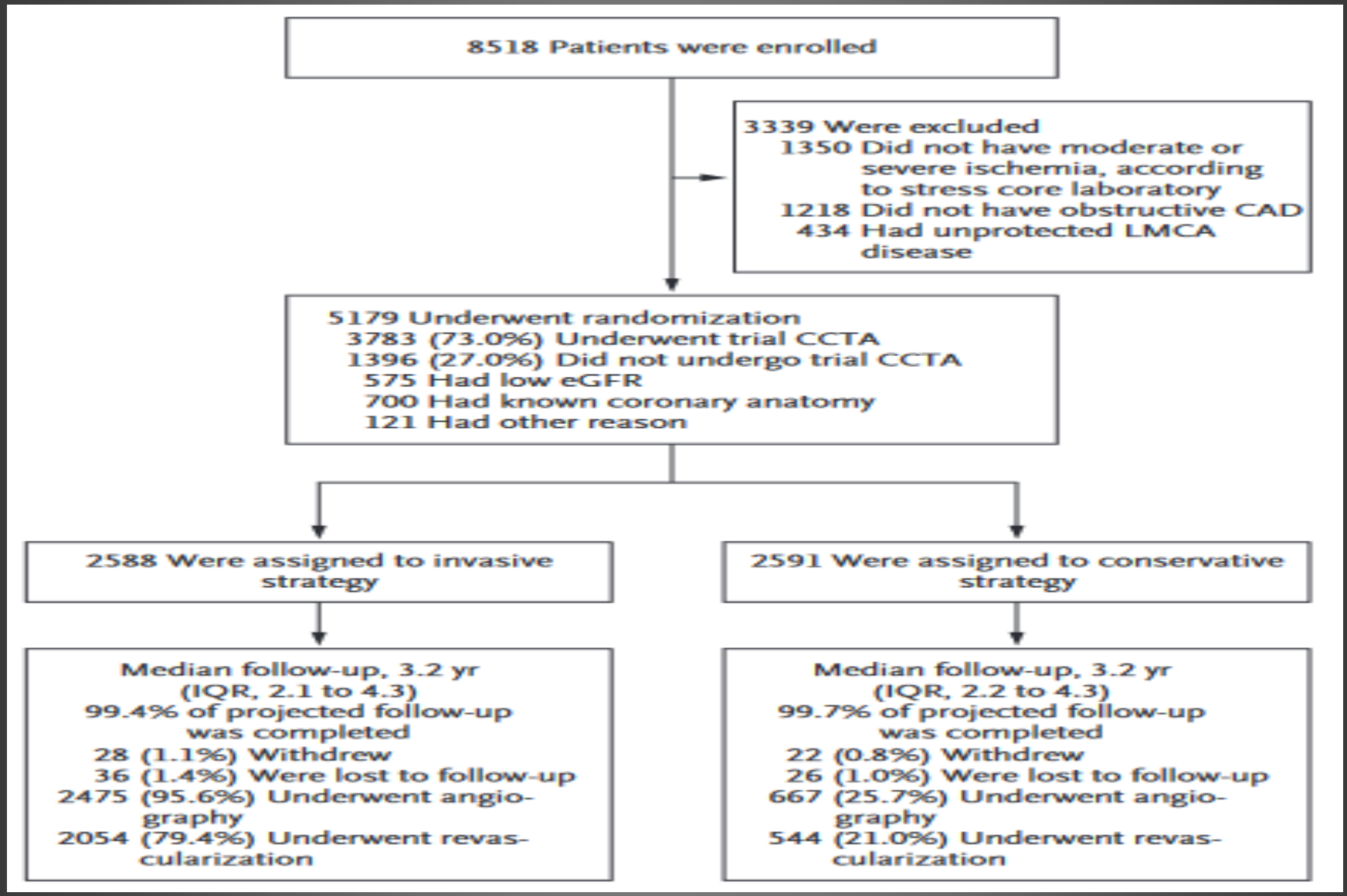
Nissen SE, et al. N Engl J Med 2023; 388: 1353–64.

A Placebo-Controlled Trial of Percutaneous Coronary Intervention for Stable Angina



Rajkumar CA, et al. New Engl J Med. 2023;389:2319-2330.

Initial invasive or conservative strategy for stable coronary disease



Maron DJ, et al. N Engl J Med 2020;382:1395-407.

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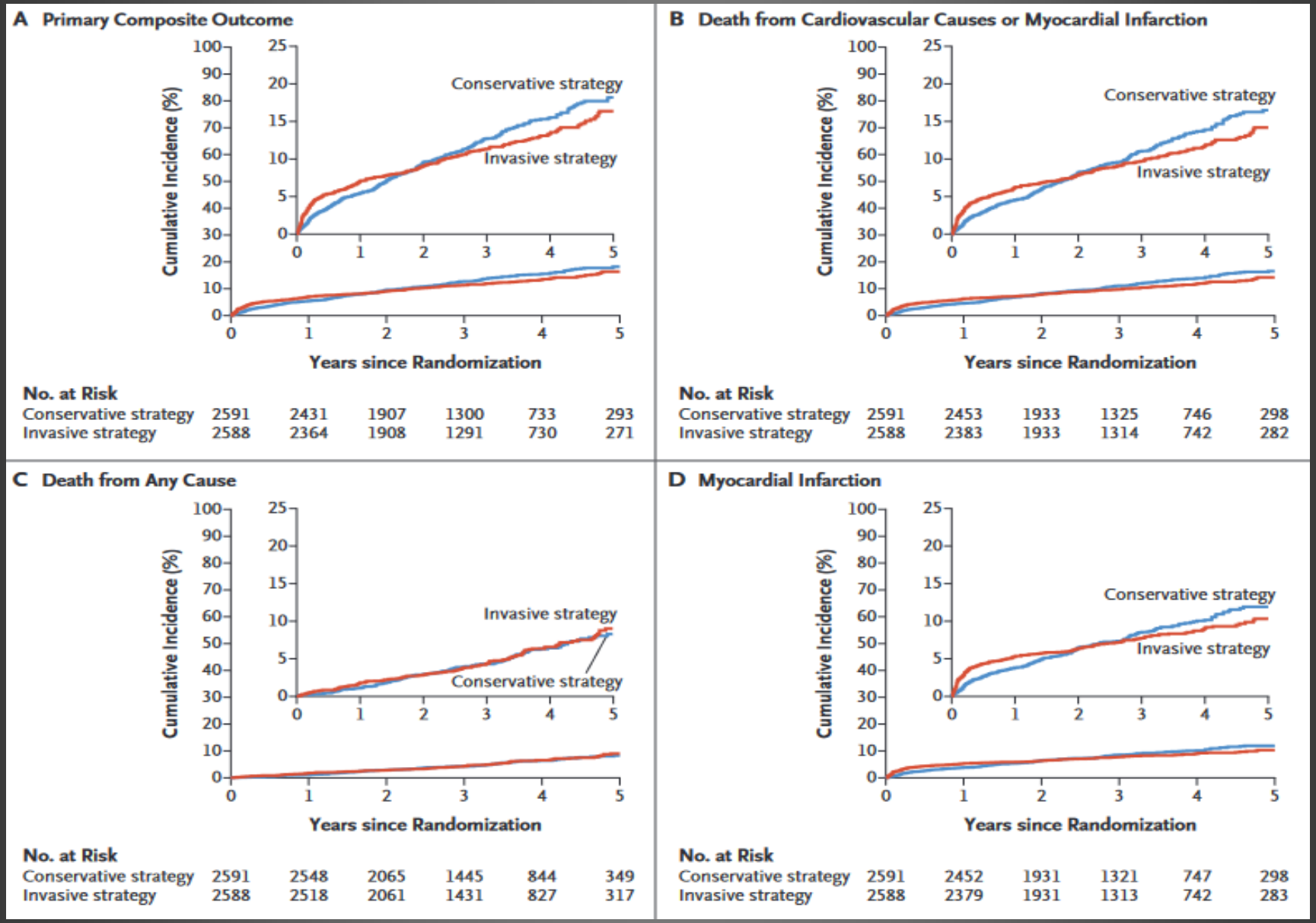


Maron DJ, et al. N Engl J Med 2020;382:1395-407.

A Placebo-Controlled Trial of Percutaneous Coronary Intervention for Stable Angina

A total of 301 patients underwent randomization: 151 to the PCI group and 150 to the placebo group;

- ✓ Angor + ischémie au test non invasifs ou tests physiologiques
- ✓ Lésion coronaire pouvant justifier d'une angioplastie avec FFR;
- ✓ Procédure d'angioplastie simulée
- ✓ Arrêt 15 jours des traitements anti-angineux avant la randomisation : questionnaire téléphonique tous les jours
- ✓ Avant la coronarographie : Epreuve d'effort et une échocardiographie sous dobutamine
- ✓ Après la procédure :
  - ✓ Questionnaire téléphonique tous les jours
  - ✓ A 12 semaines : Epreuve d'effort et une échocardiographie sous dobutamine

Rajkumar CA, et al. New Engl J Med. 2023;389:2319-2330.

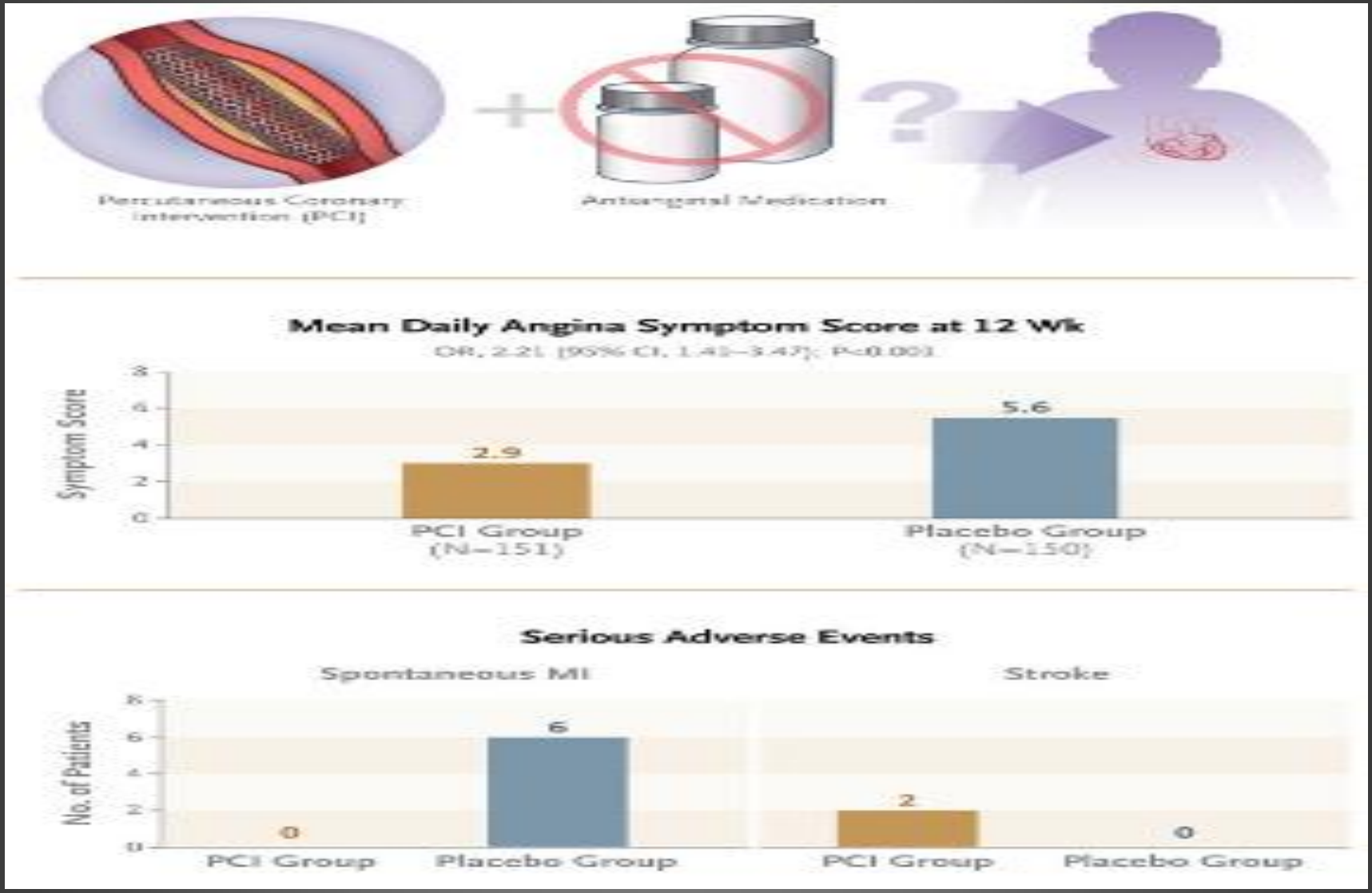
A Placebo-Controlled Trial of Percutaneous Coronary Intervention for Stable Angina

Table 3. Primary and Secondary End Points.*

End Point	PCI (N=151)		Placebo (N=150)		Odds Ratio or Difference (95% CI)†
	value	*no. of patients with data*	*value*	*no. of patients with data*	
Primary end point: angina symptom score — mean score‡	2.9	151	5.6	150	2.21 (1.41 to 3.47)§
Mean daily angina episodes — no.	0.3	151	0.7	150	3.44 (2.00 to 5.91)
Mean daily antianginal medication use — units¶	0.2	151	0.3	150	1.21 (0.70 to 2.10)
Secondary end points					
Mean treadmill exercise time — sec	700.9	123	641.4	112	59.5 (16.0 to 103.0)
CCS class — mean	0.9	147	1.7	146	3.76 (2.43 to 5.82)
End points assessed with the use of the SAQ‖					
Frequency of angina	80.6	146	66.2	145	14.4 (9.5 to 19.4)
Physical limitation	82.7	139	73.9	144	8.8 (4.7 to 12.9)
Angina stability	61.8	145	55.3	145	6.5 (0.5 to 12.5)
Quality of life	62.8	145	51.6	145	11.2 (6.2 to 16.1)
Freedom from angina	40	146	15	145	3.69 (2.10 to 6.46)
EQ-5D-5L descriptive system — mean score**	0.82	145	0.73	144	0.09 (0.05 to 0.13)
EQ-VAS — mean score**	73.1	146	66.9	143	6.2 (2.4 to 10.0)
Stress echocardiography score — mean score††	0.79	119	1.95	111	−1.17 (−1.56 to −0.78)

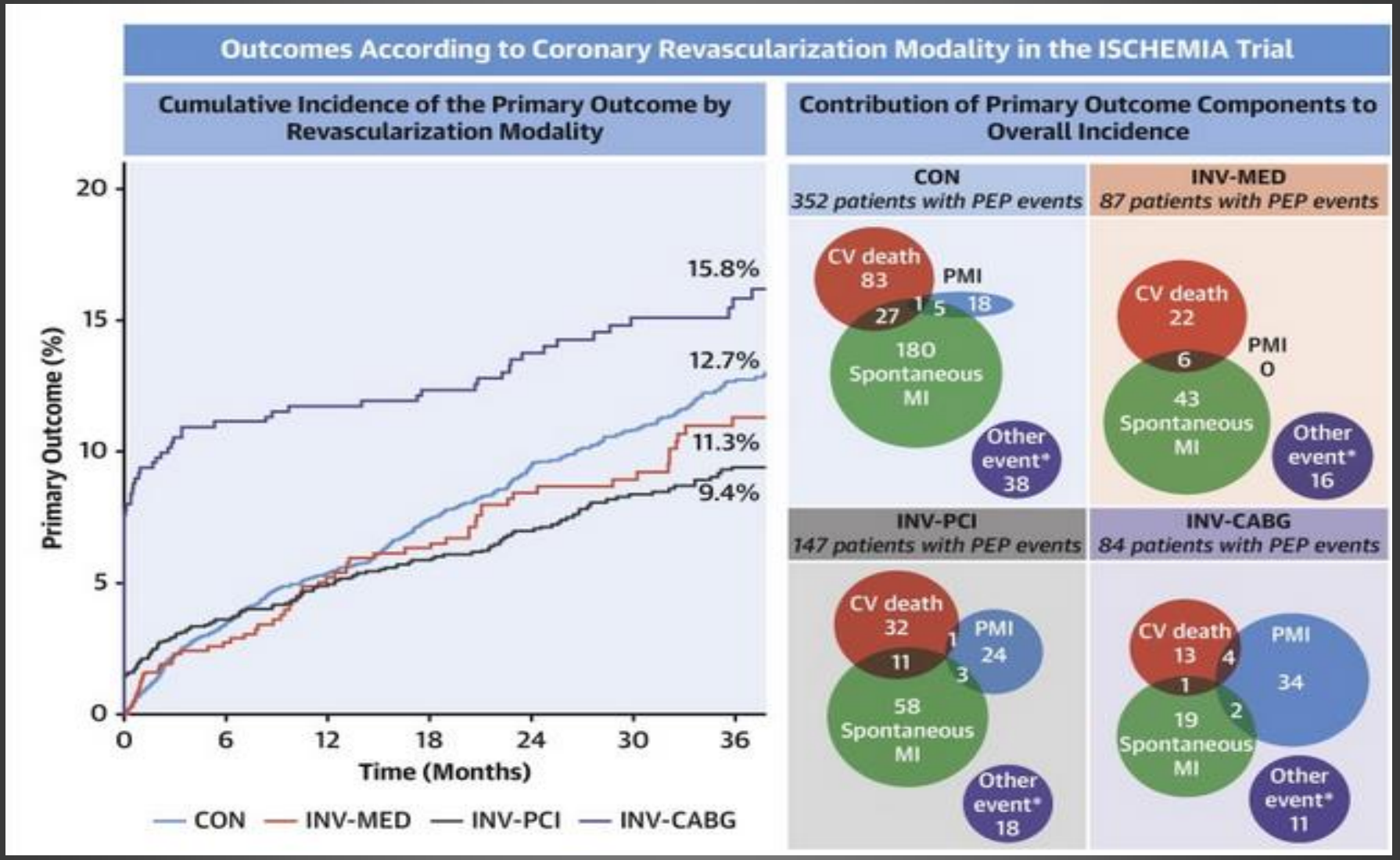
Rajkumar CA, et al. New Engl J Med. 2023;389:2319-2330.

A Placebo-Controlled Trial of Percutaneous Coronary Intervention for Stable Angina



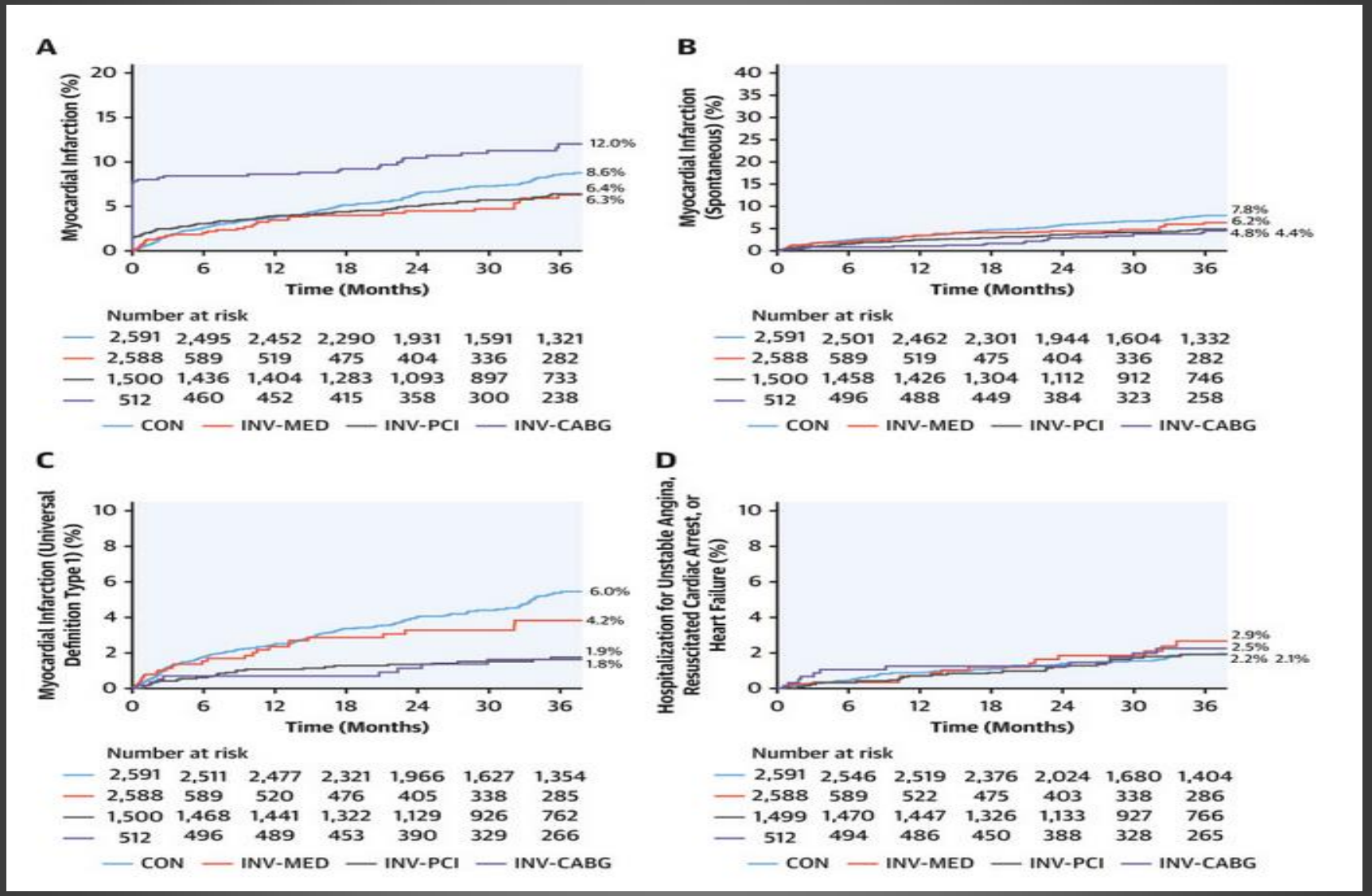
Rajkumar CA, et al. New Engl J Med. 2023;389:2319-2330.

Outcomes According to Coronary Revascularization Modality in the ISCHEMIA Trial



Redfors BR, et al. JACC. 2024;83:549-558.

Outcomes According to Coronary Revascularization Modality in the ISCHEMIA Trial



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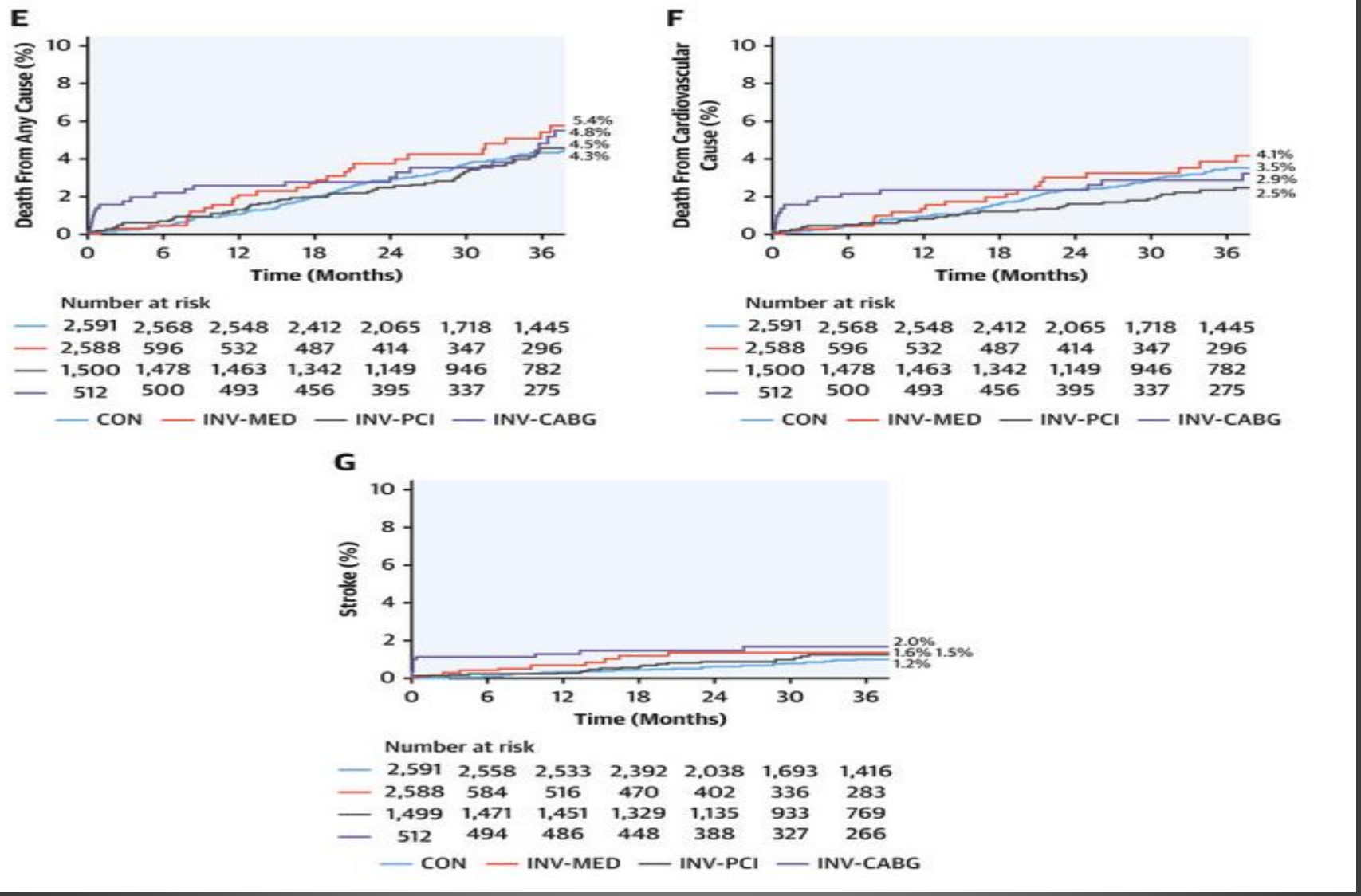

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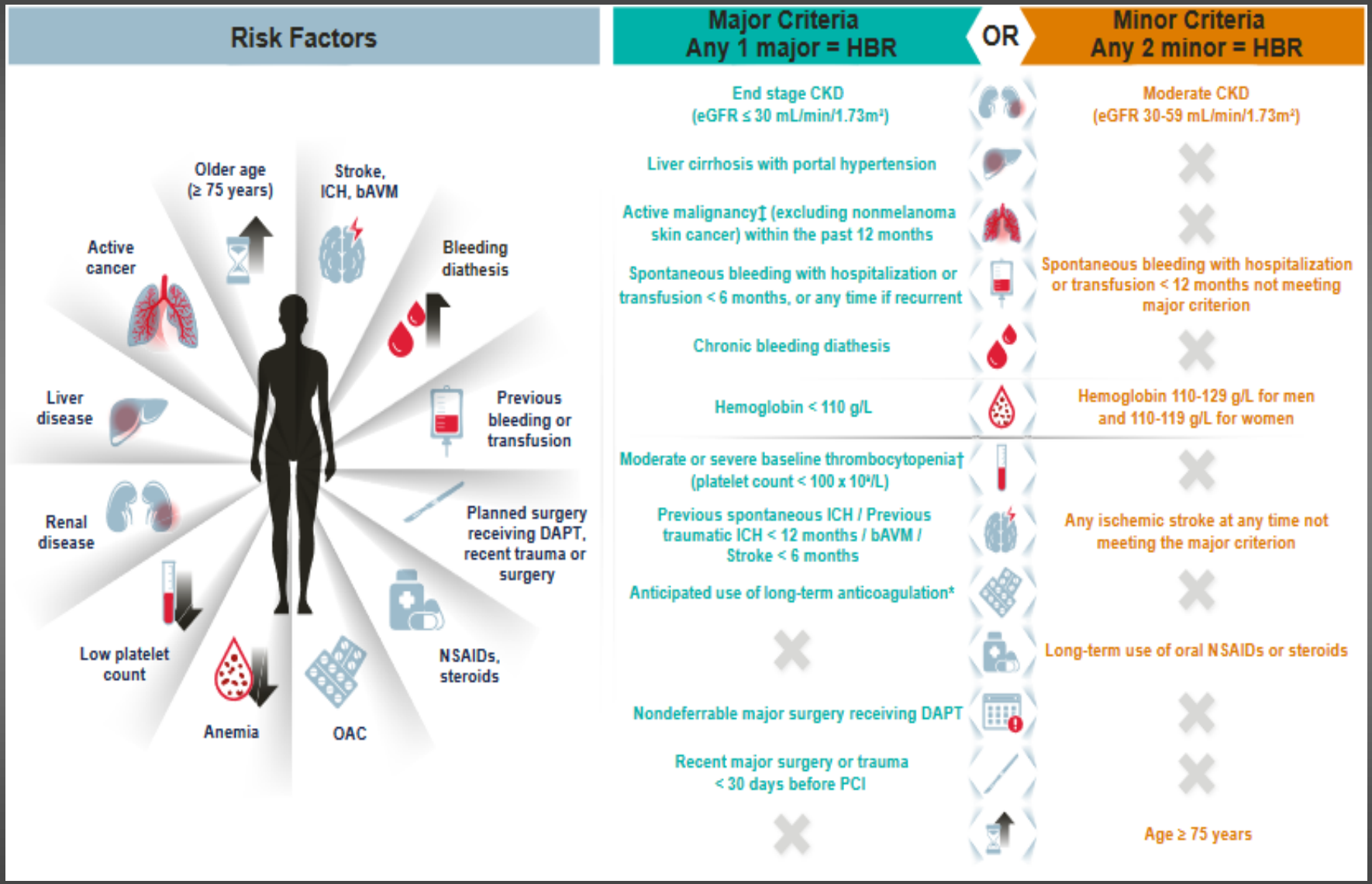

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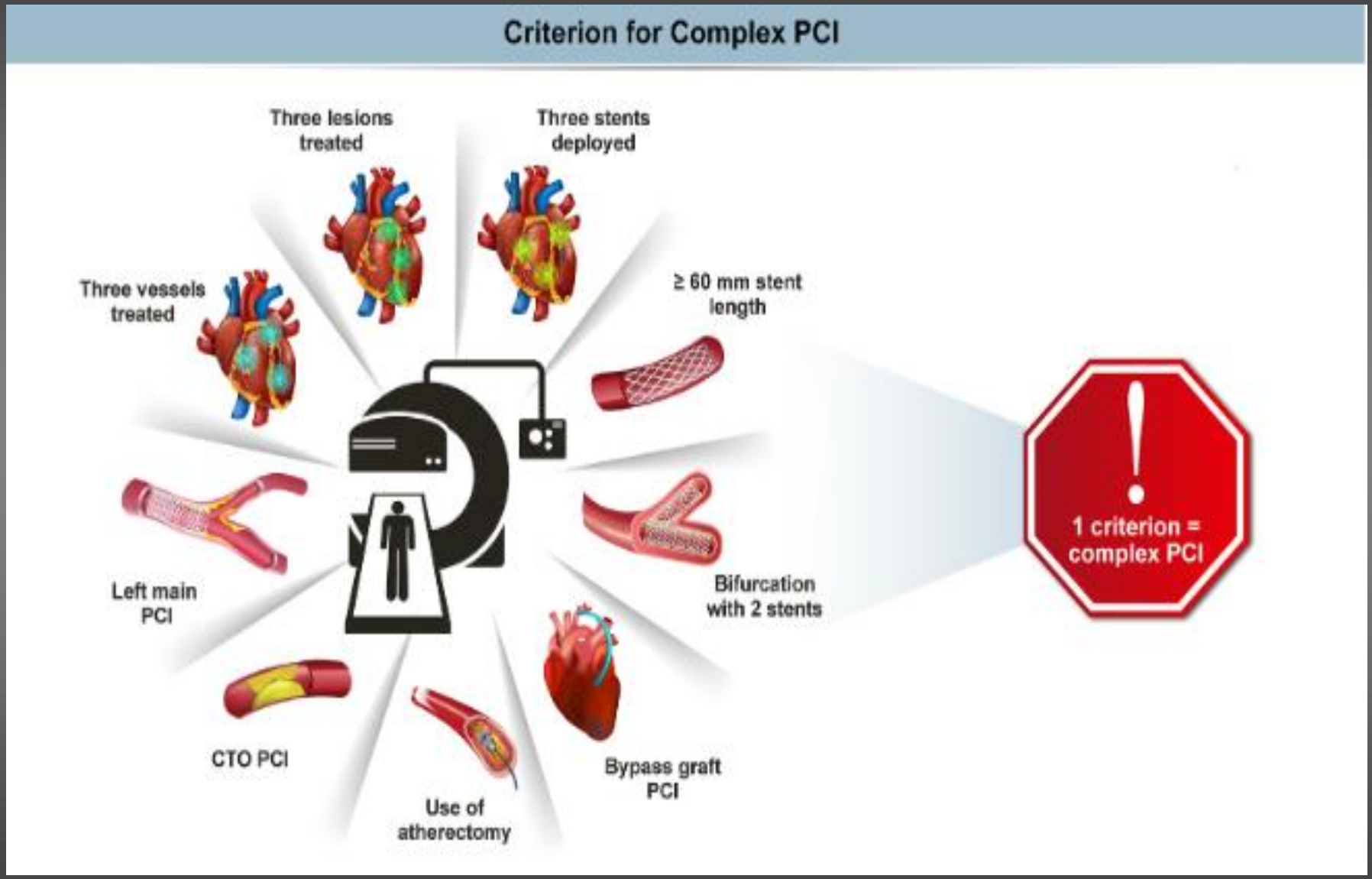

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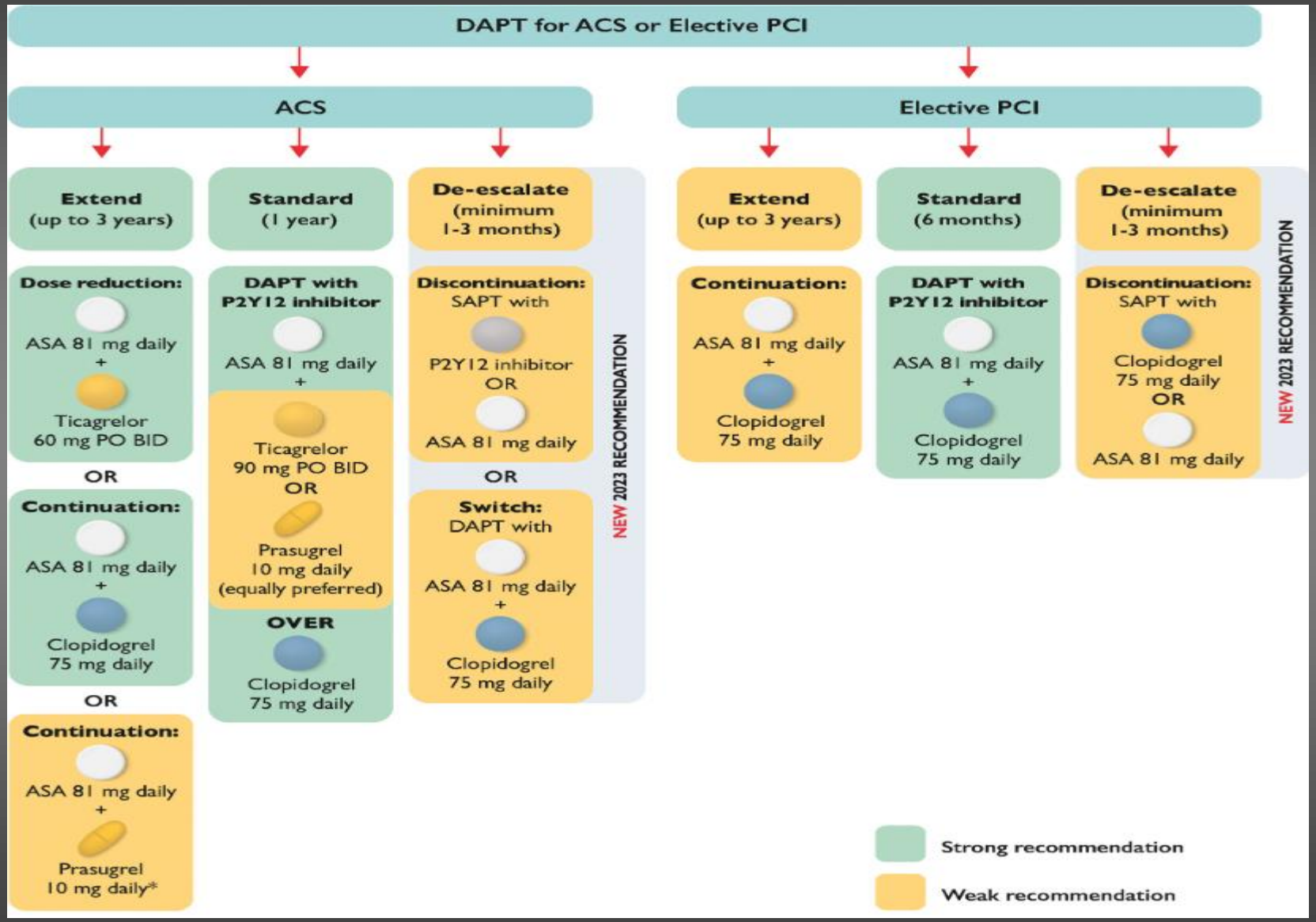

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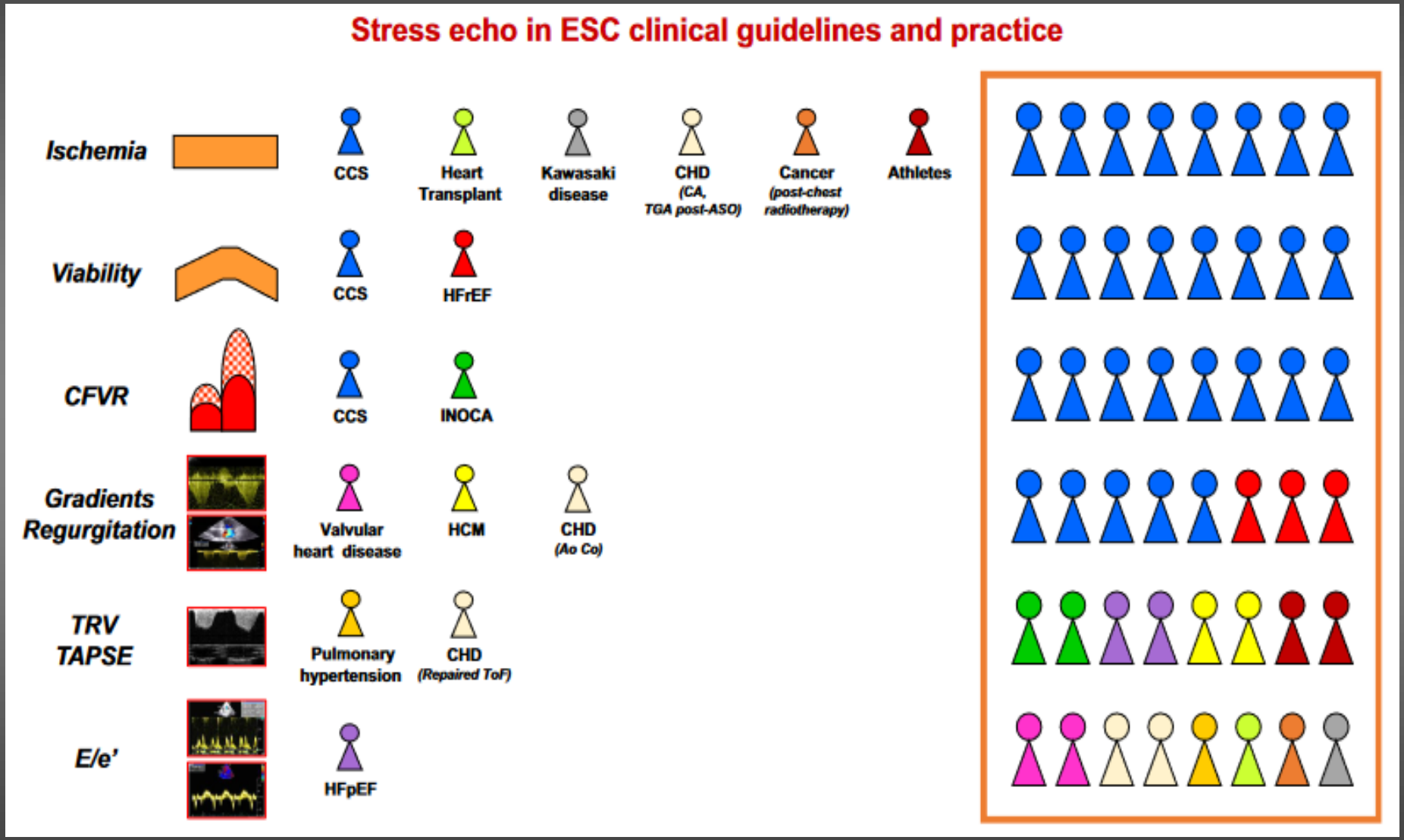

CFVR, coronary flow velocity reserve

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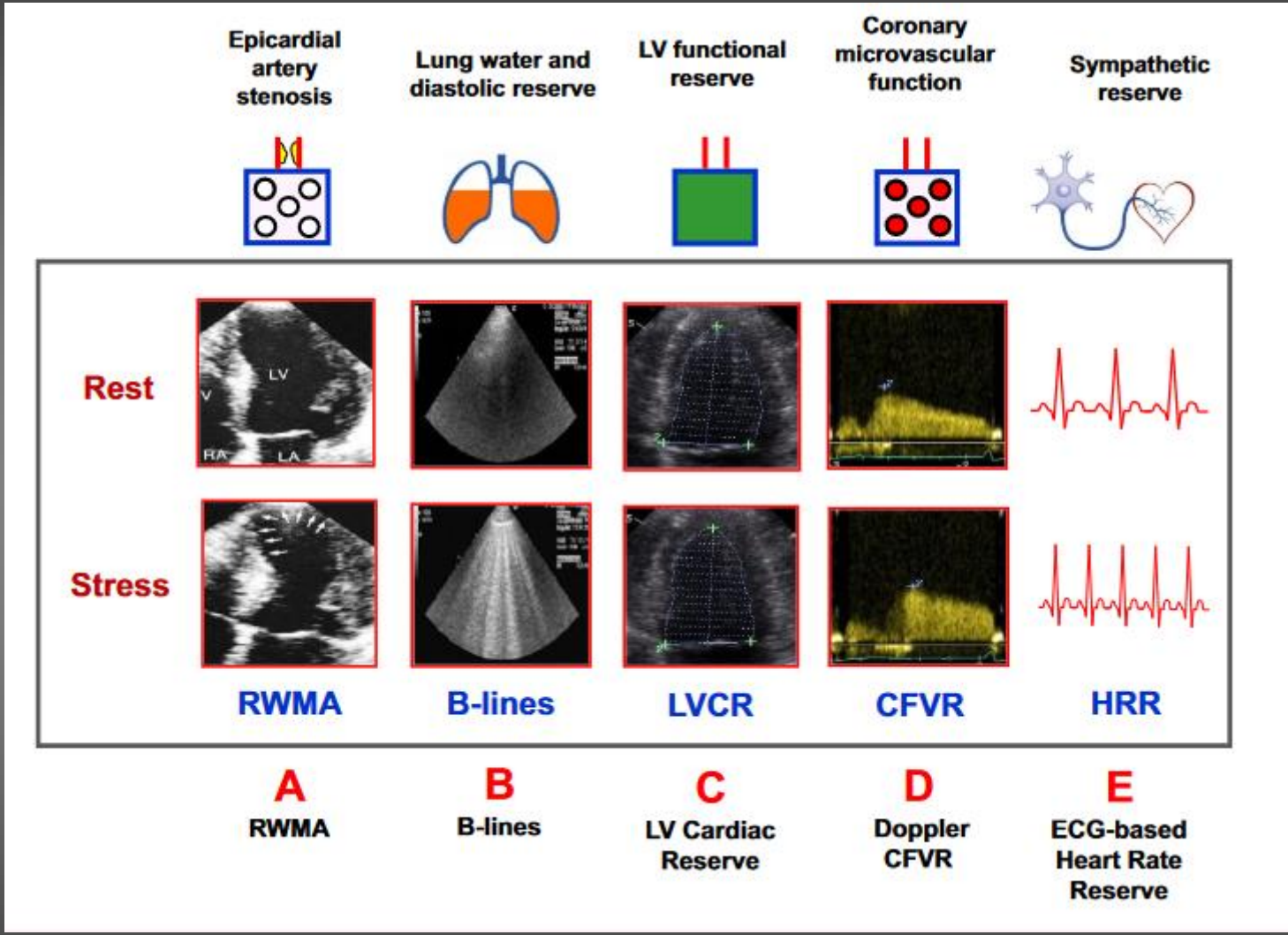

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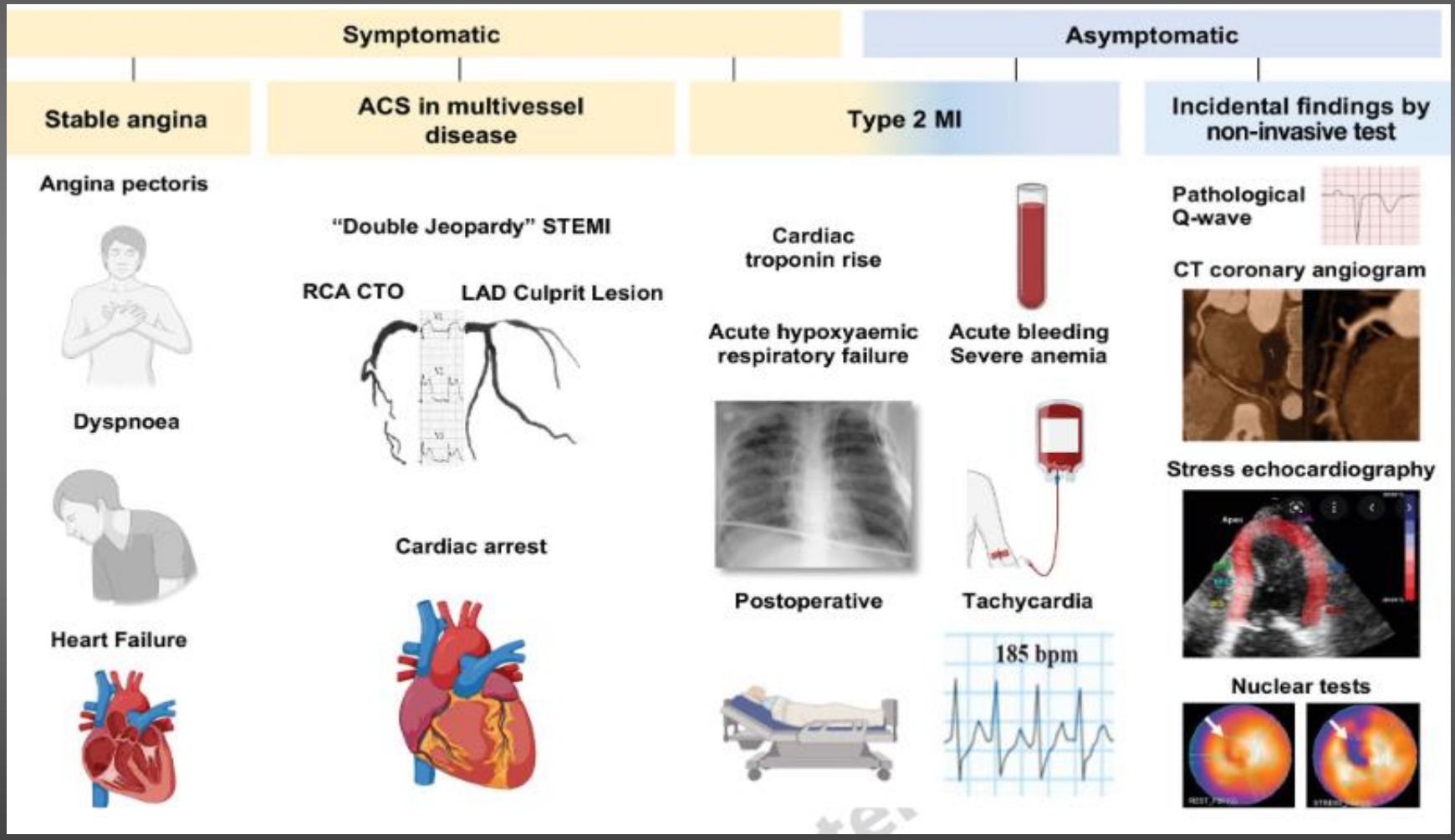

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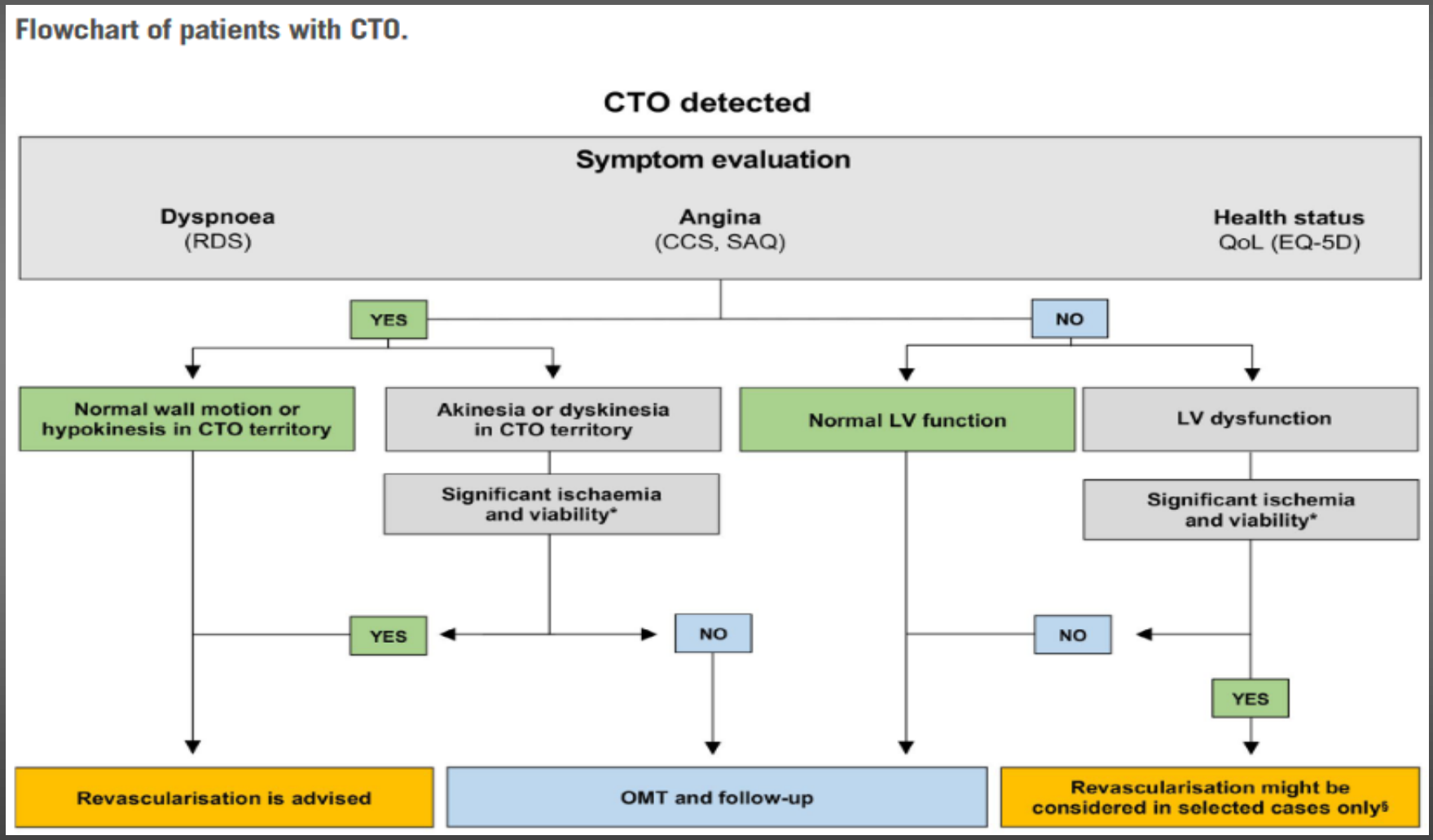

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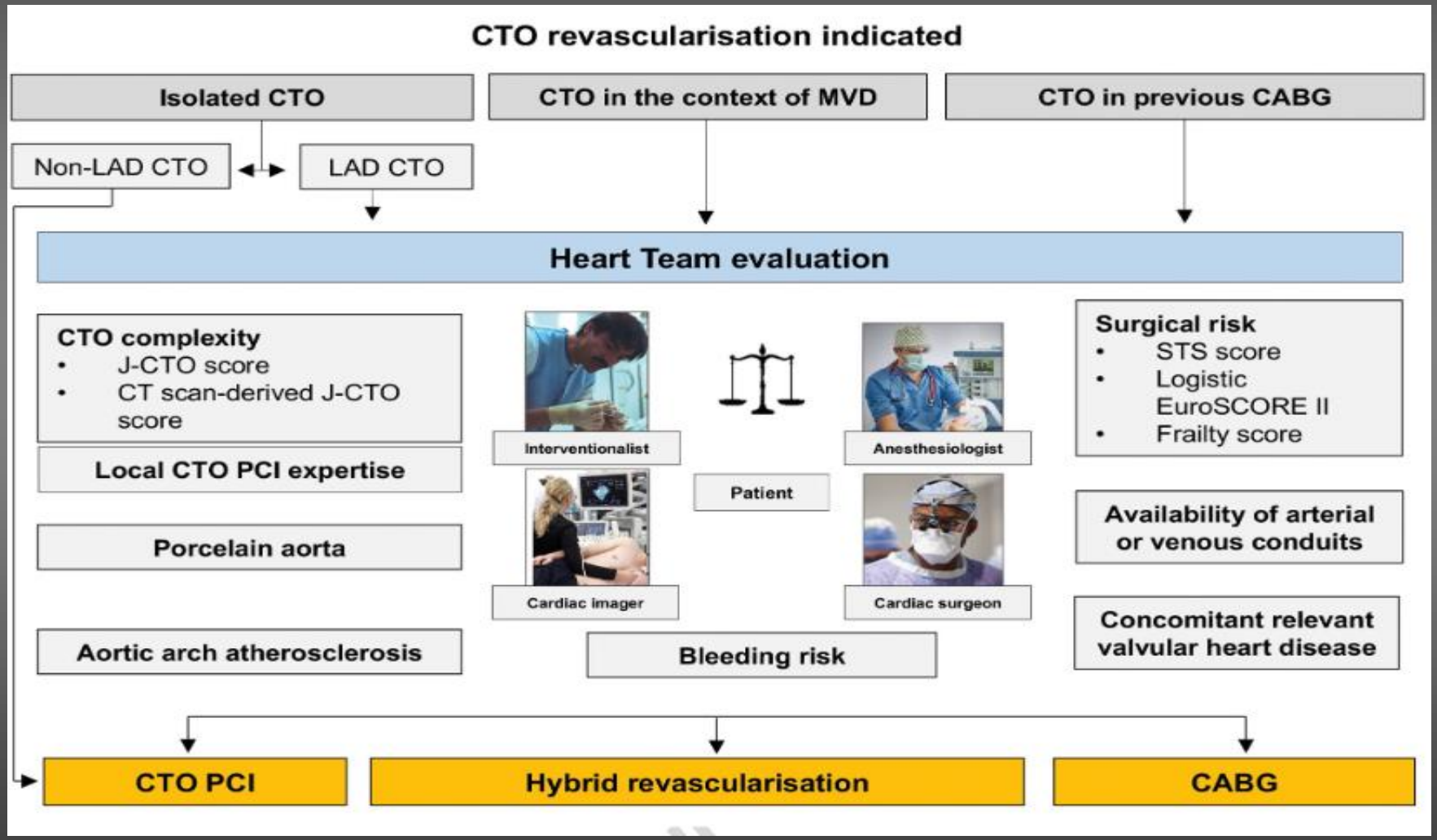

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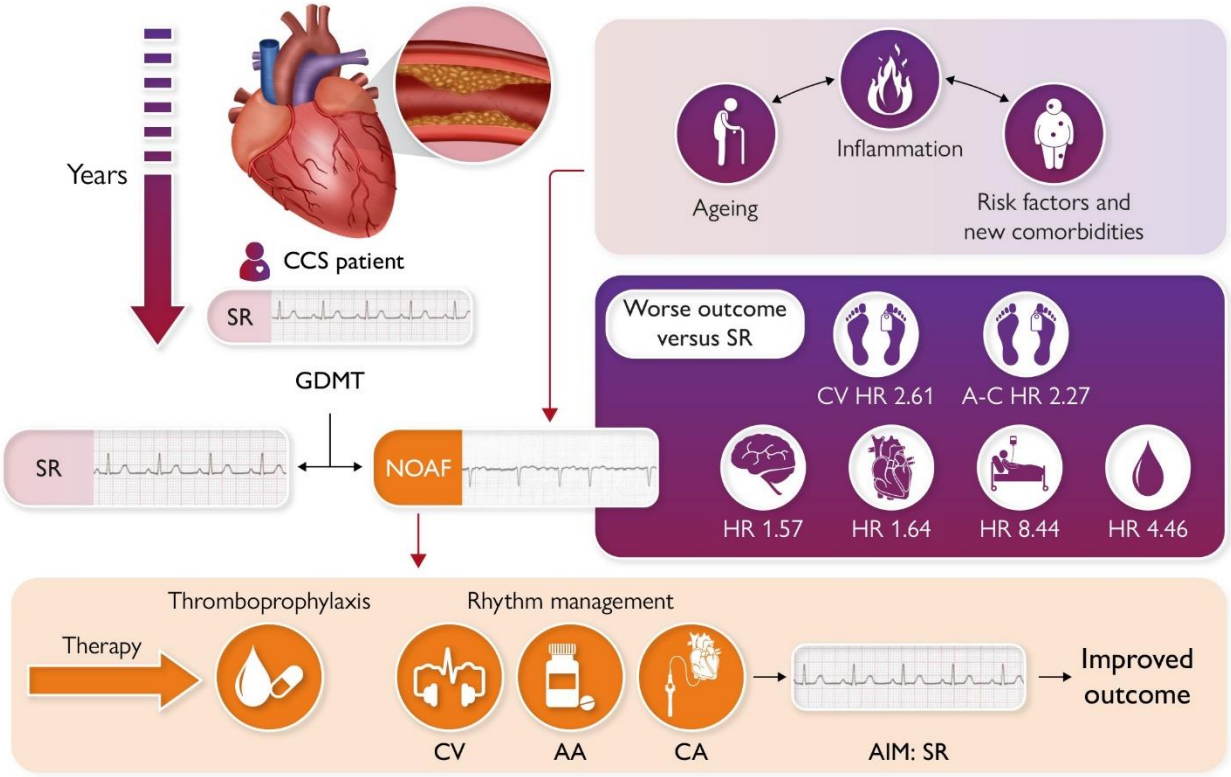
Graphical Abstract Adverse prognosis of new-onset atrial fibrillation in patients with chronic coronary syndromes in the CLARIFY ...



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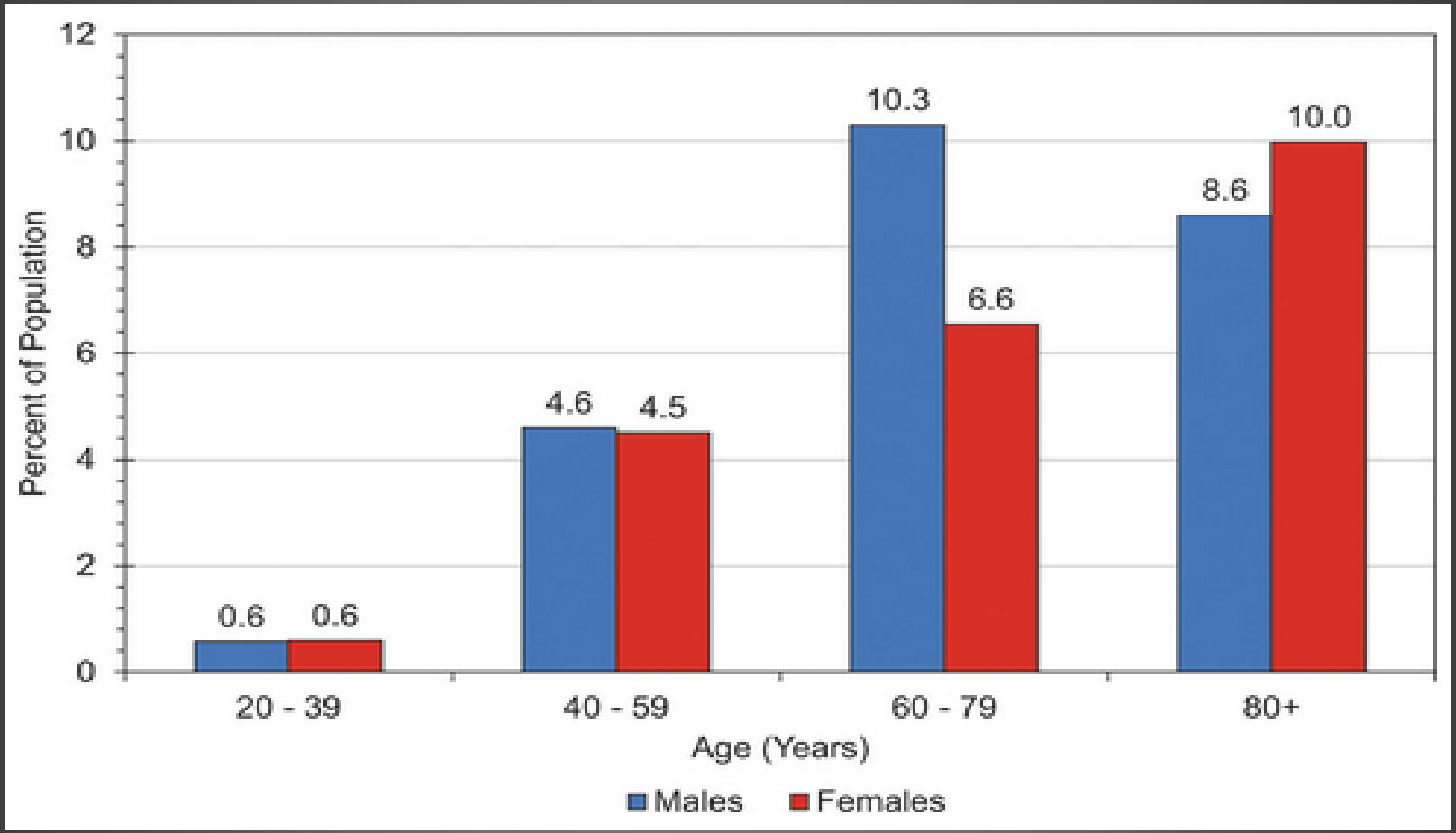
Heart Disease and Stroke Statistics-2023 Update: A Report From the American Heart Association

Prevalence of IHD by age and sex



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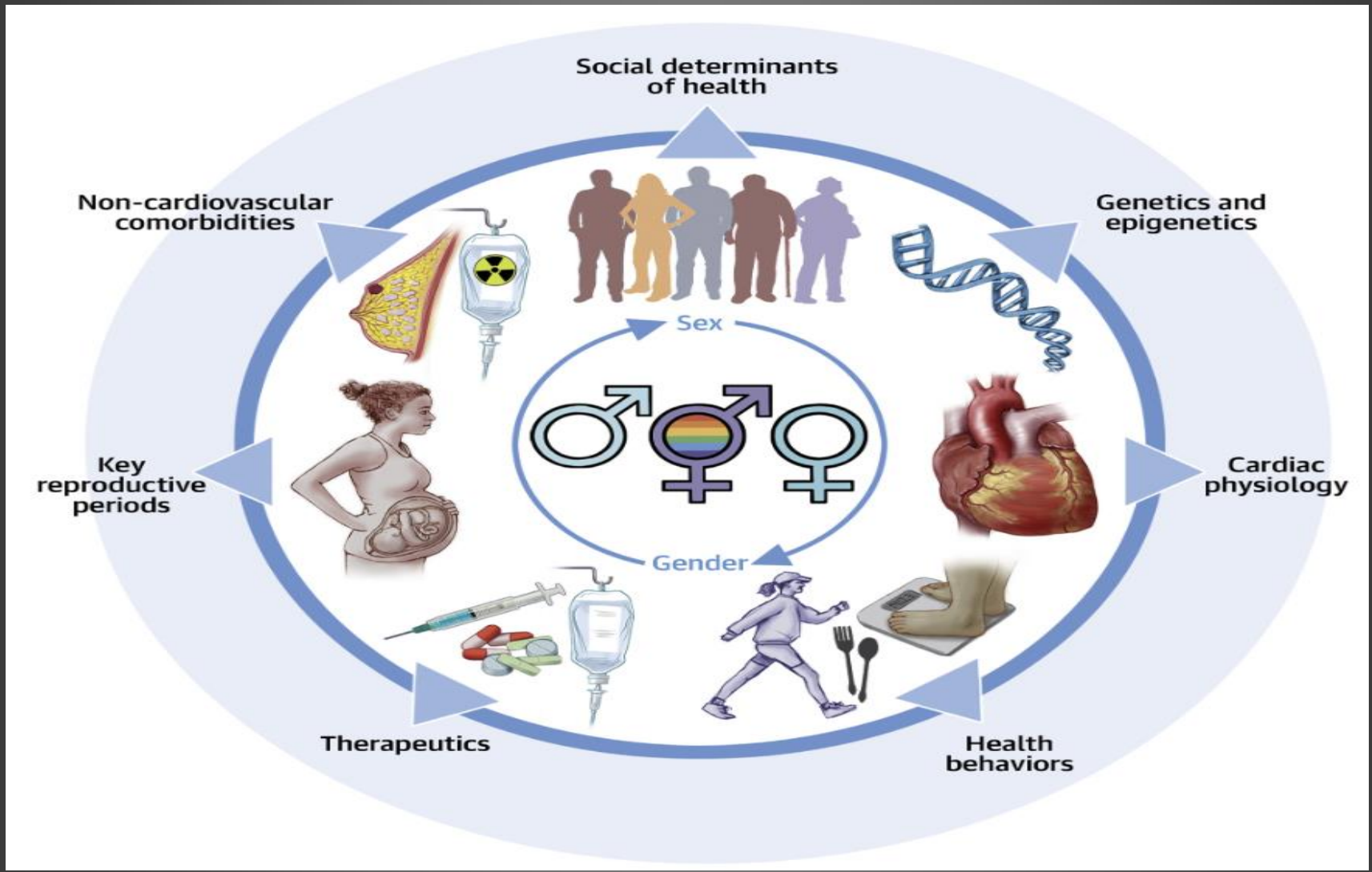
Sex-Based Differences in Heart Failure



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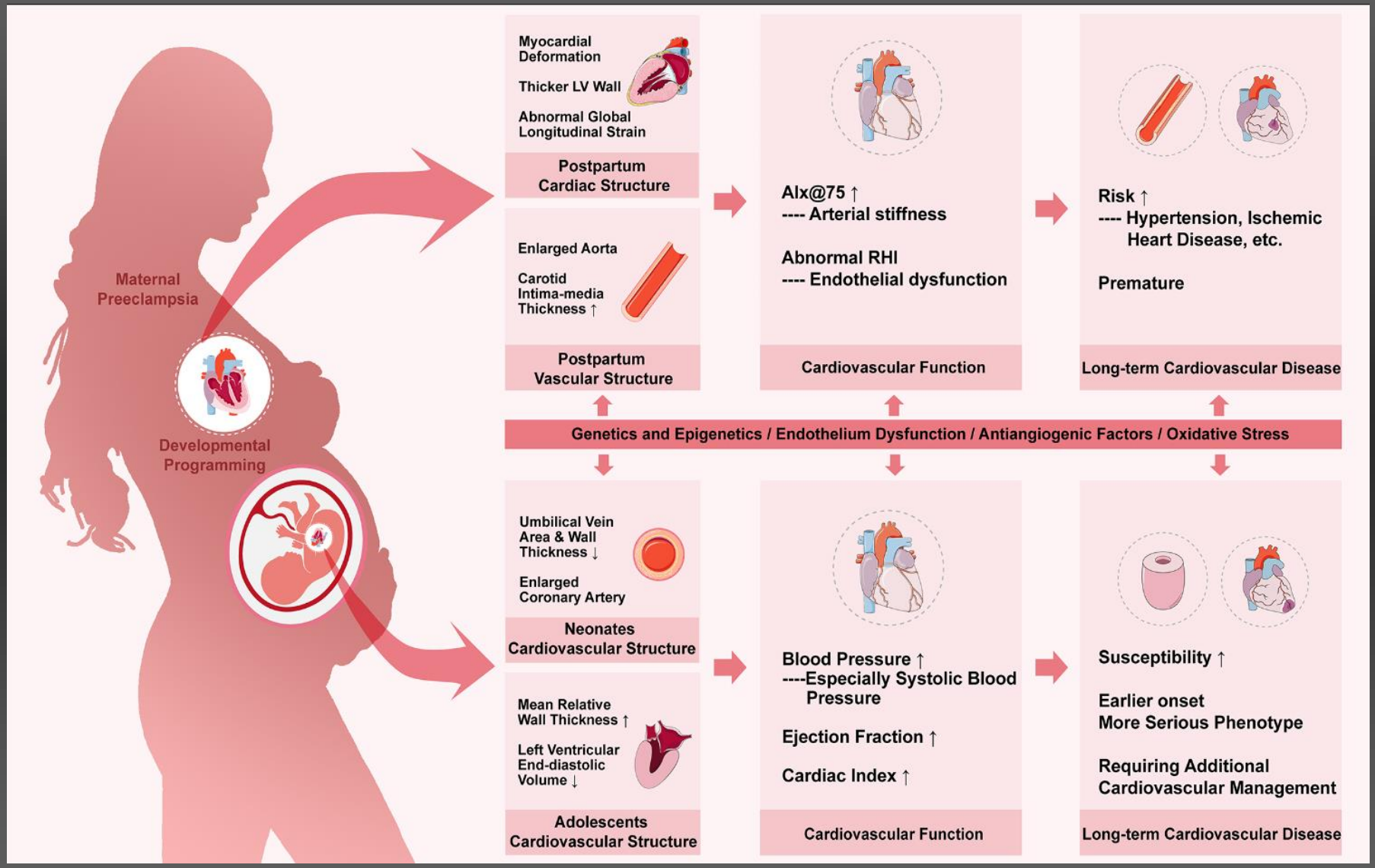
Long-Term Impacts of Preeclampsia on the Cardiovascular System of Mother and Offspring



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Sex differences in cardiovascular risk factors and disease prevention

Table 1
Female-Specific Risk Factors associated with Cardiovascular Disease.

Female-specific risk factor	CVD[f]	CHD[g]	HT[h]	Stroke	T2DM[i]
PCOS[a] [89,90,95,96]	●	—	●	—	● ● ●
POI[b] [93]	● ●	● ●	—	—	—
PIH[c] [71]	● ●	●	● ● ●	●	● ●
Preeclampsia [71]	● ●	● ●	● ● ●	● ●	● ●
GDM[d] [76,77,81]	● ●	● ●	● ● ●	—	● ● ●
Parity ≥1 [85]	● ●	—	—	—	—
Parity ≥5 [85]	● ● ●	—	—	—	—
Miscarriage ≥1 [97]	—	●	—	—	—
Miscarriage 2+/3+ [98]	—	● ●	—	—	—
Preterm birth < 37 w [84,99,100,101,102]	● ●	●	●	● ●	● ●
SGA < 10th centile[e] [82]	● ●	● ●	—	● ●	—
Stillbirth [98]	—	● ●	—	—	—

● weak association, Relative Risk (RR) between 1 and 1.5 in cohort studies ● ● moderate association, RR between 1.5 and 2.5 in cohort studies ● ● ● strong association, RR ≥ 2.5 in cohort studies.

[a] PCOS, Polycystic Ovary Syndrome, diagnosis according to the 2003 Rotterdam consensus criteria.

[b] POI, Primary Ovarian Insufficiency, defined as spontaneous (non-surgical) menopause before the age of 40 years.

[c] PIH, Pregnancy-Induced Hypertension, defined by ISSHP criteria (BP ≥ 140/90 mm Hg without significant proteinuria).

[d] GDM, Gestational Diabetes Mellitus, different criteria combined.

[e] SGA, Small-for-Gestational Age, i.e. birth weight <5th centile.

[f] CVD, Cardio Vascular Disease.

[g] CHD, Coronary Heart Disease.

[h] HT, Hypertension.

[i] T2DM, Type 2 Diabetes Mellitus.

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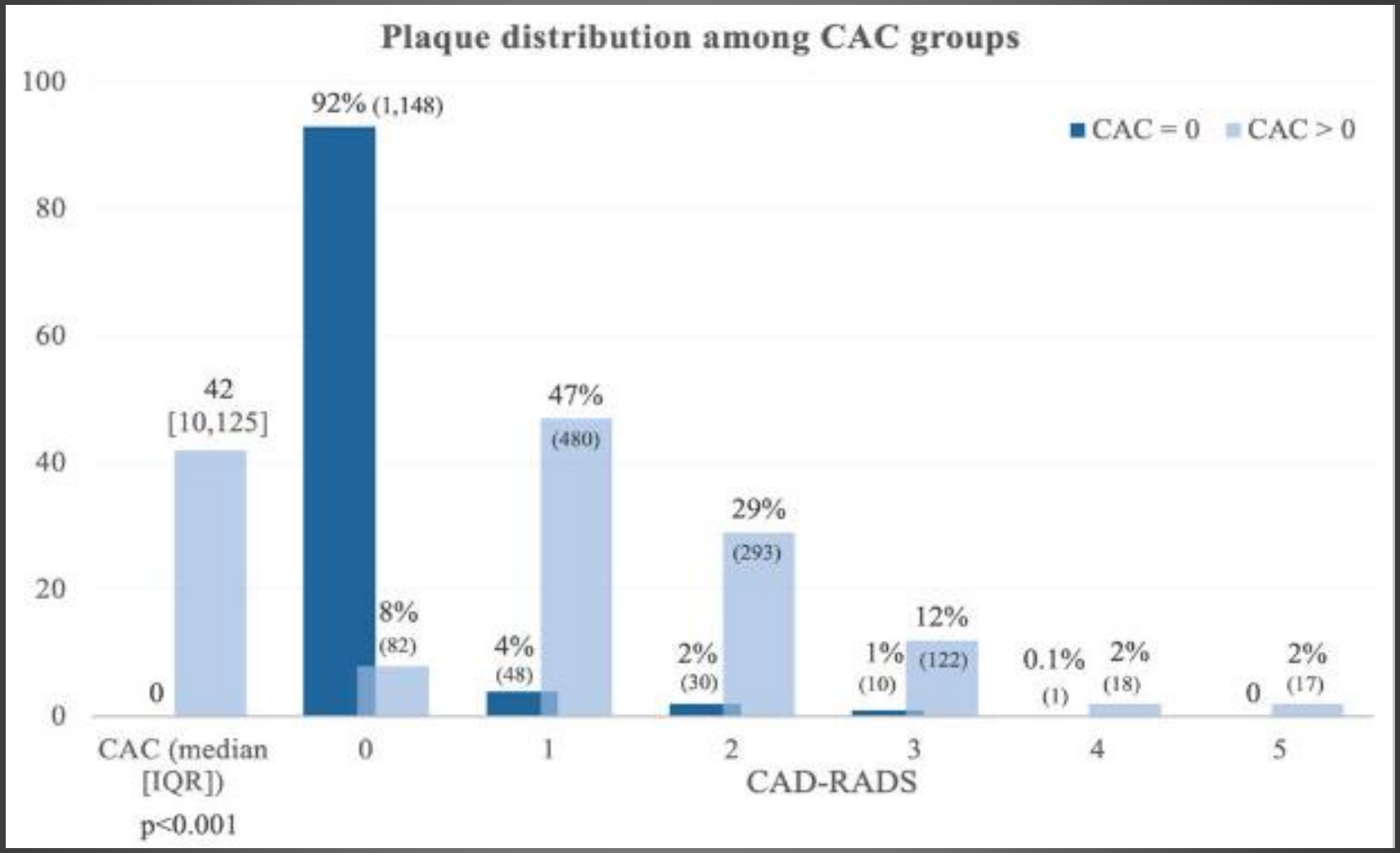
Interplay Between Zero CAC, Quantitative Plaque Analysis, and Adverse Events in a Diverse Patient Cohort

2249 patients



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2249 patients

Table 4. Multivariate Regression Analysis for Predictors of Plaque Among Zero CAC Patients

	OR (95% CI)	*P* value		OR (95% CI)	*P* value
Age	1.03 (1.009–1.06)	0.008*	Risk factors=0	Ref.	
Male sex	2.26 (1.36–3.75)	0.002*	Risk factors=1	1.67 (0.84–3.40)	0.15
Diabetes	1.01 (0.53–1.87)	0.96	Risk factors=2	6.00 (3.24–11.6)	<0.001*
Hypertension	2.88 (1.74–4.82)	<0.001*	Risk factors≥3	5.88 (2.73–12.7)	<0.001*
Hyperlipidemia	2.15 (1.28–3.59)	0.003*			
Smoking history	1.66 (0.98–2.75)	0.053			

Risk factors considered: age, male sex, diabetes, hypertension, hyperlipidemia, and smoking history. CAC indicates coronary artery calcium; and OR, odds ratio.

*Statistically signficant.

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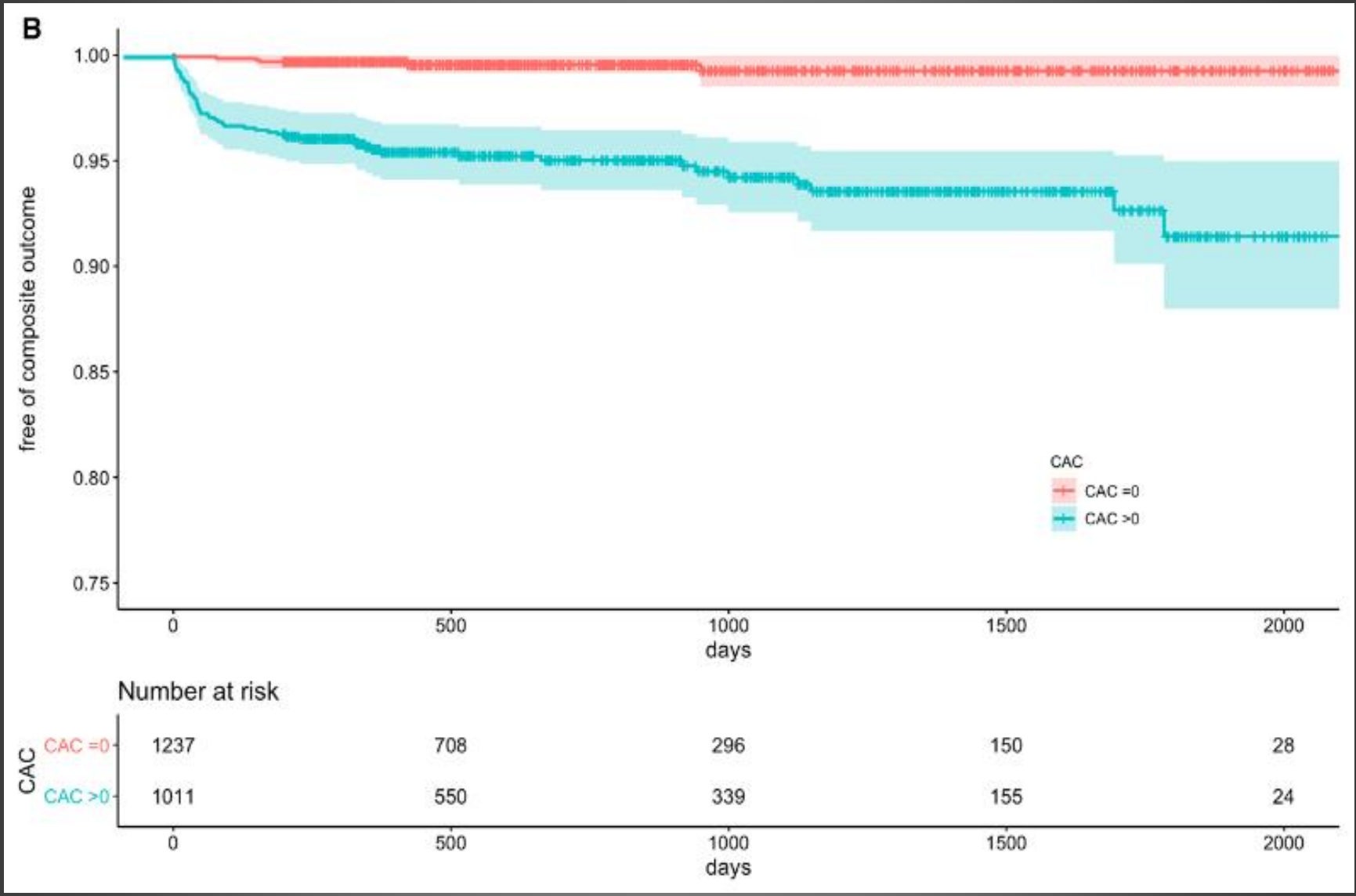

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