

Multivessel disease

Is revascularization always the answer?

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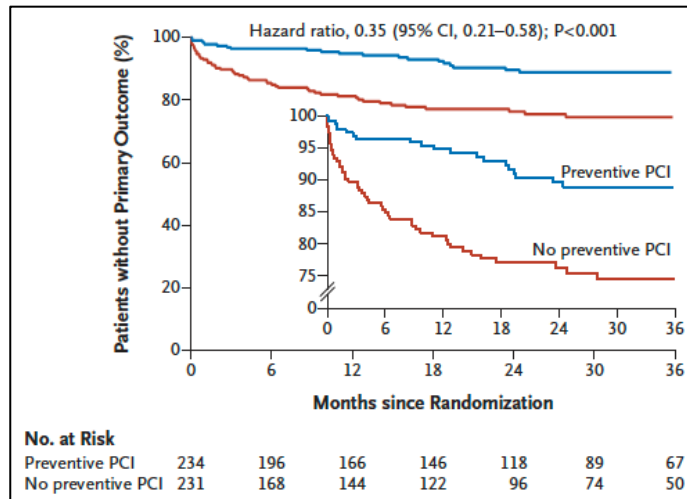
Invasive therapies

MVD & ACS



STE-ACS patients with MVD

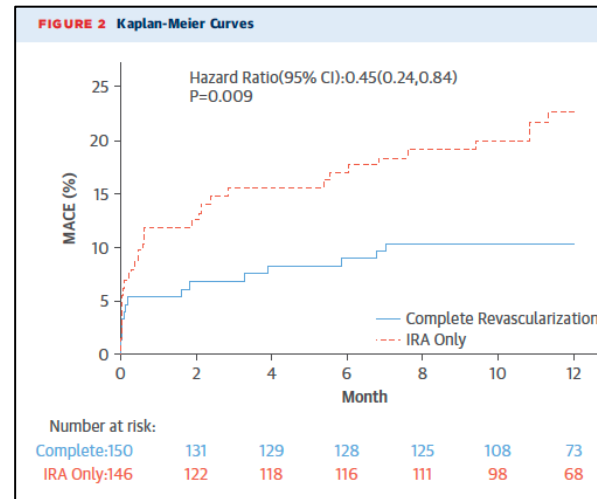
PRAMI (465 pts)



Index procedure

Wald et al, N Engl J Med 2013;369:1115-23

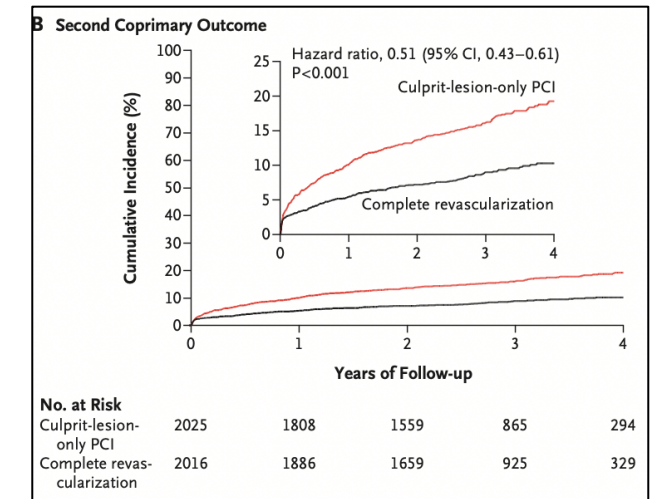
CVLPRIT (253 pts)



Pre-discharge

Gershlick et al, J Am Coll Cardiol 2015;65:963-72

COMPLETE (> 4000 pts)

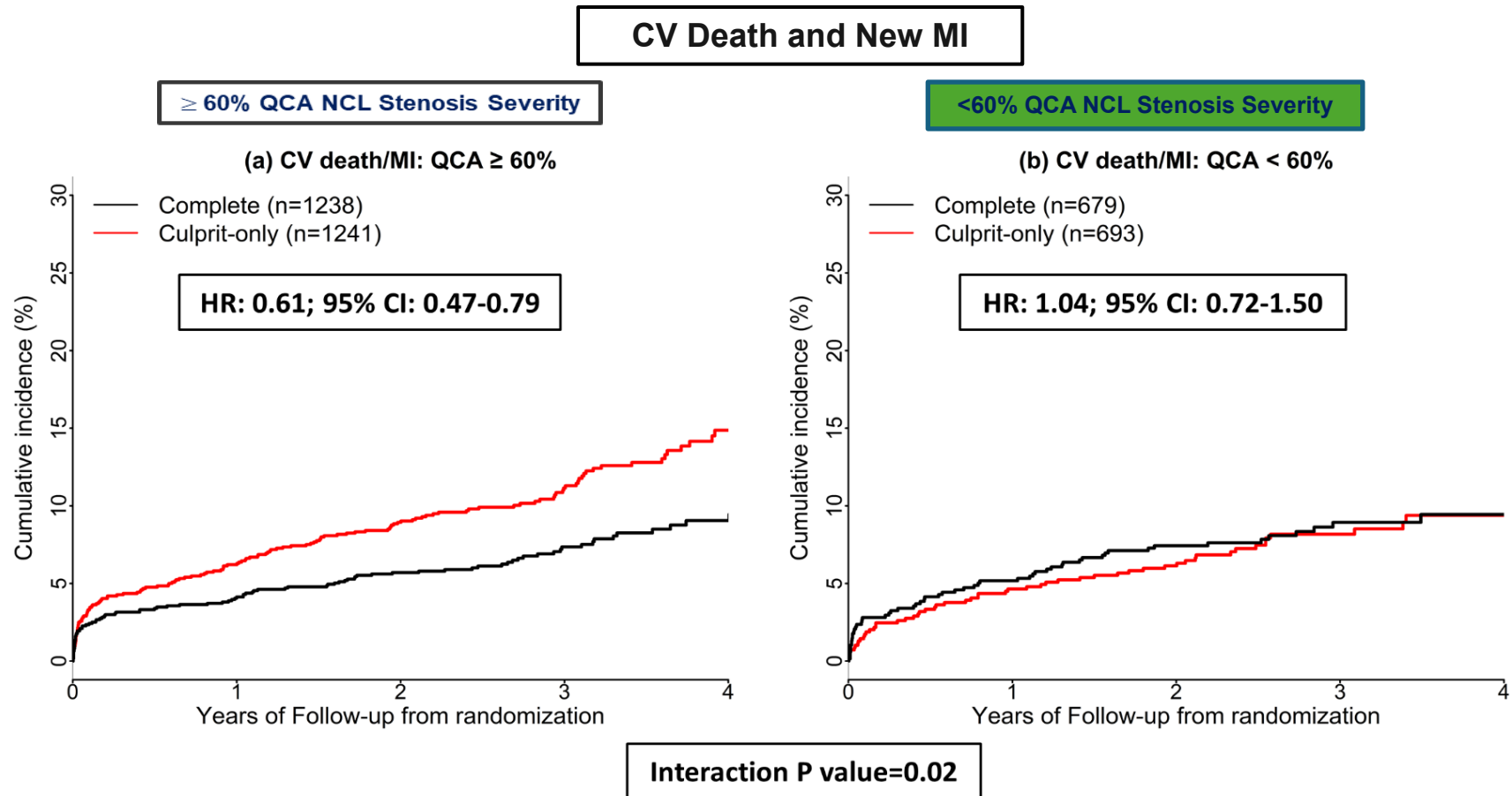


Pre-discharge or
Post-discharge < 45 days

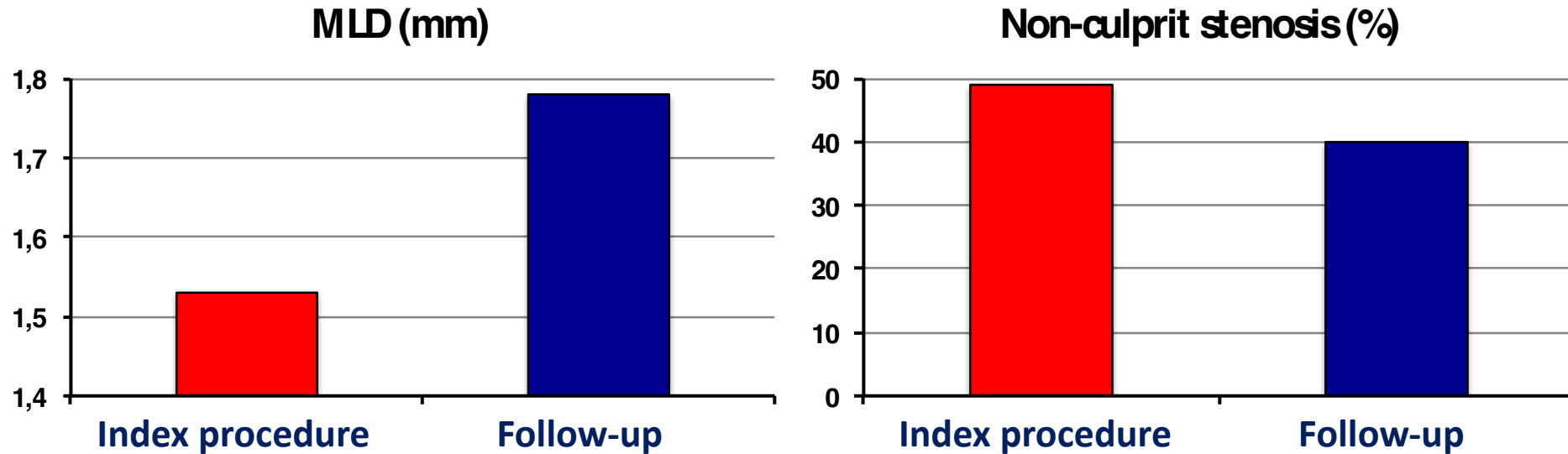
Mehta SR et al, N Engl J Med 2019;381:1411-1431



COMPLETE Trial - Outcomes by NCL Stenosis QCA Severity: Greater Benefit if Tighter NCLs



Systematic over-estimation of the stenosis severity at the index procedure





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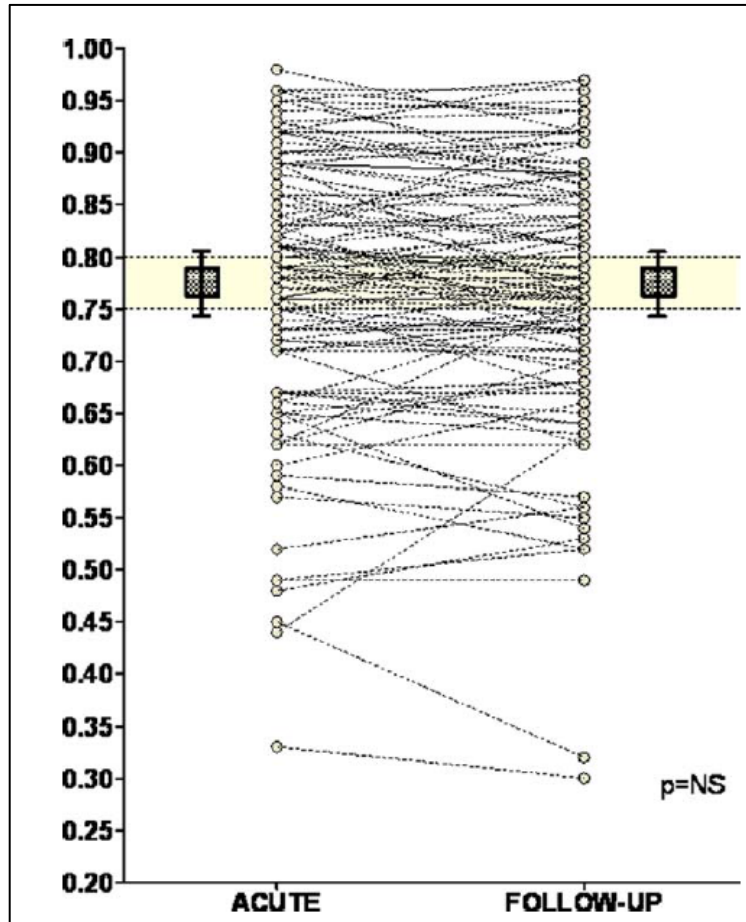


Management of non-culprit lesions in STEMI

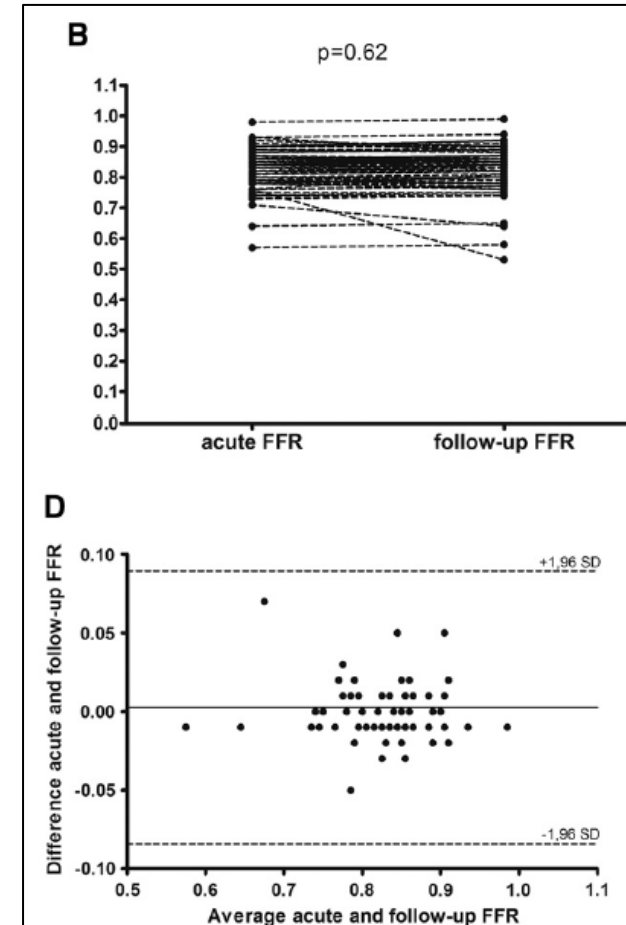
Any role of IV physiology?



Physiology in non-culprit lesions is reproducible



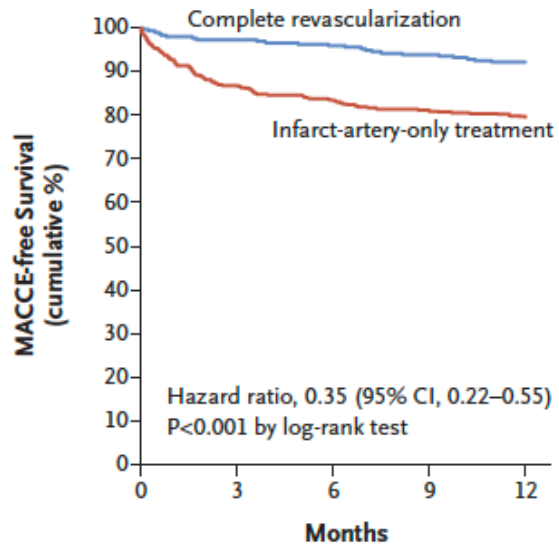
Ntalianis et al, J Am Coll Cardiol Interv 2010;3:1274-81



Musto C et al, Am Heart J 2017



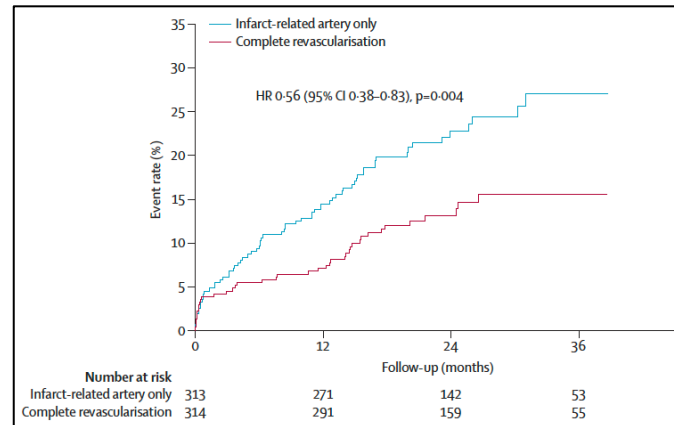
COMPARE-ACUTE



Index procedure

Smits et al, N Engl J Med 2017;376:1234-44

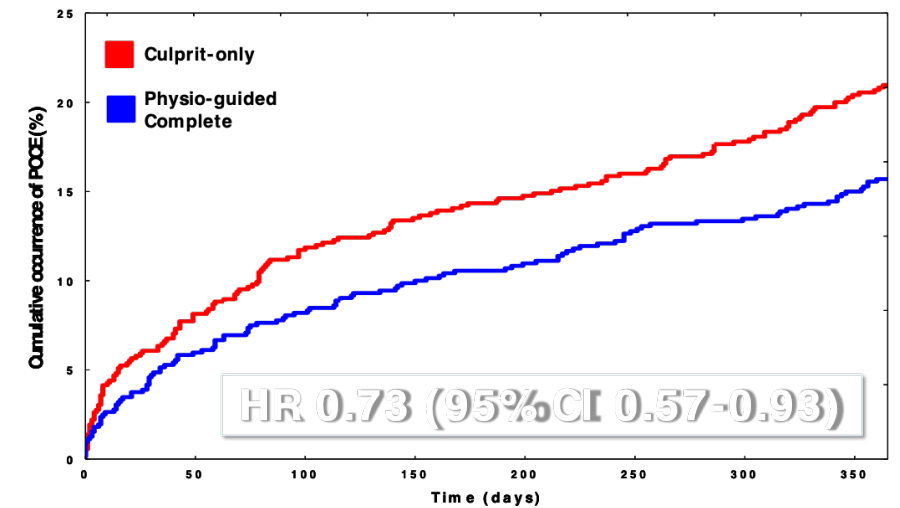
DANAMI-PRIMULTI



In-hospital

Engstrom et al, Lancet 2015;386:665-71

FIRE



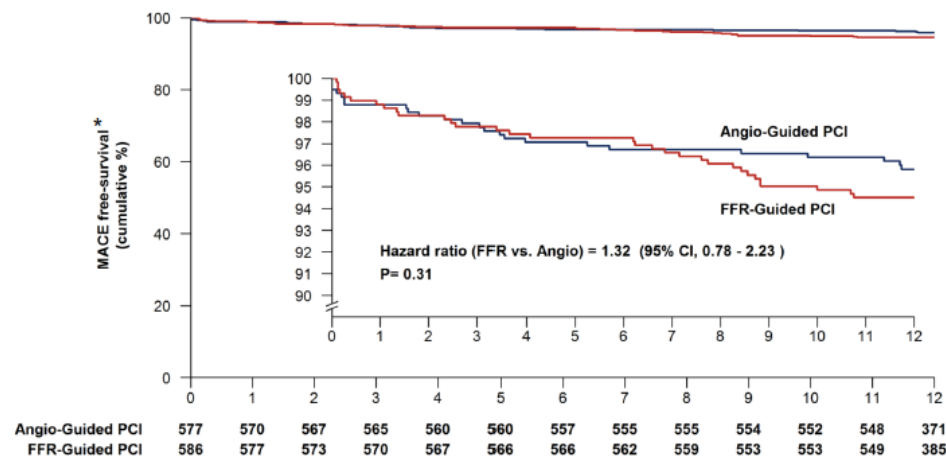
In-hospital (elderly)

Biscaglia et al, N Engl J Med 2023



STE-ACS patients with MVD: role of physiology in NCL

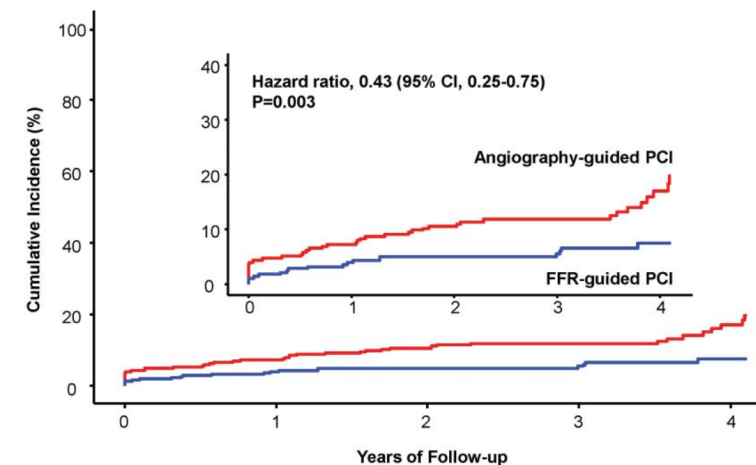
FLOWER - MI



In-hospital

Puymirat et al, NEJM 2021

FRAME - MI



No. at Risk

Angiography-guided PCI	278	257	223	173	74
FFR-guided PCI	284	271	237	186	79

Lee JM et al, Eur Heart J 2023

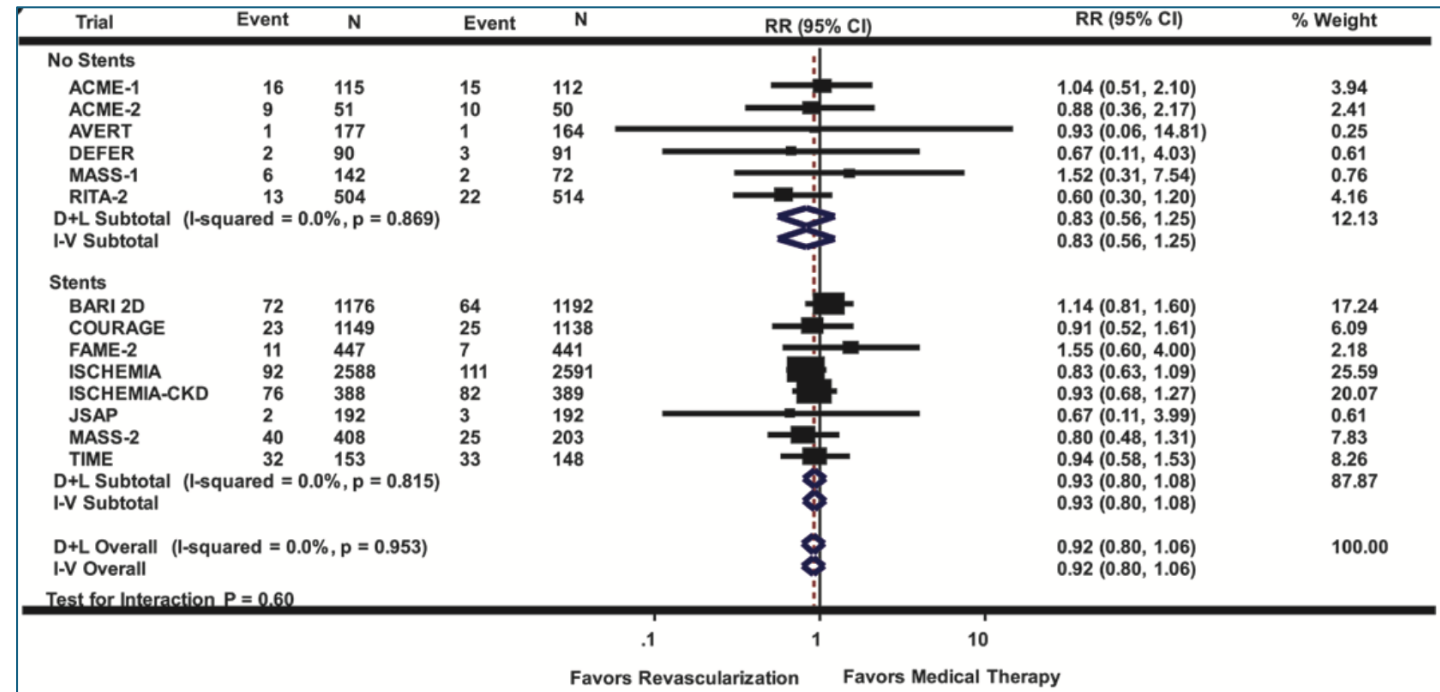
MVD & CCS



Routine revascularization vs. medical therapy

Neutral impact on cardiovascular mortality

- Nearly 15k patients
- 5 years clinical follow-up
- LM excluded in most of the trials

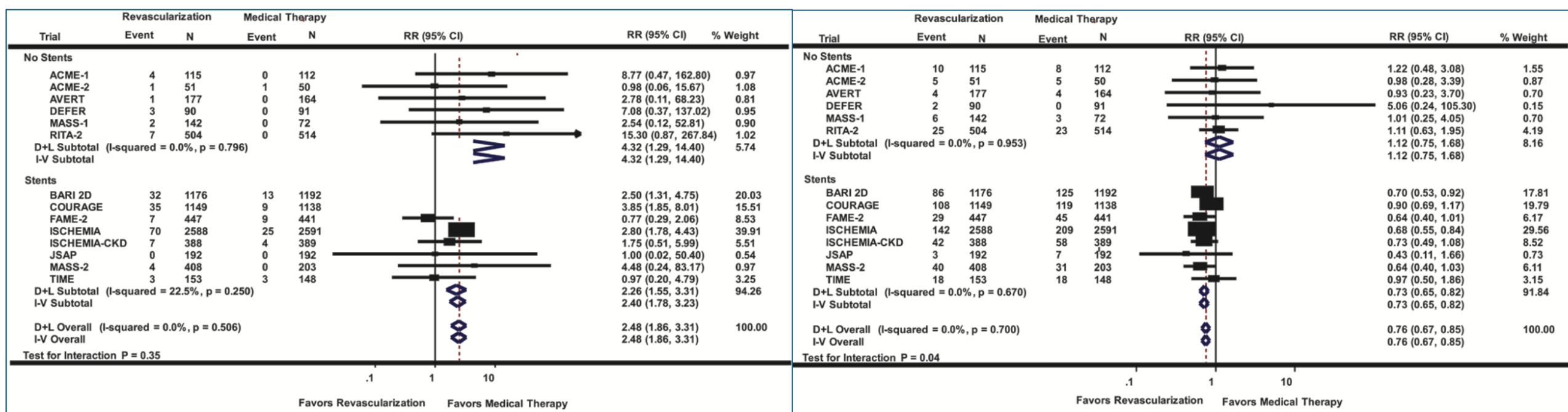




Routine revascularization vs. medical therapy

Negative impact on PMI

Positive impact on type 1 MI



Greater freedom from angina for the revascularization strategy



Selective revascularization vs. medical therapy

Revascularization to improve outcomes

In CCS patients with LVEF >35%, myocardial revascularization is recommended, in addition to guideline-directed medical therapy, for patients with <u>functionally significant left main stem stenosis</u> to improve survival.	I	A
In CCS patients with LVEF >35%, myocardial revascularization is recommended, in addition to guideline-directed medical therapy, for patients with <u>functionally significant three-vessel disease</u> to improve long-term survival and to reduce long-term cardiovascular mortality and the risk of spontaneous myocardial infarction.	I	A
In CCS patients with LVEF >35%, myocardial revascularization is recommended, in addition to guideline-directed medical therapy, for patients with <u>functionally significant single- or two-vessel disease involving the proximal LAD</u> , to reduce long-term cardiovascular mortality and the risk of spontaneous myocardial infarction.	I	B
In surgically eligible CCS patients <u>with multivessel CAD and LVEF ≤35%</u> , myocardial revascularization with CABG is recommended over medical therapy alone to improve long-term survival.	I	B



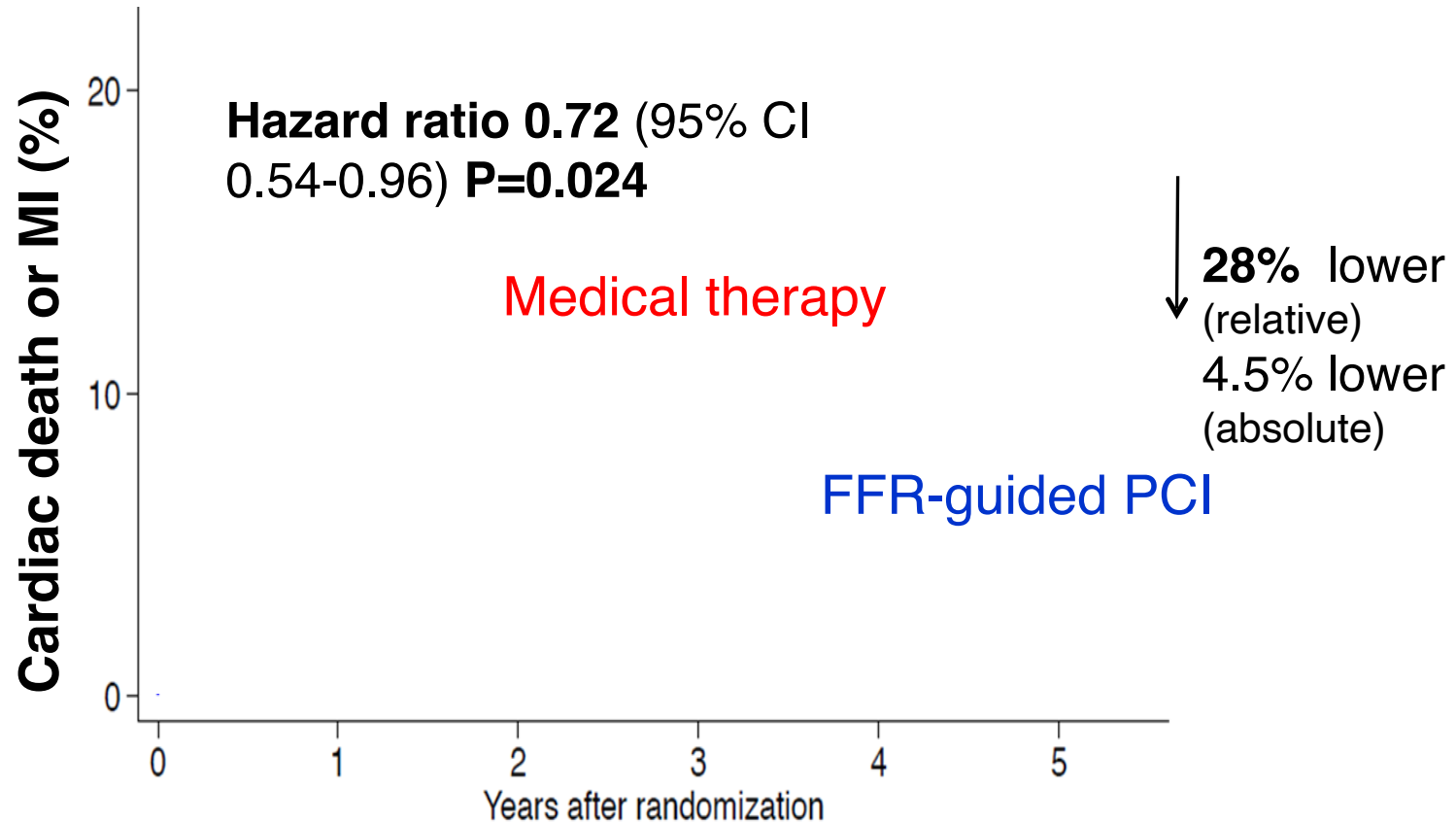
Assessment of procedural risks and post-procedural outcomes

Intracoronary pressure measurement (FFR or iFR) or computation (QFR):

- is recommended to guide lesion selection for intervention in patients with multivessel disease;

I

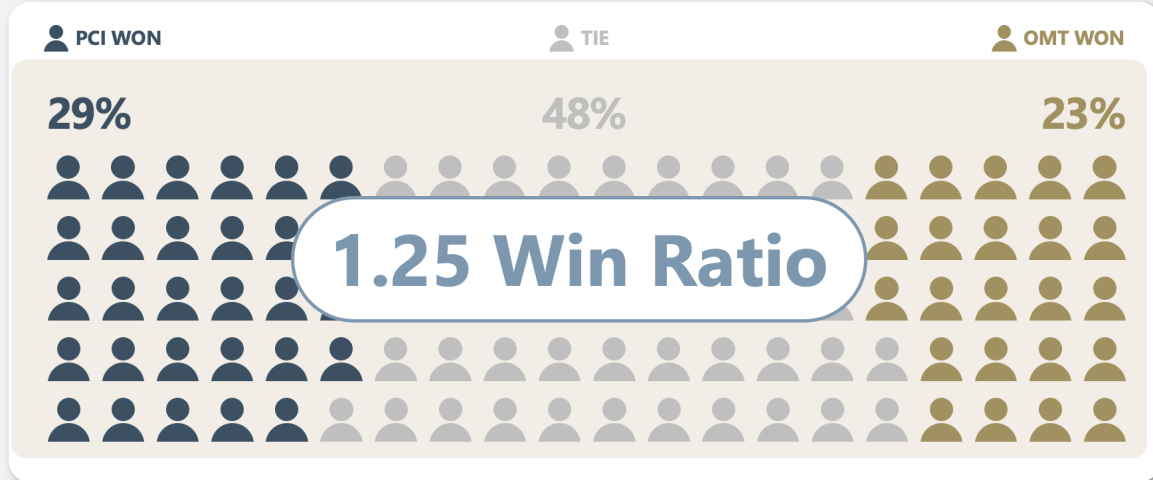
A



No. at risk

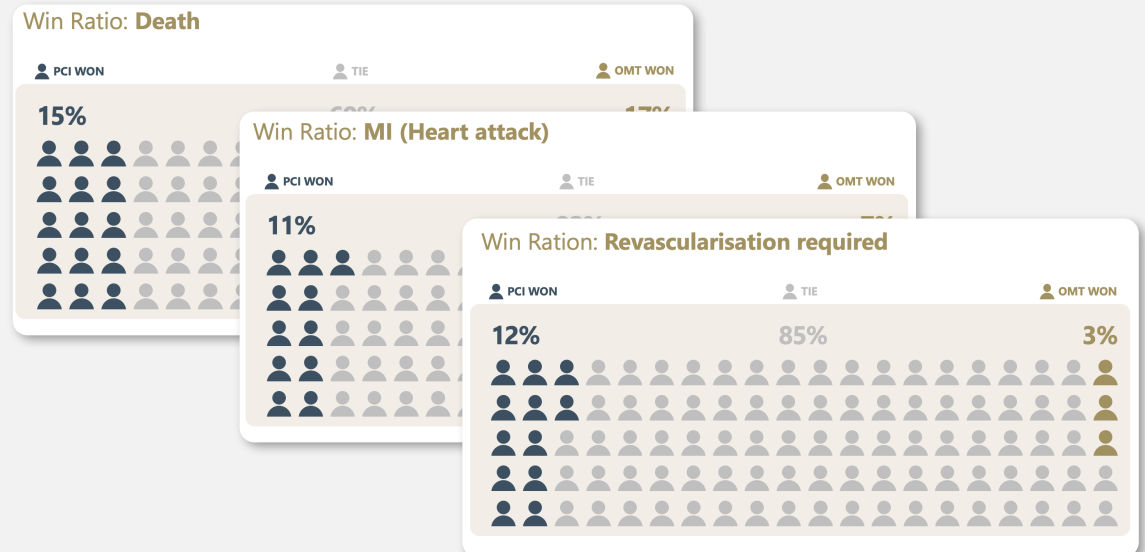
Medical therapy	1344	1222	688	559
381	301			
FFR-guided PCI	1056	980	696	566
406	328			

FFR-guided PCI has better long-term outcomes



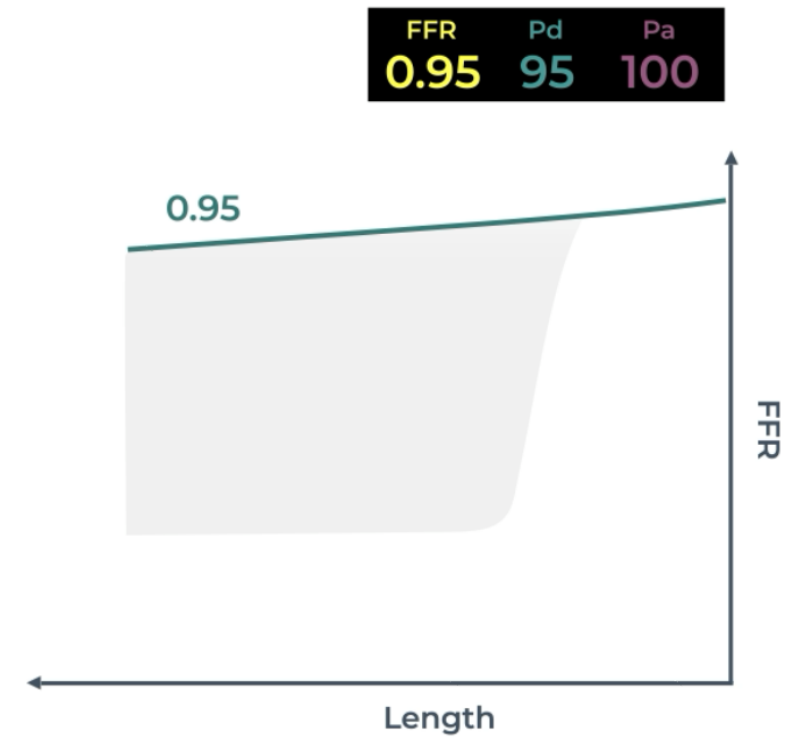
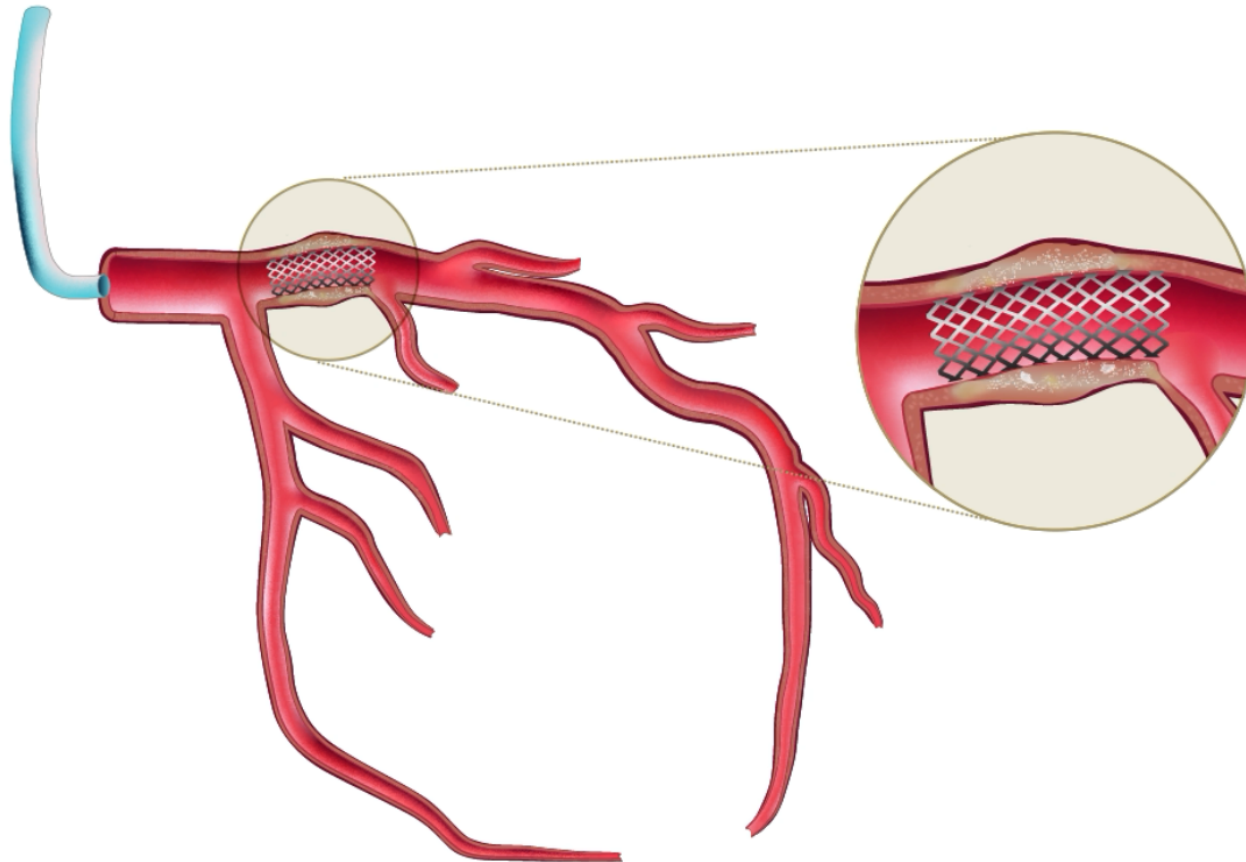
10-year follow-up demonstrates **FFR-guided PCI + Medical Therapy** treatment had better long-term outcomes than **Medical Therapy** alone.

FFR-guided PCI long-term benefit of **reduced urgent revascularisations**, a trend toward **fewer MIs**, but does not significantly impact all-cause mortality.



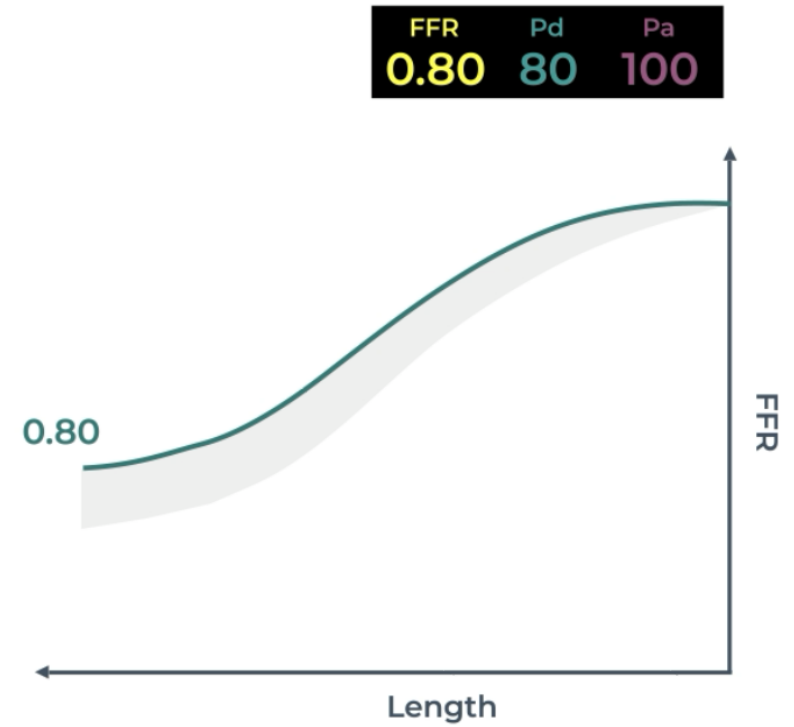
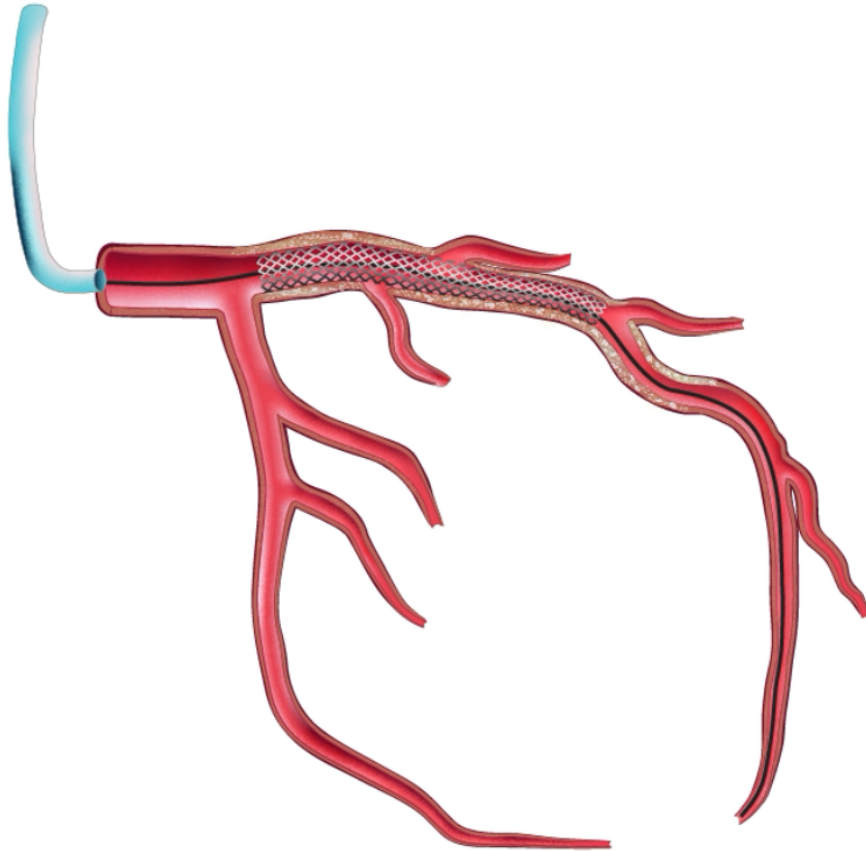


PCI in focal CAD





PCI in diffuse CAD





Assessment of procedural risks and post-procedural outcomes

Intracoronary pressure measurement (FFR or iFR) or computation (QFR):

- is recommended to guide lesion selection for intervention in patients with multivessel disease;

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A

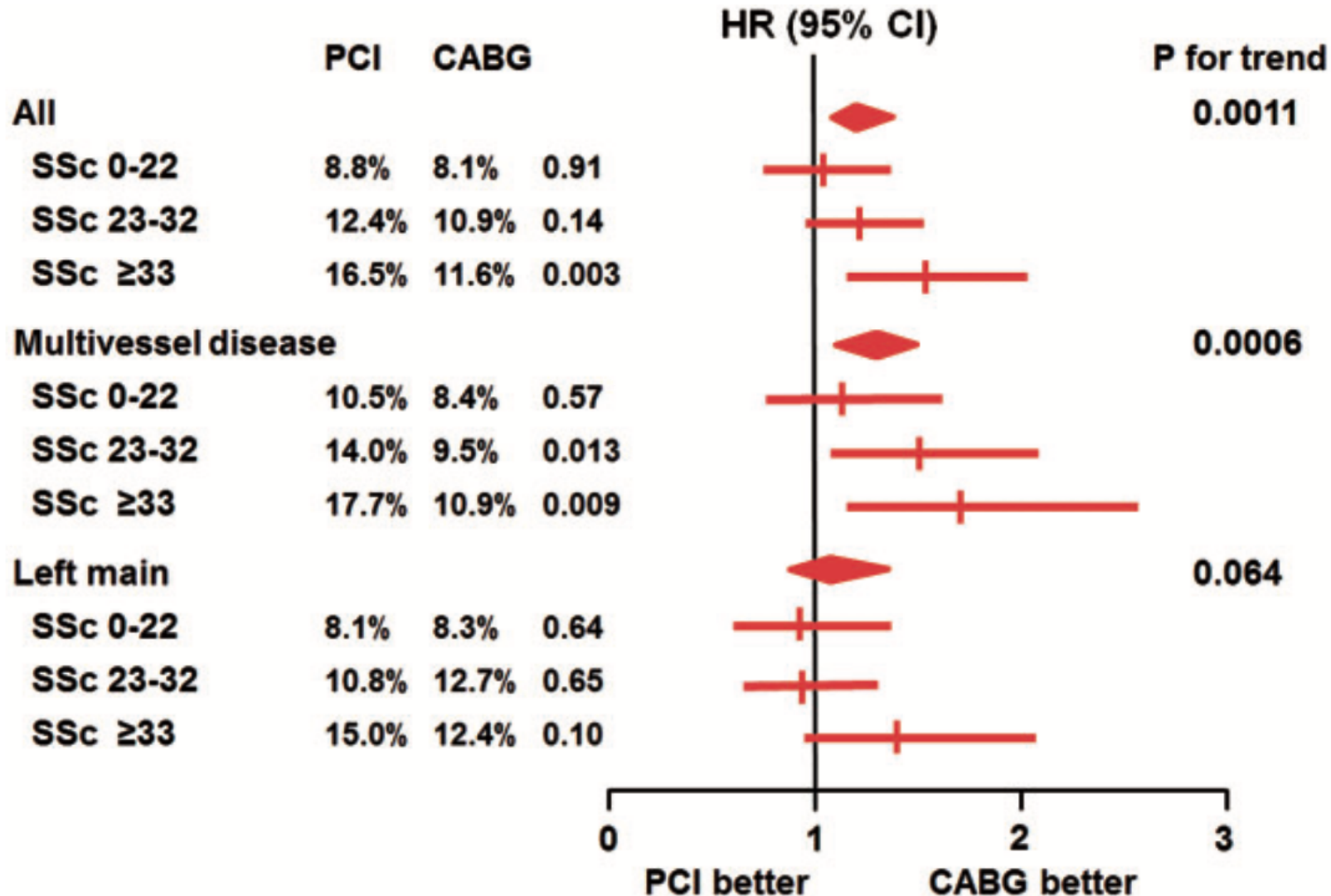
In patients with multivessel obstructive CAD, calculation of the SYNTAX score is recommended to assess the anatomical complexity of disease.

I

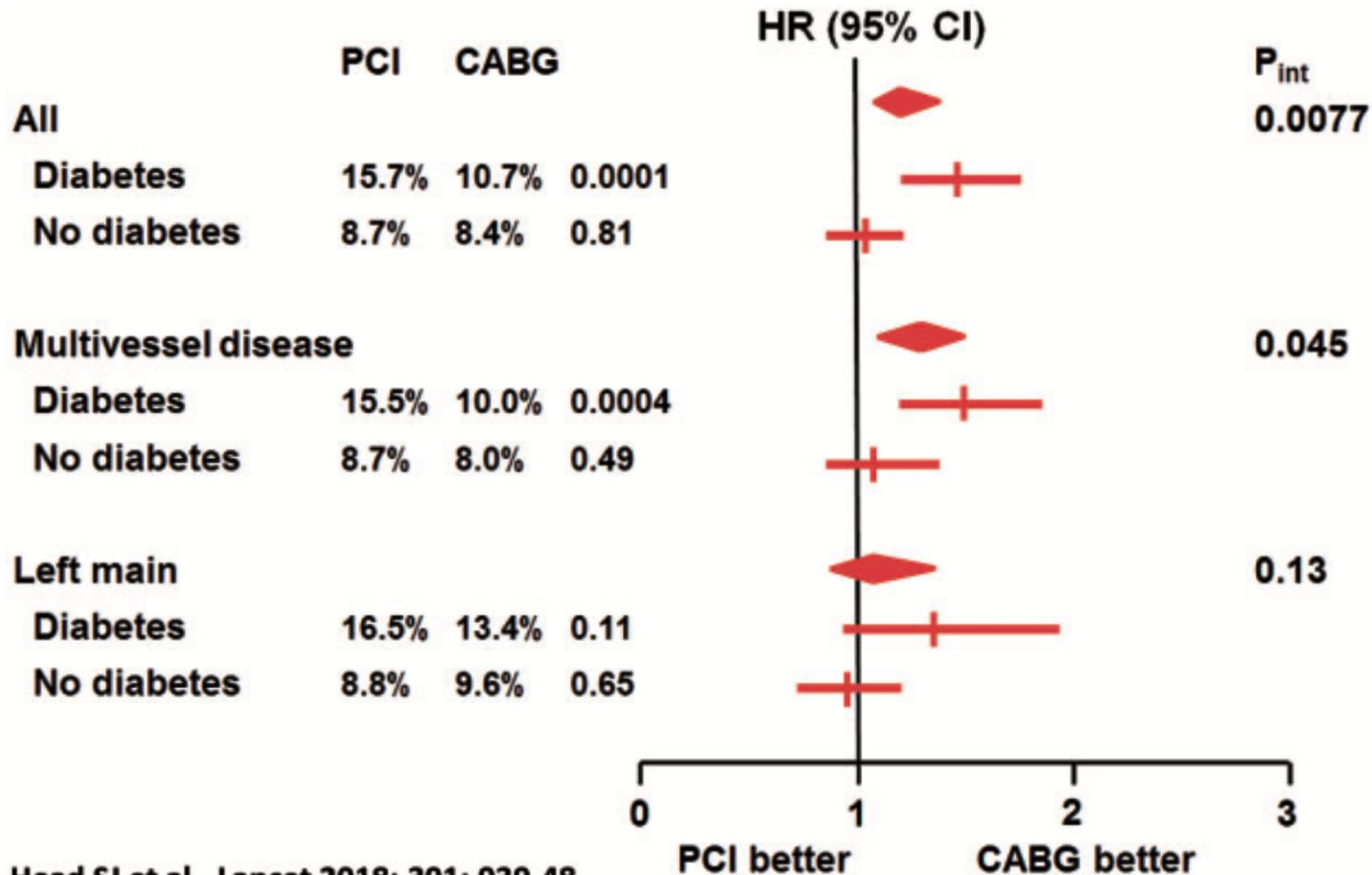
B



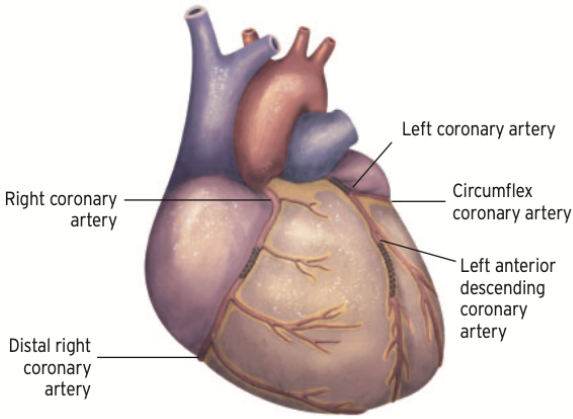
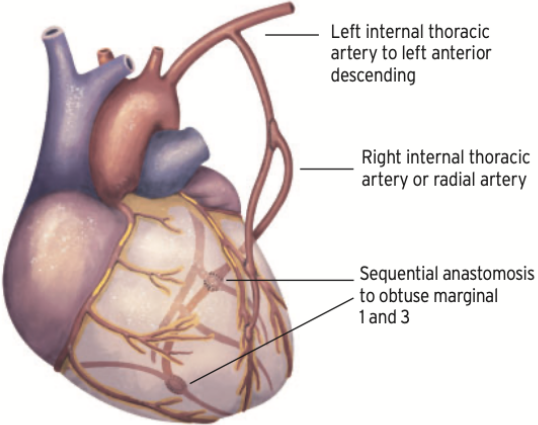
All-cause mortality among pts with MVD and LM disease



All-cause mortality among pts with MVD and LM disease



Factors in favour of PCI vs. CABG

PCI	CABG
	
FAVOURS PCI Clinical characteristics - Presence of severe co-morbidity (not adequately reflected by scores) - Advanced age/frailty/reduced life expectancy - Restricted mobility and conditions that affect the rehabilitation process Anatomical and technical aspects - MVD with SYNTAX score 0-22 - Anatomy likely resulting in incomplete revascularization with CABG due to poor quality or missing conduits - Severe chest deformation or scoliosis - Sequelae of chest radiation - Porcelain aorta^a	FAVOURS CABG Clinical characteristics - Diabetes - Reduced LV function (EF ≤35%) - Contraindication to DAPT - Recurrent diffuse in-stent restenosis Anatomical and technical aspects - MVD with SYNTAX score ≥23 - Anatomy likely resulting in incomplete revascularization with PCI - Severely calcified coronary artery lesions limiting lesion expansion Need for concomitant interventions - Ascending aortic pathology with indication for surgery - Concomitant cardiac surgery

Conclusions

- In ACS pts with MVD, complete revascularization is always associated with improved prognosis, especially when directed to angiographically severe or functional significant non-culprit stenoses
- In CCS, routine revascularization improves angina; prognosis improves when revascularization is selectively performed in severe MVD w/o LM, with associated reduced LVEF (w CABG), or diabetes
- Anatomical complexity (e.g. SS) or invasive functional evaluation are key to assess procedural risks and post-procedural outcomes