

# Culprit PCI vs MultiVessel PCI for Acute Myocardial Infarction

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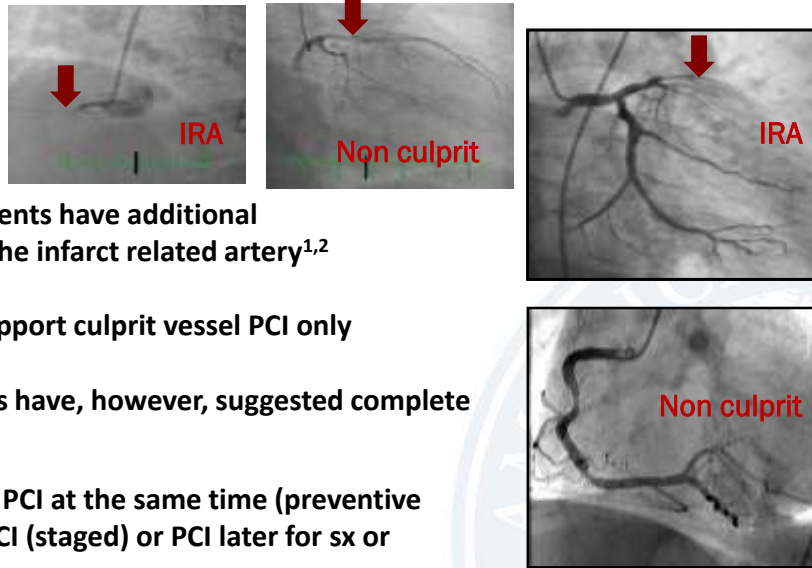


## Disclosure

# I have no disclosures



## Background



30-50% of STEMI patients have additional stenoses other than the infarct related artery<sup>1,2</sup>

Current guidelines support culprit vessel PCI only

Contemporary studies have, however, suggested complete revascularization<sup>3,4</sup>

Options: Multivessel PCI at the same time (preventive approach), delayed PCI (staged) or PCI later for sx or ischemia

<sup>1</sup> Jong JA *et al.* Coronary Artery disease 2006

<sup>2</sup> Muller DW *et al.* Am Heart J 1991

<sup>3</sup> Wald *et al.* NEJM 2013

<sup>4</sup> Gershlick *et al.* ESC 2014



## 2013 STEMI: ACC/AHA Guidelines



PCI of a non-infarct artery at the time of primary PCI in patients without hemodynamic compromise is not indicated



PCI is indicated in a non-infarct artery at a time separate from primary PCI in patients who have spontaneous symptoms of myocardial ischemia.



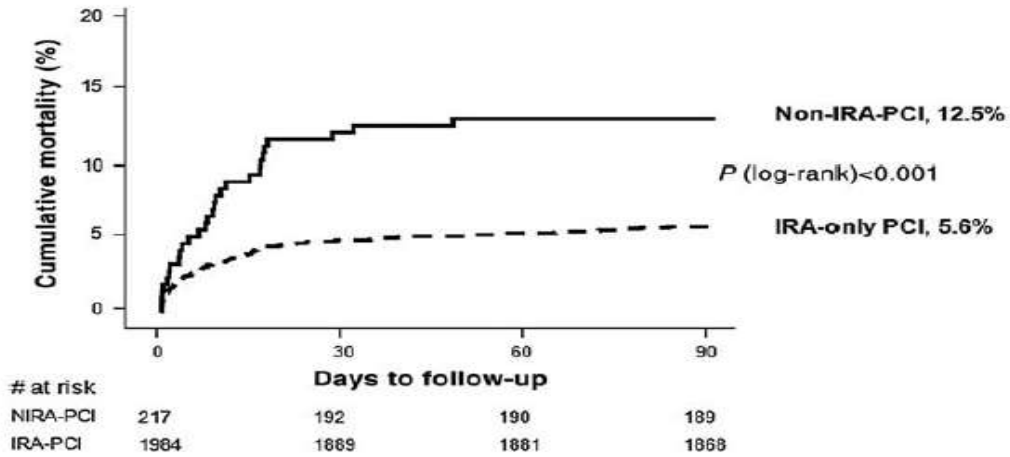
PCI is reasonable in a non-infarct artery at a time separate from primary PCI in patients with intermediate- or high-risk findings on noninvasive testing

O' Gara PT S *et al.* JACC 2013



## Rationale for ACC-AHA Guideline Recommendation

Toma et al, EHJ (2010;31:1701–1707)



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# Let us talk about the new studies



# Randomized Trial of Preventive Angioplasty in Myocardial Infarction (PRAMI)

David S. Wald, M.D., Joan K. Morris, Ph.D., Nicholas J. Wald, F.R.S., Alexander J. Chase, M.B., B.S., Ph.D., Richard J. Edwards, M.D., Liam O. Hughes, M.D., Colin Berry, M.B., Ch.B., Ph.D., Keith G. Oldroyd, M.D., for the PRAMI Investigators

N Engl J Med  
Volume 369(12):1115-1123  
September 19, 2013



## PRAMI: "Preventative" PCI of Non-culprit Lesions after Culprit Lesion Primary PCI in STEMI

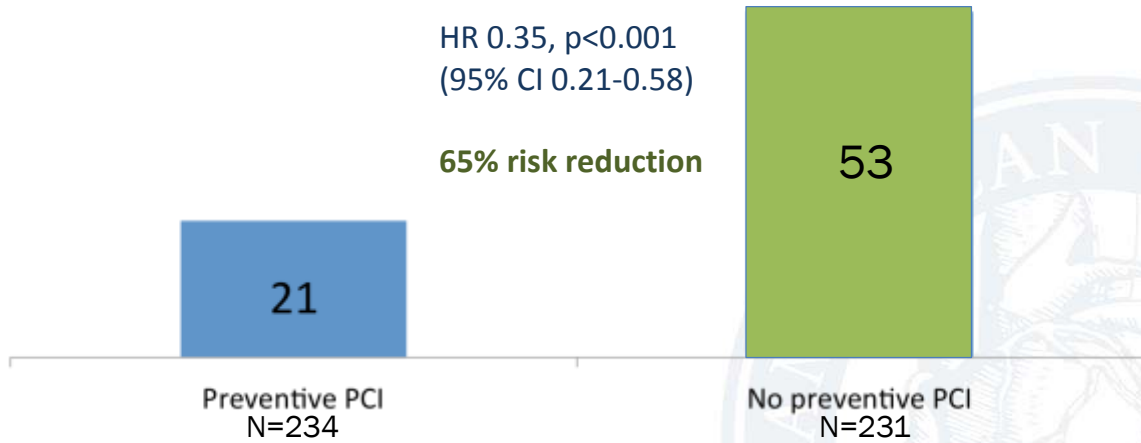
Wald DS et al. N Engl J Med 2013;369:1115-1123

Median FU 2.3 Years

	Complete revasc (N=234)	Culprit PCI only (N=231)	HR (95%CI)	P value
Pre-specified outcomes				
Cardiac death, MI, or refractory angina	21	53	0.35 (0.21-0.58)	<0.001
Cardiac death or MI	11	27	0.36 (0.18-0.73)	0.004
Cardiac death	4	10	0.34 (0.11-1.08)	0.07
Nonfatal MI	7	20	0.32 (0.13-0.75)	0.009
Refractory angina w/o CD or MI	12	30	0.35 (0.18-0.69)	0.002
Secondary outcomes				
Noncardiac death	8	6	1.10 (0.38-3.18)	0.86
Repeat revascularization	16	46	0.30 (0.17-0.56)	<0.001



## PRAMI – cardiac death, non fatal MI, refractory angina



Wald *et al.* NEJM 2013



## PRAMI Trial Conclusions

- The preventive multivessel PCI group had a 65% reduction in the relative risk of the primary outcome ( composite of cardiac death, nonfatal MI, or refractory angina) as compared to Culprit PCI group.
- Relatively small population
- Distribution of composite endpoint differed significantly in their frequency, (e.g. cardiac death=14, nonfatal MI = 27, refractory angina = 42.)
- Thus,  $P$  values are extremely sensitive to the addition of few events. Only 3 more MIs in the preventive PCI arm would render nonfatal MI non-significant.



# Randomized Trial of Complete Versus Lesion-Only Revascularization in Patients Undergoing Primary PCI for STEMI and Multivessel Disease: The CvLPRIT Trial

A.H. Gershlick, G.P. McCann et al  
*JACC*  
MARCH 17, 2015

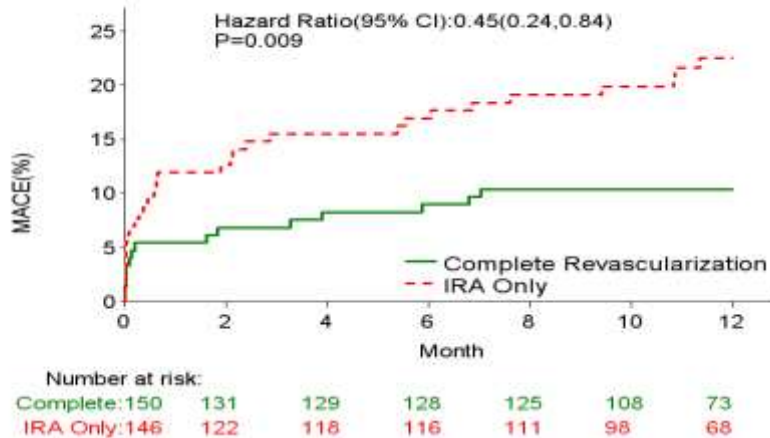


## CvLPRIT study: Complete vs IRA PCI in STEMI

1. 296 STEMI pts-Randomized to complete revascularization( n=150) vs infarct related revascularization (n=146) only.
2. Complete revascularization was performed either at the time of primary PCI or before hospital discharge.
3. Randomization was stratified by infarct location- anterior vs non-anterior and by symptom onset- less than 3 hours or more than 3 hours
4. Primary endpt was a composite of all cause death, recurrent myocardial infarction, heart failure, and ischemia –driven revascularization within 12 months



## CvIprit – Primary Endpoint : 12 Month MACE: Total mortality, Recurrent MI, Heart failure, Revascularization



Gershlick et al. ESC 2014



## CvLPRIT Results

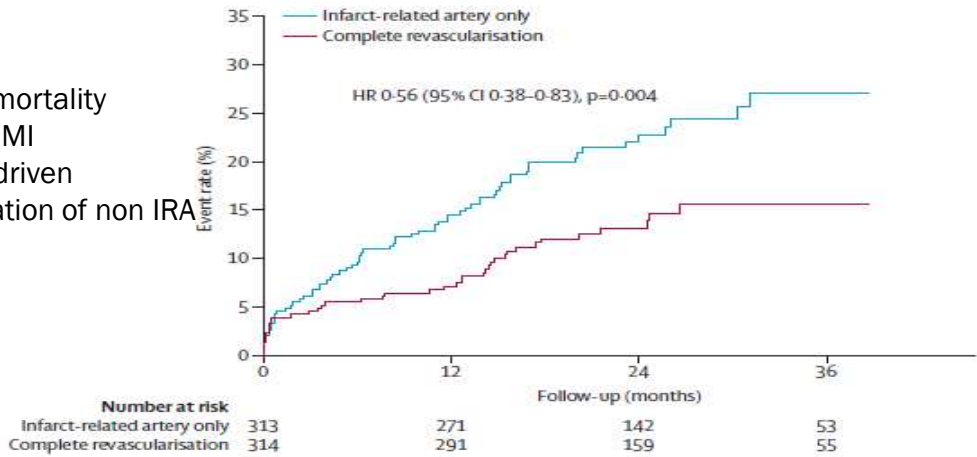
1. The primary endpoint occurred in 10% of the complete revascularization group versus 21.2% in the culprit only revascularization group
2. A trend toward benefit was seen early after complete revascularization
3. No significant reduction in death or MI, a nonsignificant reduction in all primary endpoint components was seen.
4. Small study but significant outcome



## Primary endpoint- DANAMI3-PRIMULTI median follow up 27 months

### Composite

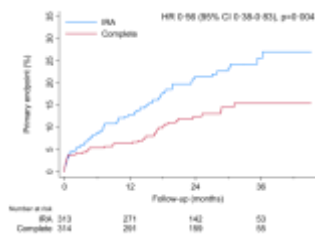
1. All-cause mortality
2. Nonfatal MI
3. Ischemia driven revascularization of non IRA lesions



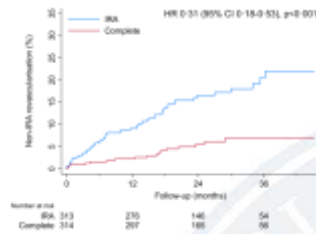
www.thelancet.com Vol 386 Published online August 5, 2015 [http://dx.doi.org/10.1016/S0140-6736\(15\)60648-1](http://dx.doi.org/10.1016/S0140-6736(15)60648-1)



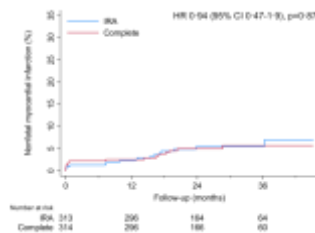
## Individual components of primary endpoint



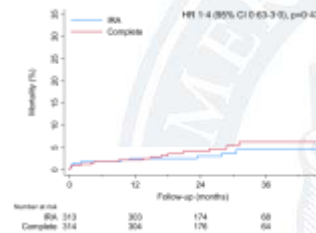
Composite



Revascularisation



Non fatal MI



All cause death





## Subgroup analysis- DANAMI3-PRIMULTI



\* there were no events in patients with prior myocardial infarction randomized to complete revascularization



## Conclusions : DANAMI3-PRIMULTI

Complete FFR guided revascularization of multivessel CAD in STEMI pts, staged within the index admission, reduced all cause death, reinfarction and repeat revascularization

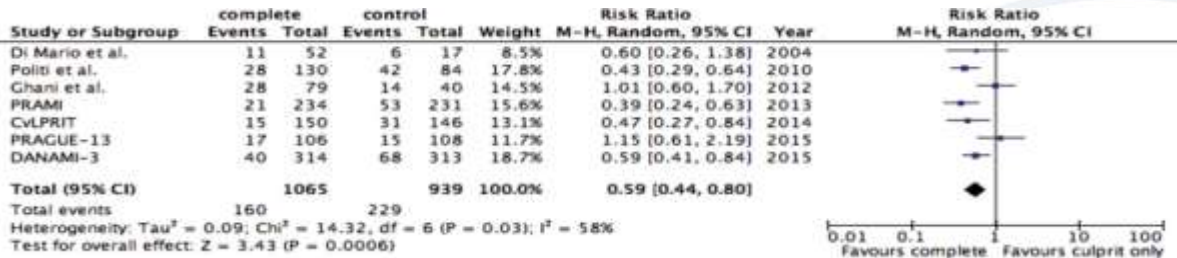
40% of repeat revascularizations were urgent

Analysis of secondary endpoints showed no difference between groups with regards to all cause death or non fatal re-infarction



**From: COMPLETE VERSUS CULPRIT-ONLY REVASCUARIZATION IN PATIENTS WITH ST-ELEVATION MYOCARDIAL INFARCTION AND MULTIVESSEL DISEASE: A META-ANALYSIS OF RANDOMIZED TRIALS**

J Am Coll Cardiol. 2016;67(13\_S):41-41. doi:10.1016/S0735-1097(16)30042-0



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**New Focused PCI guidelines update- October 21, 2015**

**Table 2. Primary PCI in STEMI**

	COR	LOE	References
Ischemic symptoms < 12 h	I	A	17, 50, 51
Ischemic symptoms < 12 h and contraindications to fibrinolytic therapy irrespective of time delay from FMC	I	B	52, 53
Cardiogenic shock or acute severe HF irrespective of time delay from MI onset	I	B	54-57
Evidence of ongoing ischemia 12 to 24 h after symptom onset	IIa	B	29, 30
PCI of a noninfarct artery at the time of primary PCI in patients without hemodynamic compromise	<del>III. Harm</del> IIB	B	58-60

## Conclusions

1. In the past, PCI of nonculprit vessel was Class III- harm
2. Now we have new evidence from recent clinical trials that treating nonculprit vessels maybe safe and beneficial in selected pts with multivessel disease.
3. ACC withdraws from its 'Choosing Wisely' campaign its former recommendation discouraging multivessel revascularization at the time of primary PCI for STEMI. The college cited "new science showing that complete revascularization of all significant blocked arteries leads to better outcomes in some heart attack patients."



## STEMI-Multivessel PCI

- Who?
- When?
- Where?



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