

Complete vs. Culprit-Only Revascularization in Older STEMI Patients



The **EARTH-STEMI** IPD meta-analysis

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on behalf of the EARTH-STEMI Investigators

Disclosures

- **Research grants and/or personal fees from SMT, Medis, Abbott Vascular, GADA, Siemens Helthcare, GE Healthcare, Menarini, Amgen, Daichii-Sankio**

Background

- The **COMPLETE** trial showed the superiority of complete revascularization in STEMI patients¹
- The **FIRE** trial confirmed its benefit in older MI patients²

However:

- The **FIRE** trial mixed STEMI and NSTEMI patients²
- The **FIRE** follow-up was limited to 1-year²
- The recent **FULL-REVASC** trial questioned long-term benefit of complete revascularization³

Research question



To investigate with an individual patient data meta-analysis from RCTs whether, in older patients (75+ years) with STEMI and multivessel disease, complete revascularization is superior to a culprit-only strategy at follow-up longer than 1 year



Methods



- **The EARTH-STEMI protocol was registered on PROSPERO with the id CRD42022367898¹ and followed PRISMA guidelines**
- **We searched for RCTs comparing complete vs. culprit-only revascularization in MI patients**
- **From original database, data of STEMI patients aged ≥ 75 years were extracted and analyzed**

Endpoints (at longest available follow-up)



Primary

Death, any MI, or ID-revascularization

Key secondary

Cardiovascular death or MI

Safety

CA-AKI, stroke, ST or major bleeding



Results - Population



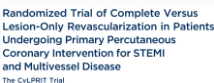
Trial	PI	Pts	75+
COMPLETE¹	<i>S Metha</i>	4041	554
FIRE²	<i>S Biscaglia</i>	1445	509
FULL REVASC³	<i>F Boehm</i>	1542	318
DANAMI 3⁴	<i>T Engstrom</i>	627	110
COMPARE ACUTE⁵	<i>P Smits</i>	885	108
Hamza et al.⁶	<i>I Elgendy</i>	100	76
CvLPRIT⁷	<i>G McCann</i>	296	58

7 RCTs, 19% of pts

1733 pts

917
culprit

816
complete



Results – Follow-up



Trial	Median	Longest
COMPLETE¹	2.8	5.6
FIRE²	1	1
FULL REVASC³	4.4	6.2
DANAMI 3⁴	1.9	3.7
COMPARE ACUTE⁵	2.9	3.2
Hamza et al.⁶	0.5	0.5
CvLPRIT⁷	6	6

(years)



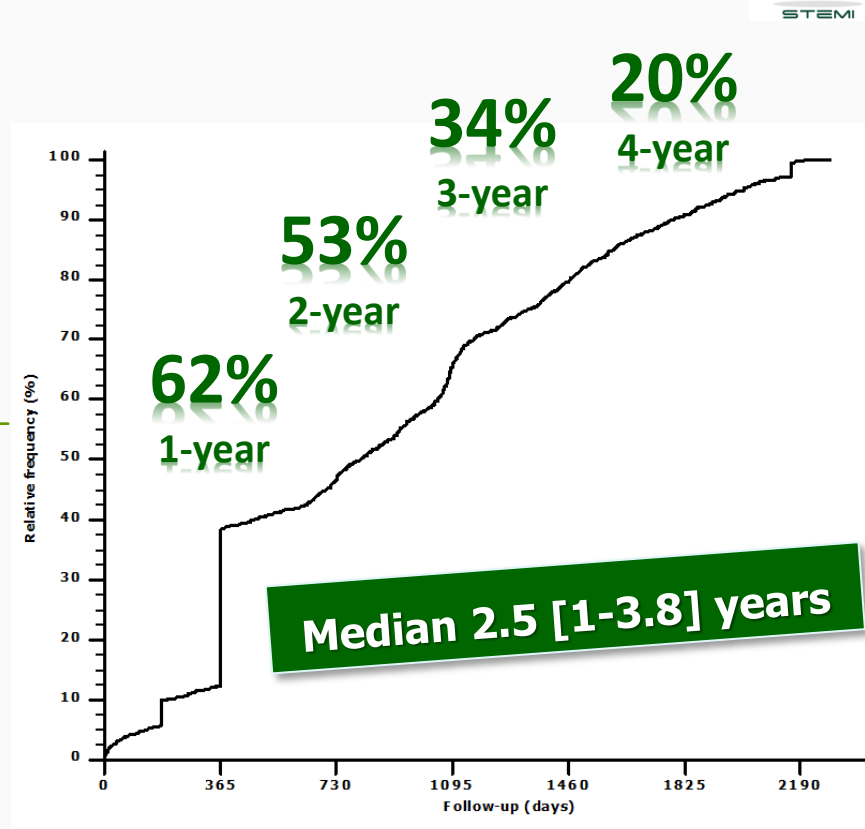
FULL REVASC



ORIGINAL ARTICLE
Fractional Flow Reserve-Guided Multivessel Angioplasty in Myocardial Infarction

ACUTE CORONARY SYNDROME
A Randomized Trial of Complete Versus Lesion-Only Revascularization During Primary Percutaneous Coronary Intervention in Diabetic Patients With Acute ST Elevation Myocardial Infarction and Multi-Vessel Disease

Randomized Trial of Complete Versus Lesion-Only Revascularization in Patients Undergoing Primary Percutaneous Coronary Intervention for STEMI and Multivessel Disease
The CvLPRIT Trial



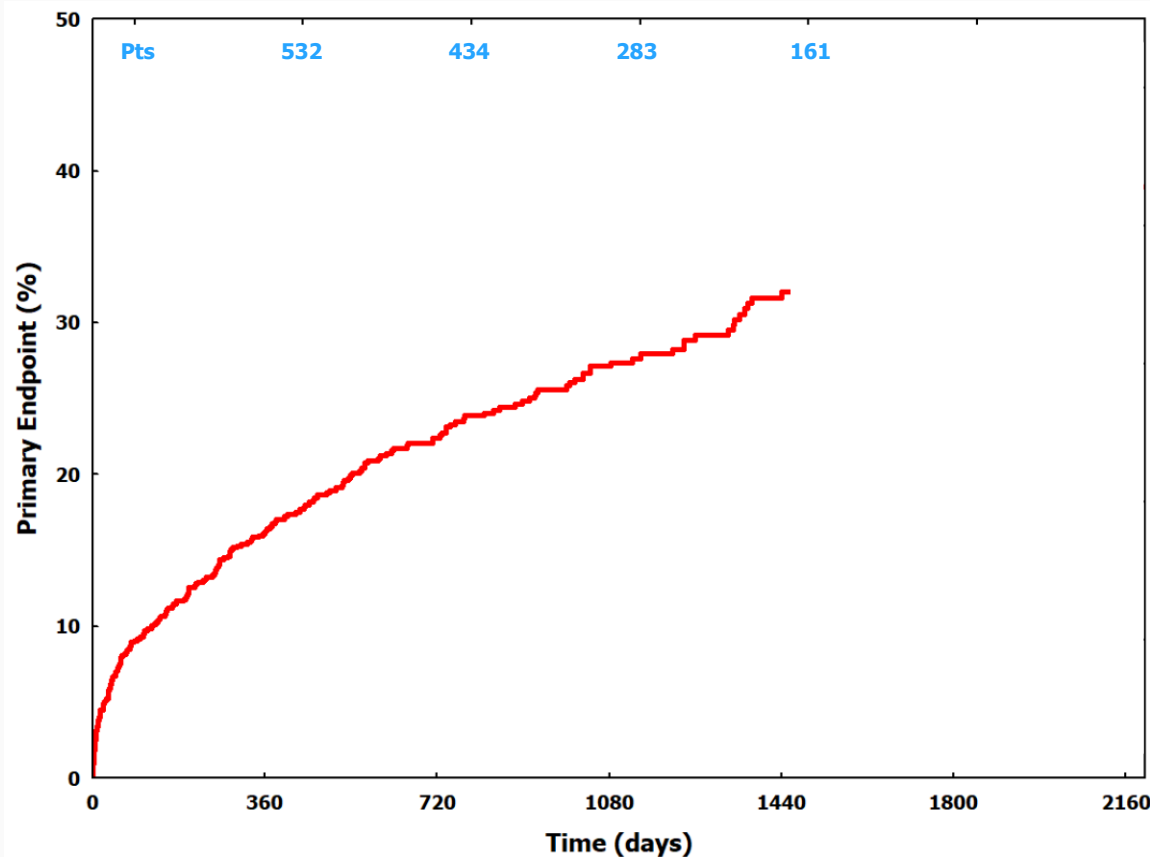
Baseline Characteristics



Characteristic	Culprit (N=917)	Complete (N=816)
Age (IQR) – yr	79 (77-83)	79 (77-83)
Female sex *	336 (37)	259 (32)
Comorbidities		
Hypertension	611 (67)	552 (68)
Diabetes	193 (21)	198 (24)
Prior MI	79 (9)	77 (9)
Culprit artery		
LM	9 (1)	8 (1)
LAD	343 (37)	332 (40)
LCx	134 (15)	116 (14)
RCA	431 (47)	360 (45)

Characteristic	Culprit-Only (N=917)	Complete (N=816)
Killip class ≥ 2	164 (18)	135 (17)
Radial access	697 (76)	612 (75)
≥ 2 NCLs	277 (31)	243 (31)
Physio-guided		487 (57)
Medication at discharge		
Aspirin	879 (96)	792 (97)
Clopidogrel	359 (39)	329 (40)
Ticagrelor	496 (55)	453 (56)
Prasugrel	55 (6)	31 (4)
ACEi or ARB	665 (73)	609 (83)
Statin	856 (93)	772 (95)

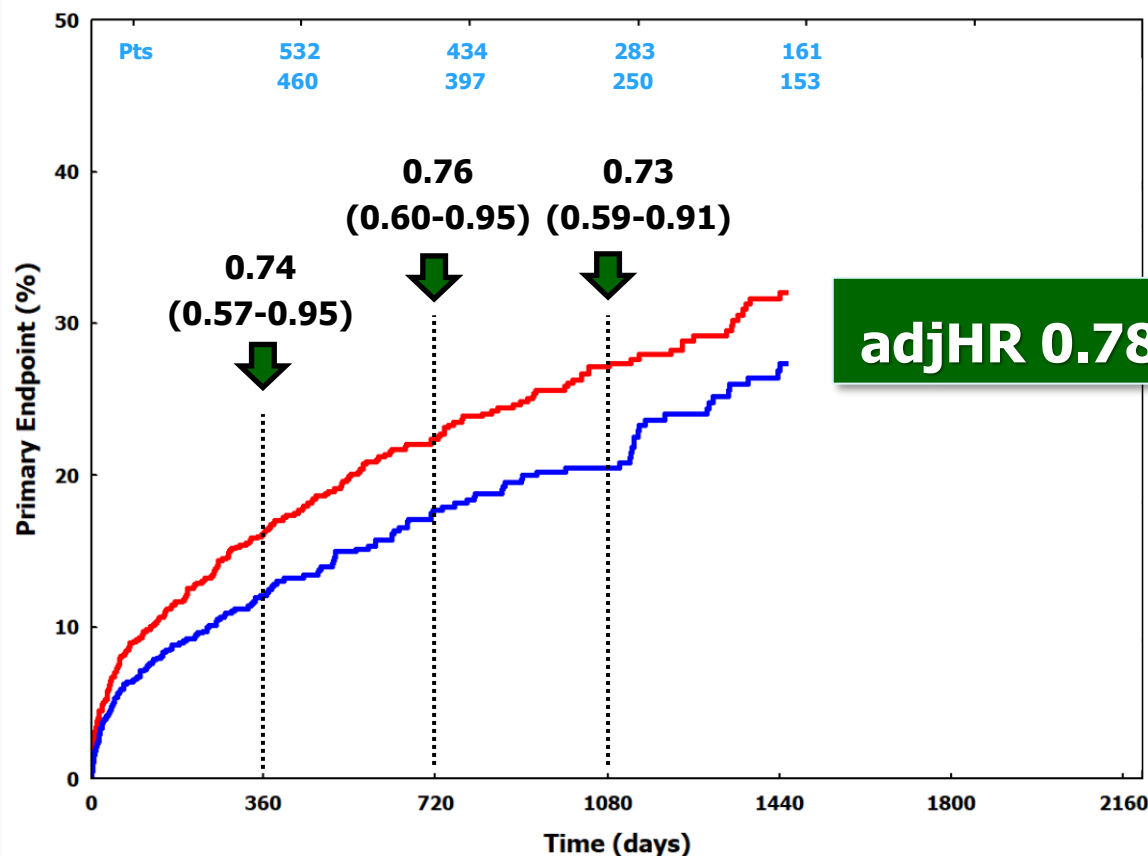
Primary endpoint (Death, MI or ID-revascularization)



 Culprit-only

 Complete

Primary endpoint (Death, MI or ID-revascularization)



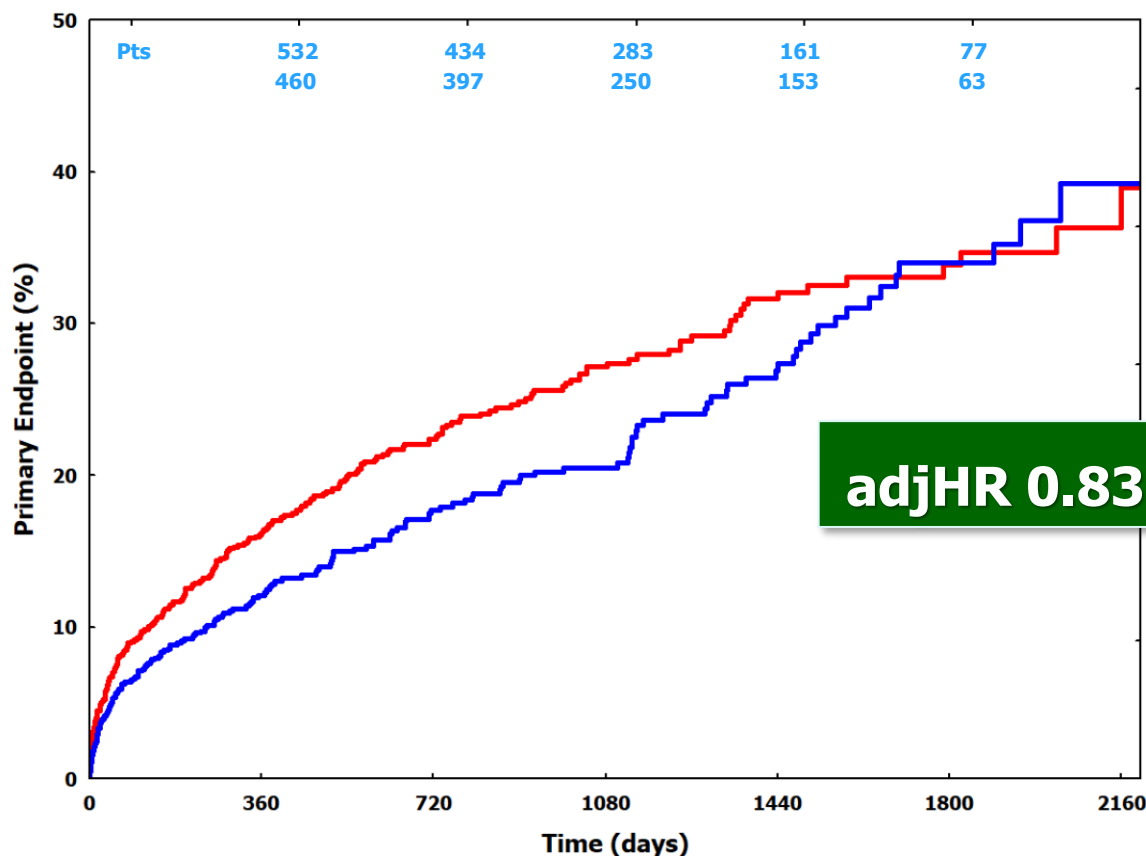
adjHR 0.78 (95%CI 0.63-0.96)

P=0.005

Culprit-only

Complete

Primary endpoint (Death, MI or ID-revascularization)



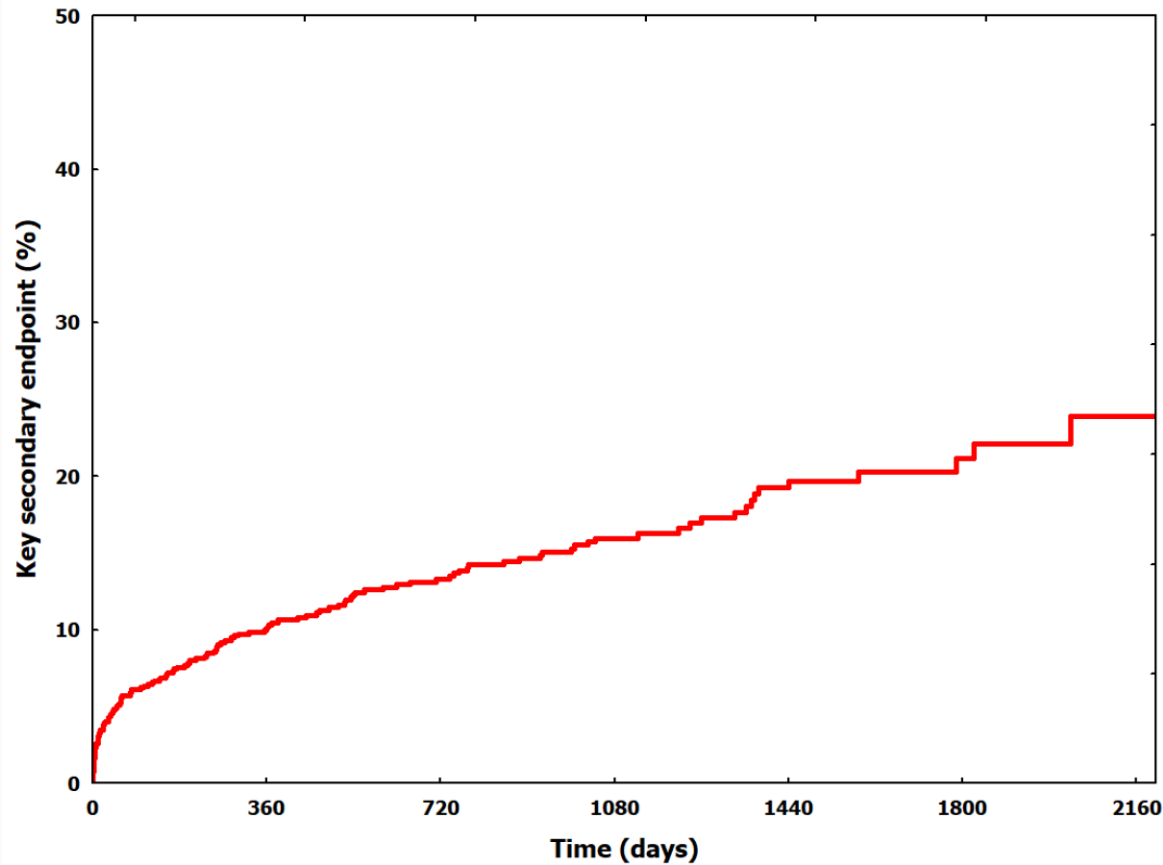
adjHR 0.83 (95%CI 0.69-1.01)

P=0.063

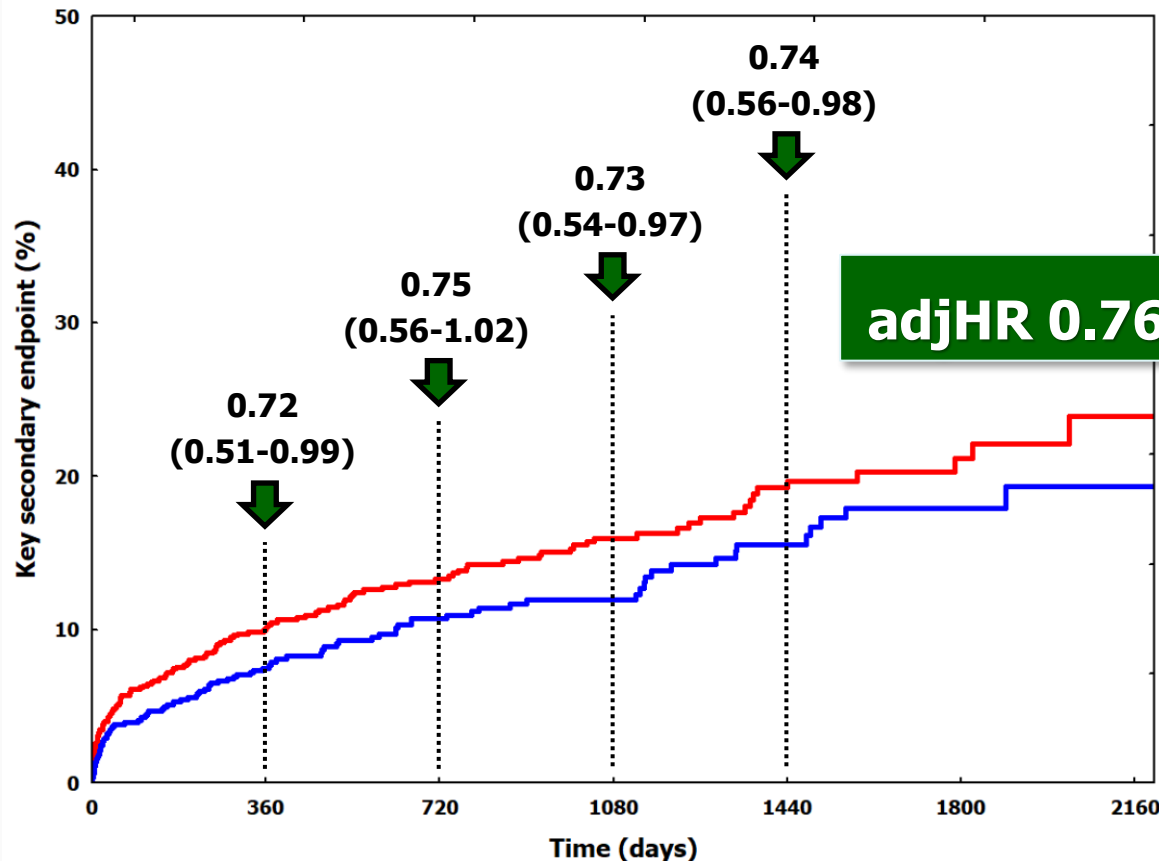
■ Culprit-only

■ Complete

Key secondary endpoint (CV Death or MI)



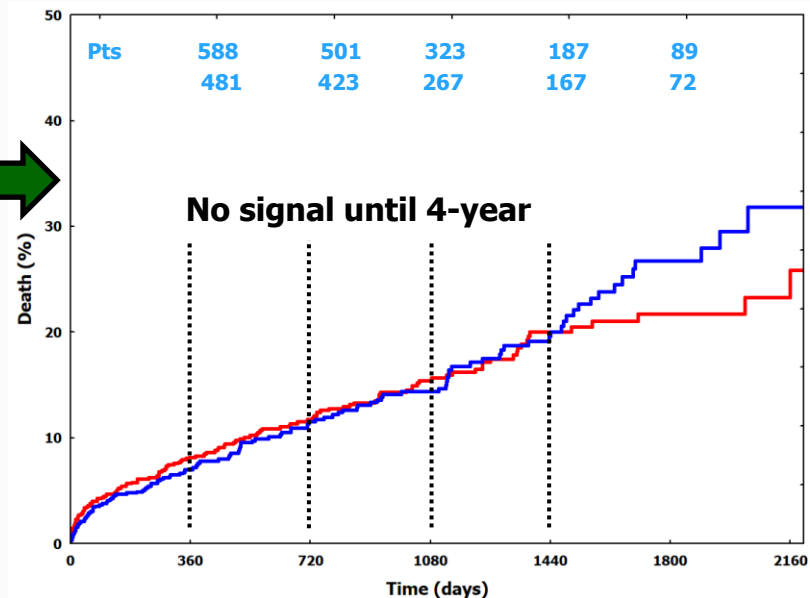
Key secondary endpoint (CV Death or MI)



P=0.046

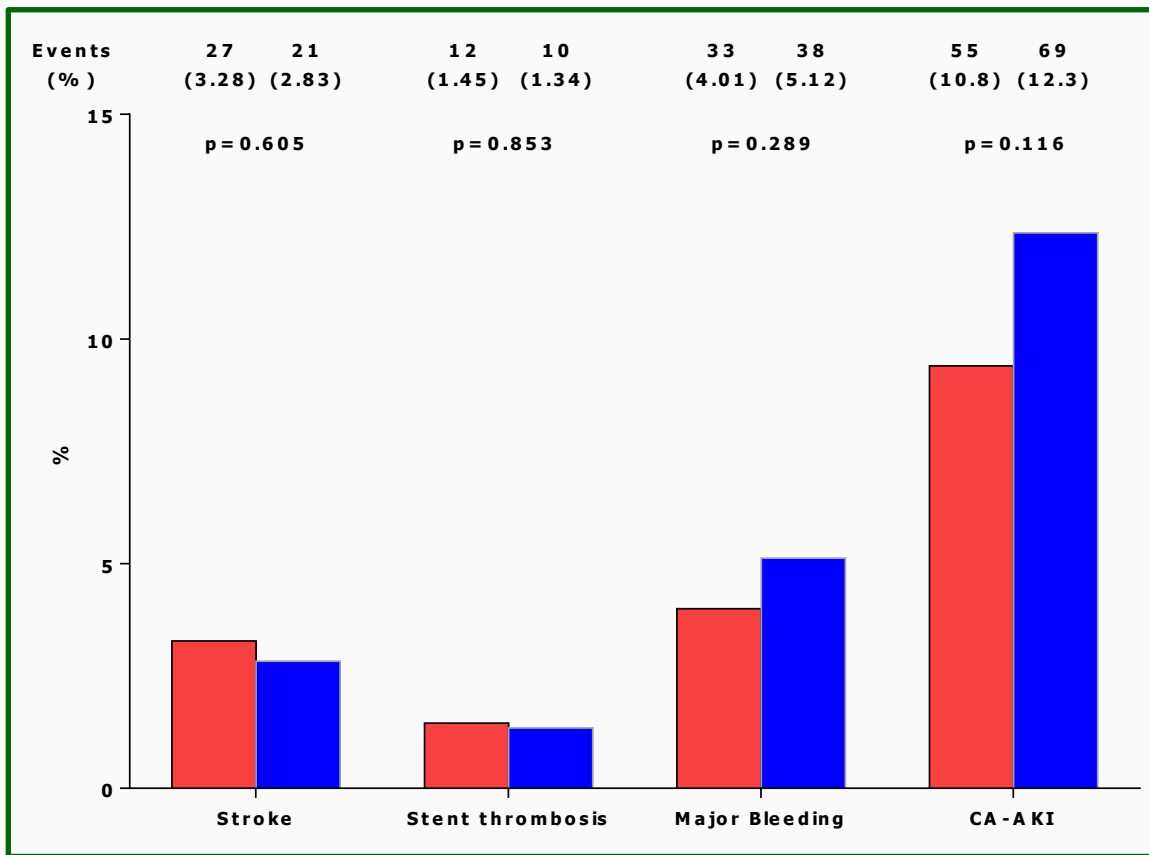
Secondary Endpoints

Outcome	Hazard Risk (95% CI)	P
Death	1.03 (0.80-1.32)	0.818
Cardiovascular death	0.79 (0.56-1.02)	0.184
Non-cardiovascular death	1.40 (0.97-2.02)	0.115
Myocardial infarction	0.73 (0.47-1.13)	0.161
ID-revascularization	0.52 (0.34-0.85)	0.002



The early reduction in cardiac events is subsequently balanced by an increase in non-cardiovascular death

Safety Endpoints



**No concerns
regarding safety
endpoints in patients
undergoing complete
revascularization**

Limitations



- **FIRE population represented 29% of patients and its follow-up is limited to 1 year**
- **Follow-up ≥ 4 years was available in 20% of patients**
- **The sample size is limited to draw definitive conclusions regarding death**
- **Our data cannot be generalized to younger STEMI patients**



Conclusions



The EARTH STEMI analysis, focused on STEMI patients aged ≥ 75 years with multivessel disease, shows that complete revascularization

- **Is safe**
- **Reduces ischemic events up to 4 years**
- **Reduces CV death or MI over time**
- **Does not affect long-term mortality**

For more details...



Complete vs. Culprit-Only Revascularization in Older STEMI

Patients: An Individual Patient Meta-Analysis

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<https://elementrials.org>



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Circulation

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