PLACE

PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

ROMA
Centro Congressi
di Confindustria
Auditorium
della Tecnica

9ª Edizione

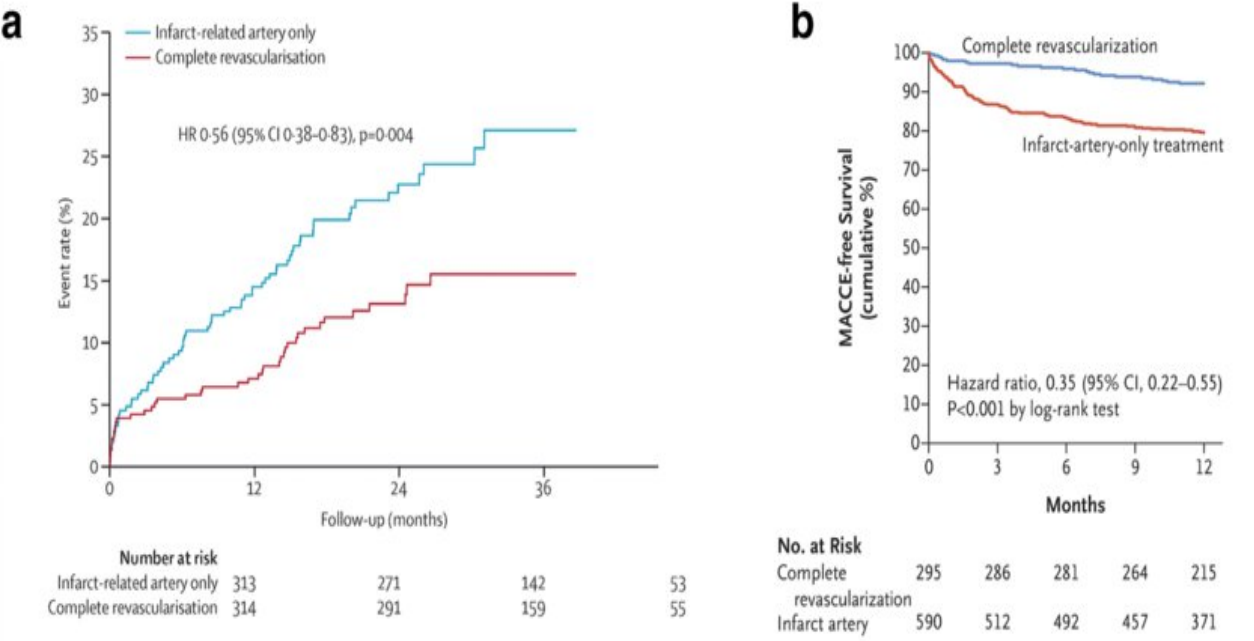
30 Settembre
1 Ottobre
2022

HOT TOPICS IN CATH LAB 1: MALATTIA CORONARICA MULTIVASALE

MALATTIA CORONARICA MULTIVASALE NELLO STEMI

Mauro Pennacchi
Osp. San Camillo, Roma

- ✓ **Complete revascularization?**
- ✓ **When?**



Engstrøm T et al. Lancet. 2015 Aug 15;386(9994):665-71.

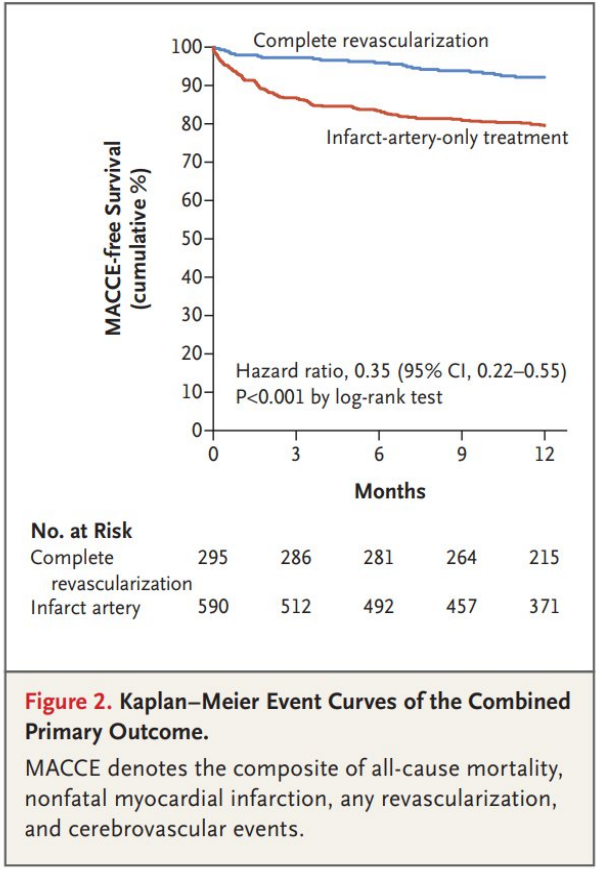
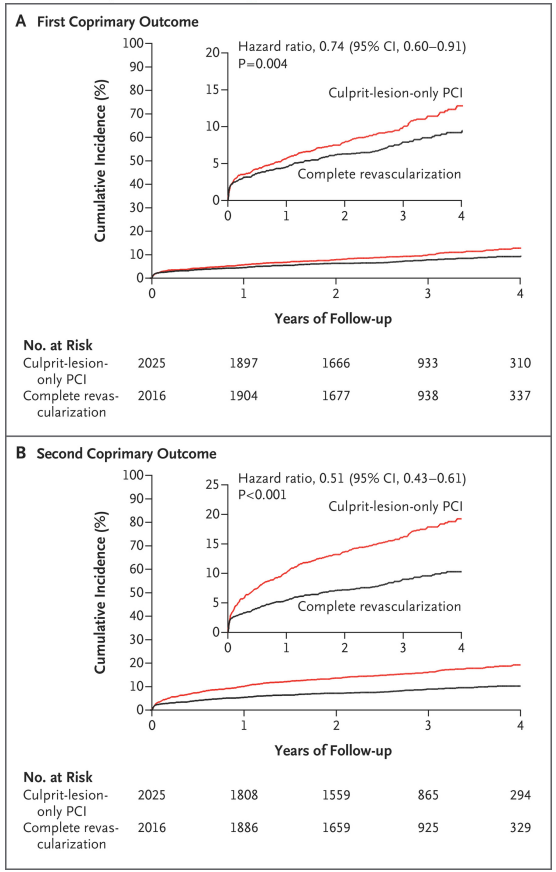


Figure 2. Kaplan–Meier Event Curves of the Combined Primary Outcome.

MACCE denotes the composite of all-cause mortality, nonfatal myocardial infarction, any revascularization, and cerebrovascular events.

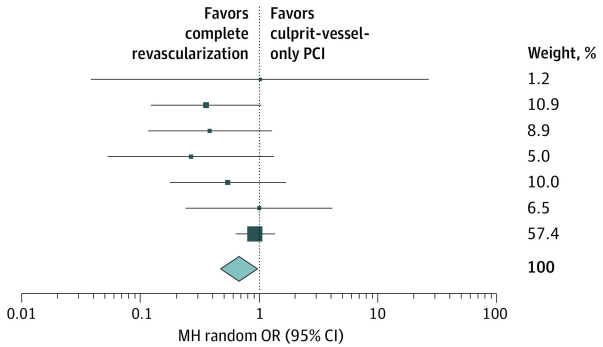
Smits PC et al. N Engl J Med 376;13 nejm.org March 30, 2017



Mehta SR et al. N Engl J Med 2019; 381:1411-1421

Source or study	Complete revascularization: No. of events	Complete revascularization: Total No.	Culprit-vessel-only PCI: No. of events	Culprit-vessel-only PCI: Total No.	MH random OR (95% CI)
HELP AMI,[7] 2004	1	52	0	17	1.02 (0.04-26.19)
Politi et al,[8] 2010	6	130	10	84	0.36 (0.13-1.03)
PRAMI,[10] 2013	4	234	10	231	0.38 (0.12-1.24)
CvLPRIT,[13] 2015	2	150	7	146	0.27 (0.05-1.31)
DANAMI-3-PRIMULTI,[12] 2015	5	314	9	313	0.55 (0.18-1.65)
COMPARE-ACUTE,[15] 2017	3	295	6	590	1.00 (0.25-4.03)
COMPLETE,[4] 2019	59	2016	64	2025	0.92 (0.64-1.32)
Total	**80**	**3191**	**106**	**3406**	**0.69 (0.48-0.99)**

Heterogeneity: $\tau = 0.03$; $\chi^2_8 = 6.57$ ($P = .36$); $I^2 = 9\%$
Test for overall effect: $z = 1.99$ ($P = .05$)



JAMA Cardiol. 2020 Aug 1;5(8):881-888.

✓ **Complete revascularization? Yes**
✓ **When? Indifferent**

RCTs and meta-analyses support the benefit of CR in STEMI patients with MVD, regardless of the mode of selection and the timing of NCL treatment

- ✓ **Complete revascularization?**
- ✓ **When?**
- ✓ **How to Evaluate?**

Assessment of Non-Culprit Lesions

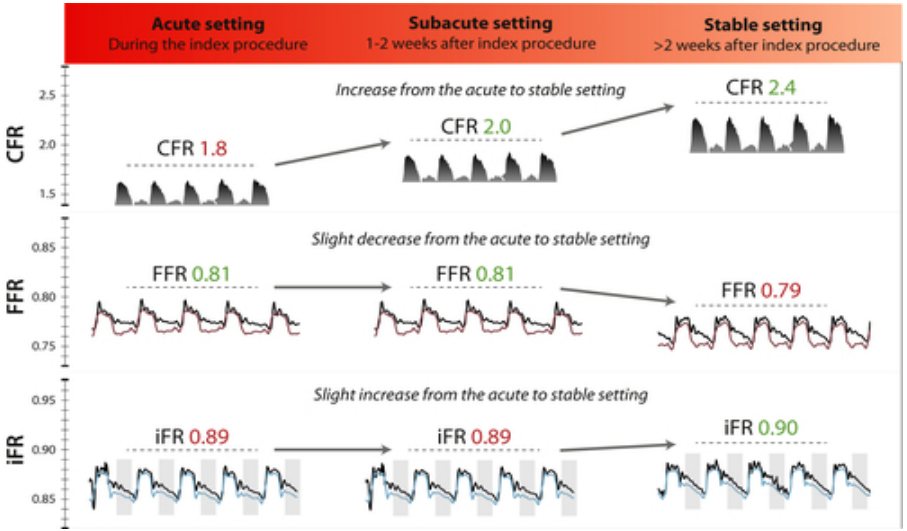
Angiography

Physiological

Imaging

Assessment of Non-Culprit Lesions

Physiological



Troels Tim, Nina W. van der Hoeven, Carmine Musto et al.
J Am Coll Cardiol Intv 2020; 13:1145-1154.

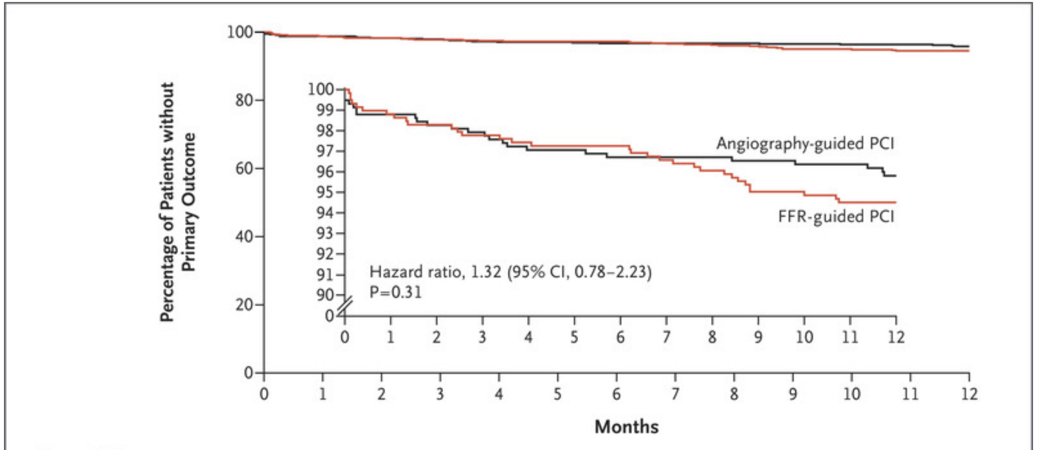
Assessment of Non-Culprit Lesions

Physiological

RESEARCH SUMMARY

Multivessel PCI Guided by FFR or Angiography for Myocardial Infarction

Puymirat E et al. DOI: 10.1056/NEJMoa2104650



No. at Risk													
Angiography-guided PCI	577	570	567	565	560	560	557	555	555	554	552	548	371
FFR-guided PCI	586	577	573	570	567	566	566	562	559	553	553	549	385

on the investigators' assessments.

- Investigators were encouraged to perform complete revascularization during the index procedure. In practice, most patients underwent staged multivessel procedures. A randomized trial comparing immediate and staged PCI could address the issue of the most effective timing.

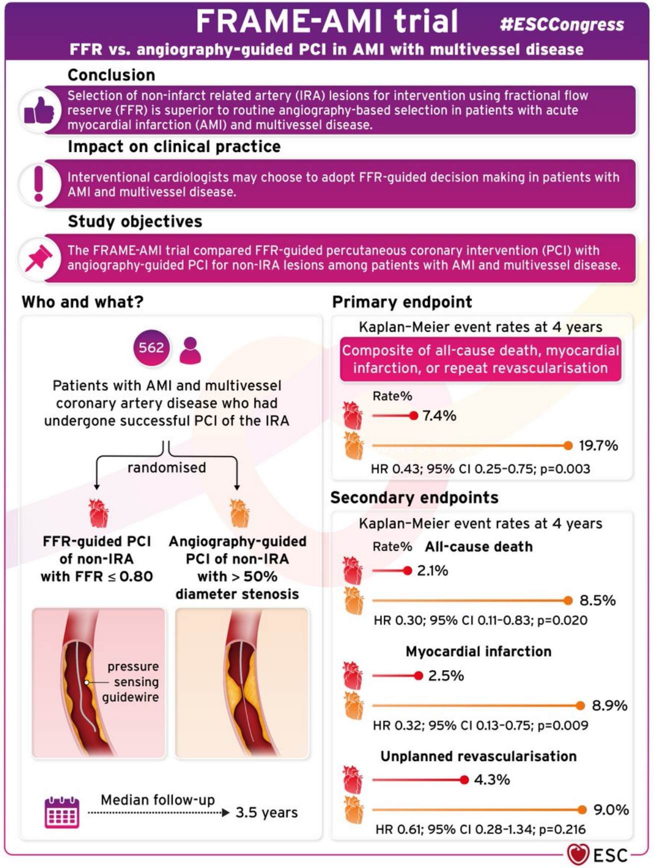
Links: Full article | NEJM Quick Take | Editorial

CONCLUSIONS

An FFR-guided strategy for complete revascularization in patients with STEMI and multivessel disease was not superior to an angiography-guided strategy for reducing the risk of major adverse cardiac events. However, given the wide confidence interval for the primary outcome, the findings do not allow for a conclusive interpretation.

Puymirat E. et al. N Engl J Med 2021; 385:297-308
FLOWER-MI Study

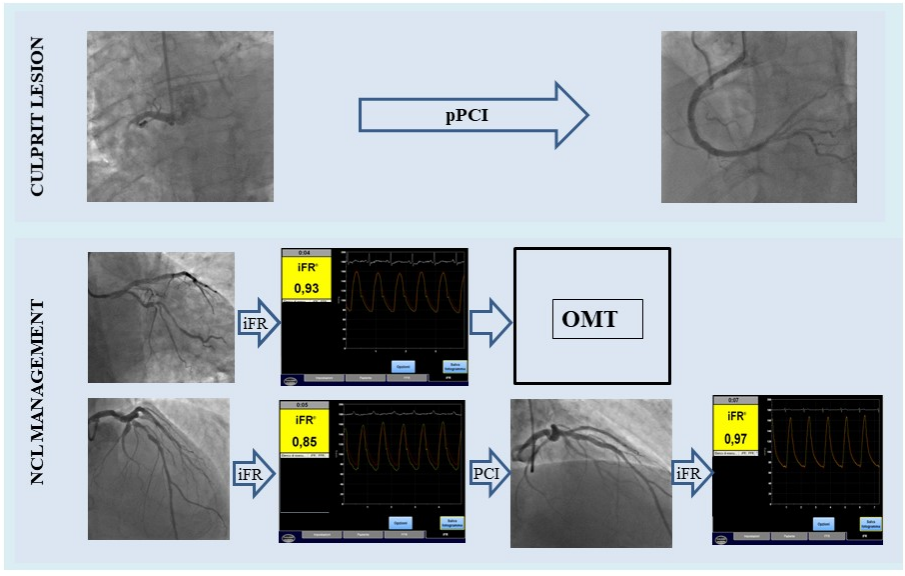
Puymirat E. et al. N Engl J Med 2021; 385:297-308
FLOWER-MI Study


FRAME-AMI trial
#ESCCongress
FFR vs. angiography-guided PCI in AMI with multivessel disease
Conclusion
Selection of non-infarct related artery (IRA) lesions for intervention using fractional flow reserve (FFR) is superior to routine angiography-based selection in patients with acute myocardial infarction (AMI) and multivessel disease.
Impact on clinical practice
Interventional cardiologists may choose to adopt FFR-guided decision making in patients with AMI and multivessel disease.
Study objectives
The FRAME-AMI trial compared FFR-guided percutaneous coronary intervention (PCI) with angiography-guided PCI for non-IRA lesions among patients with AMI and multivessel disease.
Who and what?
562
Patients with AMI and multivessel coronary artery disease who had undergone successful PCI of the IRA
randomised
FFR-guided PCI of non-IRA with FFR ≤ 0.80
Angiography-guided PCI of non-IRA with > 50% diameter stenosis
pressure sensing guidewire
Median follow-up
3.5 years
Primary endpoint
Kaplan-Meier event rates at 4 years
Composite of all-cause death, myocardial infarction, or repeat revascularisation
Rate%
7.4%
19.7%
HR 0.43; 95% CI 0.25-0.75; p=0.003
Secondary endpoints
Kaplan-Meier event rates at 4 years
Rate% All-cause death
2.1%
8.5%
HR 0.30; 95% CI 0.11-0.83; p=0.020
Myocardial infarction
2.5%
8.9%
HR 0.32; 95% CI 0.13-0.75; p=0.009
Unplanned revascularisation
4.3%
9.0%
HR 0.61; 95% CI 0.28-1.34; p=0.216
ESC

Assessment of Non-Culprit Lesions

Physiological

CENTRAL ILLUSTRATION iFR-guided Evaluation and Management of Nonculprit Lesions in STEMI



pPCI = primary percutaneous coronary intervention; OMT = optimal medical therapy

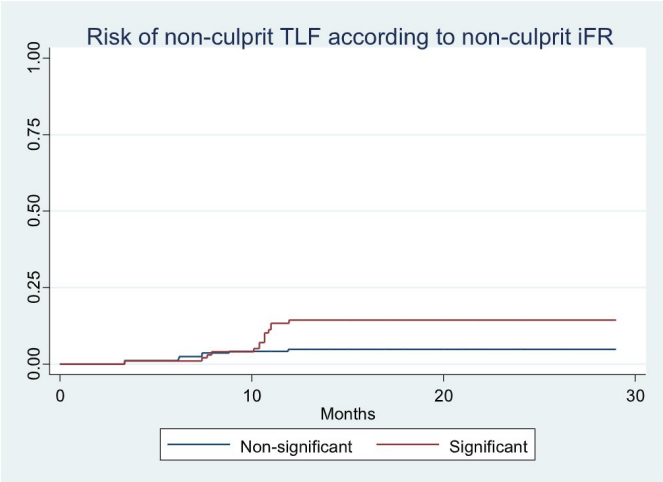
STEMI = ST-elevation myocardial infarction, iFR = instantaneous wave-free ratio; TLF = target lesion failure

› Catheter Cardiovasc Interv. 2022 Sep;100(3):351-359. doi: 10.1002/ccd.30342. Epub 2022 Jul 23.

Instantaneous wave-free ratio-guided revascularization of nonculprit lesions in STEMI patients with multivessel coronary disease: The WAVE registry

Carmine Musto [1], Massimiliano Scappaticci [2], Giuseppe Biondi-Zoccai [2], Francesco De Felice [1], Domenico D'Amario [3], Marco S Nazzaro [1], Rocco E Stio [1], Armando Del Prete [2], Diana Chin [1], Mauro Pennacchi [1], Luca Paolucci [1], Francesco Versaci [2], Domenico Gabrielli [1]

Figure 1B. Risk of non-culprit TLF according to non-culprit iFR (p=0.013)



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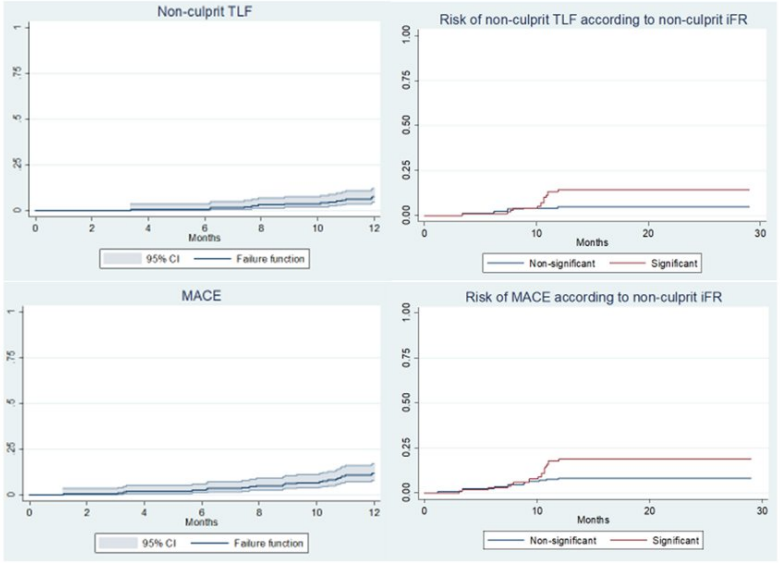
Assessment of Non-Culprit Lesions

Physiological



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Assessment of Non-Culprit Lesions

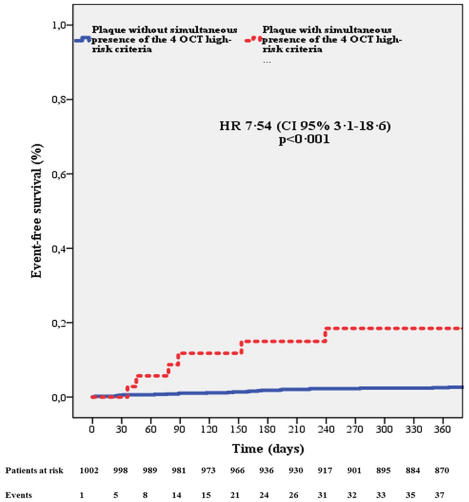
Imaging

OCT LAD in 1003 patients with clinically indicated coronary angiogram from 11 independent centres enrolled from January 2013 to December 2016 (clinicaltrial.gov identifier NCT02883088).

MLA <3.5mm^2 + FCT <75µm + Lipid arc circumferential extension >180° + OCT defined macrophages

In 18.9% of patients who experienced the primary end-point the combination of the 4 findings was an independent predictor of events (HR 7.54, CI 95% 3.1-18.6).

Prati F. et al. Eur Heart J. 2020 Jan 14;41(3):393.



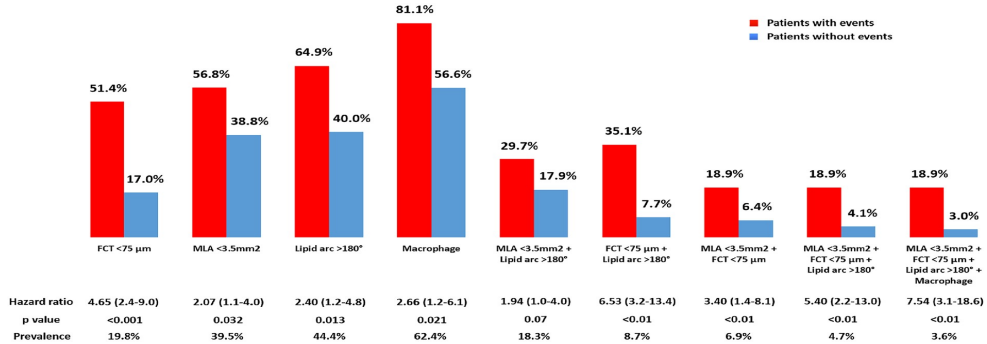


Figure 2 Clinical outcome. Survival free of cardiac death or target vessel myocardial infarction according to optical ...

Figure 3 One-year event rates for lesions with and without optical coherence tomography-defined high-risk criteria.

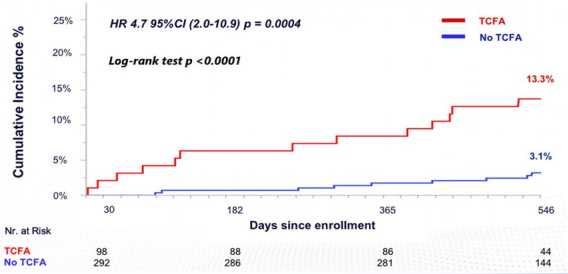
Assessment of Non-Culprit Lesions

Imaging

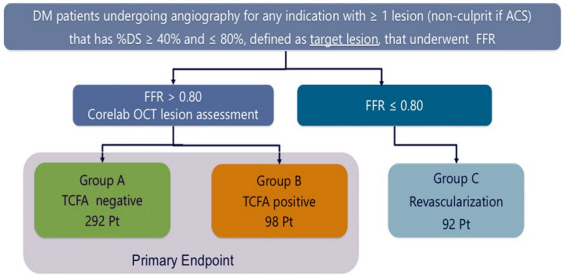
Combined *Optical Coherence Tomography* and *Fractional Flow Reserve* Assessment to Better Predict Adverse Event Outcomes in DM Patients
COMBINE (FFR–OCT) Trial

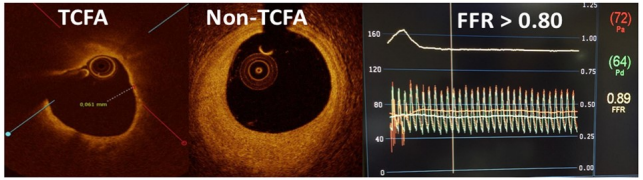
Aim: **to explore the hypothesis that in patients with fast progressing atherosclerosis like DM patients, identification of TCFAs may be more important than ruling out the presence of flow-limiting lesions in predicting future MACE**

Primary Endpoint
(CD, TVMI, CD-TLR, or Hospitalization UAP)



COMBINE (FFR-OCT) Design
Prospective Natural History Study





Conclusions: **In DM patients, TCFA represents 25% of FFR-negative lesions and OCT-detected TCFA is associated with a 5-fold higher rate of adverse events despite the absence of ischemia**

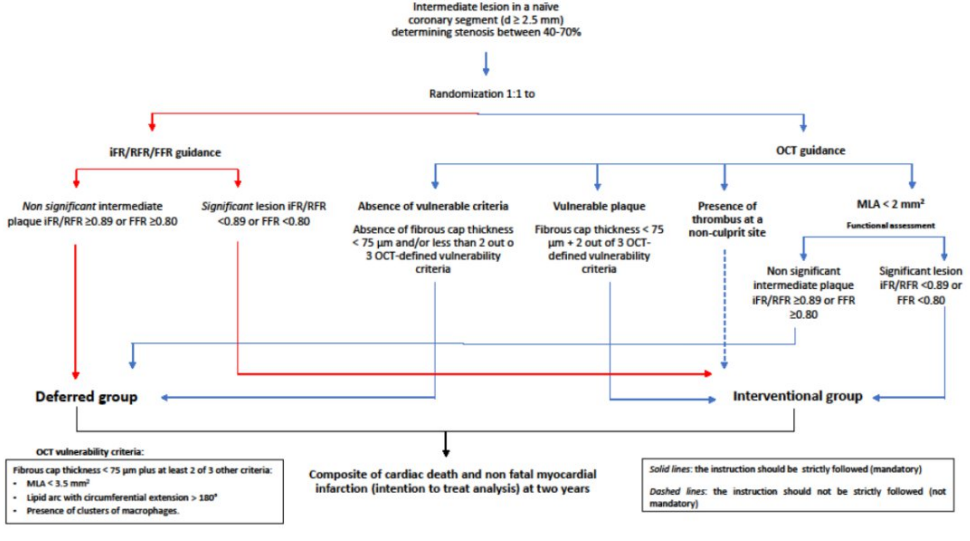
Eur Heart J, Volume 42, Issue 45, 1 December 2021, Pages 4671–4679.

Assessment of Non-Culprit Lesions

Imaging

AN INTERVENTIONAL STRATEGY FOR NON-CULPRIT LESIONS WITH MAJOR VULNERABILITY CRITERIA IDENTIFIED BY OCT IN PATIENTS WITH ACS
(THE INTER-CLIMA TRIAL)

To validate the use of an optical coherence tomography (OCT)-based plaque risk stratification as compared with a physiology-based approach (i.e. iFR/FFR/RFR) for the treatment of non-culprit intermediate coronary lesions in patients with acute coronary syndrome (ACS).



- ✓ **Complex non-culprit Lesions**

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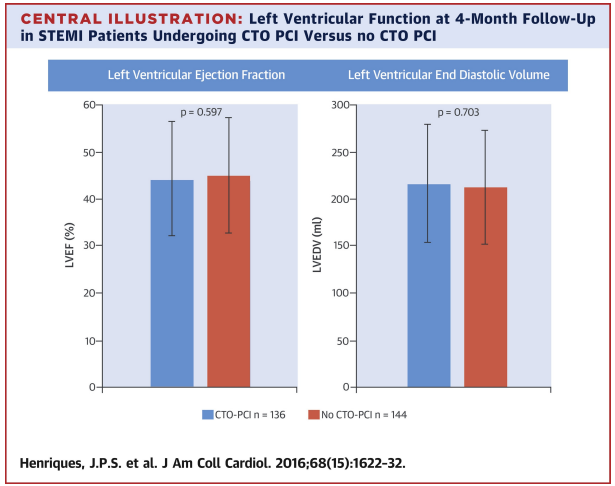
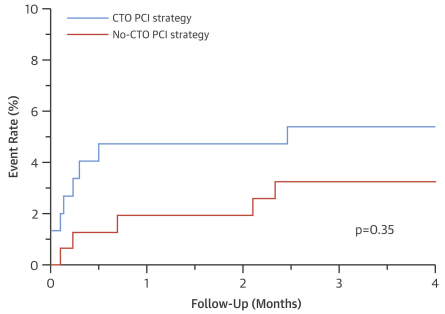
✓ Complex non-culprit Lesions

CTO





LM

NCL LMS is rare in patients with ACS

Most of the RCTs investigating culprit-only versus multivessel PCI in different ACS settings excluded patients with an indication for urgent CABG affecting the majority of patients with an NCL LMS.

Unless there is a critical degree of stenosis and any sign of an unstable morphology, e.g., thrombotic lesion, ulceration or plaque rupture related to the NCL LMS, a deferred revascularisation approach is recommended for most patients with CS and patients with STEMI after primary PCI of the culprit lesion.

Complete Revascularization in ACS; *State of the Art*.
EuroIntervention 2021;17:193-201

FUTURE PERSPECTIVES

- ✓ The **BIOVASC trial** (NCT03621501) will answer if immediate CR approach is non-inferior to staged CR (within six weeks after the procedure).

- ✓ The **MULTISTARS AMI trial** (NCT03135275) will compare index procedure CR to staged revascularisation of NCLs within 19-45 days.

- ✓ The **iMODERN trial** (NCT03298659) will compare an iFR-guided approach of NCLs during the acute setting with a deferred stress perfusion CMR-guided strategy during the outpatient follow-up in a cohort of 1,146 STEMI patients with MVD.

- ✓ The **FULL-REVASC trial** (NCT02862119) has helted recruitment after COMPLETE tiral results.

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