



# STEMI With Multivessel CAD – Immediate or Staged Revascularization?

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# CME Disclosure Statement

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1. Duke Clinical Research Institute
2. Svelte Medical
3. Ablative Solutions
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5. Shaanxi Micot

## **Equity Ownership**

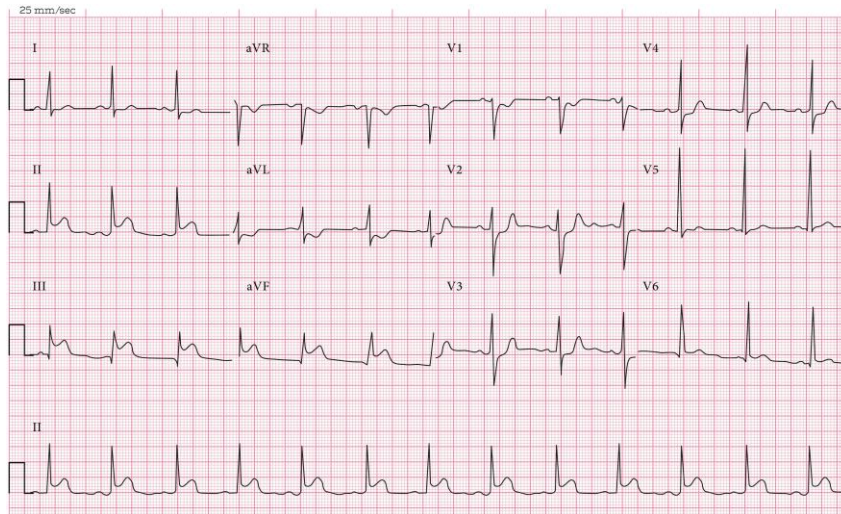
1. Verve Medical, Inc

*Nothing relevant to talk*



# Case Presentation

Evening of July 4<sup>th</sup>, 55-year-old man presented with 4 hours of chest pain. P=50, BP=70/40. EKG obtained at triage.



Acute inferior wall myocardial infarction

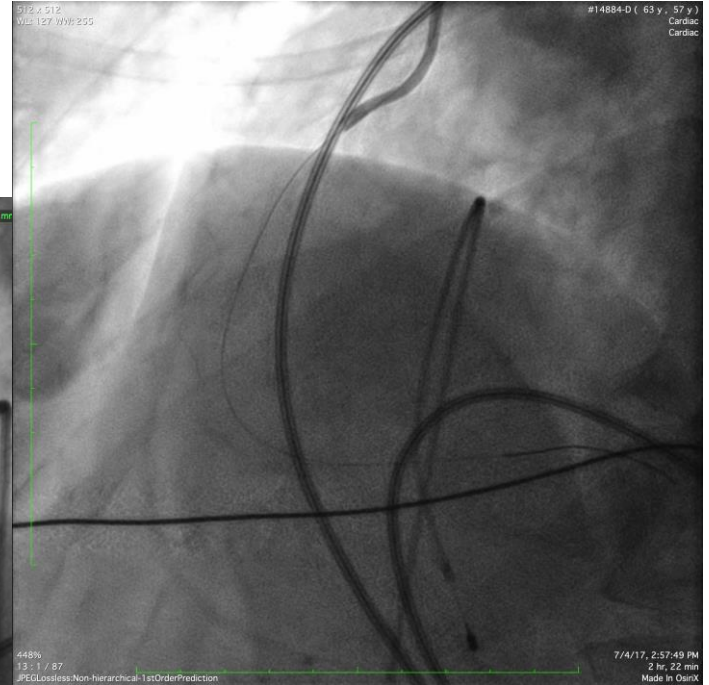
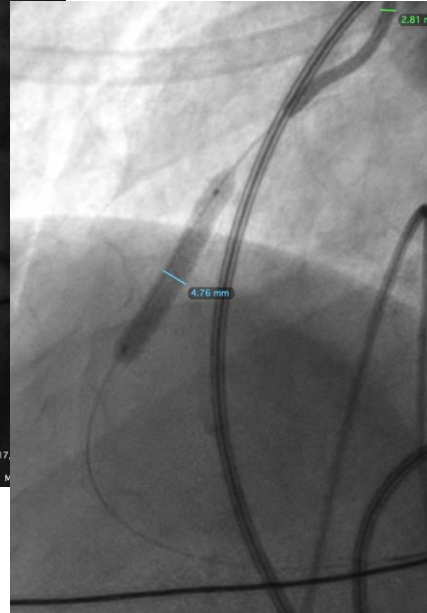
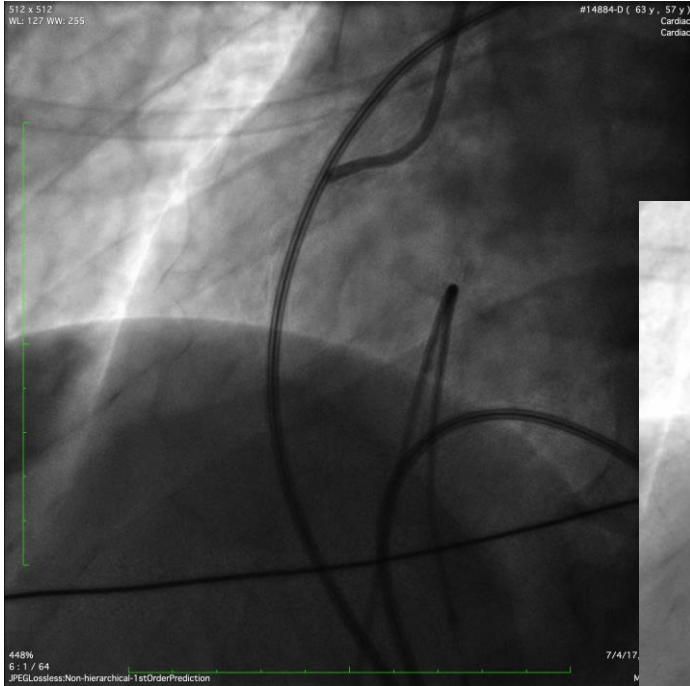
ASA  
VF Arrest\*2  
Dopamine for BP  
TC Pacemaker  
Not intubated

Off to the  
Cath Lab

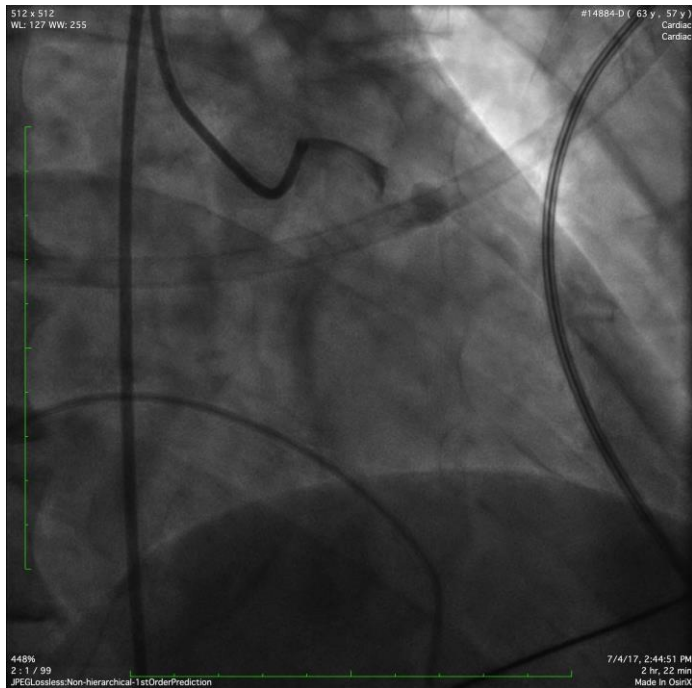
# Angiography & Stent of RCA



Bivalirudin  
DES  
30 minutes



# Angiography Left Coronary



Significant disease in LAD



*Clean it up, or  
leave it for later?*

# Survival ↓ with ↑ CAD Burden



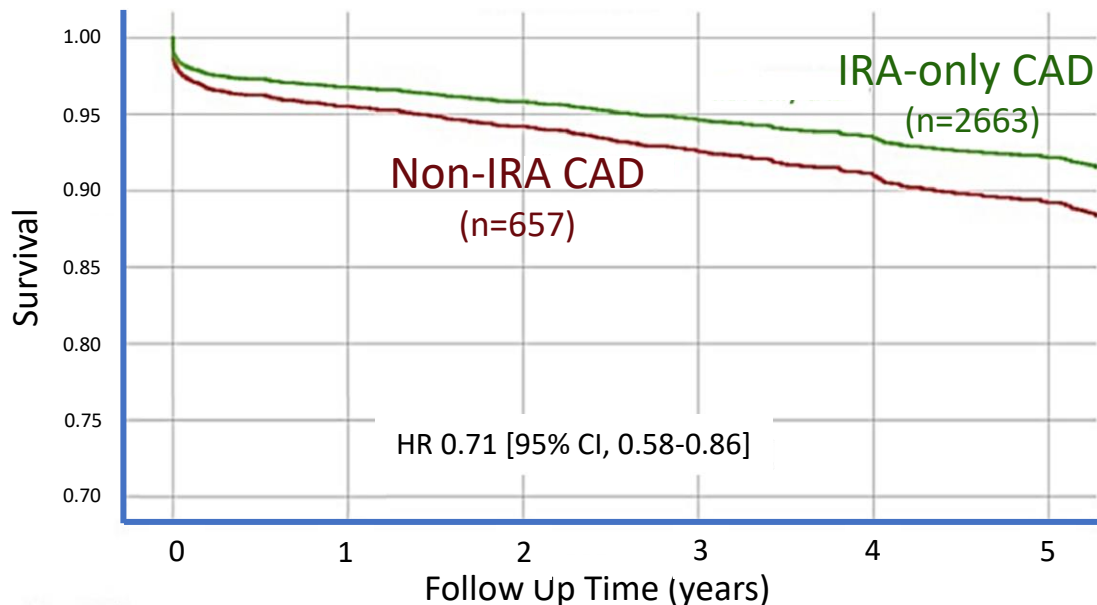
Shaare Zedek Medical Center  
2000-2020  
All AMI's  
(N=3320)



5 year follow up after primary  
PCI comparing patients with &  
without CAD in non-infarct  
artery

Levi, et al. *Am J Cardiol* 2022;173:73-79

20% with either  $\geq 50\%$  LMCA or  $\geq 90\%$  in non-IRA



No. at risk

IRA-only CAD	2663	1888	1643	1433	1255	1084
Non-IRA CAD	657	439	388	346	295	253



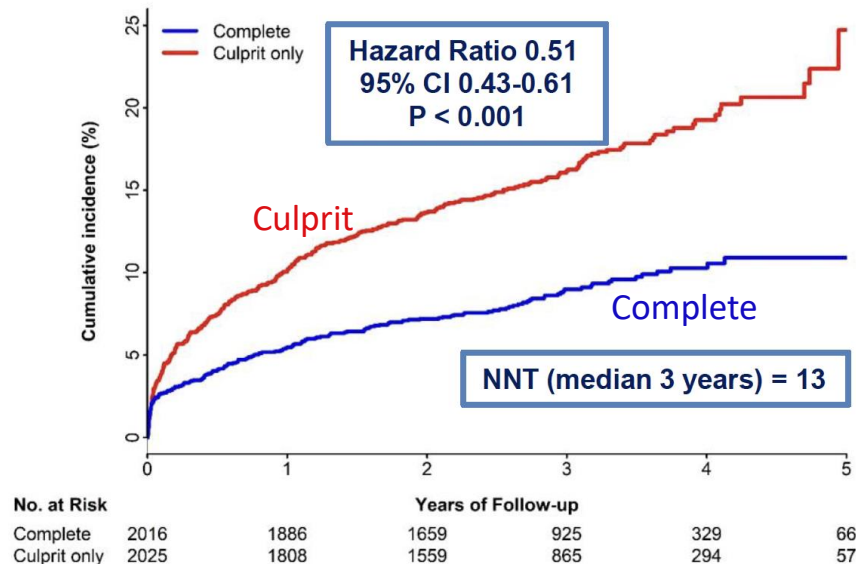
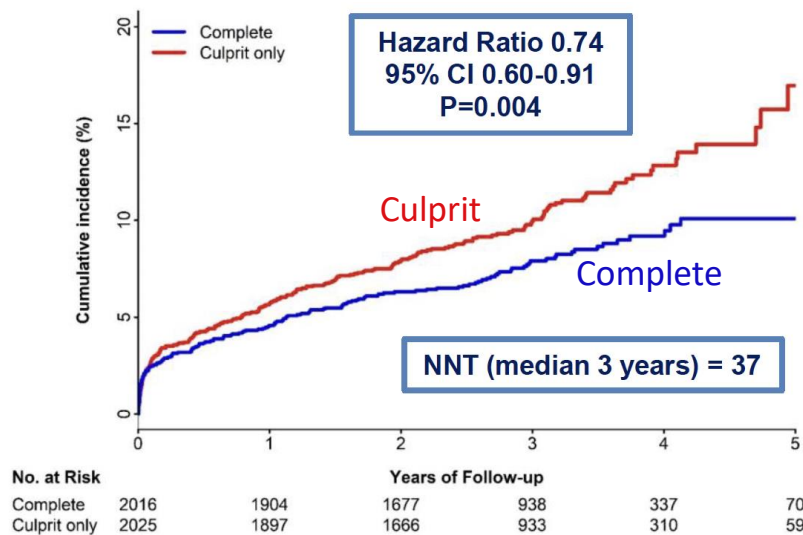
# COMPLETE Trial



## Multivessel vs Culprit Only Primary PCI: *Primary Outcomes*

### CV Death or New MI

### CV Death, New MI, or IDR



Mehta SR et al, *N Engl J Med* 2019; 381(15):1411

IDR: Ischemia Driven Revascularization  
CV: Cardiovascular  
MI: Myocardial Infarction

# Mortality: Culprit v Multi-Vessel PCI

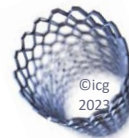


	Multivessel		Culprit Only					
Study	Events	Total	Events	Total	Risk Ratio	RR	95% CI	Weight
HELP AMI, 2004	1	52	0	17		1.00	0.04-23.44	0.5%
Politi, 2010	10	130	13	84		0.50	0.23-1.08	7.5%
Ghani, 2012	4	79	0	40		4.58	0.25-83.09	0.5%
PRAMI, 2013	12	234	16	231		0.74	0.36-1.53	8.6%
DANAMI-3, 2015	15	314	11	313		1.36	0.63-2.91	7.8%
PRAGUE-13, 2015	6	106	7	108		0.87	0.30-2.51	4.1%
CvLPRIT, 2015	4	150	10	146		0.39	0.12-1.21	3.5%
Hamza, 2016	1	50	4	50		0.25	0.03-2.16	1.0%
COMPARE ACUTE, 2017	4	295	10	590		0.80	0.25-2.53	3.4%
COMPLETE, 2019	96	2016	106	2025		0.91	0.70-1.19	62.9%
<b>Random Effects Model</b>		<b>3426</b>		<b>3604</b>		<b>0.85</b>	<b>0.68-1.05</b>	<b>100%</b>
Heterogeneity: $I^2=0\%$ , $\tau^2=0$ , $p=0.53$								



# Revascularization Guidelines 2021

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## Recommendations for Revascularization of Non-Infarct Artery in STEMI

Lawton JS, et al. 2021 ACC/AHA/SCAI guideline for coronary artery revascularization. *J Am Coll Cardiol.* 2022;79:e21-e129.



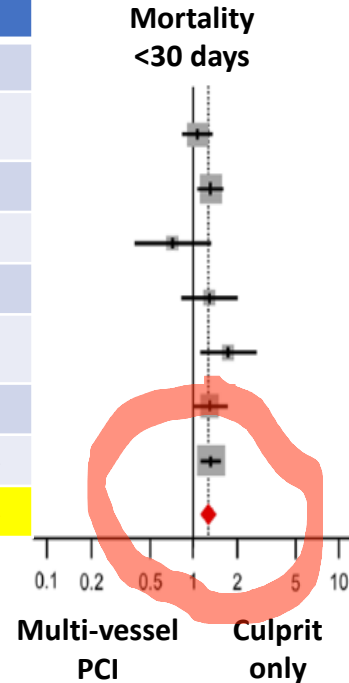
# Multi-vessel PCI in Cardiogenic Shock

Cohort Studies (N≈5,500 patients)

	Multivessel PCI		Culprit PCI	
	Events	Total	Events	Total
IABP-Shock II	75	167	119	284
ALKK	81	173	201	562
KAMIR	13	124	56	386
Yang et al.	19	60	68	278
Cavender et al.	20	43	42	156
EHS-PCI	40	82	95	254
NCDR	158	433	737	2654
Overall	406	1082	1318	4574

Heterogeneity:  $I^2=31\%$ ,  $\tau^2=0.007$ ,  $p=0.19$

Test for overall effect:  $p=0.001$



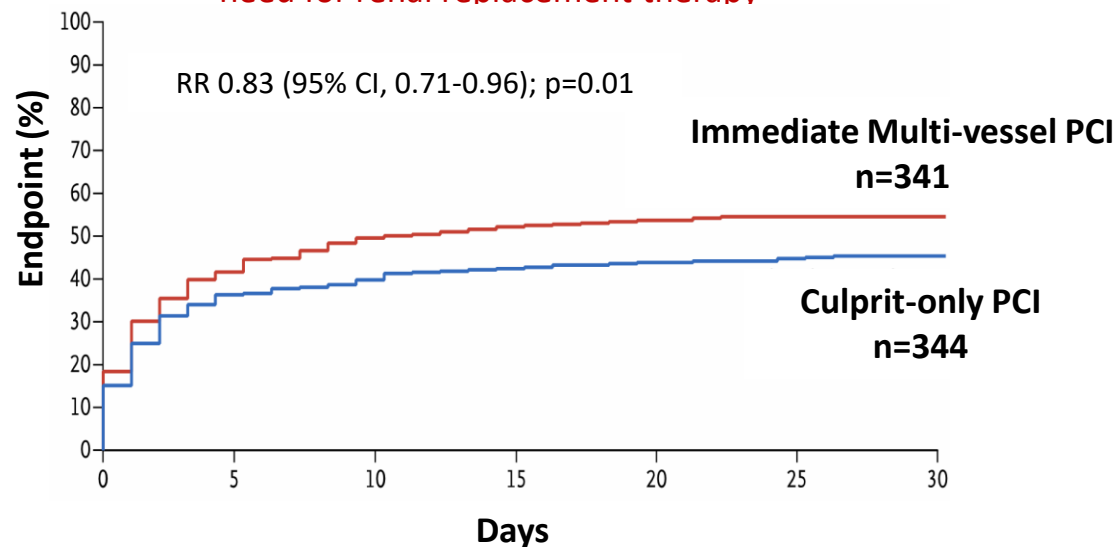
Despite the hypothetical value for complete re-vascularization in shock, cohort studies suggest otherwise.

# Randomized Trial in Cardiogenic Shock



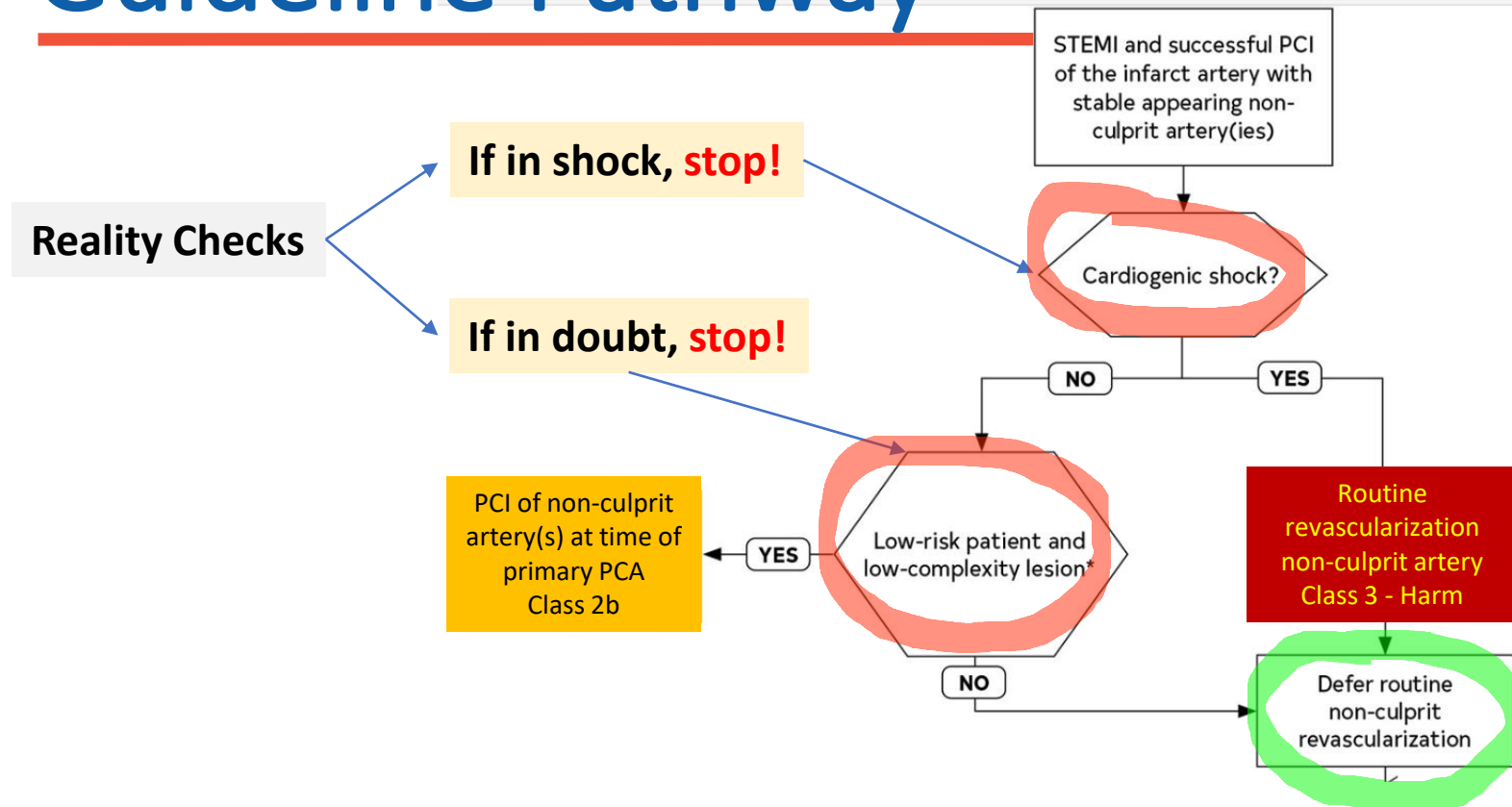
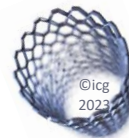
## CULPRIT-SHOCK TRIAL

Composite of all-cause death or  
need for renal replacement therapy



Results consistent with  
the non-randomized,  
cohort observations

# Guideline Pathway



# Physiology in Acute MI



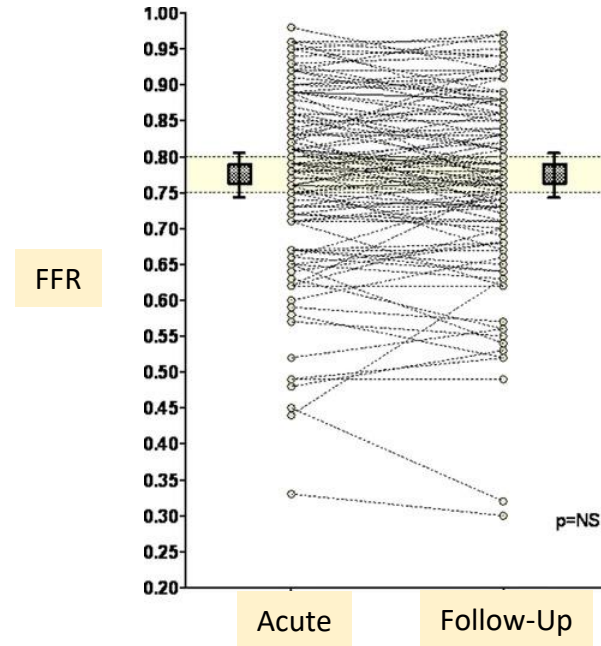
FFR in non-culprit artery

N=101, STEMI=76, NSTEMI=25

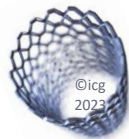
FFR at baseline (acute)

FFR at follow up (35 ± 4 days)

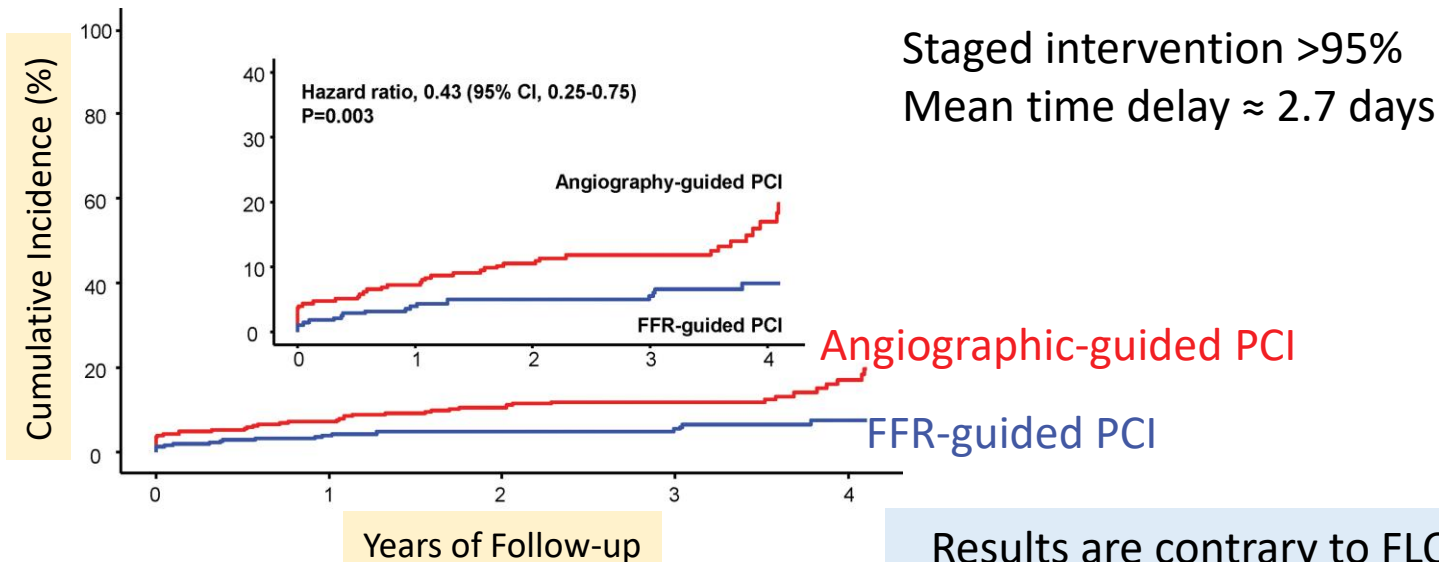
No difference in non-infarct artery



# Physiology vs Angiography for Non-Culprit



FRAME-AMI: Primary end: Composite of time to death, MI, or re-vascularization



## No. at Risk

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

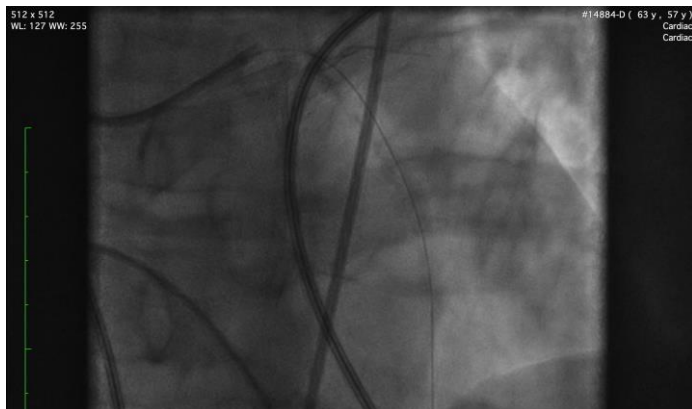
Lee JM, et al, FRAME-AMI. *European Heart Journal* (2022) 00, 1–12  
<https://doi.org/10.1093/eurheartj/ehac763>

Results are contrary to FLOWER-MI so  
the controversy continues

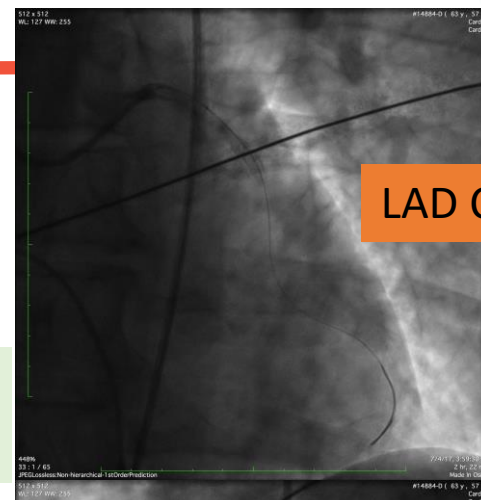
Puymirat E et al. *N.Engl.J.Med.*2021;385:297-308.



# Follow-up of Case

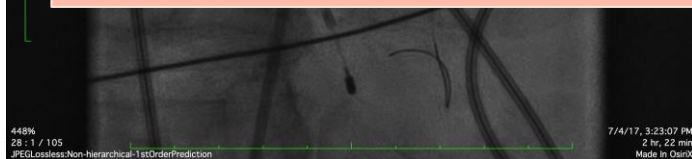


Pacemaker removed  
Low-dose Dopamine



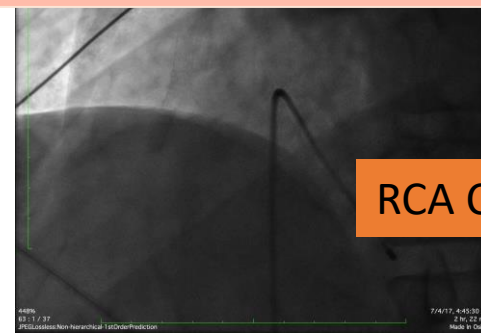
LAD Closed

*Shock Requires Support; Not Another Stent!*



LAD stented without difficulty

20 minutes  
later



RCA Closed

# Thank You



## Questions?

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