PCI vs. CABG
for Left Main and MultiVessel Disease

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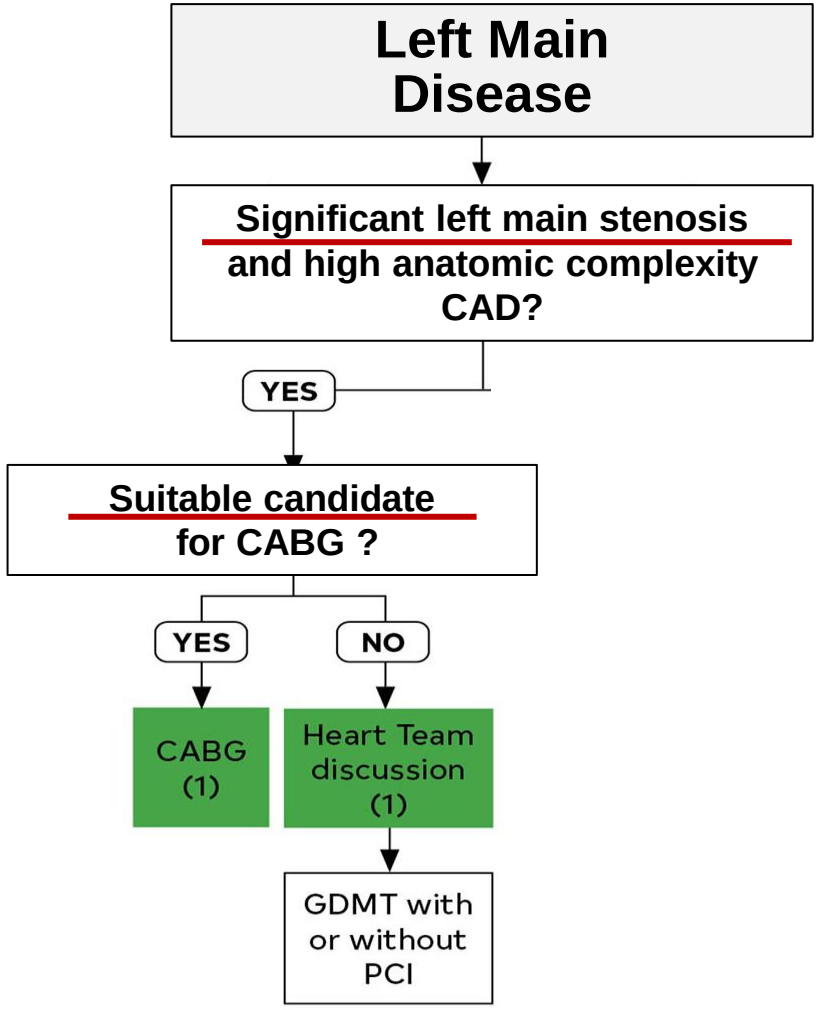
PCI vs. CABG
for LM Disease

ESC Guidelines 2018
Elective PCI for LM Stenosis

	CABG		PCI	
Recommendation according to extent of CAD	**Class**	**Level**	**Class**	**Level**
LM disease a SYNTAX score ≤ 22	**I**	**A**	**I**	**A**
LM disease a SYNTAX score 23 -32	**I**	**A**	**IIa**	**A**
LM disease a SYNTAX score > 32	**I**	**A**	**III**	**B**

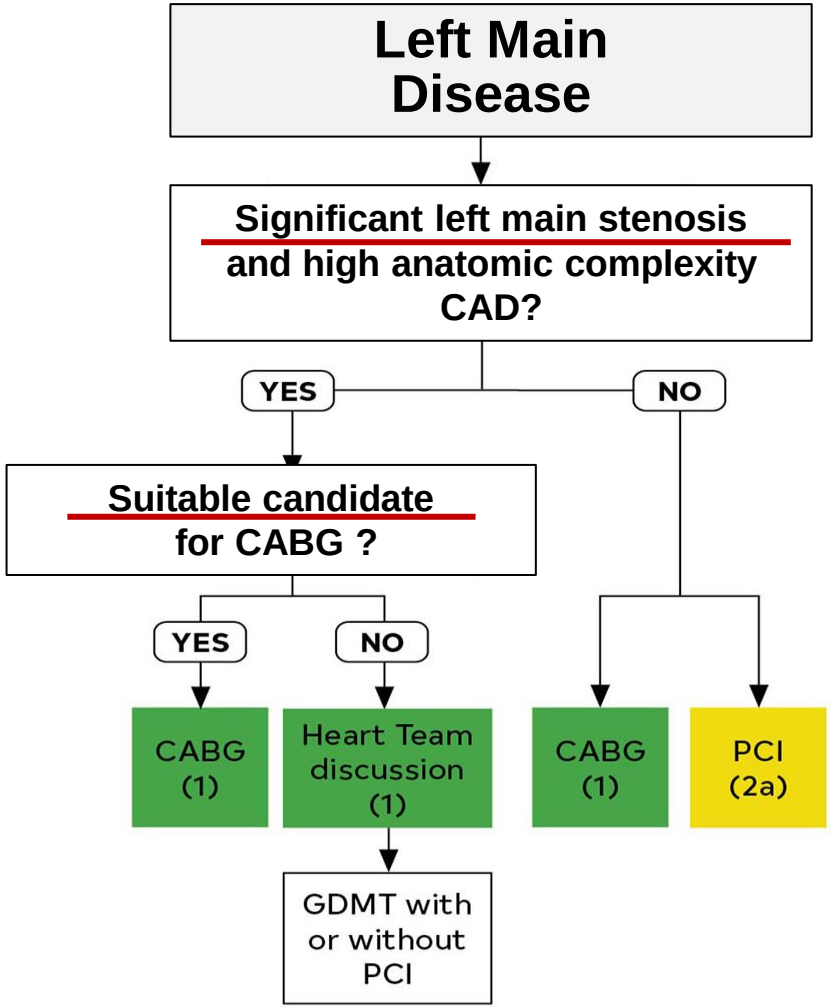
Reference; SYNTAX Study, PRECOMBAT study, MAINCOMPARE registry study and Meta-Analysis. *Patrick, SW et al, NEJM. 2009 March 5;360(10), Park SJ et al, NEJM. 2011 May 5;364(18):1718-27, Levin GN et al. ACC/AHA guidelines. JACC 2011;58:44-122, Capodanno et al, JACC 2011;58:1426-32*

2021 ACC/AHA/SCAI, Guideline for Coronary Artery Revascularization



Jennifer S. Lawton. Circulation. 2021 ACC/AHA/SCAI Guideline for Coronary Artery Revascularization:

2021 ACC/AHA/SCAI, Guideline for Coronary Artery Revascularization



Jennifer S. Lawton. Circulation. 2021 ACC/AHA/SCAI Guideline for Coronary Artery Revascularization:

PCI vs. CABG for LM Disease

Recent Data

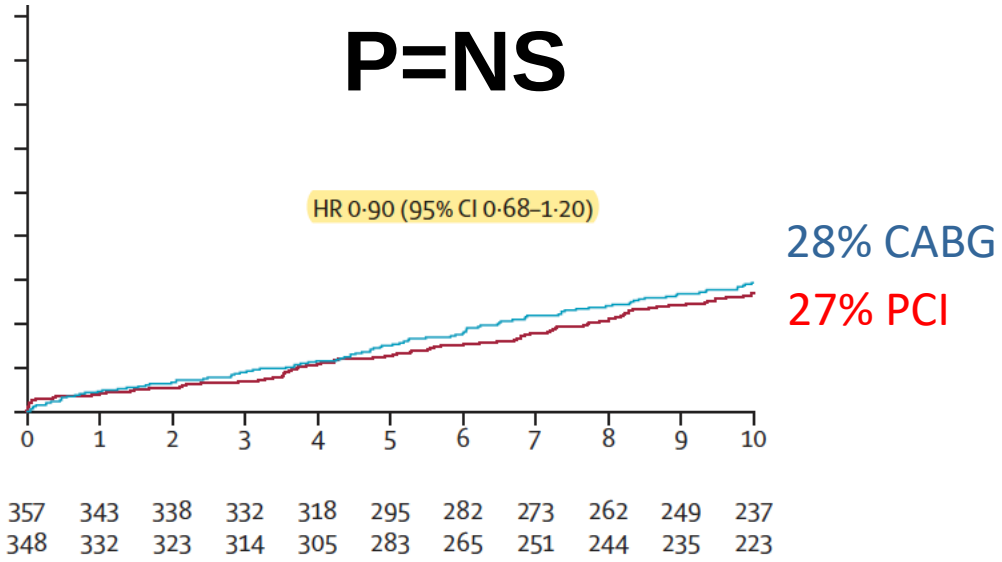
PCI vs. CABG for LM Disease

1. SYNTAX 10 years (n=1,800)
2. PRECOMBAT 10 years (n=600)
3. NOBLE 5 Year (n=1,200)
4. EXCEL 5 Year (n=1,900)
5. Combined Patient Level Meta-Analysis, 2018
6. Combined Patient Level Meta-Analysis, 2021

All Death
at SYNTAX 10-year

Left Main Disease (n=700)

P=NS



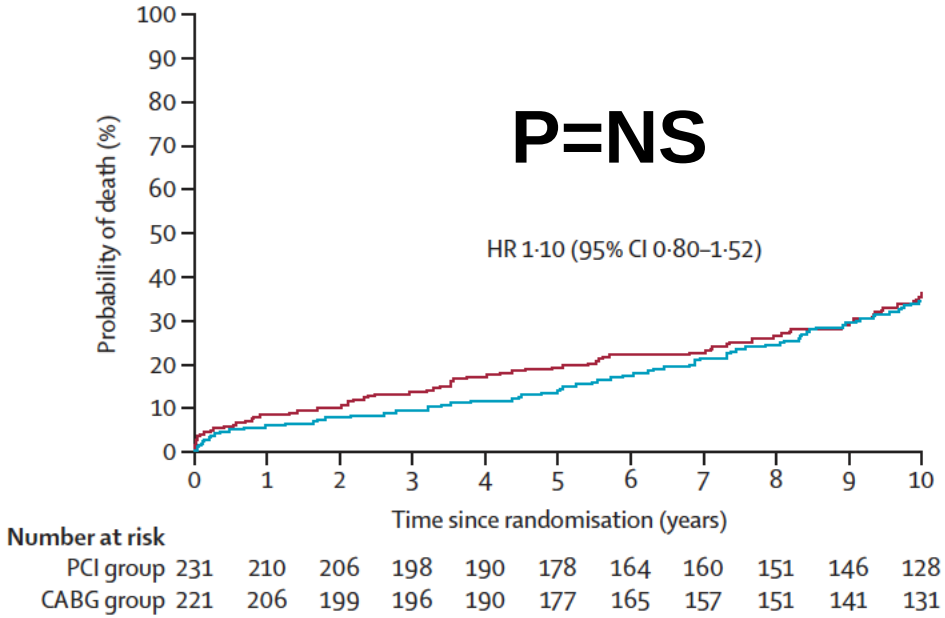
28% CABG

27% PCI

Thuijs et al. Lancet 2019

All Death
at SYNTAX 10-year

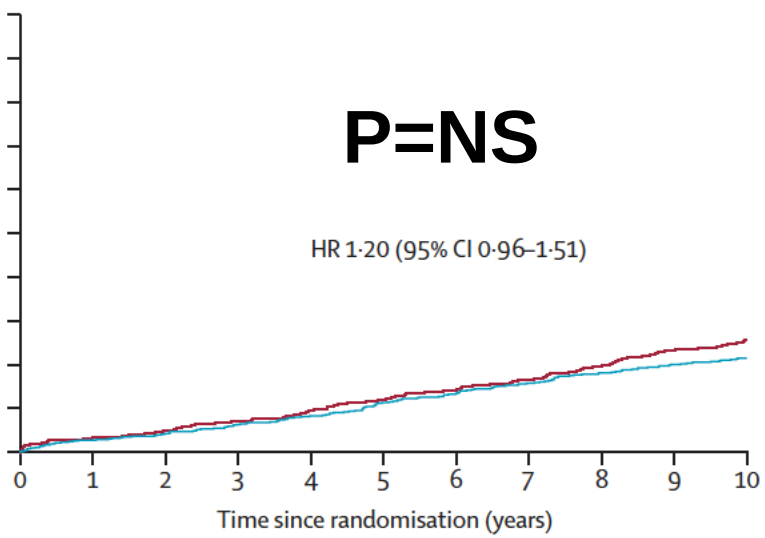
Diabetes



Number at risk

PCI group	231	210	206	198	190	178	164	160	151	146	128
CABG group	221	206	199	196	190	177	165	157	151	141	131

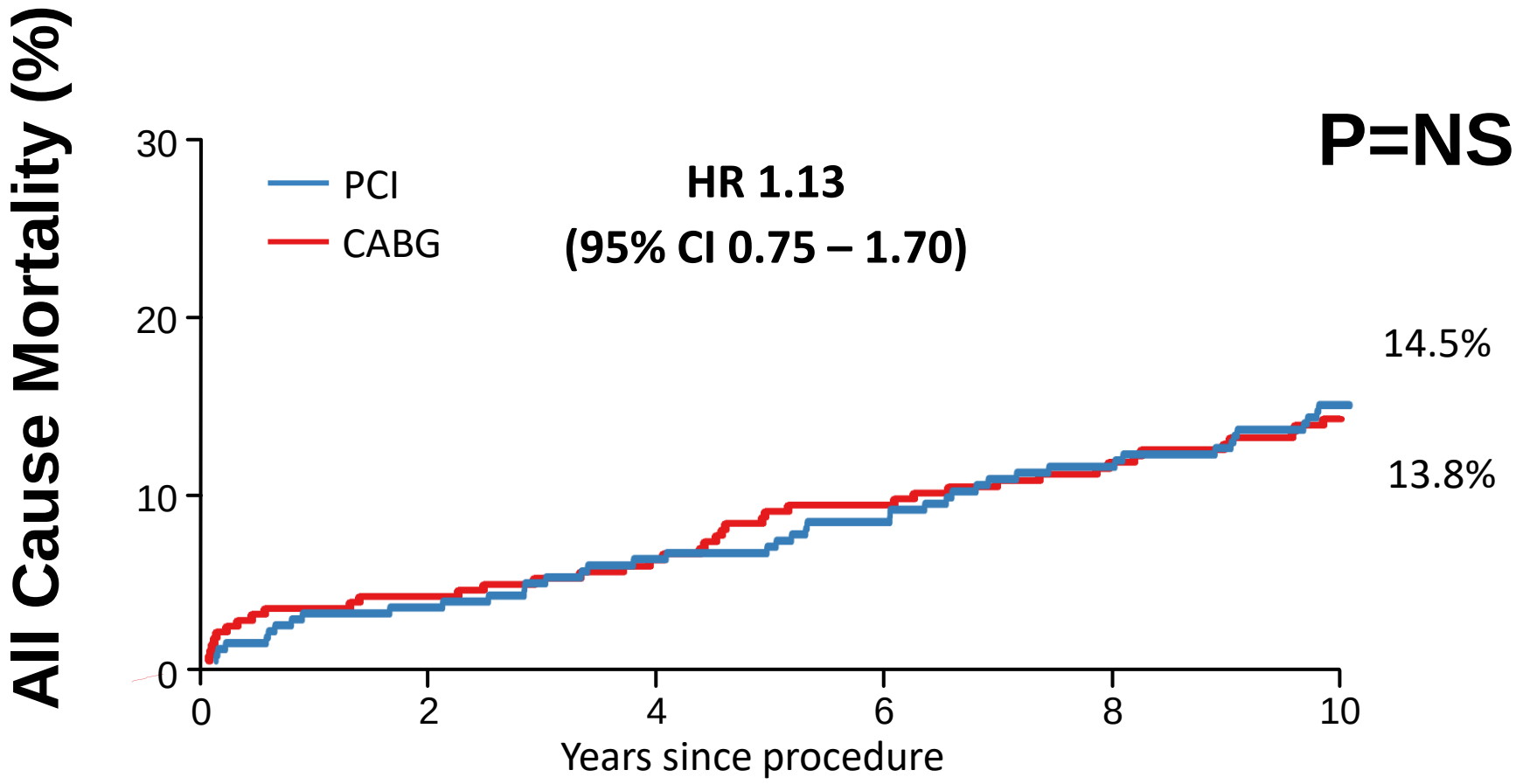
No Diabetes



	672	650	638	624	605	566	535	520	500	475	455
	676	650	639	624	609	576	546	530	515	503	489

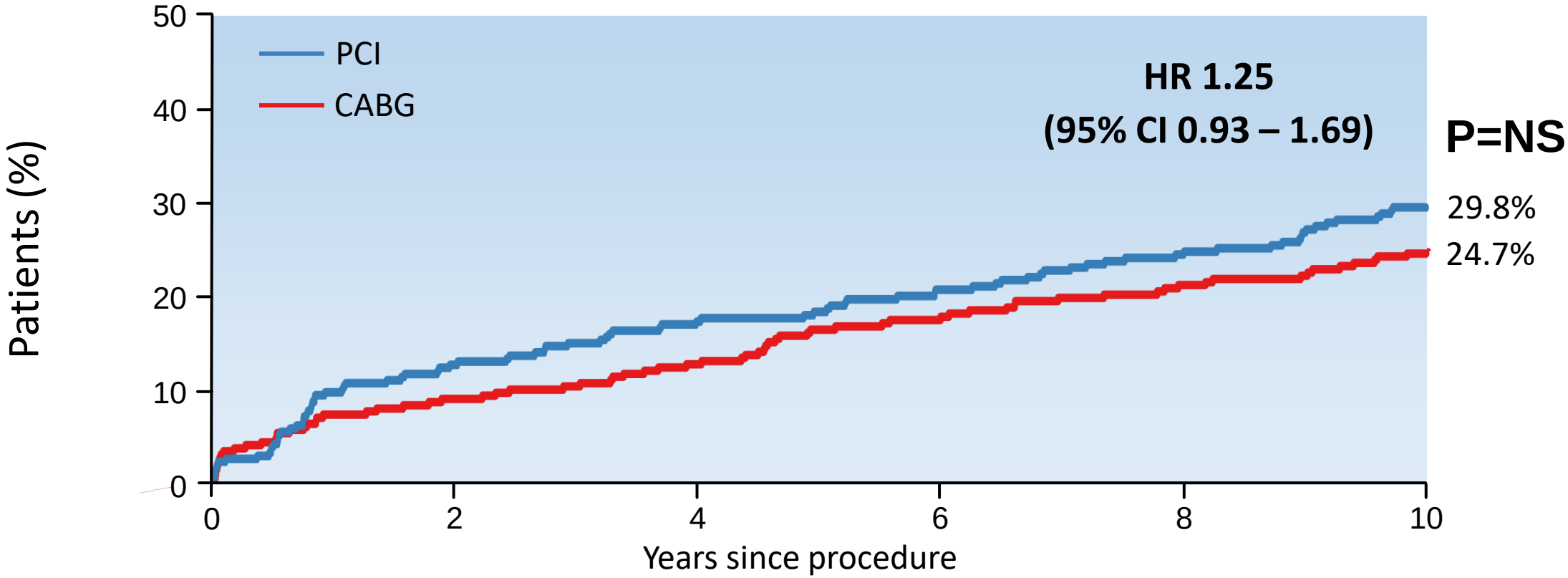
Thuijs et al. Lancet 2019

All Death
at PRECOMBAT 10-year



Park DW, Park SJ et al. Circulation 2020

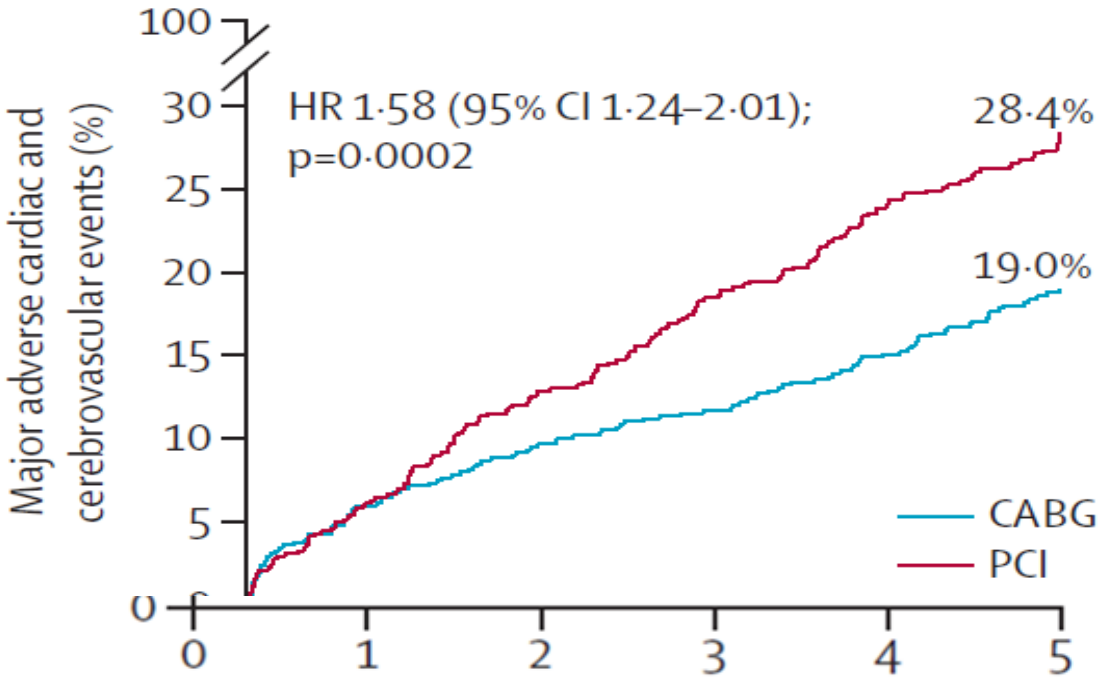
Primary Endpoint at PRECOMBAT 10-year **Death, MI, Stroke, or Ischemia-Driven TVR**



Number at risk						
PCI	300	256	239	226	214	195
CABG	300	265	253	237	227	210

Park DW, Park SJ et al. Circulation 2020

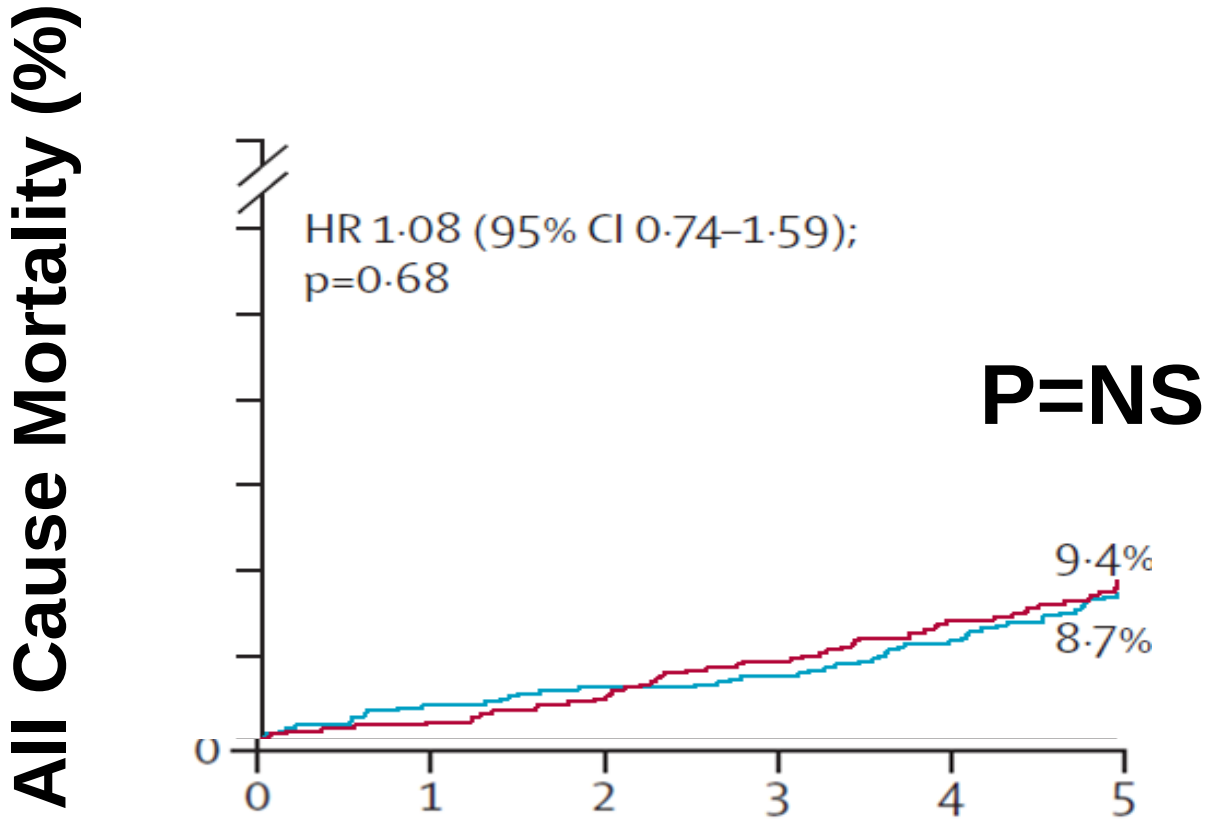
Primary Endpoint at NOBLE 5-year **Death, Non-procedural MI, Repeat Revascularization and Stroke**



P=0.0002

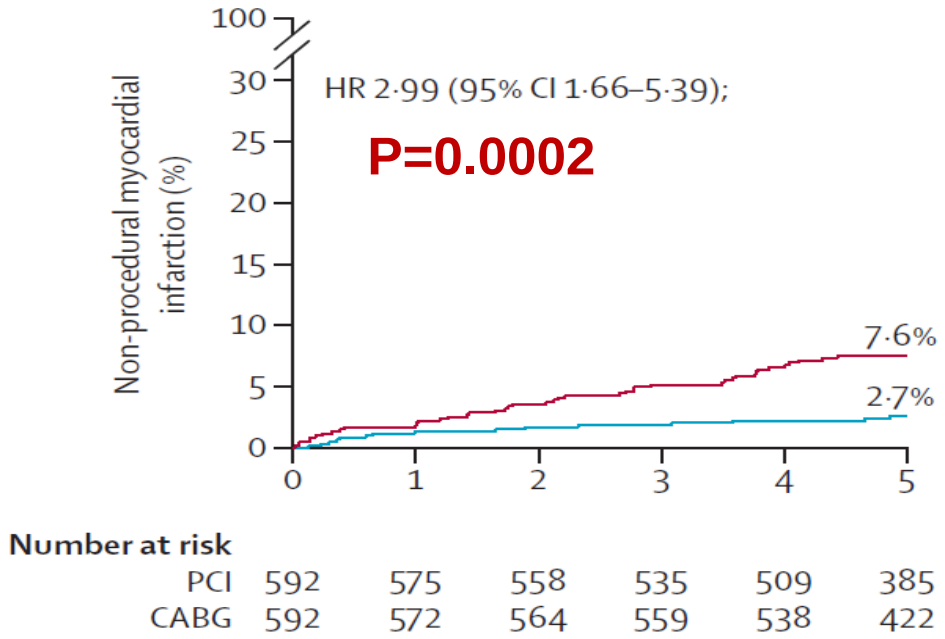
All Death

at NOBLE 5-year



NOBLE 5-year

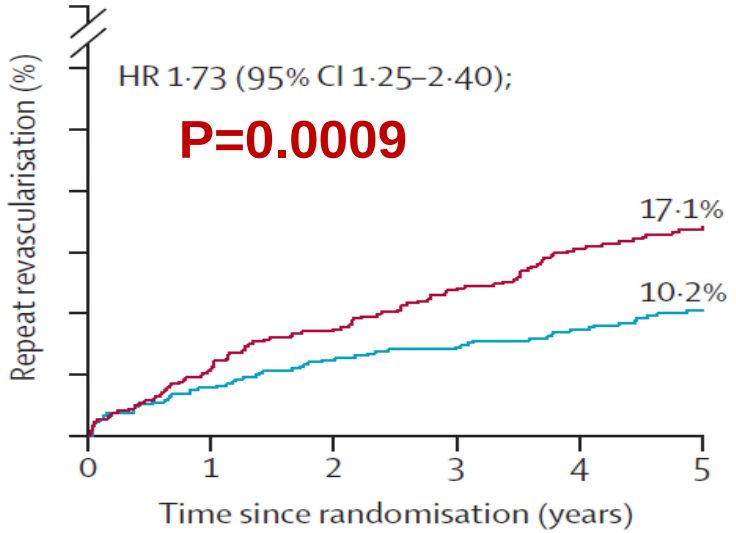
Non-Periprocedural MI



Number at risk

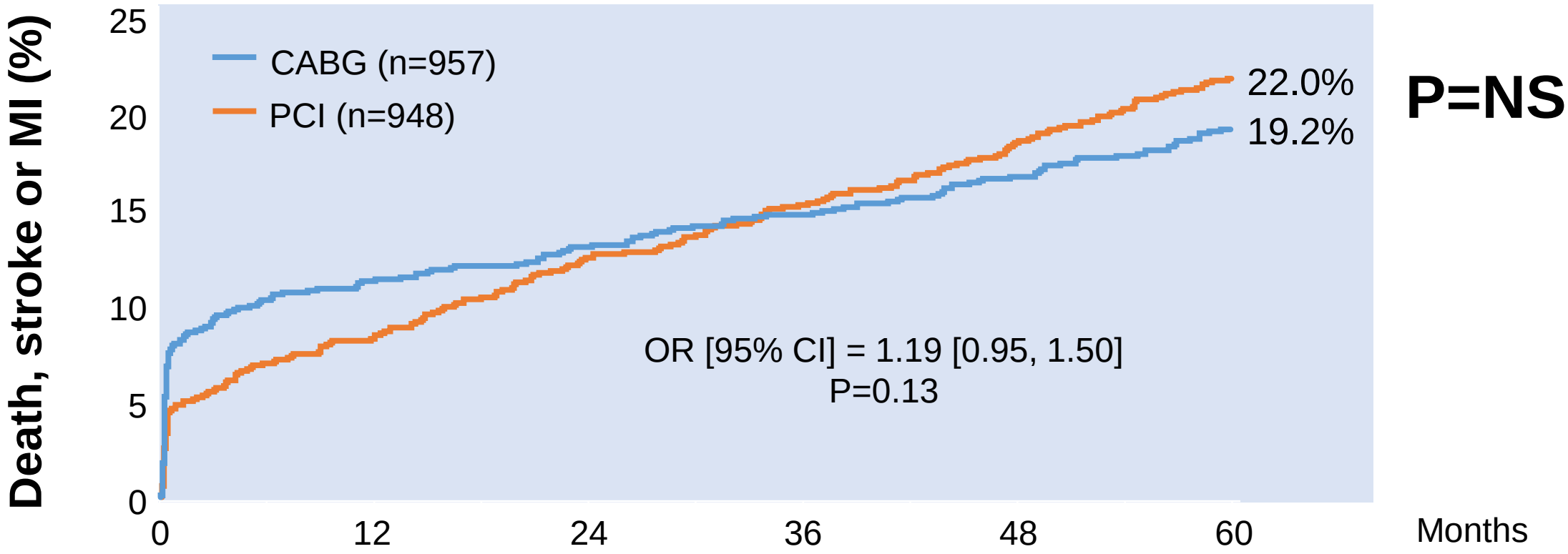
PCI	592	575	558	535	509	385
CABG	592	572	564	559	538	422

Repeat Revascularization



	592	553	528	499	463	348
	592	558	540	530	502	387

Primary Endpoint at EXCEL 5-year
(All-cause Death, Stroke or MI)



P=NS

Stone GW et al. NEJM 2019:Sept 28th, on-line

Secondary Clinical Endpoint at EXCEL 5-year

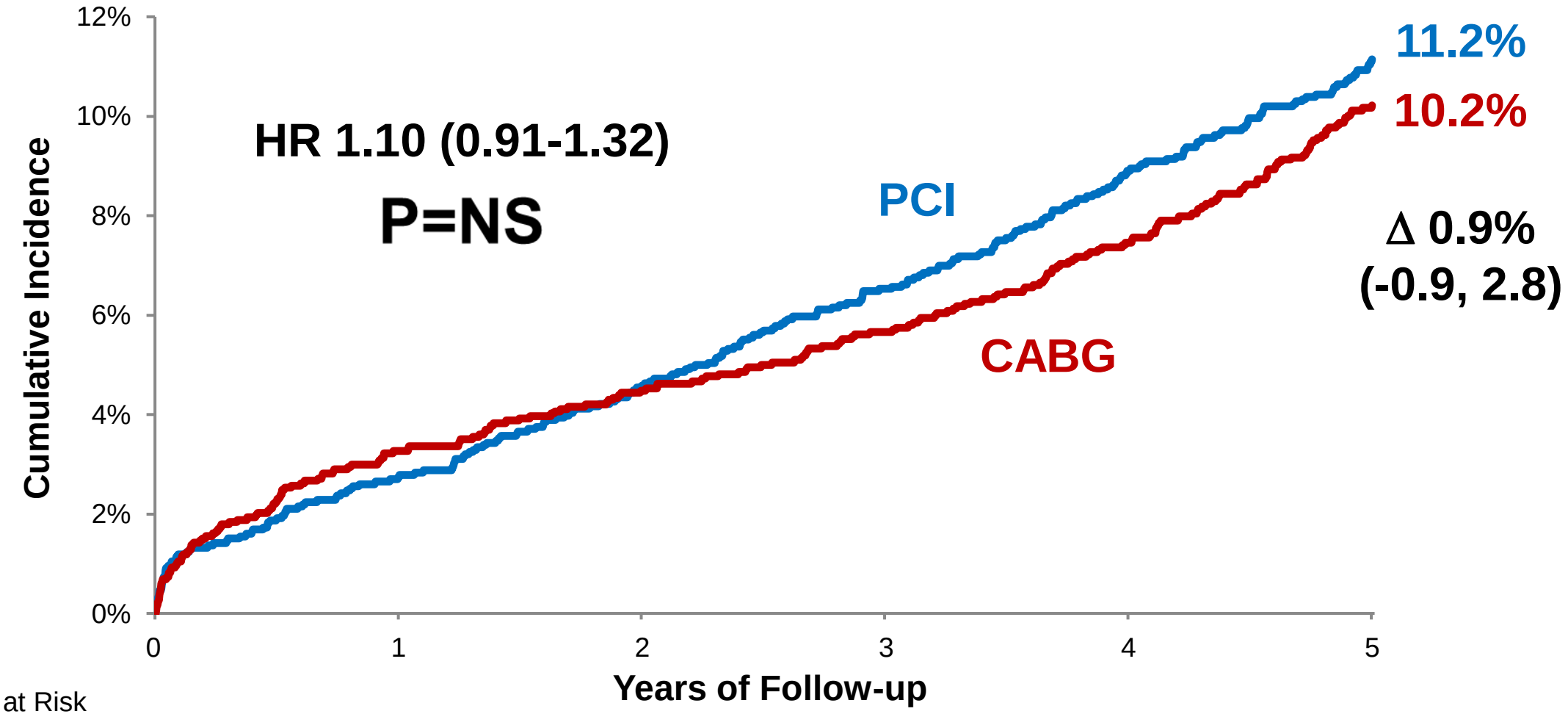
	PCI (N=948)	CABG (N=957)	Difference [95% CI]	Odds ratio [95% CI]
Death, stroke or MI	**22.0% (203)**	**19.2% (176)**	**2.8% [-0.9%, 6.5%]**	**1.19 [0.95, 1.50]**
Death, all-cause	13.0% (119)	9.9% (89)	3.1% [0.2%, 6.1%]	1.38 [1.03, 1.85]
- Cardiovascular	6.8% (61)	5.5% (49)	1.3% [-0.9%, 3.6%]	1.26 [0.85, 1.85]
- Definite cardiovascular	5.0% (45)	4.5% (40)	0.5% [-1.4%, 2.5%]	1.13 [0.73, 1.74]
- Undetermined cause	1.9% (16)	1.1% (9)	0.9% [-0.3%, 2.0%]	1.78 [0.78, 4.06]
- Non-cardiovascular	6.6% (58)	4.6% (40)	2.0% [-0.2%, 4.2%]	1.47 [0.97, 2.23]
Cerebrovascular events	3.3% (29)	5.2% (46)	-1.9% [-3.8%, 0.0%]	0.61 [0.38, 0.99]
- Stroke	2.9% (26)	3.7% (33)	-0.8% [-2.4%, 0.9%]	0.78 [0.46, 1.31]
- Transient ischemic attack	0.3% (3)	1.6% (14)	-1.3% [-2.2%, -0.4%]	0.21 [0.06, 0.74]
Myocardial infarction	10.6% (95)	9.1% (84)	11.4% [-1.3%, 4.2%]	1.14 [0.84, 1.55]
- Peri-procedural	3.9% (37)	6.1% (57)	-2.1% [-4.1%, -0.1%]	0.63 [0.41, 0.96]
- Non-peri-procedural	6.8% (59)	3.5% (31)	3.2% [1.2%, 5.3%]	1.96 [1.25, 3.06]

Meta-Analysis of 4 Randomized Trials SYNTAX, PRECOMBAT, NOBLE, and EXCEL

4394 patients, were randomly assigned to PCI (n=2197) or CABG (n=2197) with a median SYNTAX score of 25·0 (IQR 18·0-31·0)

Sabatine MS et al. Lancet 2021;398:2247-57

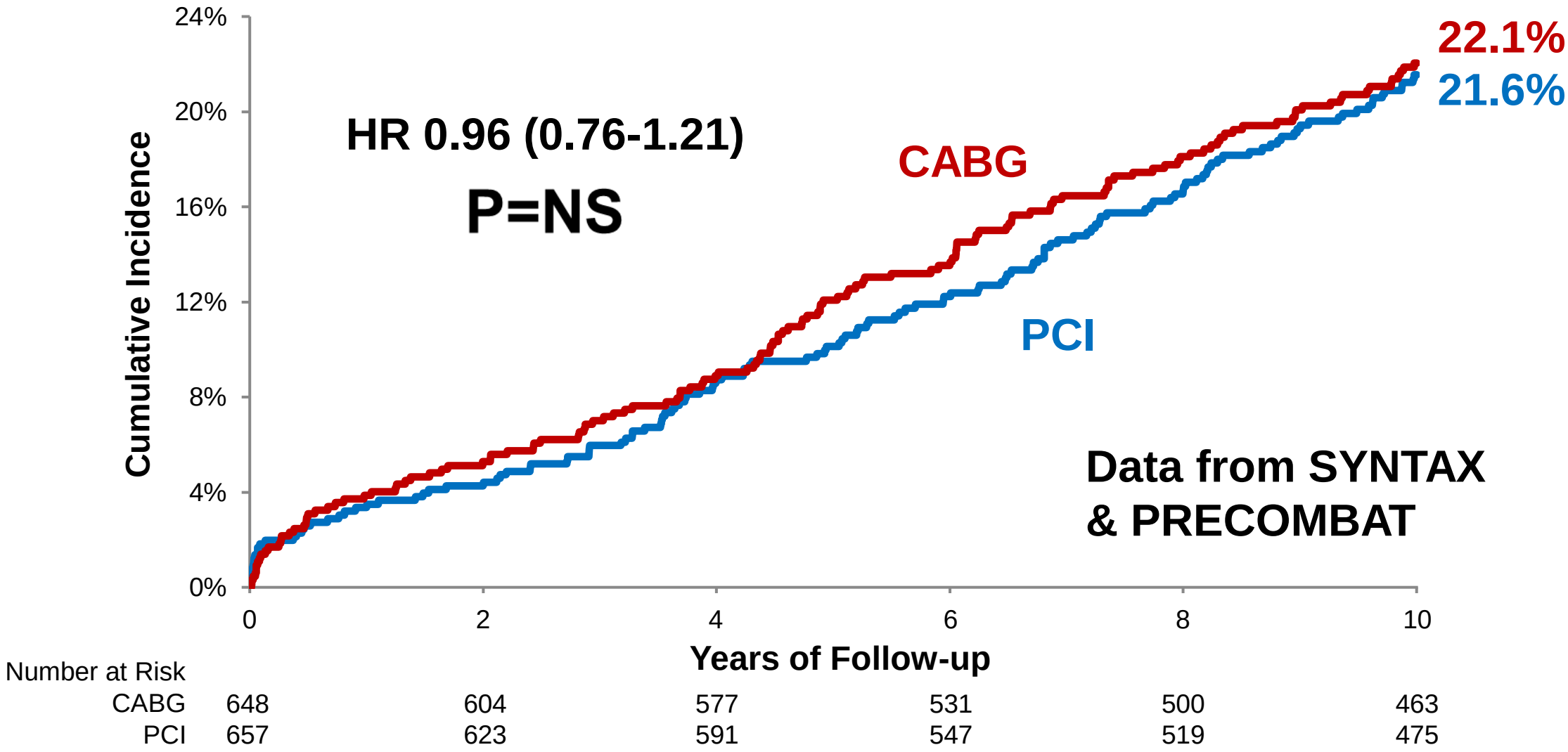
All Death at 5-Year



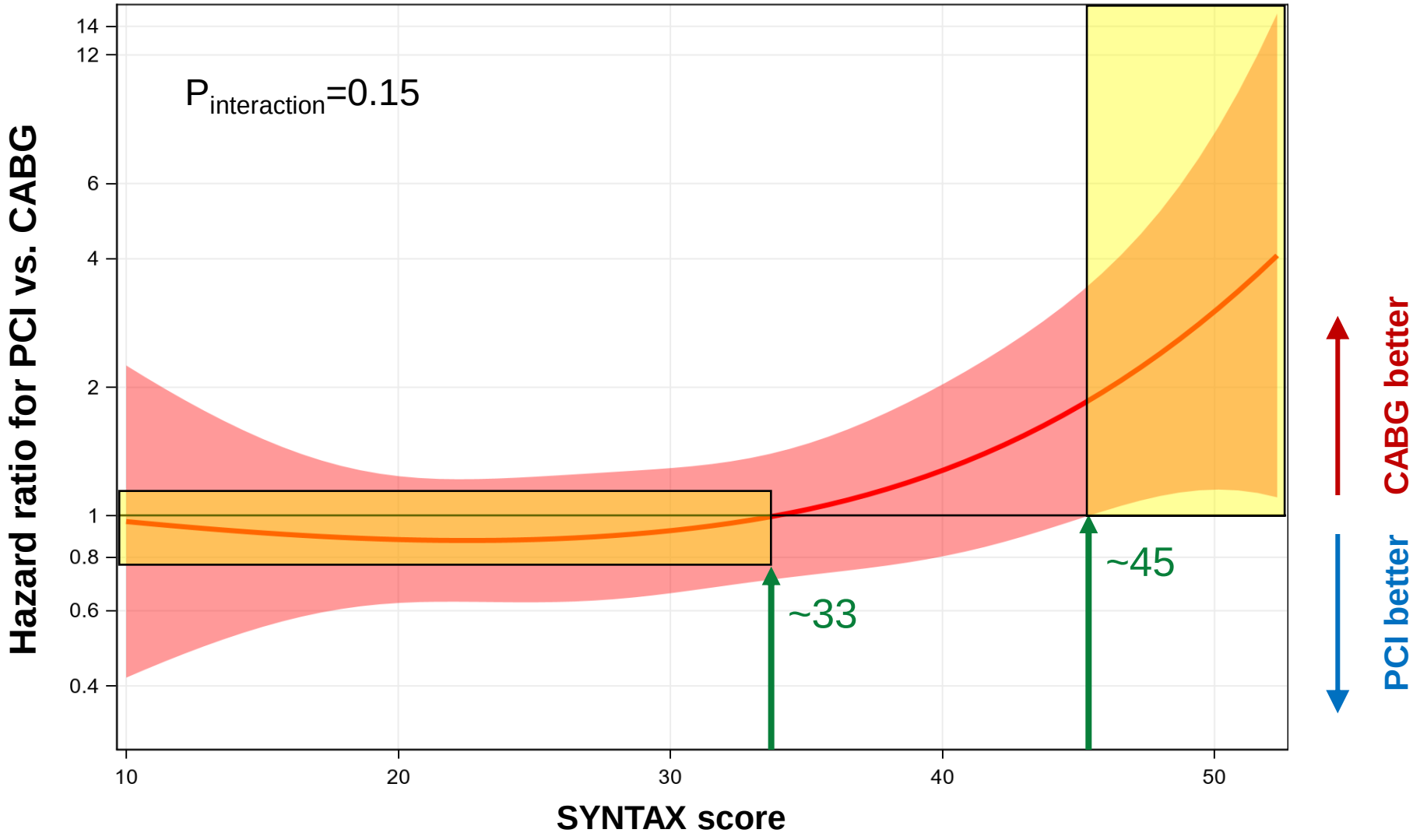
Number at Risk

CABG	2197	2085	2042	2002	1939	1585
PCI	2197	2120	2068	2015	1942	1539

All Death at 10-Year (2 trials)

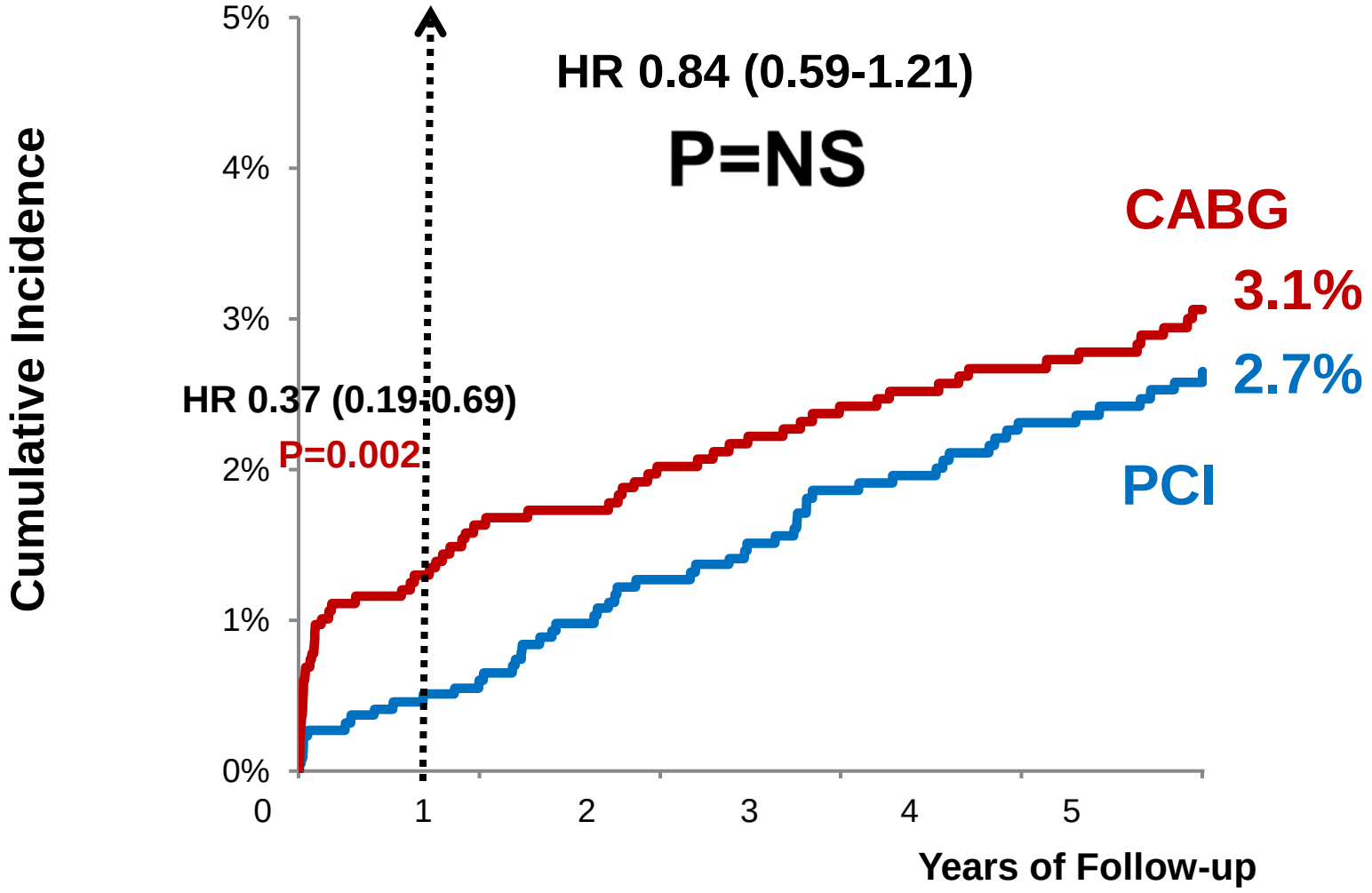


CV Mortality and SYNTAX Score: Spline analysis



Sabatine MS et al. Lancet 2021;398:2247-57

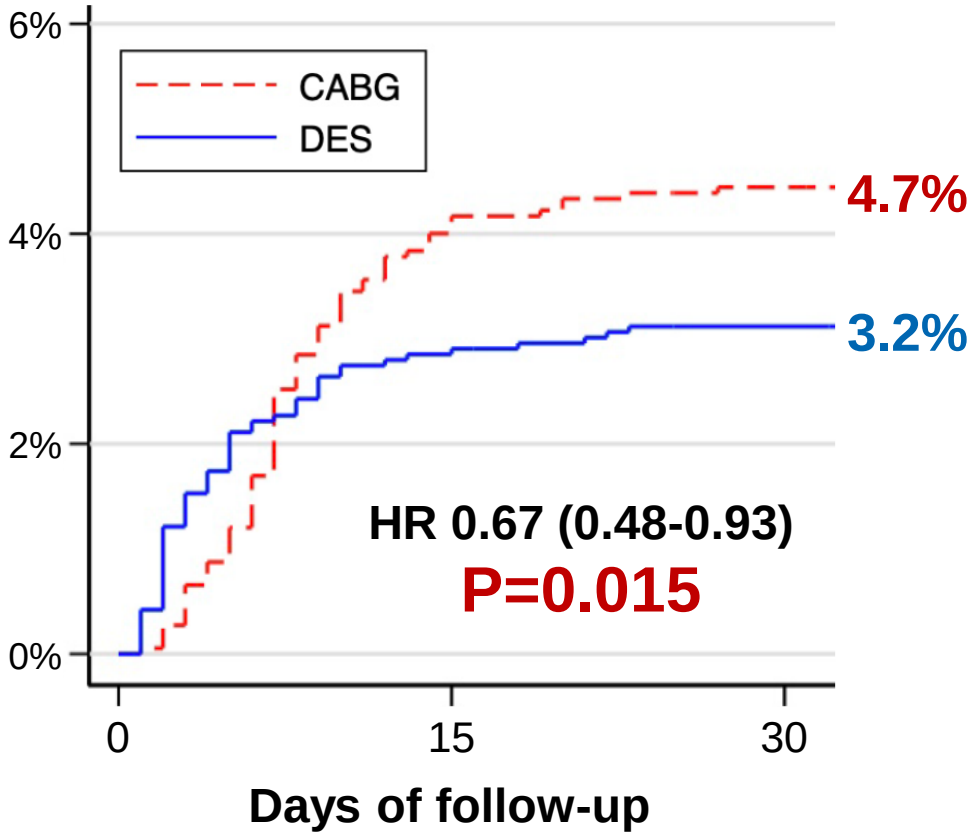
Stroke at 5-year



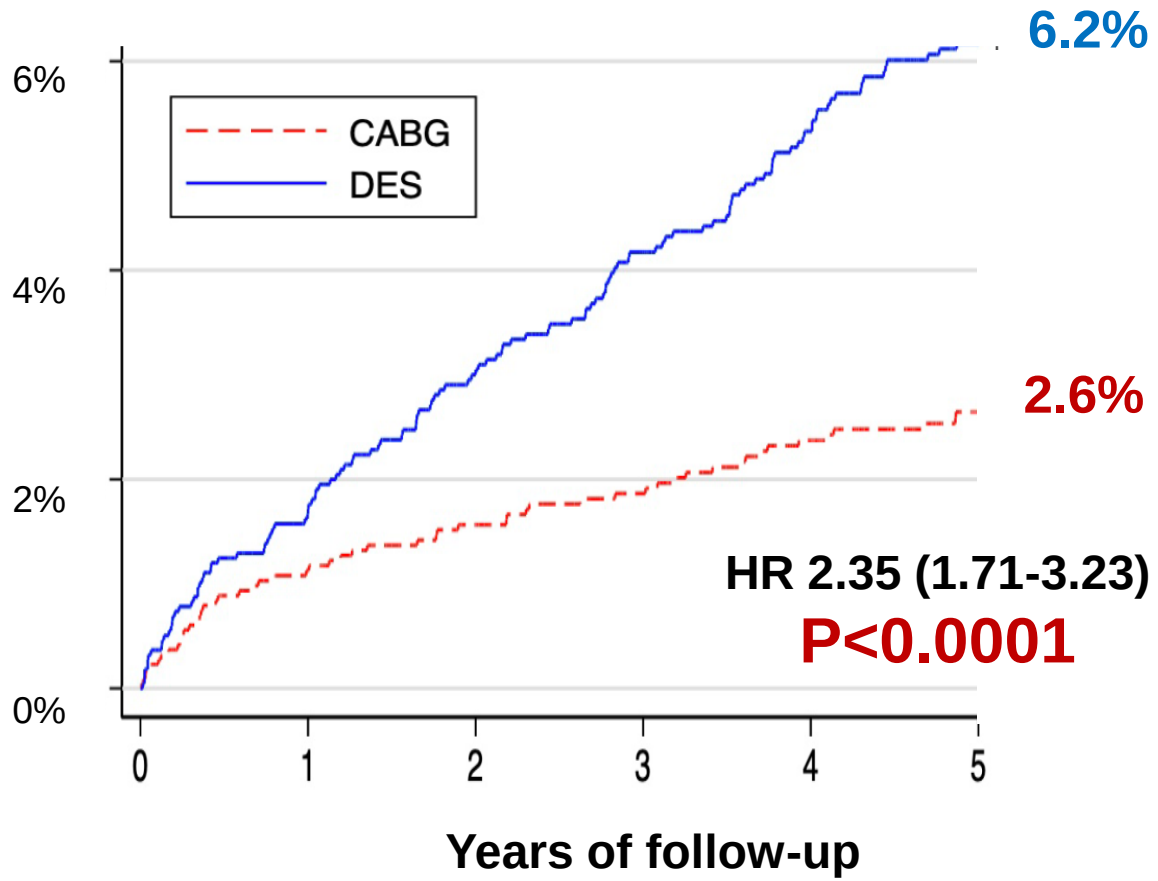
Sabatine MS et al. Lancet 2021;398:2247-57

Procedural and Spontaneous MI at 5-year

Procedural MI
(protocol definition)



Spontaneous MI



Sabatine MS et al. Lancet 2021;398:2247-57

Summary

PCI vs. CABG for Left Main Disease

1. ***No Mortality Difference !***
2. ***PCI* Has *Lower Peri-procedural Complications***
   (stroke, large MI, atrial fibrillation, bleeding, AKI, etc)
3. ***CABG* Has *Lower* Spontaneous MI and Repeat revascularization**

Summary

PCI vs. CABG for Left Main Disease

If Extensive Non-LM CAD is present

CABG may be preferred

If Multiple Comorbidities are present

PCI may be preferred.

Guadino M, Farkouh ME, Stone GW, EHJ 2022:doi: 10.1093/eurheartj/ehac216 Online ahead of print.

PCI vs. CABG for LM Disease

PCI vs. CABG
for Multi-Vessel Disease

ESC Guidelines 2018
Elective PCI for 3 Vessel Disease

	CABG		PCI	
3-VD without Diabetes Mellitus	**Class**	**Level**	**Class**	**Level**
3 VD with low SYNTAX score (0-22)	**I**	**A**	**I**	**A**
3 VD with intermediate of high SYNTAX score (>22)	**I**	**A**	**III**	**A**
3-VD with Diabetes Mellitus				
3 VD with low SYNTAX score (0-22)	**I**	**A**	**IIb**	**A**
3 VD with intermediate of high SYNTAX score (>22)	**I**	**A**	**III**	**A**

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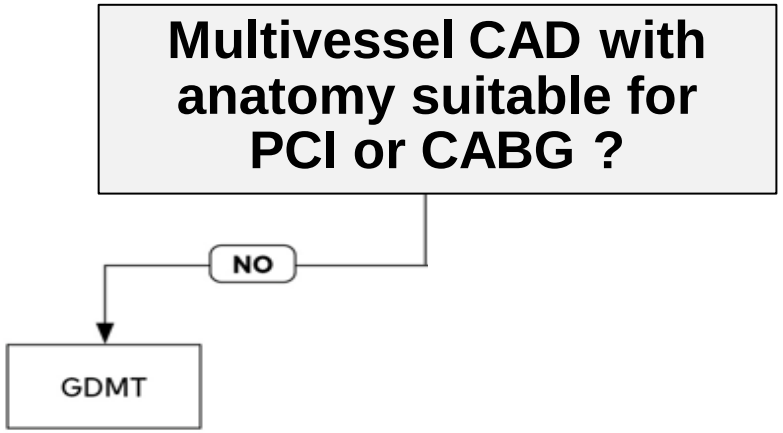

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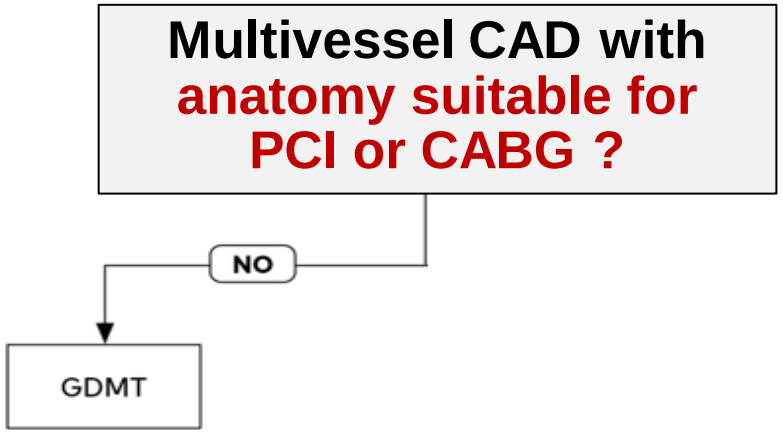


Anatomy Suitable for PCI

All Ischemic lesions,

Diameter Stenosis ≥80% and RVD ≥2.25 mm

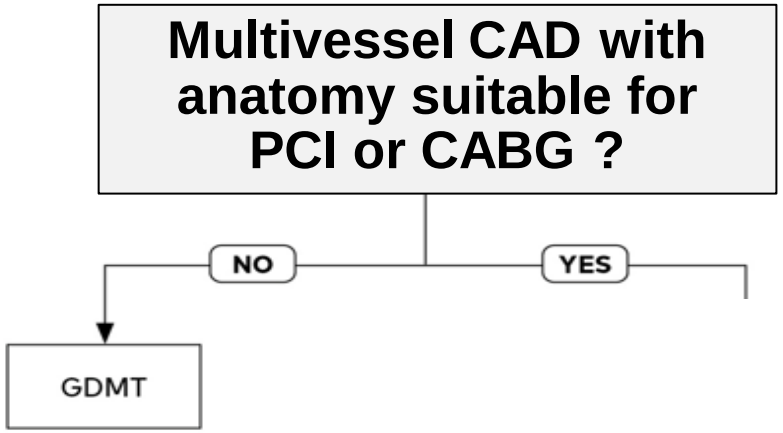
FFR and IVUS strongly recommended

Anatomy Suitable for CABG

Anatomically, all coronary arteries with ≥70% stenosis and >1.5 mm in diameter should be revascularized.

Functionally, all ischemic myocardial areas should be grafted.

2021 ACC/AHA/SCAI, Guideline for Coronary Artery Revascularization



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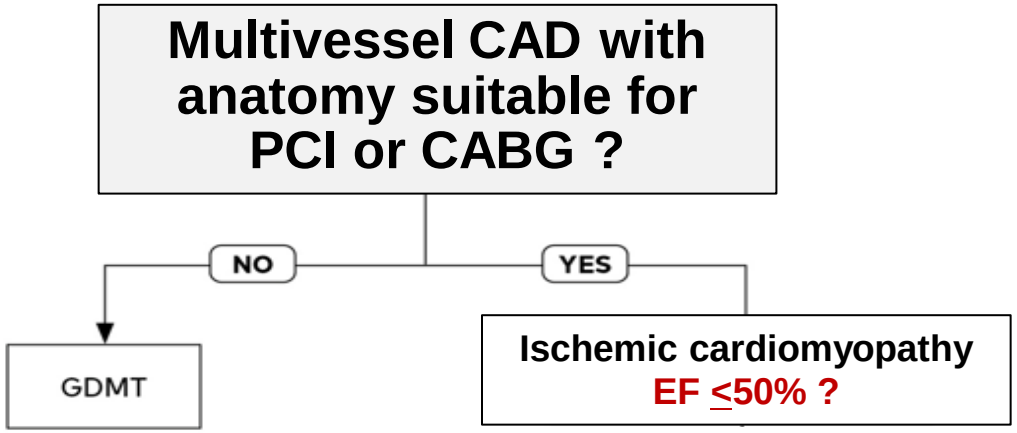

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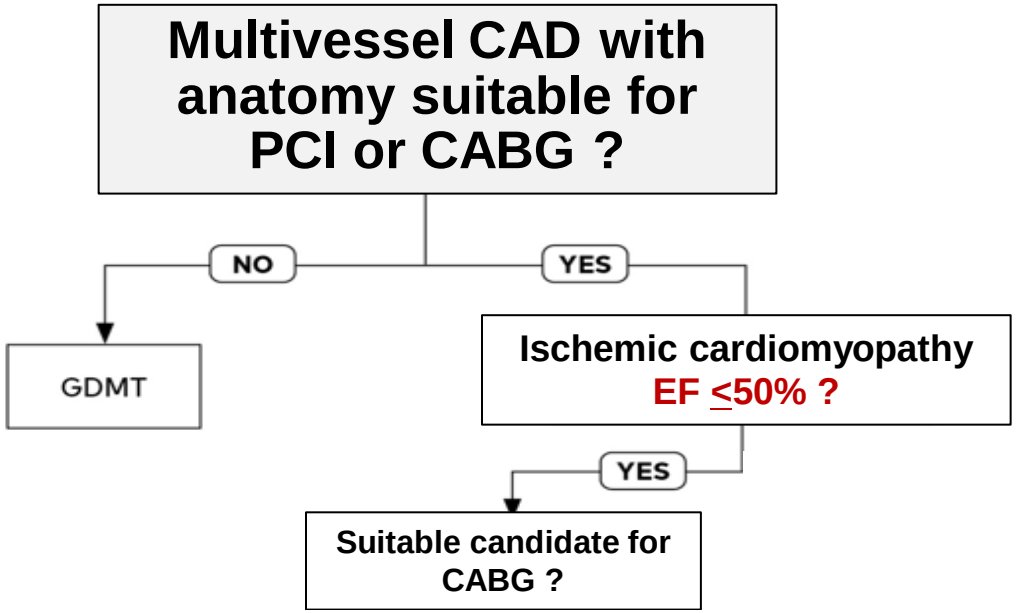

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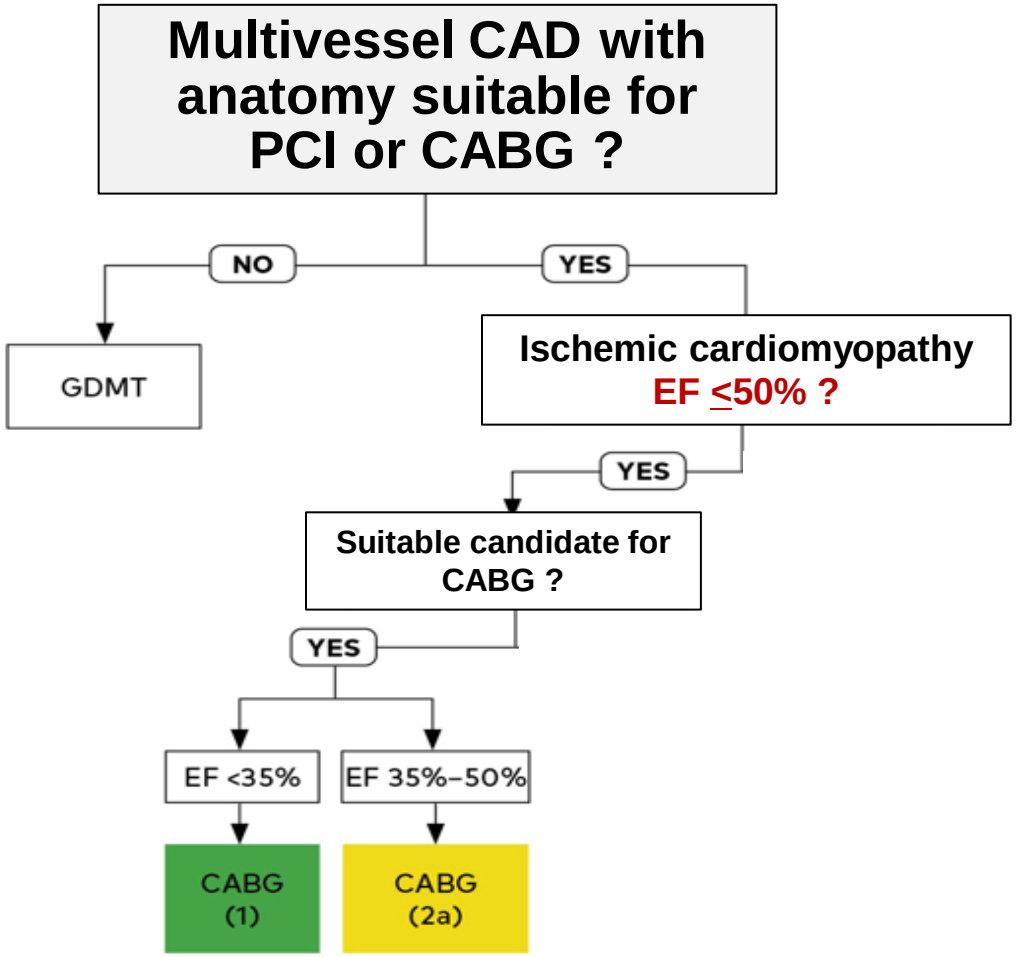

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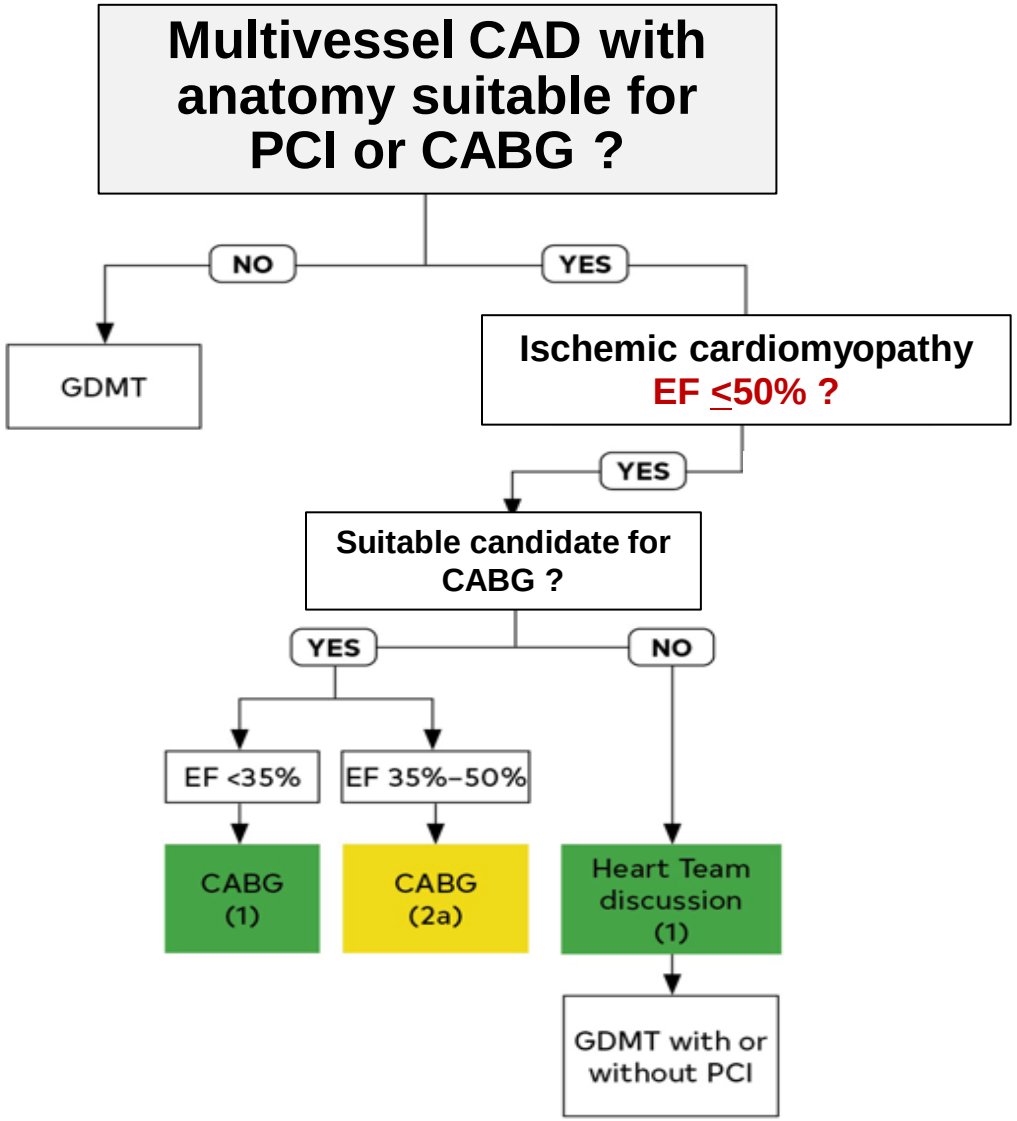

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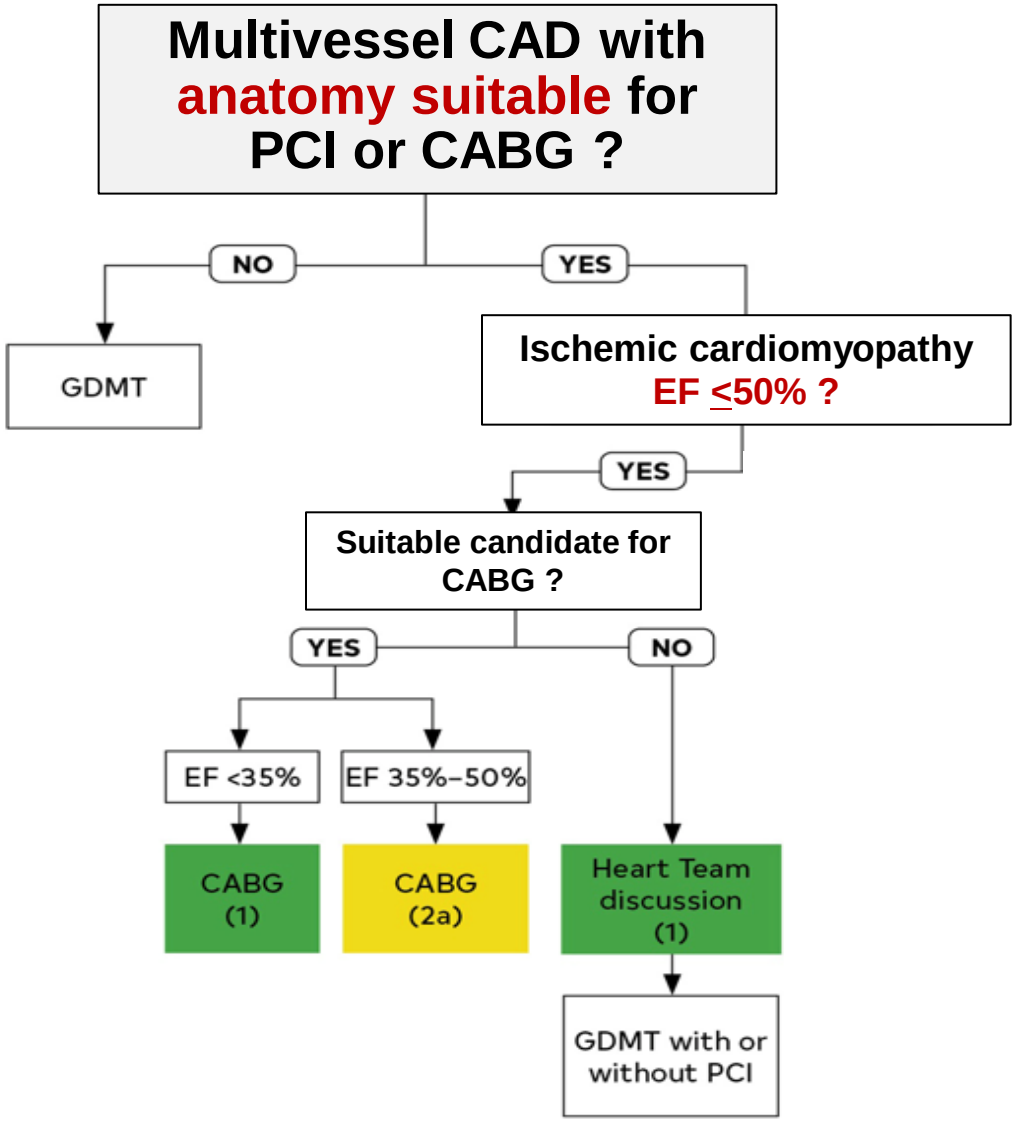

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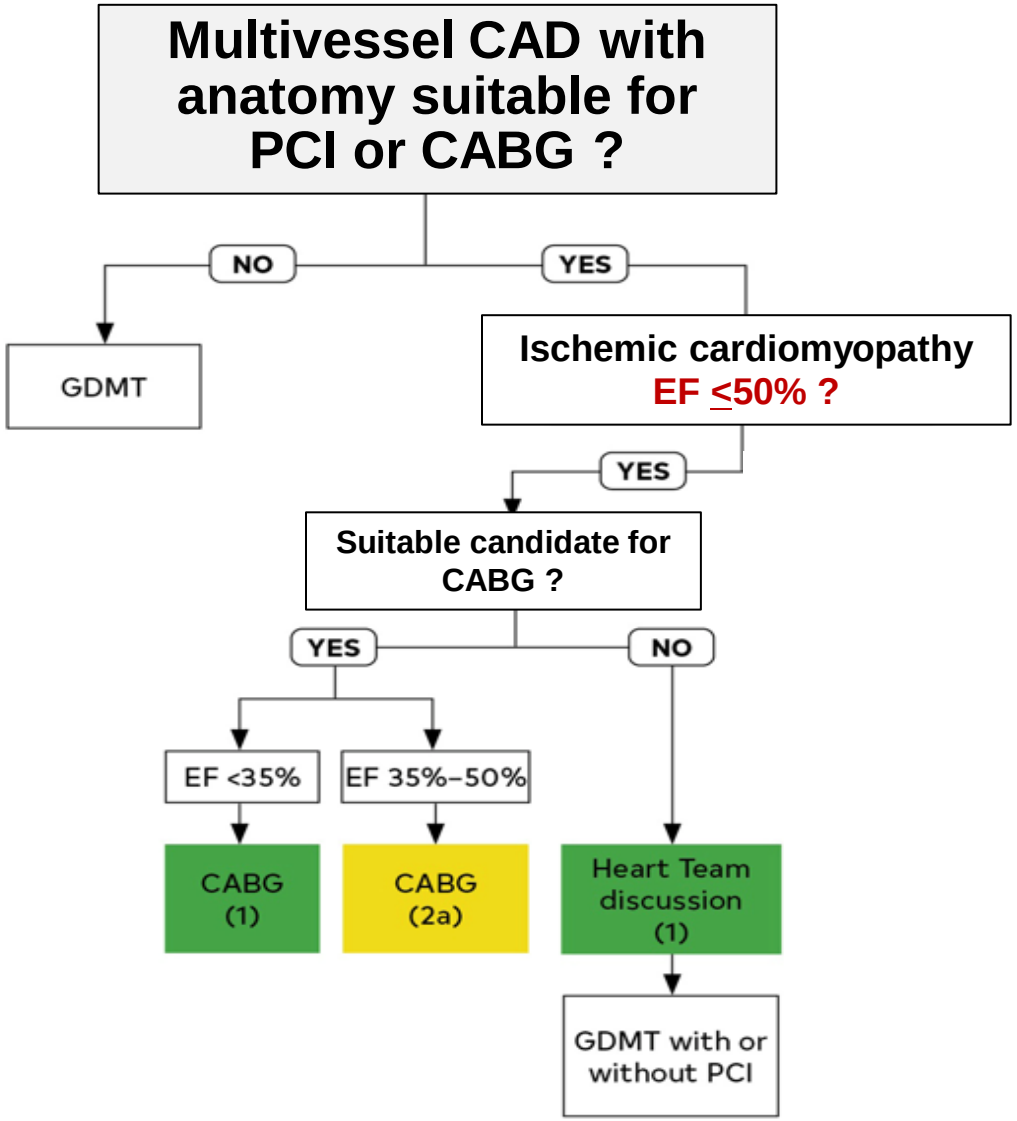


EF ≤50% and 3 Vessel Disease

CABG Is Better !

Low EF (<50%) Is

Only Important Index to Do CABG

for Multi Vessel Disease.

Underlying Data, 1

1. CASS Trial
2. STICH

Very Limited Data !

CABG vs. Medical Treatment for MVD

1st Randomized Study, CASS Trial

Coronary Artery Surgery Study (CASS): a randomized trial of coronary artery bypass surgery

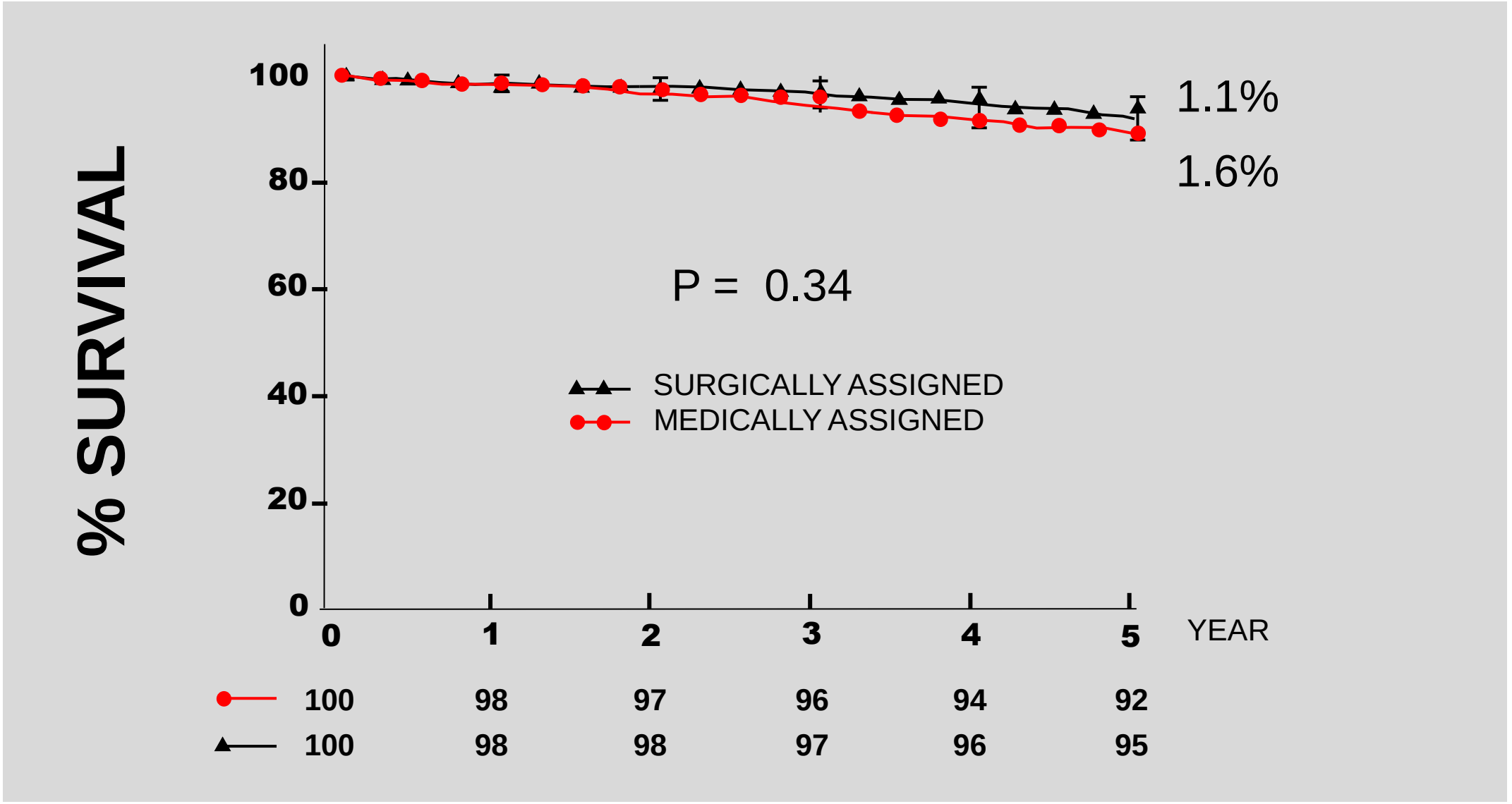
1. 780 patients,
2. Surgical (n=390) vs. Medical (n=390)
3. 70%, 1 or 2 vessel disease
4. Nitrate and Beta Blocker Available, <50%

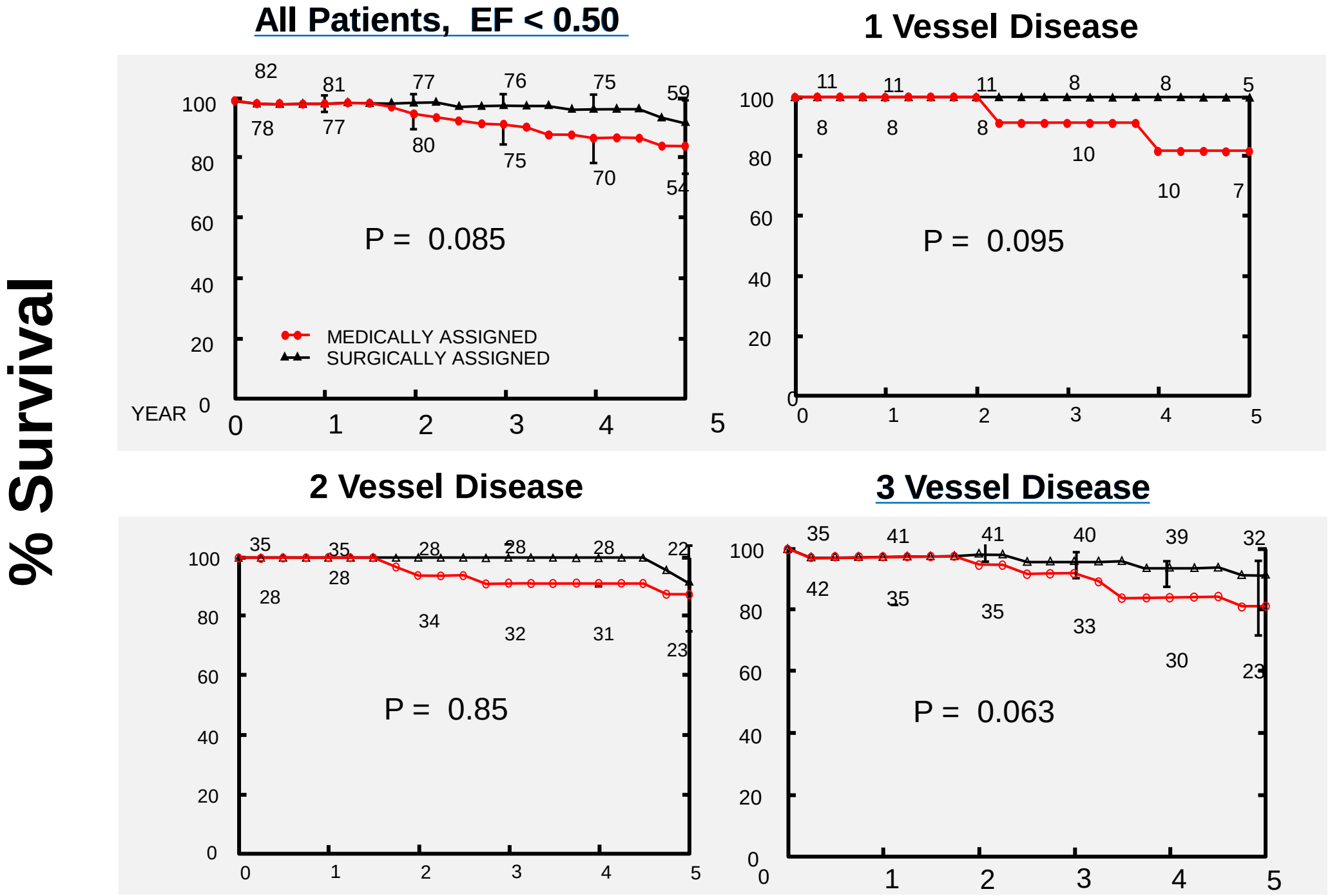
rates observed both in CASS patients assigned to receive medical and those assigned to receive surgical therapy and the similarity of survival rates in the two groups of patients in this randomized trial lead to the conclusion that patients similar to those enrolled in this trial can safely defer bypass surgery until symptoms worsen to the point that surgical palliation is required.

Circulation 68, No. 5, 939–950, 1983.

Circulation 1983 Nov;68(5):939-50. doi: 10.1161/01.cir.68.5.939.

All Cause Mortality




All Patients, EF < 0.50
1 Vessel Disease
2 Vessel Disease
3 Vessel Disease
% Survival
YEAR
P = 0.085
P = 0.095
P = 0.85
P = 0.063
MEDICALLY ASSIGNED
SURGICALLY ASSIGNED

CABG vs. Medical Treatment for MVD

From Coronary Artery Surgery (CASS) Study

CABG Is Better Over Medication in Patients with Stable Angina (<50% of LVEF)

CABG vs. Medical Treatment

Surgical Treatment for Ischemic Heart Failure (STICH) Trial

The NEW ENGLAND JOURNAL of MEDICINE

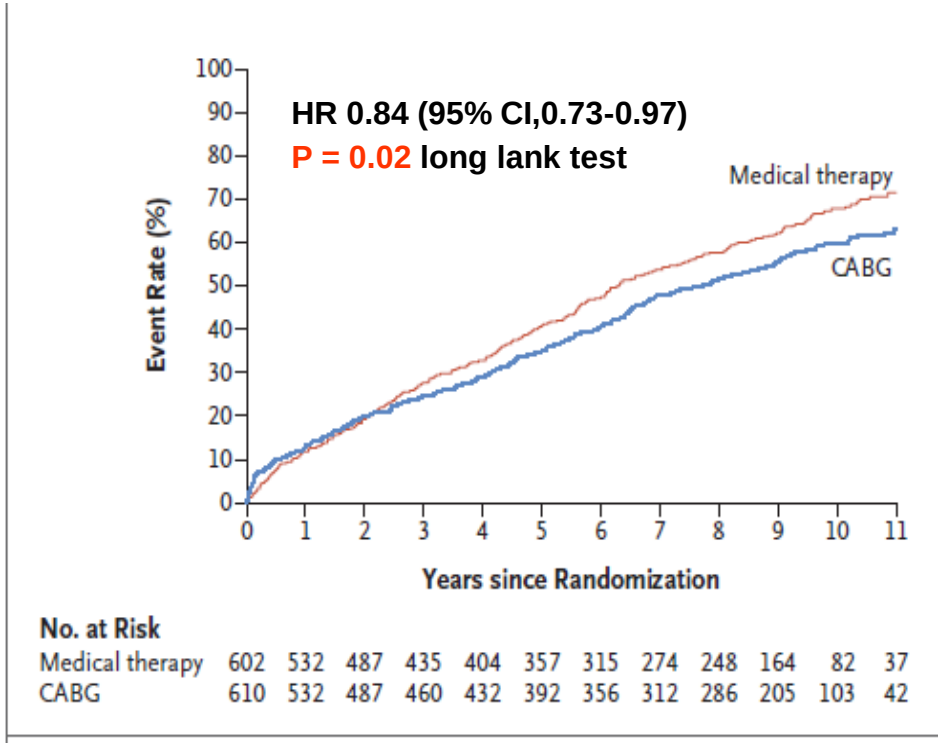
1. 1212 Patients with Stable Angina (<35% of LVEF),
2. Surgical (n=610, EF 27%) vs. Medical (n=602, EF 28%)
3. 3-VD 60%, 2VD 30%

Dorairaj Prabhakaran, M.D., D.M., Hanna Szwed, M.D., Paolo Ferrazzi, M.D.,
Mark C. Petrie, M.D., Christopher M. O'Connor, M.D.,
Pradit Panchavinnin, M.D., Lilin She, Ph.D., Robert O. Bonow, M.D.,
Gena Roush Rankin, M.P.H., R.D., Robert H. Jones, M.D.,
and Jean-Lucien Rouleau, M.D., for the STICH Investigators*

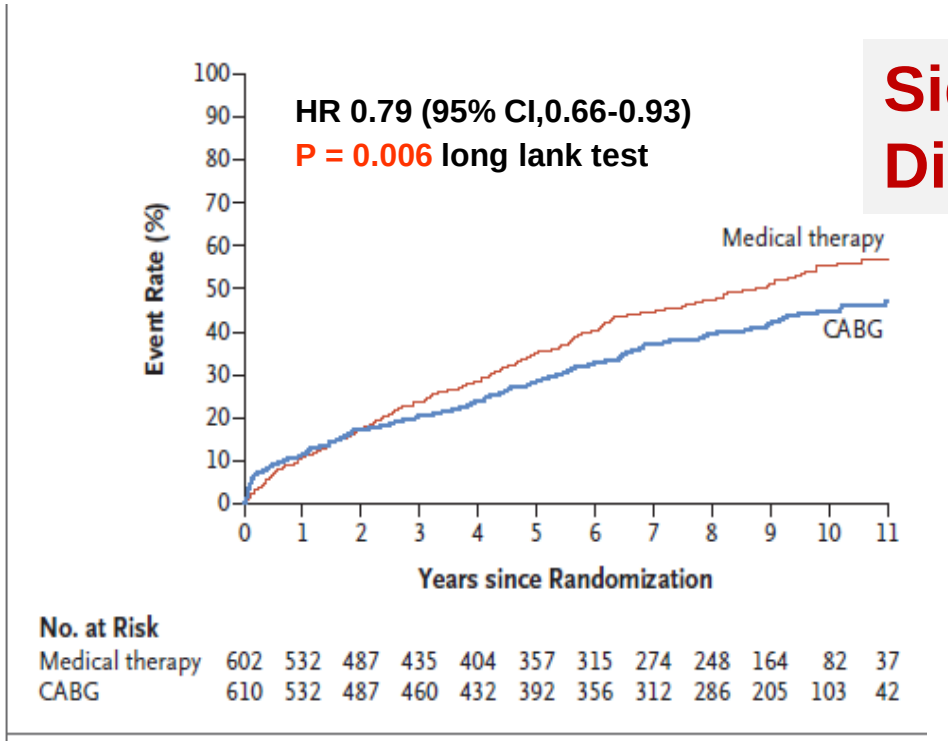
Velazquez EJ, et al. N Engl J Med 2016; 374:1511-1520 DOI: 10.1056/NEJMoa1602001

All Cause Mortality at 10 year

Any Death



Cardiovascular Death



Significantly Different !

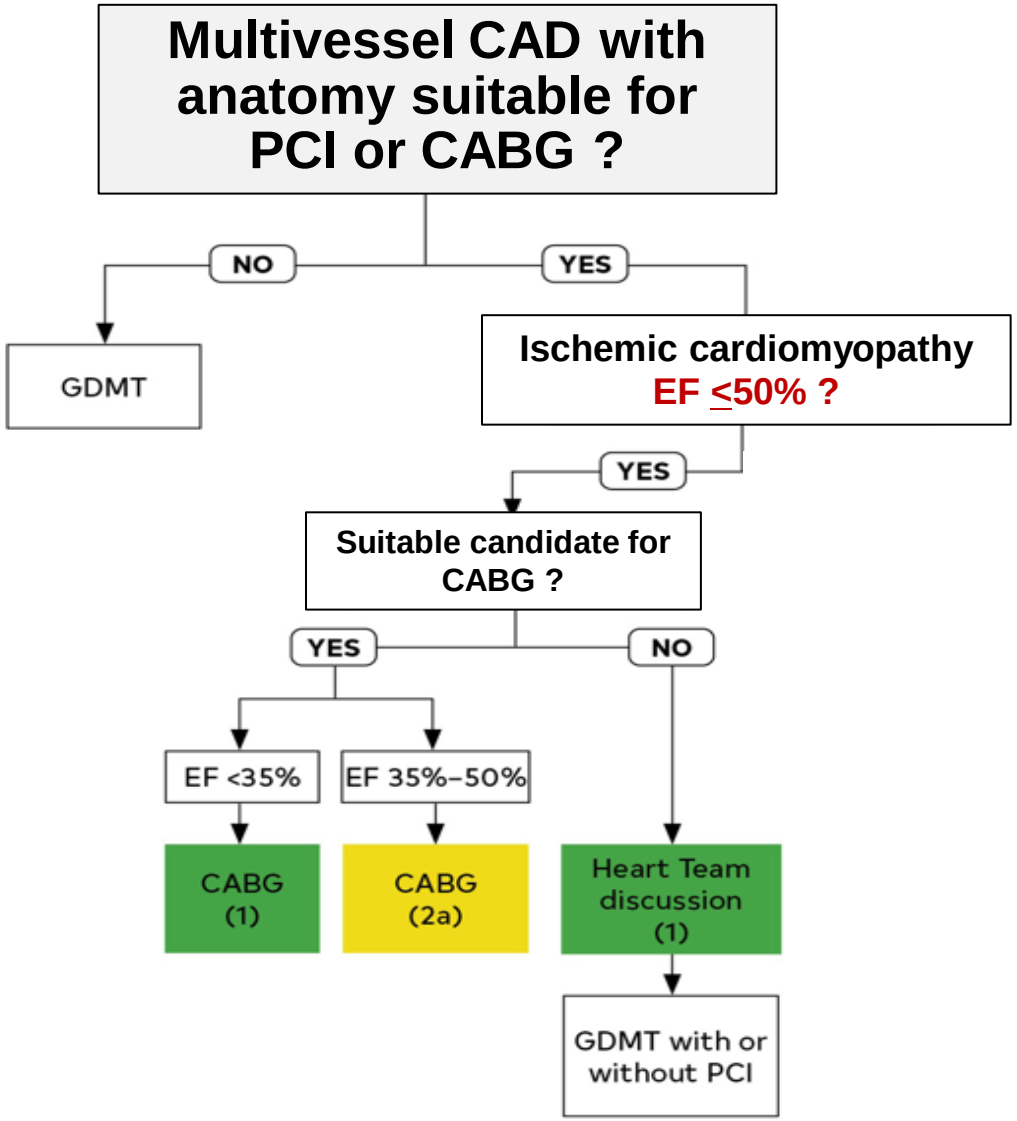
Velazquez EJ, et al. N Engl J Med 2016; 374:1511-1520 DOI: 10.1056/NEJMoa1602001

CABG vs. Medical Treatment for MVD

Surgical Treatment for Ischemic Heart Failure (STICH) Trial

CABG Is Better Over Medication in Patients with Stable Angina (<35% of LVEF)

2021 ACC/AHA/SCAI, Guideline for Coronary Artery Revascularization



EF ≤50% and 3 Vessel Disease

CABG Is Better !

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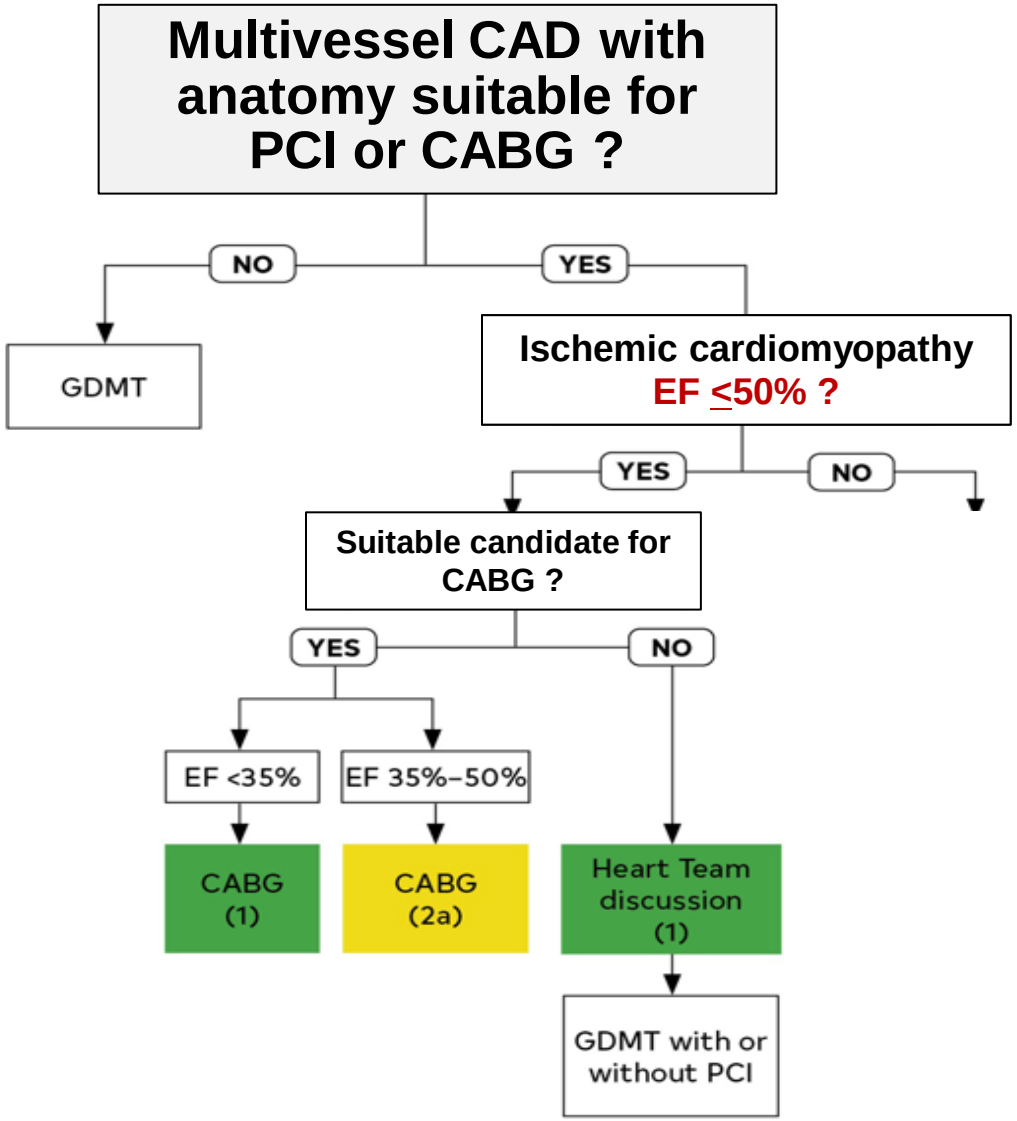

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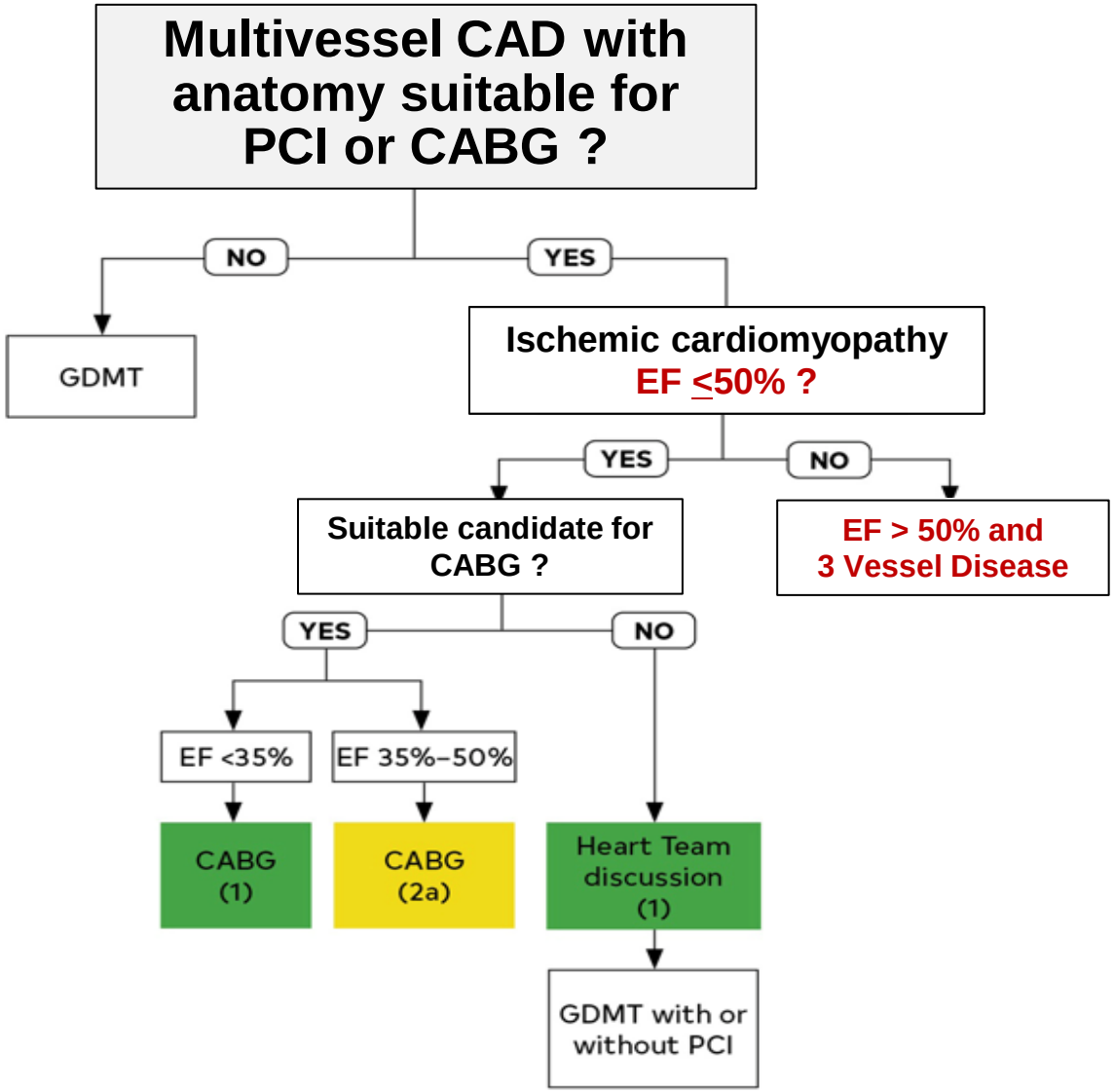

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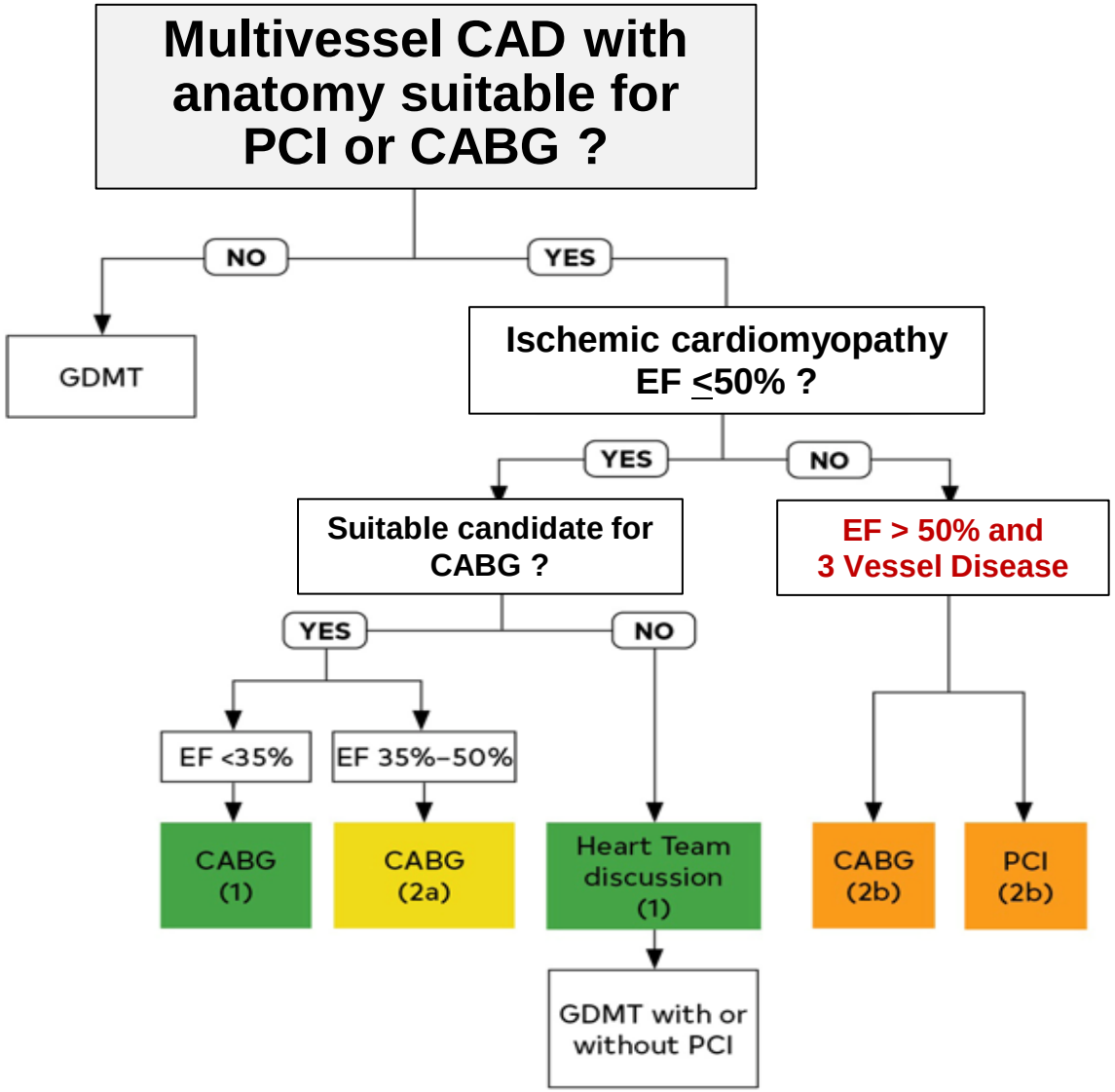


Any Revascularizations (2b)

Any Revascularizations (2b)

Class 2b (WEAK) **Benefit ≥ Risk**

Suggested phrases for writing recommendations:

- May/might be reasonable
- May/might be considered
- Usefulness/effectiveness is unknown/unclear/uncertain or not well-established

Why ?

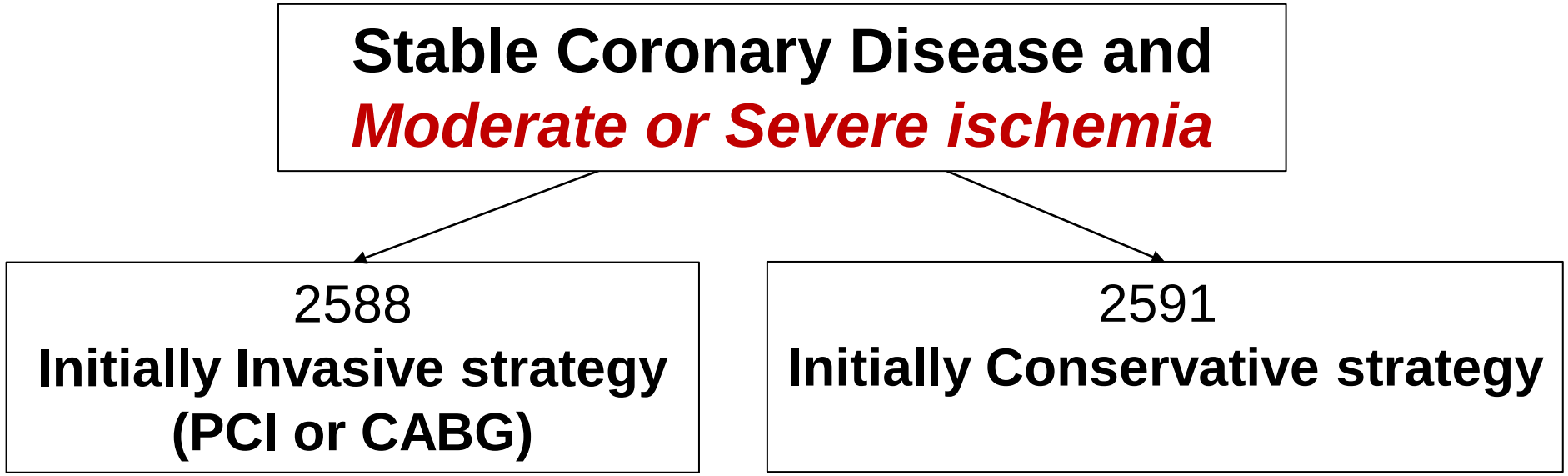
Any Revascularizations (2b)

Underlying Data, 2

1. ISCHEMIA study

Very Limited Data !

ISCHEMIA Study



Primary Outcome; *Composite of* death from cardiovascular causes, myocardial infarction, or hospitalization for unstable angina, heart failure, or resuscitated cardiac arrest.

David J. Maron et al, for the ISCHEMIA Research Group, N Engl J Med 2020; 382:1395-1407
https://www-nejm-org-ssl.libproxy.amc.seoul.kr/doi/10.1056/NEJMoa1915922

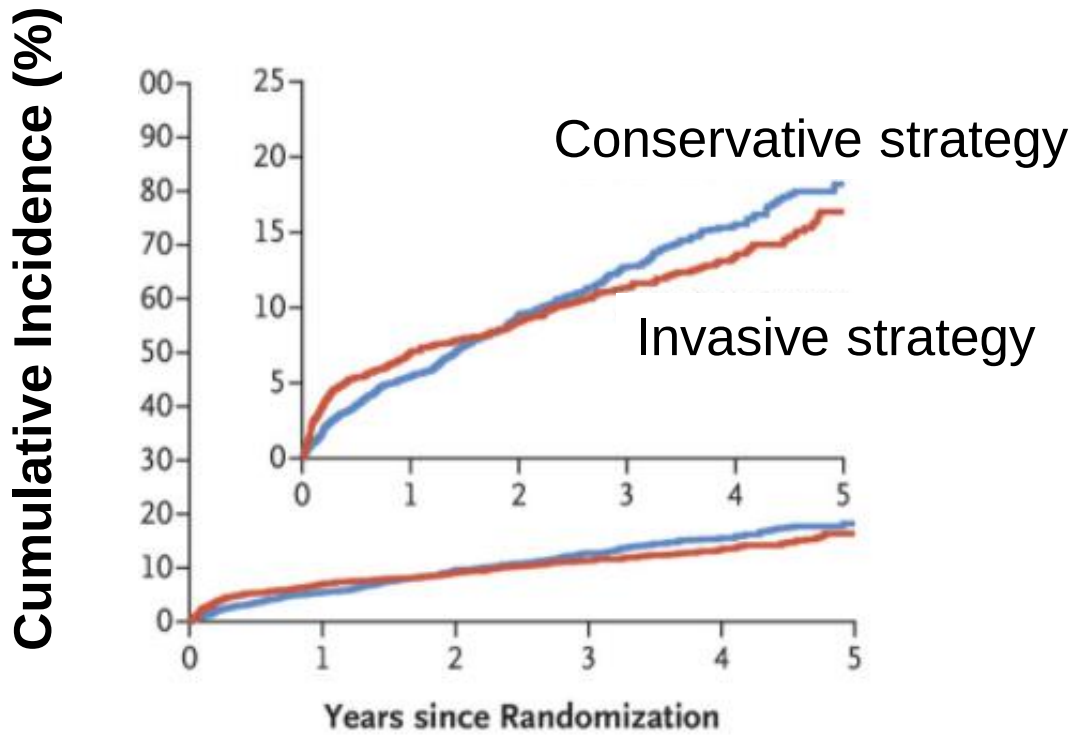
Coronary Anatomy by CCTA (≥ 50% stenosis)

	Total (N=5179)	INV (N=2588)	CON (N=2591)
0	0.1% (4/2986)	0.1% (2/1490)	0.1% (2/1496)
1	23.3% (697/2986)	24.2% (360/1490)	22.5% (337/1496)
2	31.4% (938/2986)	29.1% (434/1490)	33.7% (504/1496)
3	45.1% (1347/2986)	46.6% (694/1490)	43.6% (653/1496)

Multivessel Disease >75%

Primary Outcomes at 3.2 yrs

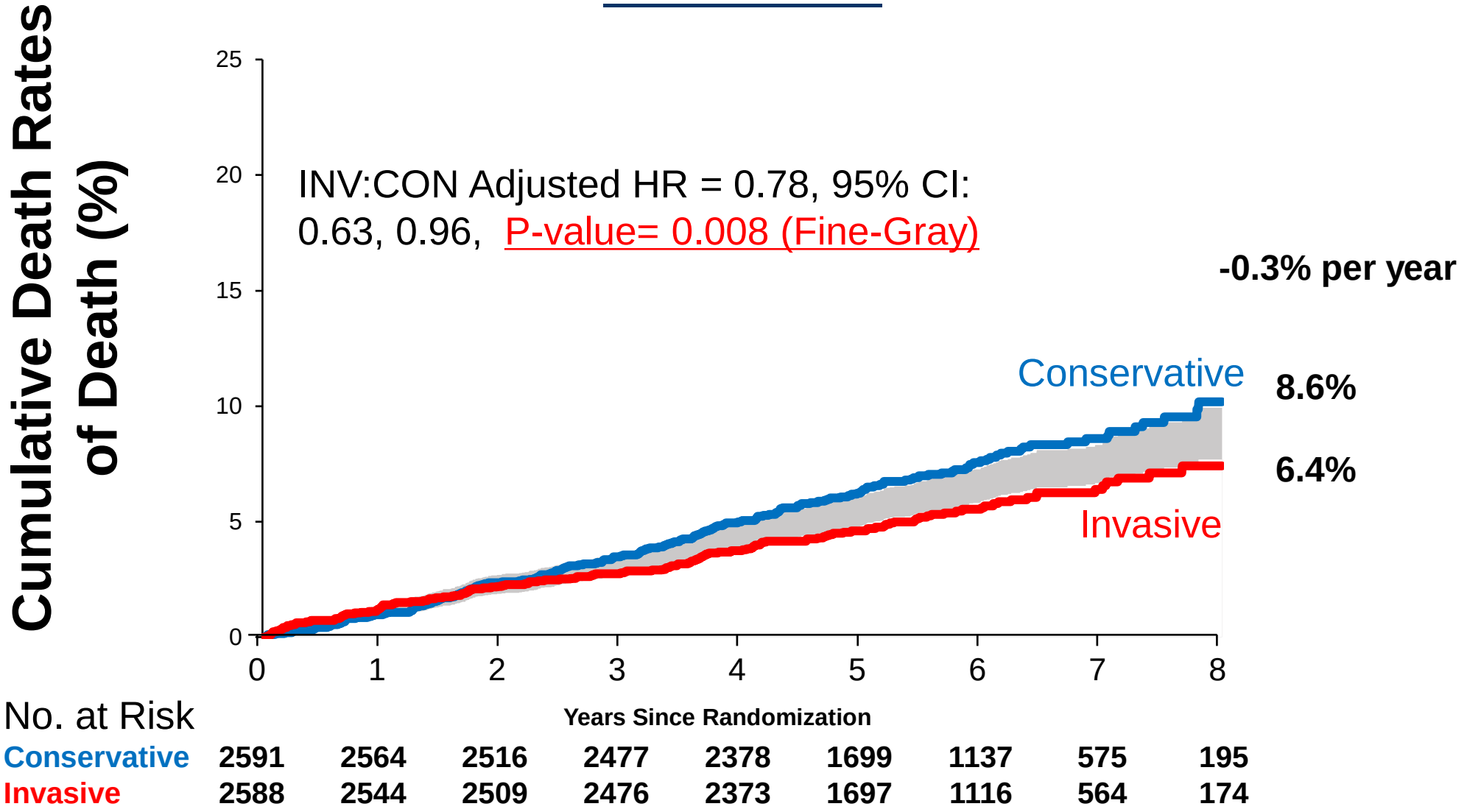
Death from cardiovascular causes, Myocardial infarction, or
Hospitalization for unstable angina, Heart failure, or Resuscitated cardiac arrest.



No. at Risk						
Conservative strategy	2591	2431	1907	1300	733	293
Invasive strategy	2588	2364	1908	1291	730	271

ISCHEMIA EXTENDED at 7 yrs

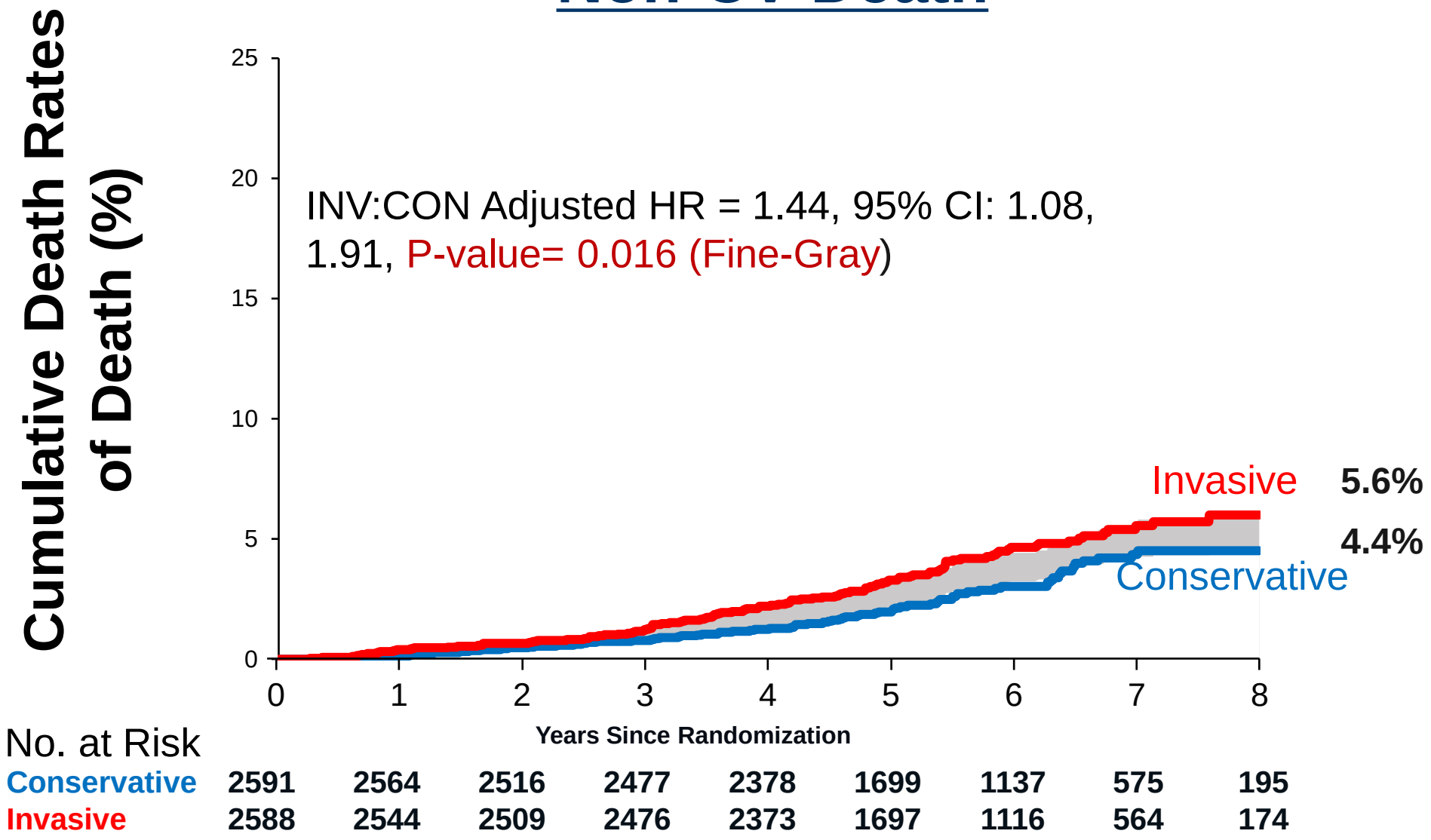
CV Death



No. at Risk

Conservative	2591	2564	2516	2477	2378	1699	1137	575	195
Invasive	2588	2544	2509	2476	2373	1697	1116	564	174

ISCHEMIA EXTENDED at 7 yrs
Non-CV Death

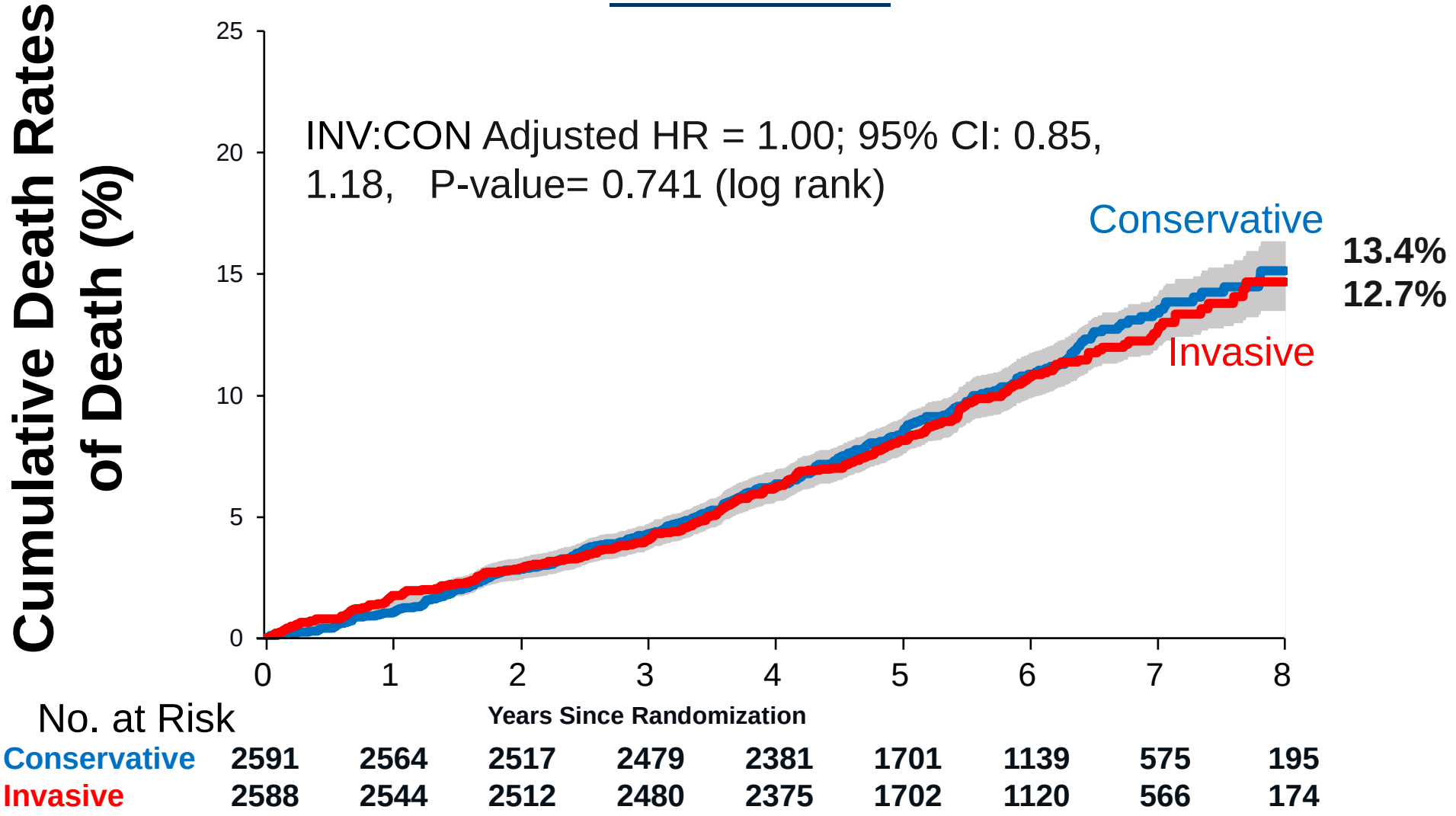


No. at Risk

Conservative	2591	2564	2516	2477	2378	1699	1137	575	195
Invasive	2588	2544	2509	2476	2373	1697	1116	564	174

ISCHEMIA EXTENDED at 7 yrs

All Death



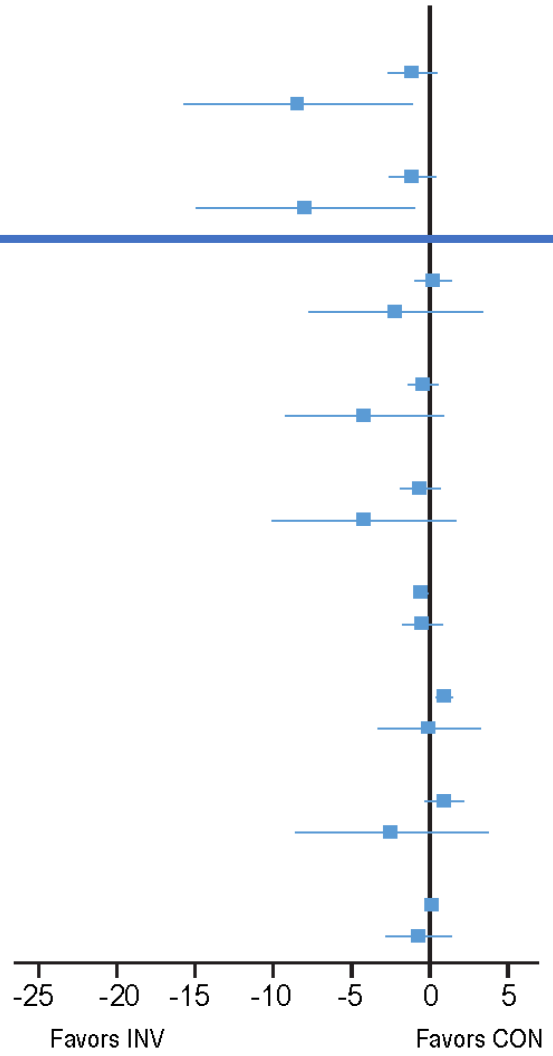
No. at Risk

Conservative	2591	2564	2517	2479	2381	1701	1139	575	195
Invasive	2588	2544	2512	2480	2375	1702	1120	566	174

ISCHEMIA: Heart failure (EF<35%)

398 (7.7%) participants with HF/LVD

Event	4-year Cumulative Incidence (95% CI)		Difference in Event Rate, INV - CON (95% CI)	Interaction P-value
	INV	CON		
Primary endpoint				0.055
No history of HF/LVD	13.0% (11.5%, 14.6%)	14.6% (13.0%, 16.2%)	-1.6% (-3.8%, 0.7%)	
History of HF/LVD	17.2% (11.6%, 23.8%)	29.3% (21.2%, 38.0%)	-12.1% (-22.6%, -1.6%)	
CV death or MI				0.061
No history of HF/LVD	11.4% (10.0%, 12.9%)	13.1% (11.5%, 14.7%)	-1.6% (-3.8%, 0.5%)	
History of HF/LVD	14.6% (9.4%, 20.9%)	25.9% (18.2%, 34.3%)	-11.4% (-21.4%, -1.4%)	
All-cause death				0.406
No history of HF/LVD	6.2% (5.1%, 7.5%)	5.9% (4.8%, 7.1%)	0.3% (-1.3%, 2.0%)	
History of HF/LVD	10.2% (5.8%, 15.9%)	13.3% (7.9%, 20.0%)	-3.1% (-11.1%, 4.8%)	
CV death				0.154
No history of HF/LVD	3.8% (3.0%, 4.9%)	4.5% (3.5%, 5.5%)	-0.6% (-2.0%, 0.8%)	
History of HF/LVD	6.7% (3.4%, 11.6%)	12.7% (7.5%, 19.5%)	-6.0% (-13.3%, 1.3%	
MI (Primary Definition)				0.244
No history of HF/LVD	8.8% (7.6%, 10.2%)	9.7% (8.4%, 11.1%)	-0.9% (-2.8%, 1.0%))	
History of HF/LVD	10.5% (6.2%, 16.2%)	16.5% (10.5%, 23.8%)	-6.0% (-14.4%, 2.4%)	
UA hospitalization				0.864
No history of HF/LVD	0.6% (0.4%, 1.1%)	1.5% (1.0%, 2.1%)	-0.8% (-1.5%, -0.2%)	
History of HF/LVD	0.5% (0.0%, 2.4%)	1.1% (0.2%, 3.7%)	-0.7% (-2.5%, 1.2%)	
Hospitalization for HF				0.550
No history of HF/LVD	2.0% (1.4%, 2.8%)	0.6% (0.3%, 1.1%)	1.4% (0.6%, 2.1%)	
History of HF/LVD	4.4% (1.9%, 8.6%)	4.5% (1.9%, 8.7%)	-0.1% (-4.8%, 4.6%)	
Death or HF hospitalization				0.293
No history of HF/LVD	7.5% (6.3%, 8.9%)	6.2% (5.1%, 7.5%)	1.3% (-0.4%, 3.1%)	
History of HF/LVD	13.3% (8.3%, 19.6%)	16.8% (10.7%, 24.1%)	-3.5% (-12.3%, 5.3%)	
HF death				0.401
No history of HF/LVD	0.3% (0.1%, 0.7%)	0.0% (0.0%, 0.3%)	0.3% (-0.0%, 0.6%)	
History of HF/LVD	0.7% (0.1%, 3.8%)	1.8% (0.3%, 6.2%)	-1.0% (-4.1%, 2.0%)	

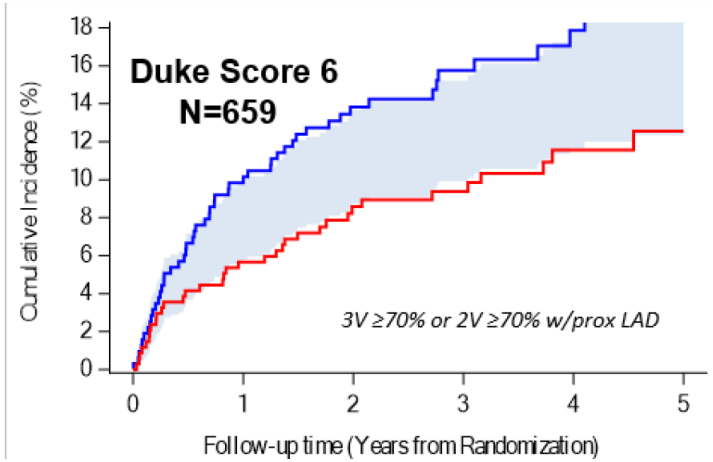


Lopes R et al. Circulation. 2020;142:1725–1735

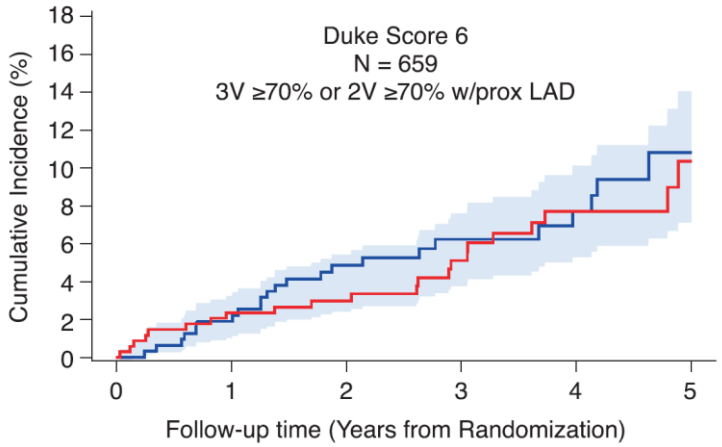
ISCHEMIA: High Anatomic Risk

3 VD >70% or 2 VD >70% including proximal LAD

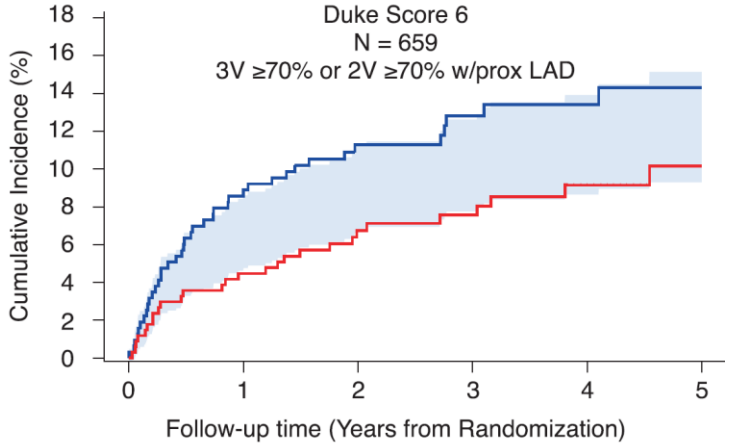
CV Death or MI



All Death



MI



— Conservative

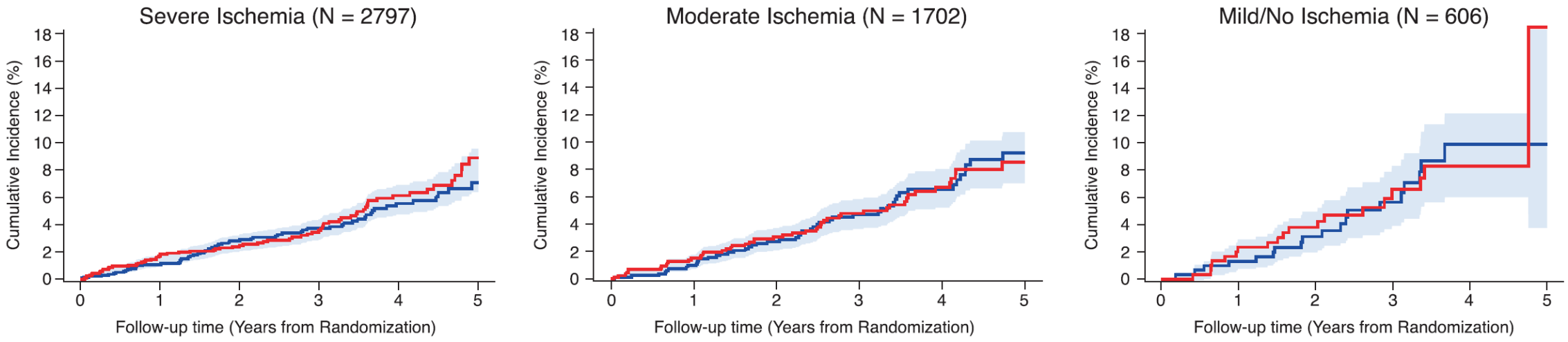
— Invasive

Reynolds et al. Circulation. 2021;144:1024–1038

ISCHEMIA:

Survival Based on Ischemia Severity

All-cause Mortality Death



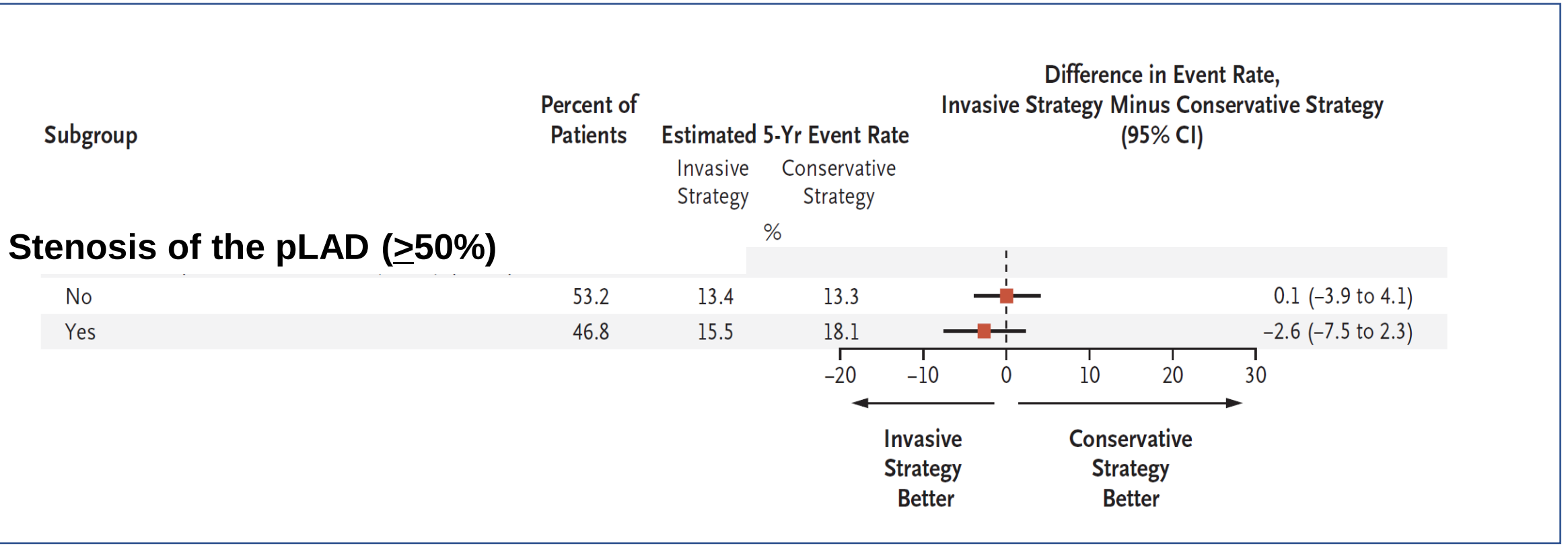
Conservative

Invasive

Reynolds et al. Circulation. 2021;144:1024–1038

ISCHEMIA:

Survival with proximal LAD Revascularization



Maron et al. N Engl J Med. 2020 Apr 9;382(15):1395-1407

2021 ACC/AHA Revascularization Guidelines

Summary

Invasive Treatment Has No improvement in survival compared with Medical Treatment, except in those with LM disease and LV systolic dysfunction.

Invasive Treatment Reduces spontaneous MI, unstable angina and lowers CV stays, (0.3%/year) in cardiac death.

2021 ACC/AHA Revascularization Guidelines

SIHD and Normal EF

LM: CABG is recommended to improve survival

1	B-R

3V-CAD: CABG maybe reasonable to improve survival

2b	B-R

3V-CAD: Usefulness of PCI to improve survival is uncertain

2b	B-R

Prox LAD: Usefulness of revasc to improve survival is uncertain

2b	B-R

1 or 2VD and no Prox LAD: Revasc is not recommended to improve survival

3: No Benefit	B-R

Lawton JS, Tamis-Holland JE, Bangalore S, et al. J Am Coll Cardiol. 2021

2021 ACC/AHA Revascularization Guidelines

SIHD and Normal EF

***Multivessel-CAD**: Revascularization is reasonable to lower the risk of cardiovascular events such as spontaneous MI, unplanned urgent revascularizations, or cardiac death*

Lawton JS, Tamis-Holland JE, Bangalore S, et al. J Am Coll Cardiol. 2021

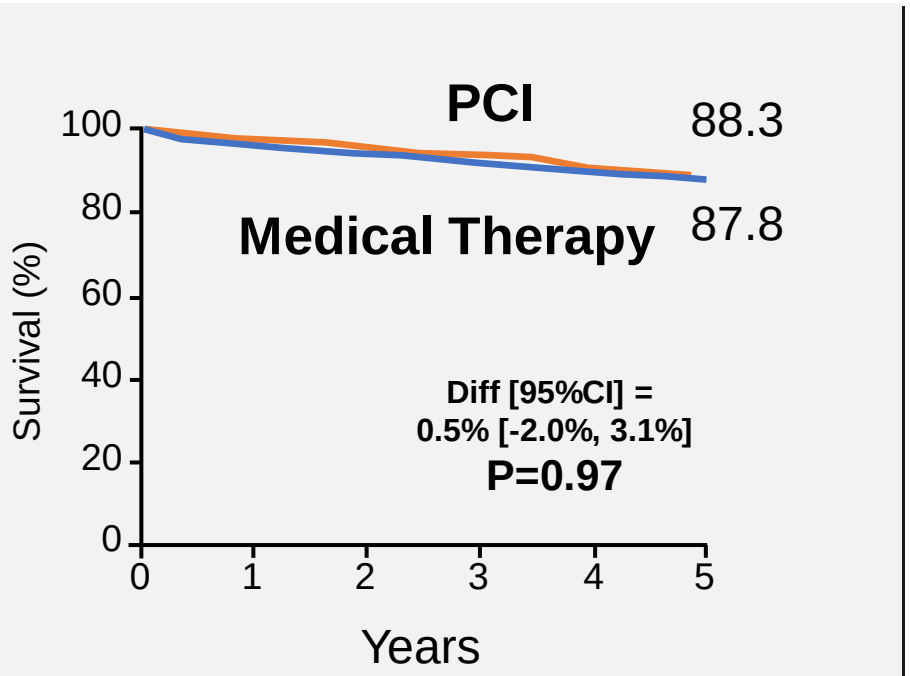
Very Old Data *for Diabetic Concerns, PCI vs. CABG for Multi-Vessel Disease*

1. BARI 2D
2. FREEDOM
3. SYNTAX
4. BEST

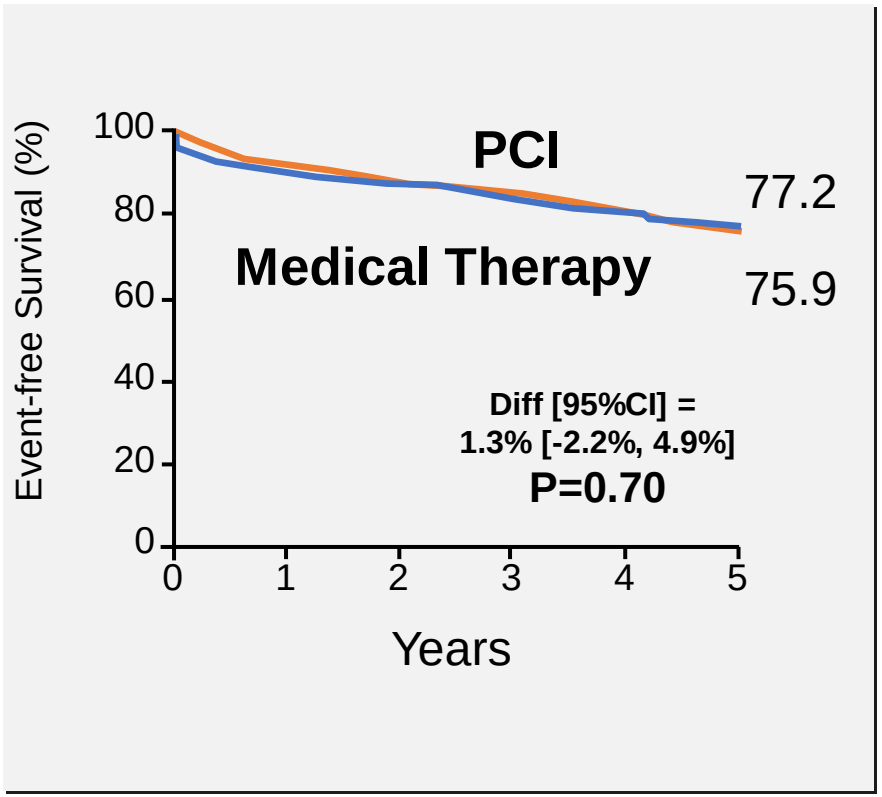
BARI 2D (DM) *at 5 year*

PCI Had No Survival Benefit Over Medical Treatment in Low Risk Patients

Survival



Freedom from MACE (Death, MI, or Stroke)

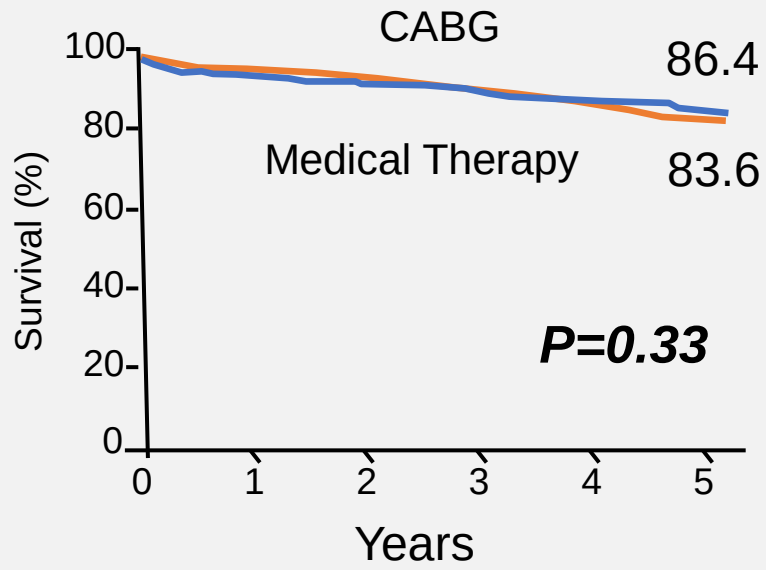


The BARI 2D Study Group.*NEJM* 2009;360:2503-15

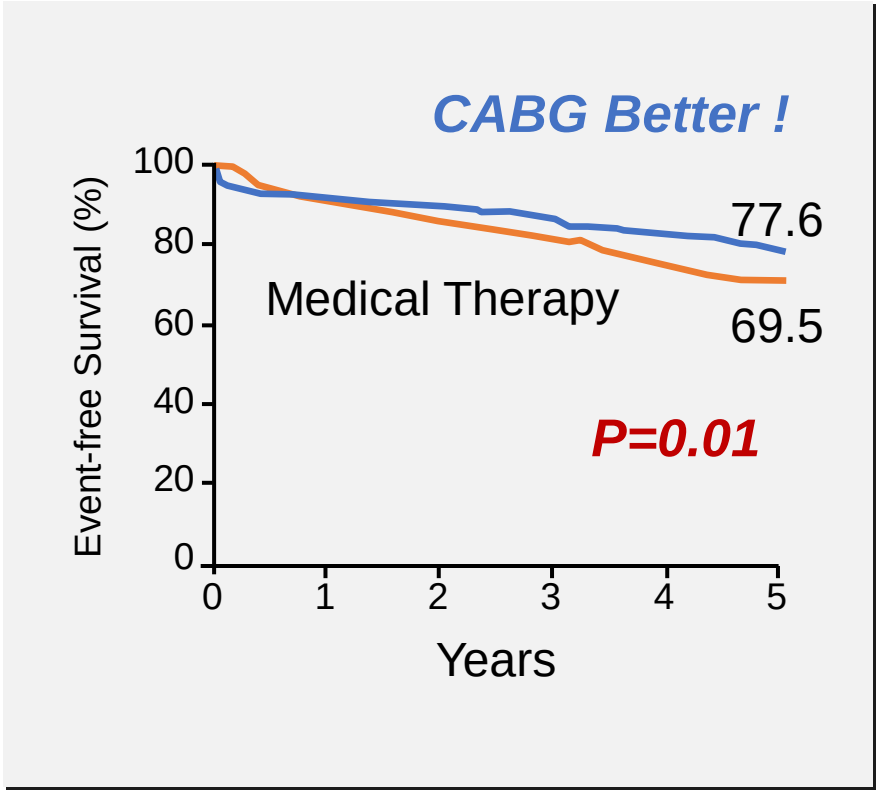
BARI 2D (DM) *at 5 year*

CABG Had No Survival Benefit Over Medical Treatment in High Risk Patients

Survival

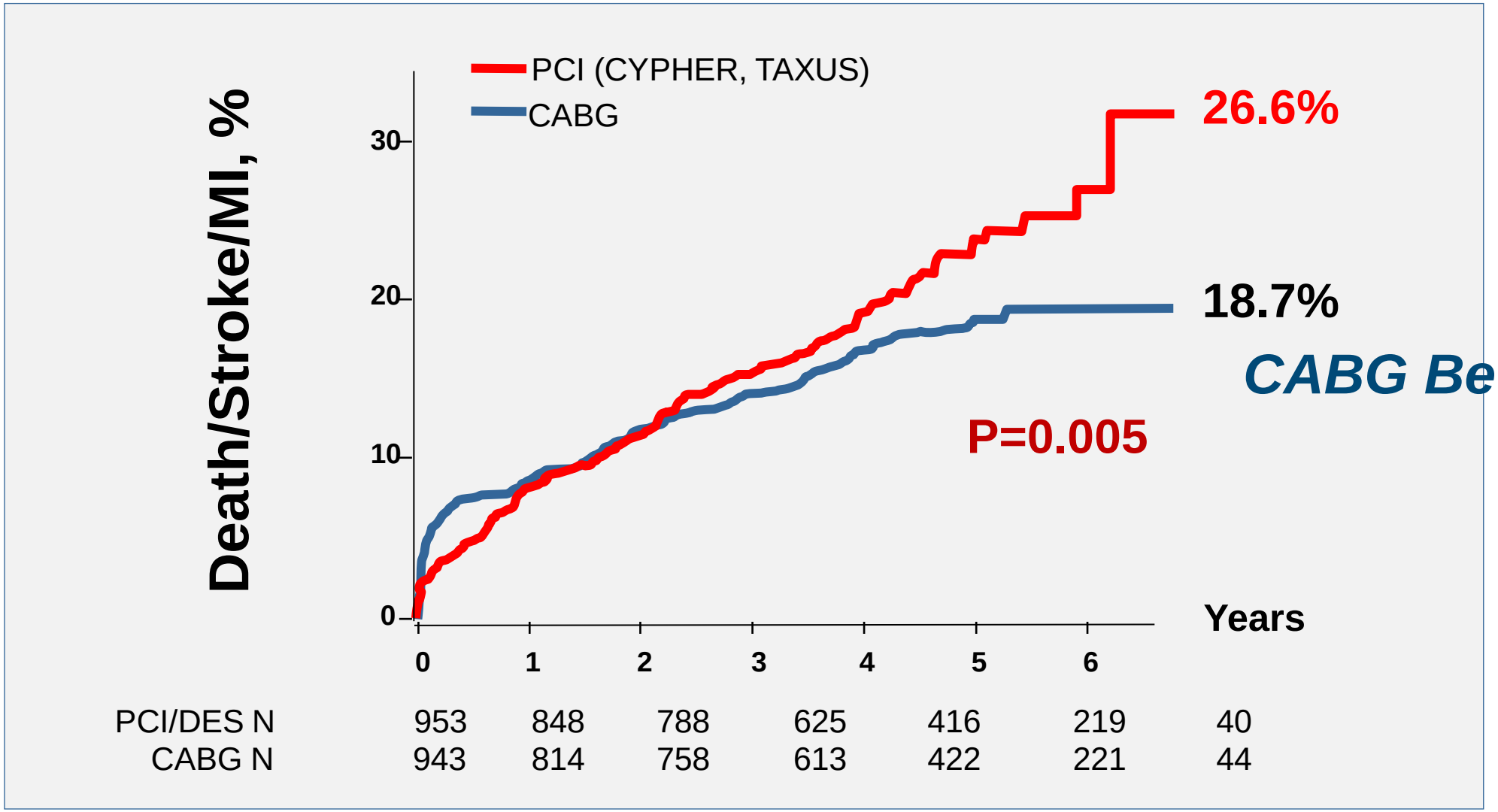


Freedom from MACE (Death, MI, or Stroke)



FREEDOM (DM and MVD) at 5 Year

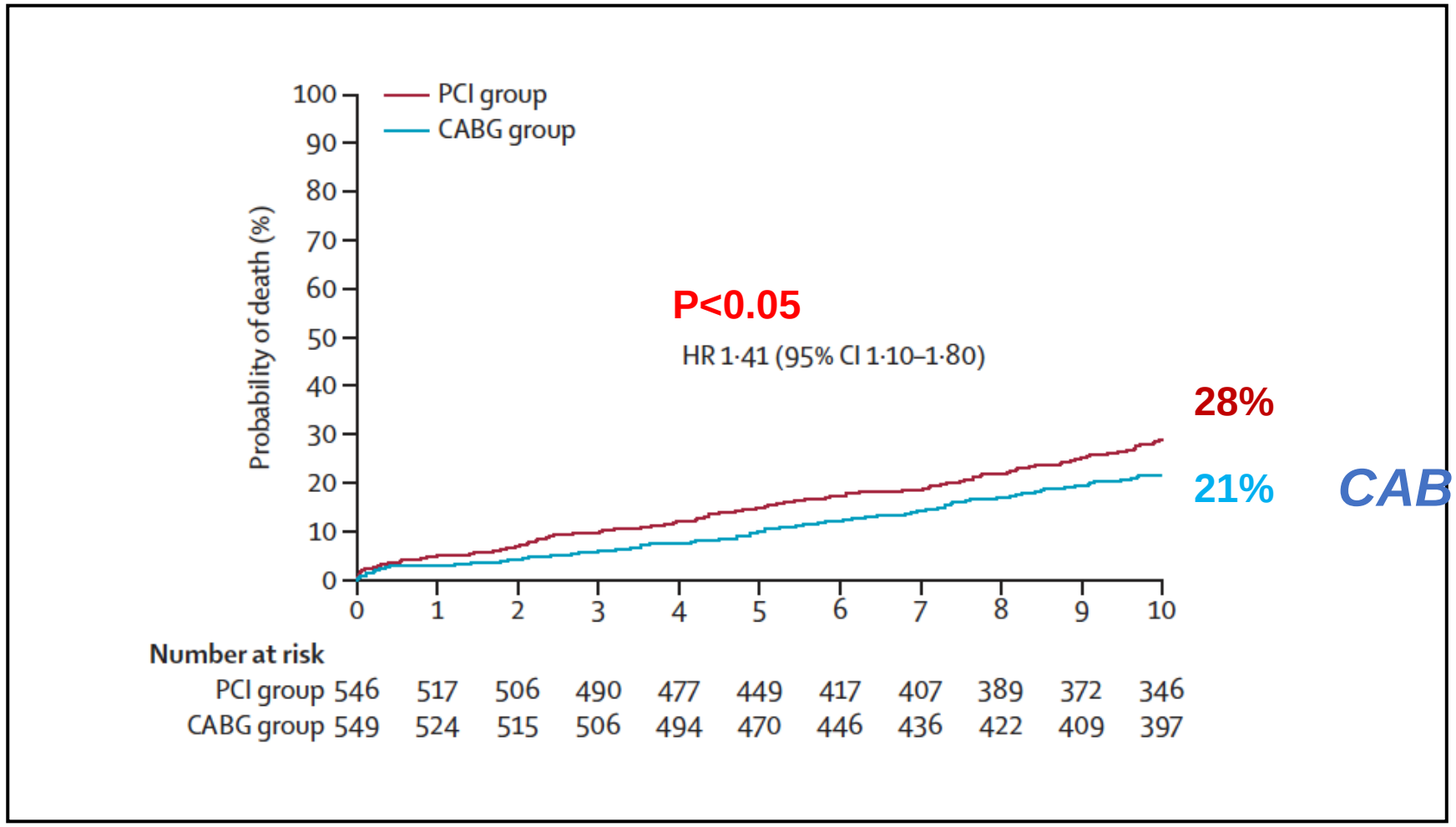
Death / MI / Stroke



Farkouh et al, *NEJM* 2012 November 4

All Death

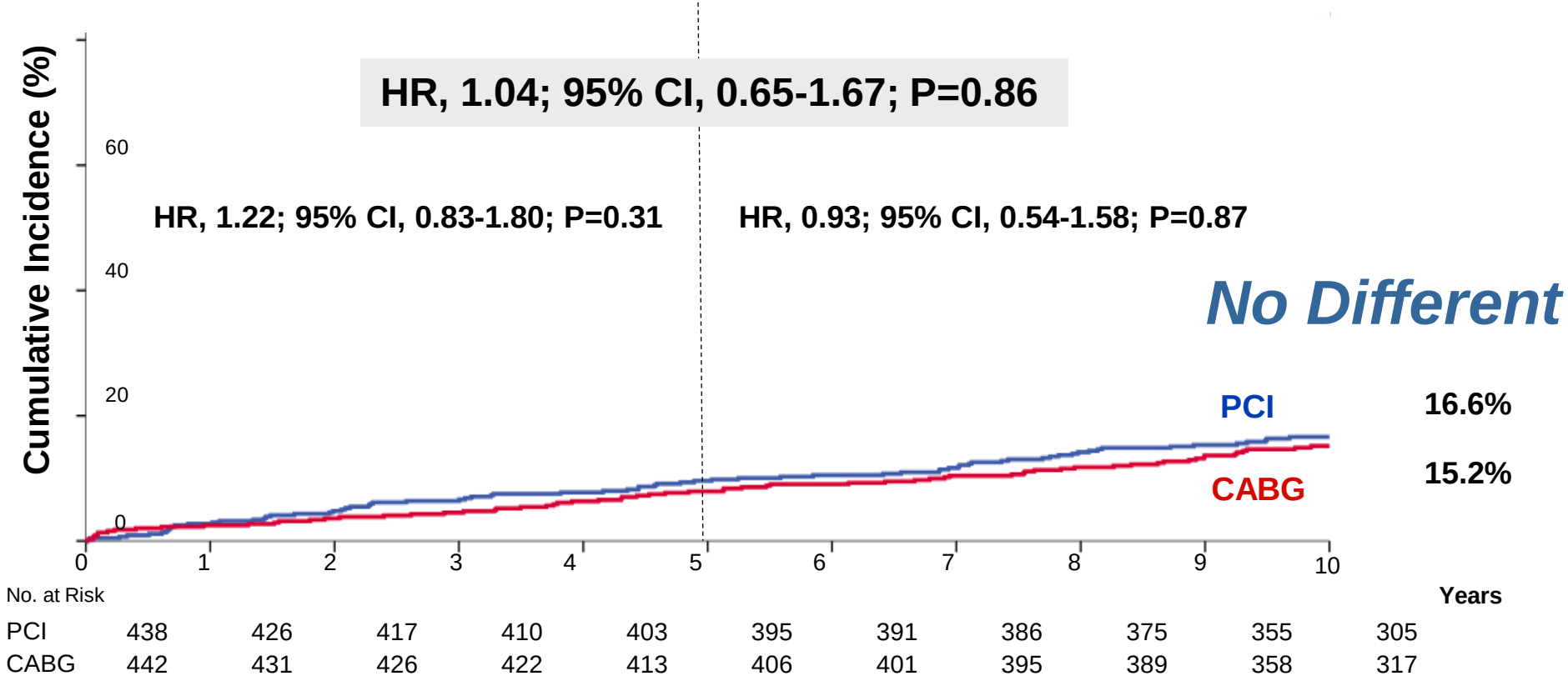
SYNTAX (3VD Subset) at 10 Year



Lancet 2019; 394: 1325–34

All Death

BEST at 10 Year



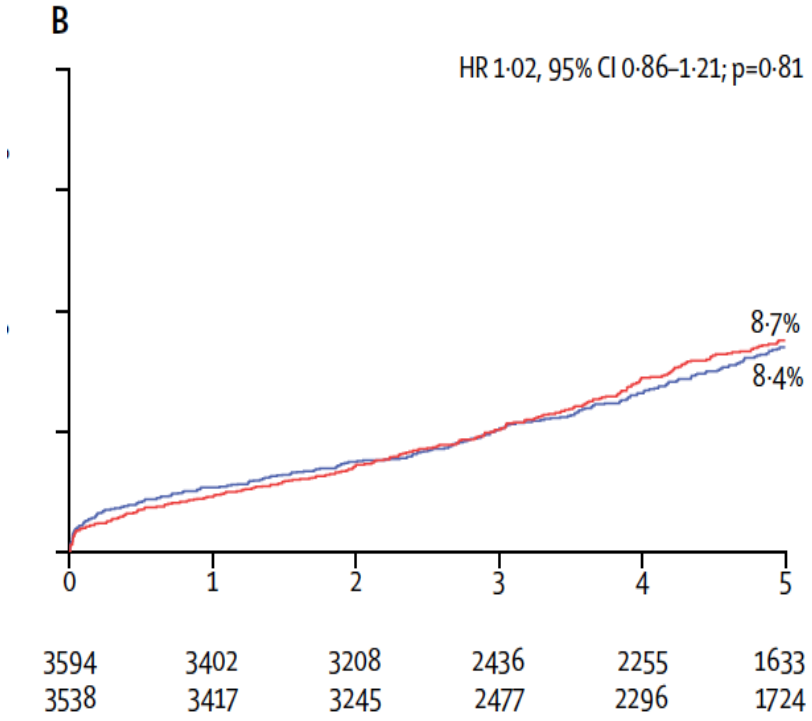
No Different

Ahn JM, Park SJ et al, Circulation 2022, Sep 19

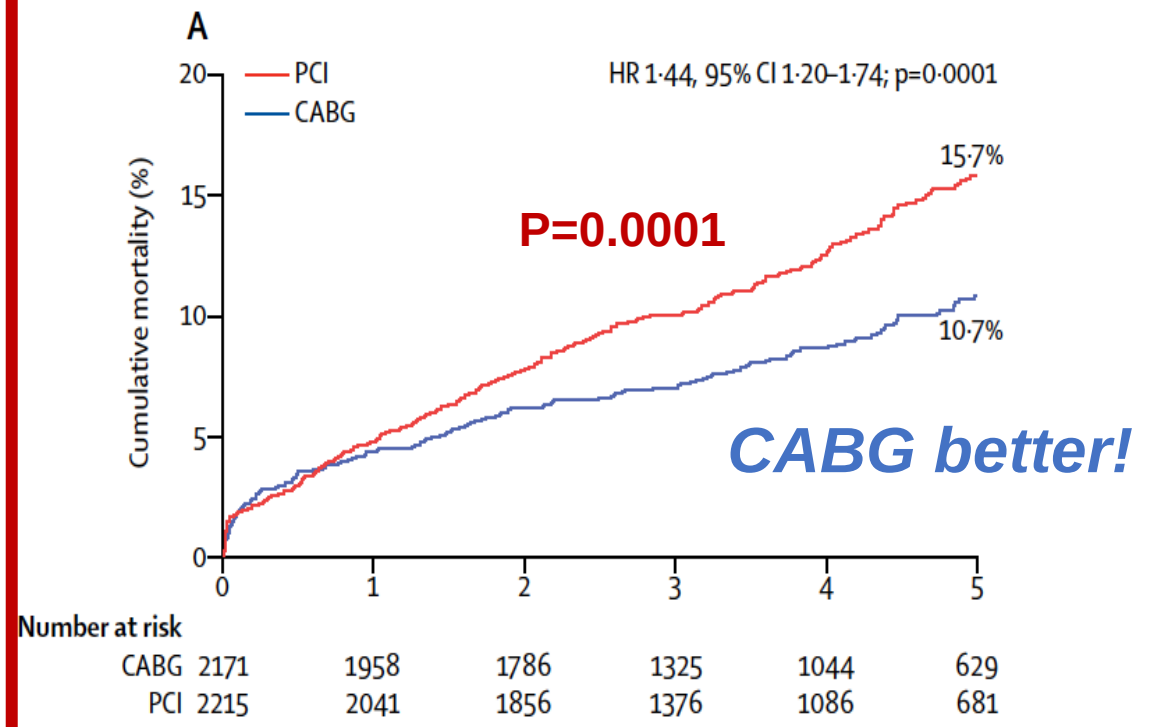
All Death

Individual Patient-Data Pooled Analysis of 11,518 Patients
From 11 Randomized Trials, ***Multivessel Disease (n=7040)***

Non-DM



DM



Head SJ et al. Lancet 2018; 391: 939-48,

2021 ACC/AHA/SCAI, Guideline for Diabetic Multivessel Disease

1. **Patients with Diabetes who Have 3 VD *Should Undergo CABG (1A).***
2. ***If they are Poor Candidates for CABG, PCI May be Considered (2a, B-NR).***

J Am Coll Cardiol. Dec 09, 2021. Epublished DOI: 10.1016/j.jacc.2021.09.006


Future
Perspective

Future Perspective

We Have to Consider Physiology and Image Supported Contemporary PCI.

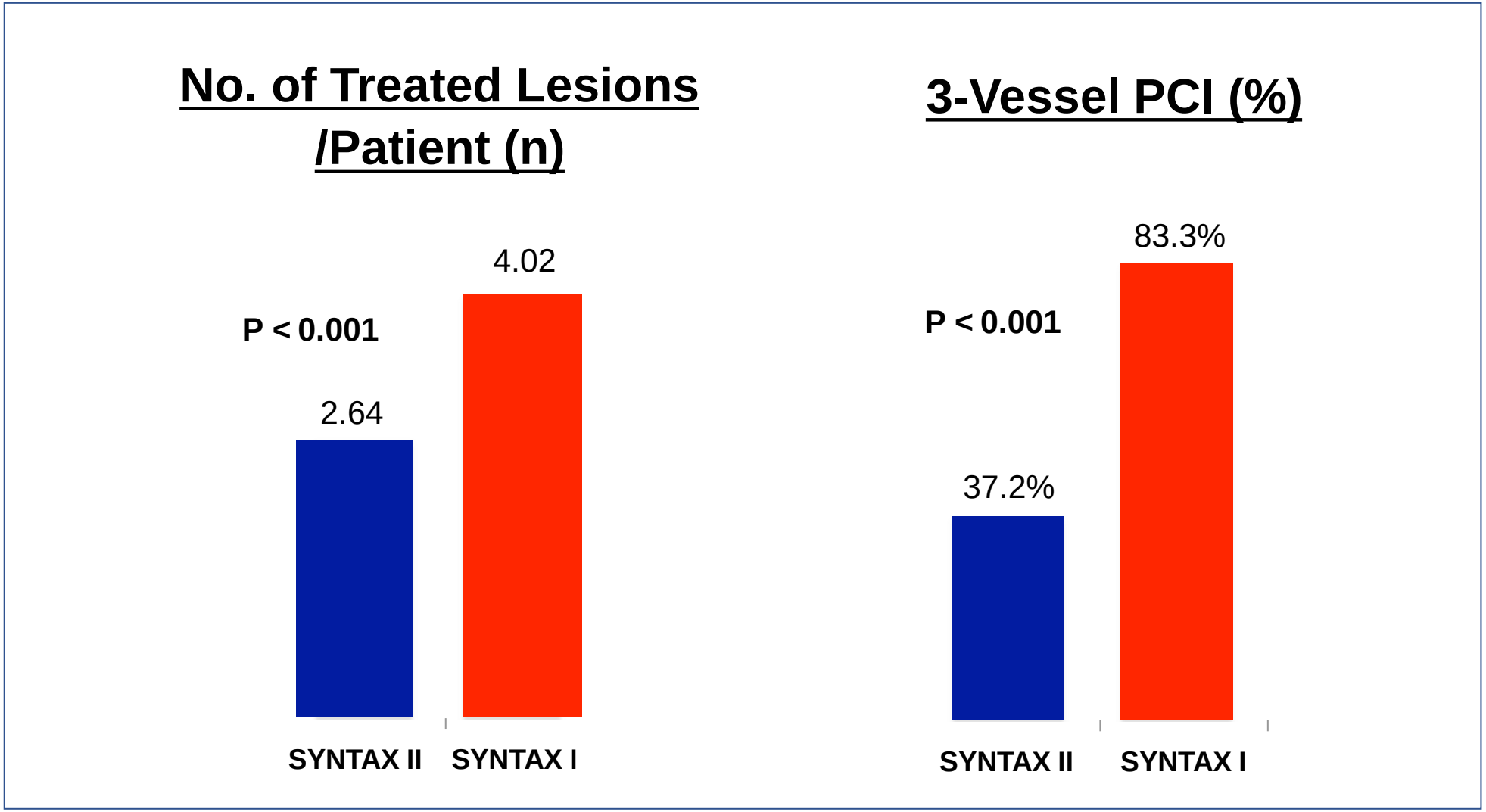
It Would Be Totally Different World !

Impact of Physiology and Imaging on Revascularization Outcome for Multi-Vessel Disease (SYNTAX II)

- iFR/FFR Measured Lesions (n=1177),
- 84.1% of IVUS Used

Escaned J, Banning A, Serruys PW. Eur Heart J. 2017 Nov 7;38(42):3124-3134.

Impact of Physiology on PCI



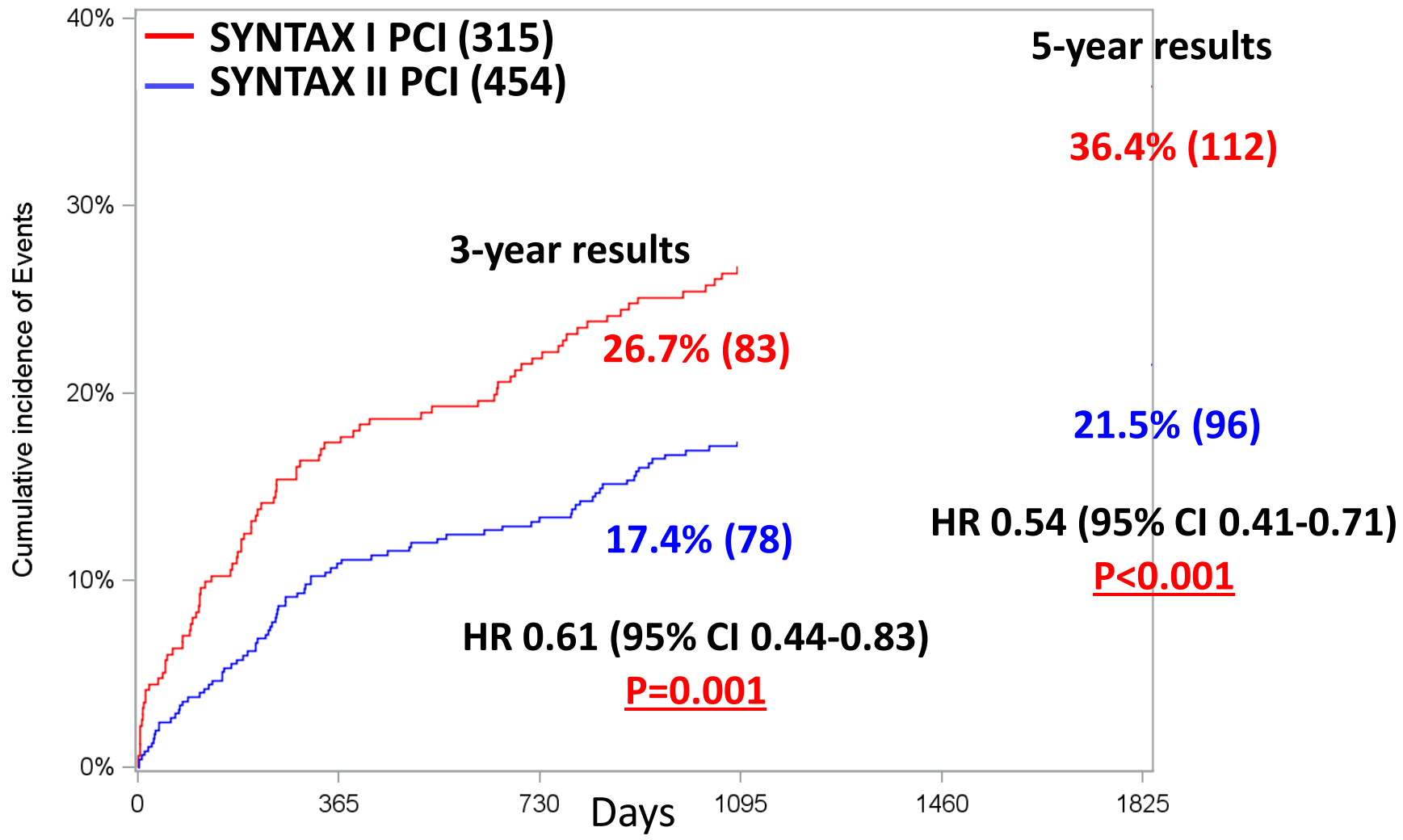
31% of PCI Was Deferred After iFR/FFR

SYNTAX II

MACE (Composite of all-cause death, stroke, any MI, or any revascularization)

Escaned J, Banning A, Serruys PW. Eur Heart J. 2017 Nov 7;38(42):3124-3134.

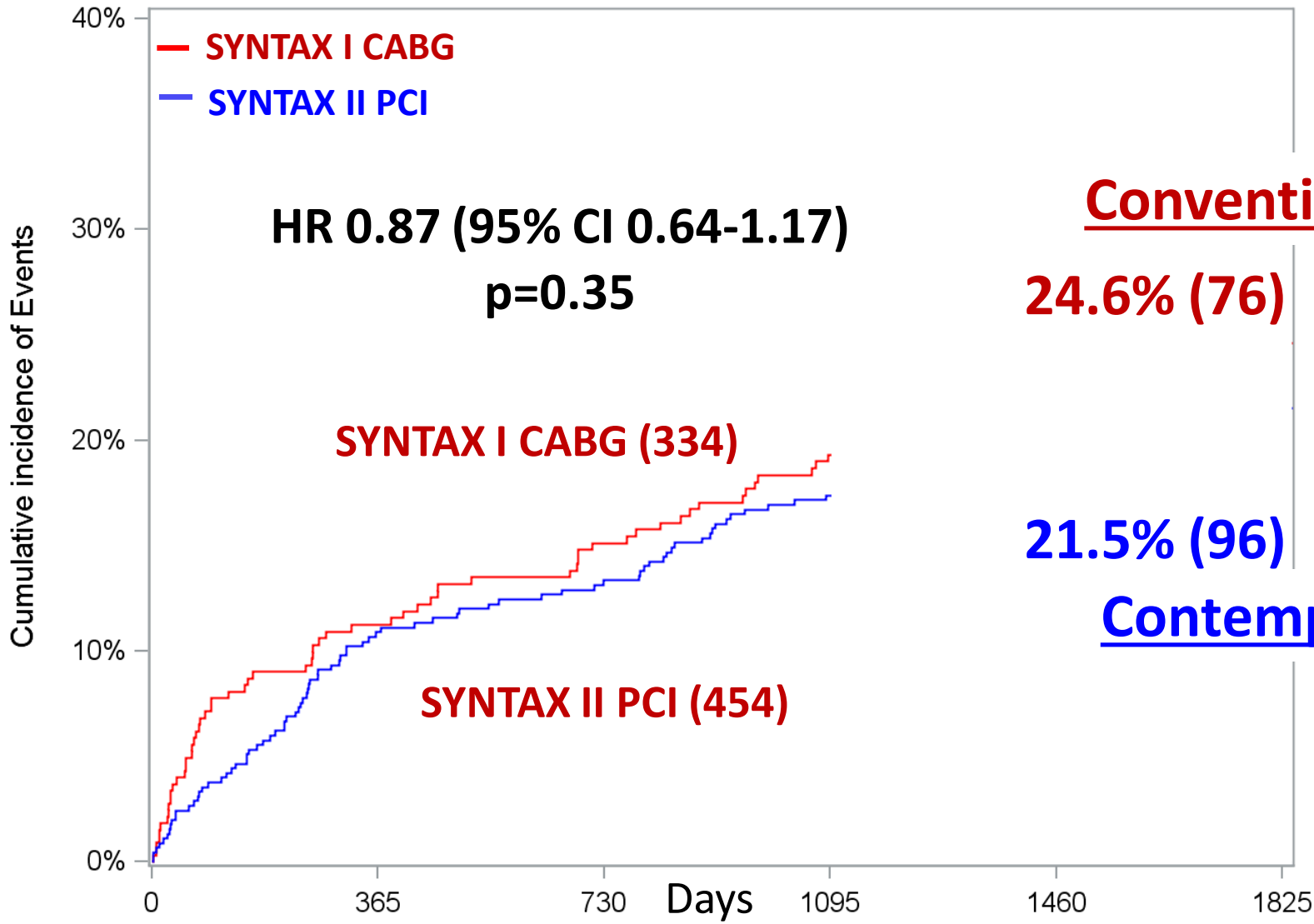
Primary endpoint: 5-year



Number at risk

SYNTAX I PCI	315	256	242	225	206	124
SYNTAX II PCI	454	400	387	329	351	274

Primary endpoint: 5-year



Conventional CABG

24.6% (76)

Not Different

21.5% (96)

Contemporary PCI

Number at risk						
SYNTAX I CABG	334	277	263	247	236	156
SYNTAX II PCI	454	400	388	367	351	274

Message From SYNTAX II

Physiology and Image Supported,
Contemporary PCI Is *Totally Different and*
Would Have Totally Different Clinical Outcomes
Compared to Conventional Angio-Guided PCI.

FFR Related Studies

FAME 3

FLOWER- MI

FUTURE

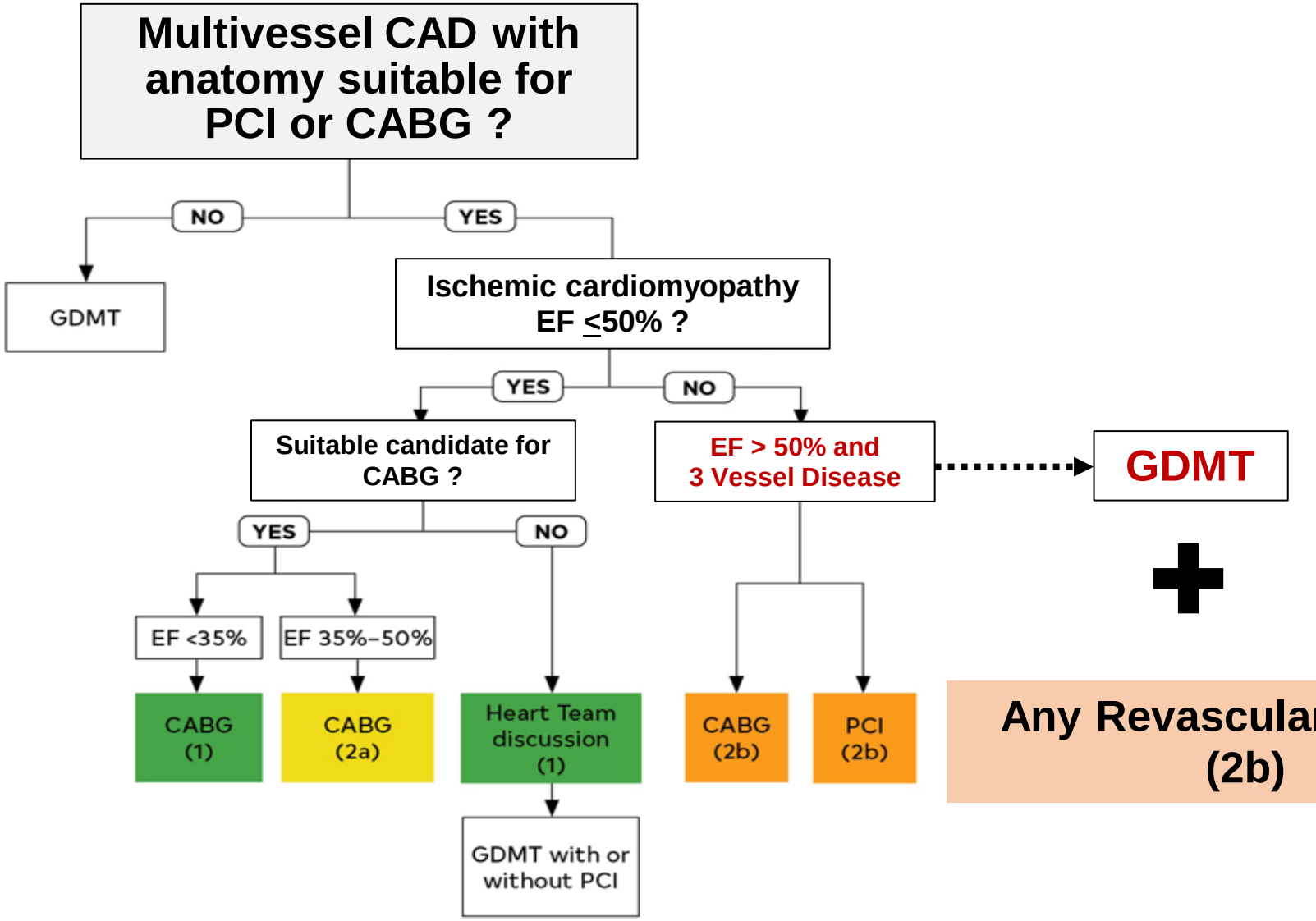
RIPCORD 2

FLAVOUR

Several Shapeless Studies
Can Not Break Up Basic Concept and Benefit of Contemporary PCI (Physiology and Image supported) !

My Approach
for Multivessel Disease

2021 ACC/AHA/SCAI, Guideline for Coronary Artery Revascularization

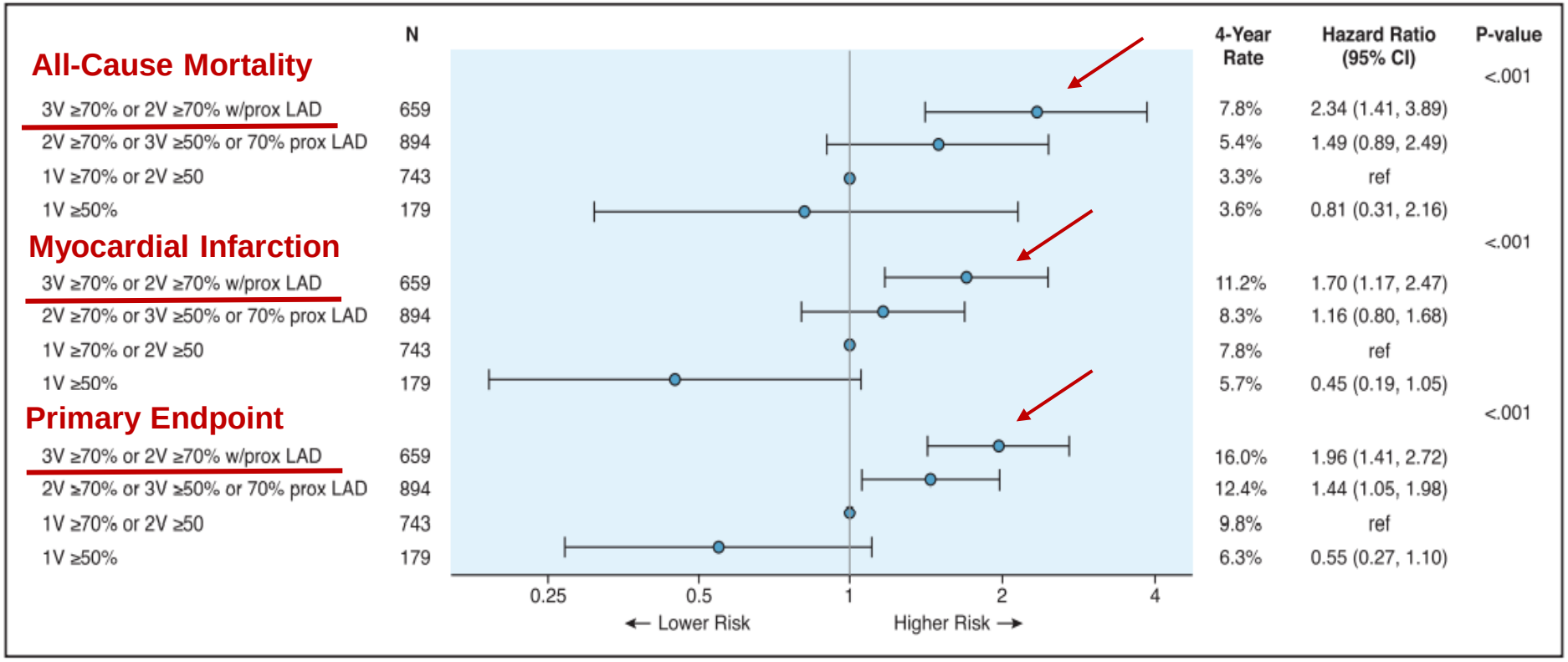


Any Revascularizations (2b)

Individualized
Treatment Strategy !

<u>According to</u>
the different CAD severity, ischemic severity, different anatomic complexity or suitability for CABG or PCI, LV dysfunction and different clinical comorbidity status.

Coronary Artery Disease Severity and Clinical Outcomes



ISCHEMIA Study, Circulation. 2021;144:1024–1038. DOI: 10.1161/CIRCULATIONAHA.120.04975

My Approach
for Multivessel Disease

High Risk,
3VD >70% or
2VD >70% with pLAD,

Intermediate Risk,
2VD >70% or 3VD >50%
or >70% pLAD,

Low Risk,
1VD >70% or 2 D >50%
Any 1VD >50%

LAD PCI + Medical Therapy

Medical Therapy Alone

My Approach
for Multivessel Disease

Big Vessel (>2.5 mm), and Favourable Anatomy for PCI, **PCI with Medical Treatment**

Unfavourable Anatomy and Low EF, and/or Diabetic Patients, **I Consider CABG first !**

Still Remaining Issues,

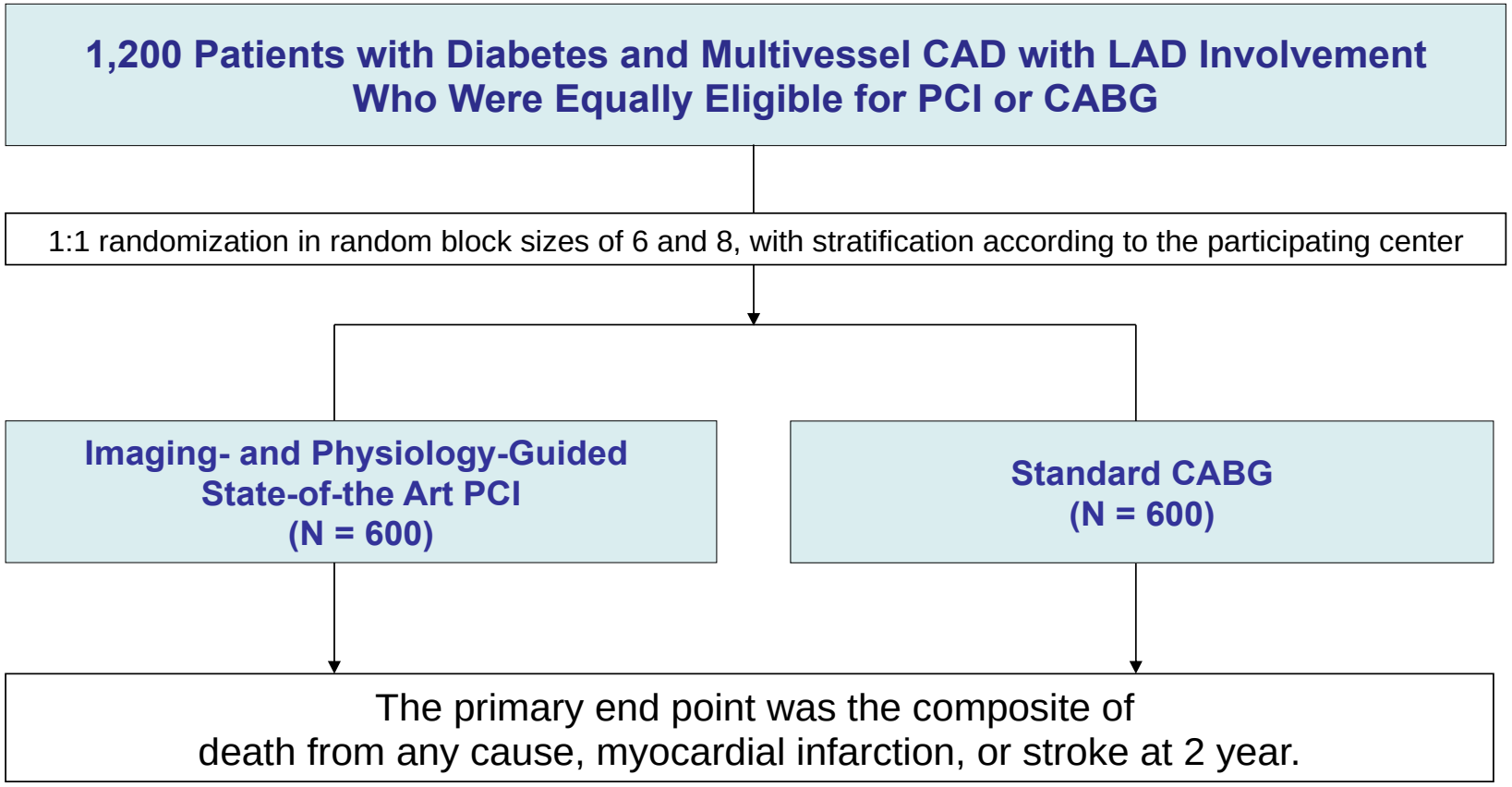
1. ***Contemporary PCI* vs. CABG for Multivessel Disease Patients with *Ischemic Cardiomyopathy (<50% EF).***
2. ***Contemporary PCI* vs. CABG for for Multivessel Disease Patients with *Diabetes.***

We Need More Data!

Trial Design

Diabetes-Centered **E**valuation of **F**unctional and **I**maging-Combi**NE**d State-of-the-Art Percutaneous Coronary Intervention or Coronary-Artery Bypass Grafting in Patients with **D**iabetes **M**ellitus and Three-Vessel Coronary Artery Disease

DEFINE-DM Trial



Thank You !!

summitMD.com