Controversies In STEMI Management

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Disclosure Statement of Financial Interest

I, Mohamed Sobhy DO NOT have a financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation.

Controversies In STEMI

- Culprit versus complete revascularization in MVD
- Culprit versus complete revascularization in cardiogenic shock

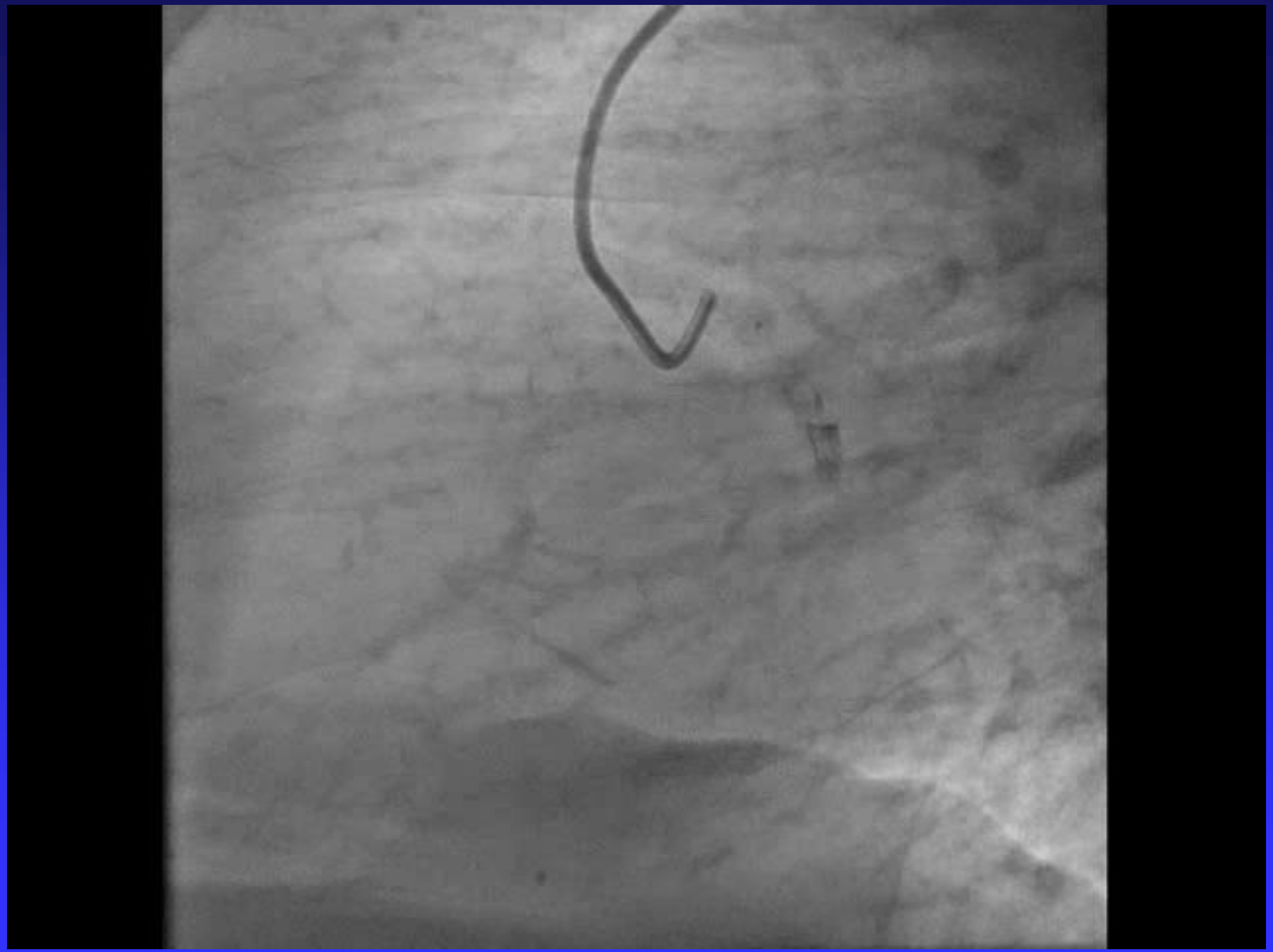
Controversies In STEMI

- Culprit versus complete revascularization in MVD
- Culprit versus complete revascularization in cardiogenic shock

Multivessel Stenting in STEMI

Senario 1

Recent posterior STEMI



Management

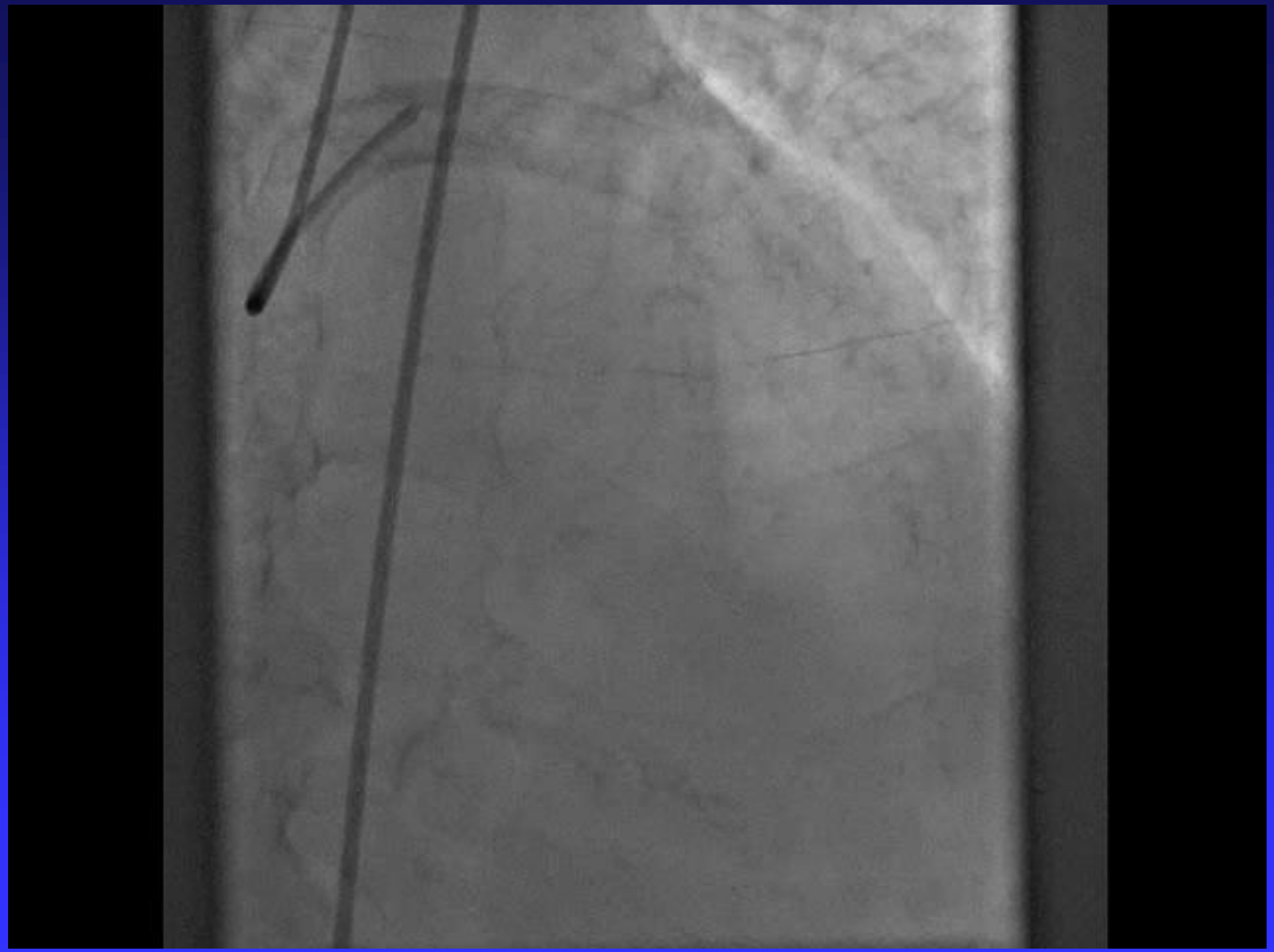
Culprit only

PCI LCX (DES)

Senario 2

Anterior STEMI & double infarction

Cath Lab

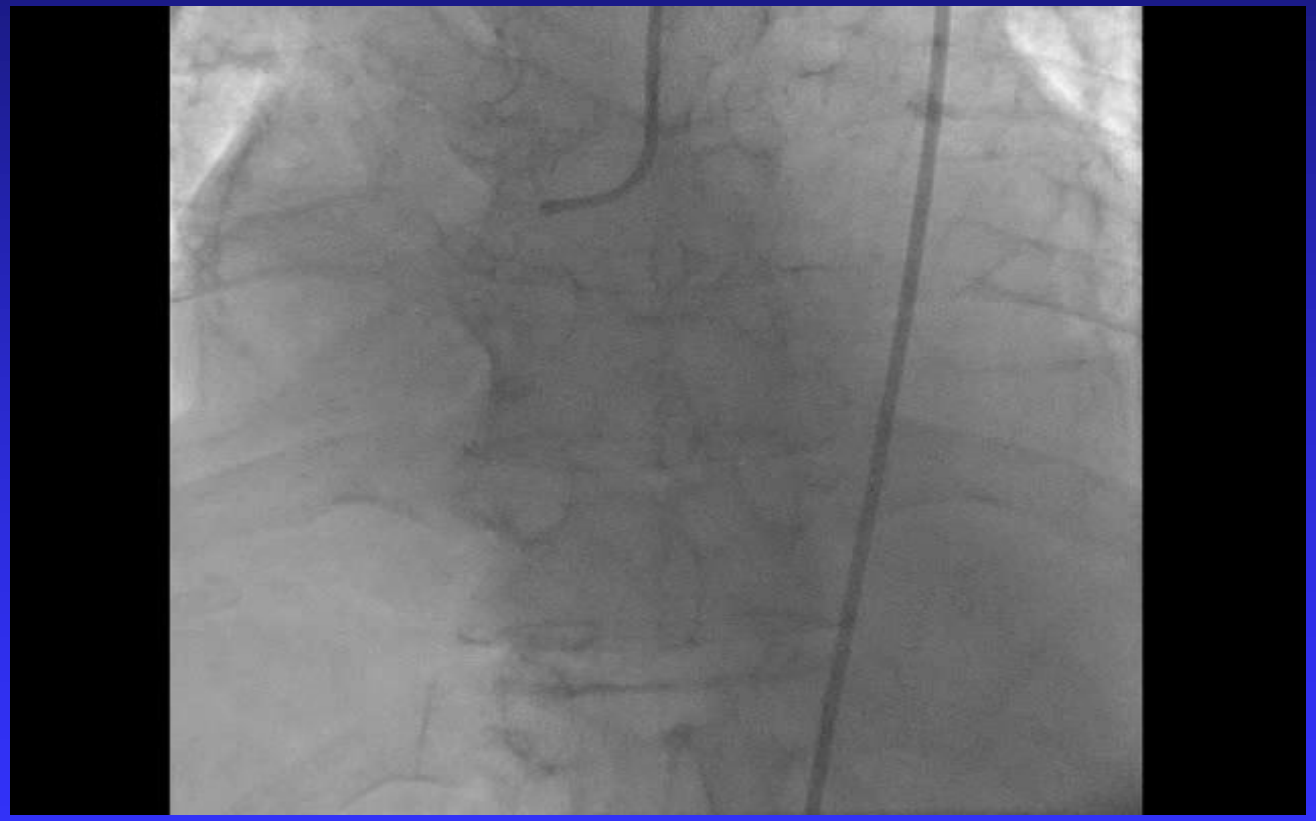


Management

Complete Revascularization

PCI LAD (DES)

PCI RCA (DES)



Senario 3

Inferior & RV STEMI

MVD

NO Cardiogenic shock

Management

What to do???

PCI LAD (2DES)

PCI RCA (DES)
When to do it?!

Background

- 30-50% of STEMI patients have additional stenoses other than the infarct related artery[1,2]
- Current guidelines support culprit vessel PCI only
- Contemporary studies have, however, suggested preventive revascularization [3,4]

[1] Jong JA *al.* Coronary Artery disease 2006
[2] Muller DW *et al.* Am Heart J 1991
[3] Wald *et al.* NEJM 2013
[4] Gershlick *et al.* ESC 2014

PRAMI

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Randomized Trial of Preventive Angioplasty in Myocardial Infarction

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., and Keith G. Oldroyd, M.D., for the PRAMI Investigators*

ABSTRACT

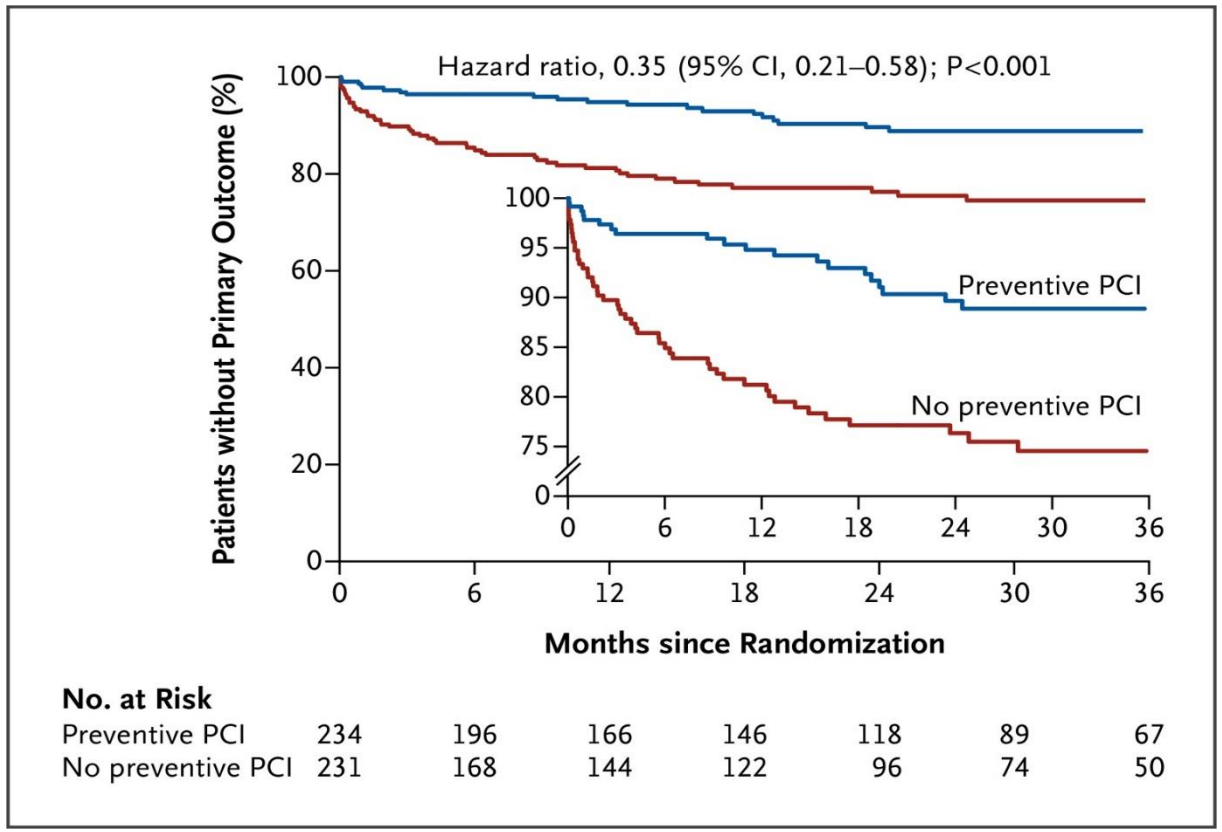
BACKGROUND

In acute ST-segment elevation myocardial infarction (STEMI), the use of percutaneous coronary intervention (PCI) to treat the artery responsible for the infarct (infarct, or culprit, artery) improves prognosis. The value of PCI in noninfarct coronary arteries with major stenoses (preventive PCI) is unknown.

METHODS

From 2008 through 2013, at five centers in the United Kingdom, we enrolled 465 patients with acute STEMI (including 3 patients with left bundle-branch block) who were undergoing infarct-artery PCI and randomly assigned them to either preven-

From the Wolfson Institute of Preventive Medicine, Barts and the London School of Medicine and Dentistry, Queen Mary University of London (D.S.W., J.K.M., N.J.W.), and London Chest Hospital (D.S.W.), London, Morriston Hospital, Swansea (A.J.C.), Freeman Hospital, Newcastle upon Tyne (R.J.E.), Norfolk and Norwich University Hospital, Norwich (L.O.H.), and Golden Jubilee National Hospital, Glasgow (C.B., K.G.O.) — all in the United Kingdom. Address re-



No. at Risk

Preventive PCI	234	196	166	146	118	89	67
No preventive PCI	231	168	144	122	96	74	50

Criticism about the study:

- Sample size is small
- Larger number of patients were inferior infarcts
- EF was not reported in the study
- The study stopped prematurely???

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ORIGINAL INVESTIGATIONS

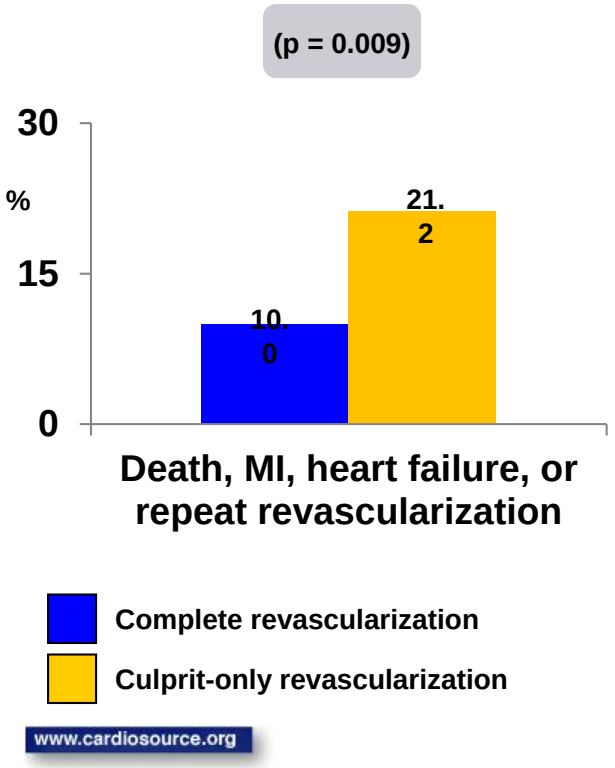
Randomized Trial of Complete Versus Lesion-Only Revascularization in Patients Undergoing Primary Percutaneous Coronary Intervention for STEMI and Multivessel Disease

The CvLPRIT Trial

Anthony H. Gershlick, MBBS,* Jamal Nasir Khan, MB ChB,* Damian J. Kelly, MB ChB, MD,†
John P. Greenwood, MB ChB, PhD,‡§ Thiagarajah Sasikaran, BSc, PhD,‖ Nick Curzen, BM, PhD,¶
Daniel J. Blackman, MD,§ Miles Dalby, MBBS, MD,# Kathryn L. Fairbrother, BA,** Winston Banya, MSc,††
Duolao Wang, PhD,‡‡ Marcus Flather, MB BS,§§ Simon L. Hetherington, MB ChB, MD,‖‖
Andrew D. Kelion, BM BCh, DM,¶¶ Suneel Talwar, MB BS, MD,## Mark Gunning, MD,*** Roger Hall, MD,§§
Howard Swanton, MB BChir, MD,††† Gerry P. McCann, MB ChB, MD*

CvLPRIT

Trial design: Participants with STEMI were randomized to complete revascularization (n = 150) vs. culprit-only PCI (n = 146).



Results

- Death, MI, heart failure, or ischemia-driven revascularization at 12 months: 10.0% of the complete revascularization group vs. 21.2% of the culprit-only group (p = 0.009)
- All-cause mortality: 1.3% vs. 4.1% (p = 0.14), respectively
- MI: 1.3% vs. 2.7% (p = 0.39), respectively
- Heart failure: 2.7% vs. 6.2% (p = 0.14), respectively
- Repeat revascularization: 4.7% vs. 8.2% (p = 0.2), respectively

Conclusions

- Among STEMI patients, complete revascularization appears beneficial at reducing major adverse cardiac events
- Benefit was primarily due to reduction in repeat revascularization procedures

Presented by Dr. Gershlick at ESC 2014

Criticism about the study:

- Small study but significant outcome
- No FFR or IVUS of the N-IRA lesions
- Open study

ACC.15
TCT@ACC-i2 | innovation in intervention
64th Annual Scientific Session & Expo

The Third DANish Study of Optimal Acute Treatment of Patients with ST-segment Elevation Myocardial Infarction

PRImary PCI in MULTIvessel Disease - DANAMI3-PRIMULTI

Thomas Engstrøm, MD, DMSci, PhD
Rigshospitalet, University of Copenhagen, Denmark

MARCH 14 – 16, 2015
SAN DIEGO
CALIFORNIA

Complete revascularisation versus treatment of the culprit lesion only in patients with ST-segment elevation myocardial infarction and multivessel disease (DANAMI-3—PRIMULTI): an open-label, randomised controlled trial

*Thomas Engstrøm, Henning Kelbæk, Steffen Helqvist, Dan Eik Høfsten, Lene Kløvgaard, Lene Holmvang, Erik Jørgensen, Frants Pedersen, Kari Saunamäki, Peter Clemmensen, Ole De Backer, Jan Ravkilde, Hans-Henrik Tilsted, Anton Boel Villadsen, Jens Aarøe, Svend Eggert Jensen, Bent Raungaard, Lars Køber, for the DANAMI-3—PRIMULTI Investigators**

Summary

Background Patients with acute ST-segment elevation myocardial infarction (STEMI) and multivessel coronary disease have a worse prognosis compared with individuals with single-vessel disease. We aimed to study the clinical outcome of patients with STEMI treated with fractional flow reserve (FFR)-guided complete revascularisation versus treatment of the infarct-related artery only.

Methods We undertook an open-label, randomised controlled trial at two university hospitals in Denmark. Patients presenting with STEMI who had one or more clinically significant coronary stenosis in addition to the lesion in the infarct-related artery were included. After successful percutaneous coronary intervention (PCI) of the infarct-related artery, patients were randomly allocated (in a 1:1 ratio) either no further invasive treatment or complete FFR-guided revascularisation before discharge. Randomisation was done electronically via a web-based system in permuted blocks of varying size by the clinician who did the primary PCI. All patients received best medical treatment. The primary endpoint was a composite of all-cause mortality, non-fatal reinfarction, and ischaemia-driven revascularisation of lesions in non-infarct-related arteries and was assessed when the last enrolled patient had been followed up for 1 year. Analysis was on an intention-to-treat basis. This trial is registered with ClinicalTrials.gov, number NCT01960933.

Findings From March, 2011, to February, 2014, we enrolled 627 patients to the trial; 313 were allocated no further invasive treatment after primary PCI of the infarct-related artery only and 314 were assigned complete revascularisation guided by FFR values. Median follow-up was 27 months (range 12–44 months). Events comprising the primary endpoint were recorded in 68 (22%) patients who had PCI of the infarct-related artery only and in 40 (13%) patients who had complete revascularisation (hazard ratio 0·56, 95% CI 0·38–0·83; p=0·004).

Interpretation In patients with STEMI and multivessel disease, complete revascularisation guided by FFR measurements significantly reduces the risk of future events compared with no further invasive intervention after primary PCI. This effect is driven by significantly fewer repeat revascularisations, because all-cause mortality and non-fatal reinfarction did not differ between groups. Thus, to avoid repeat revascularisation, patients can safely have all their lesions treated during the index admission. Future studies should clarify whether complete revascularisation should be done acutely during the index procedure or at later time and whether it has an effect on hard endpoints.

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See Online/Comment
http://dx.doi.org/10.1016/S0140-6736(15)60856-X

*Listed at end of report and in the appendix (p 1)

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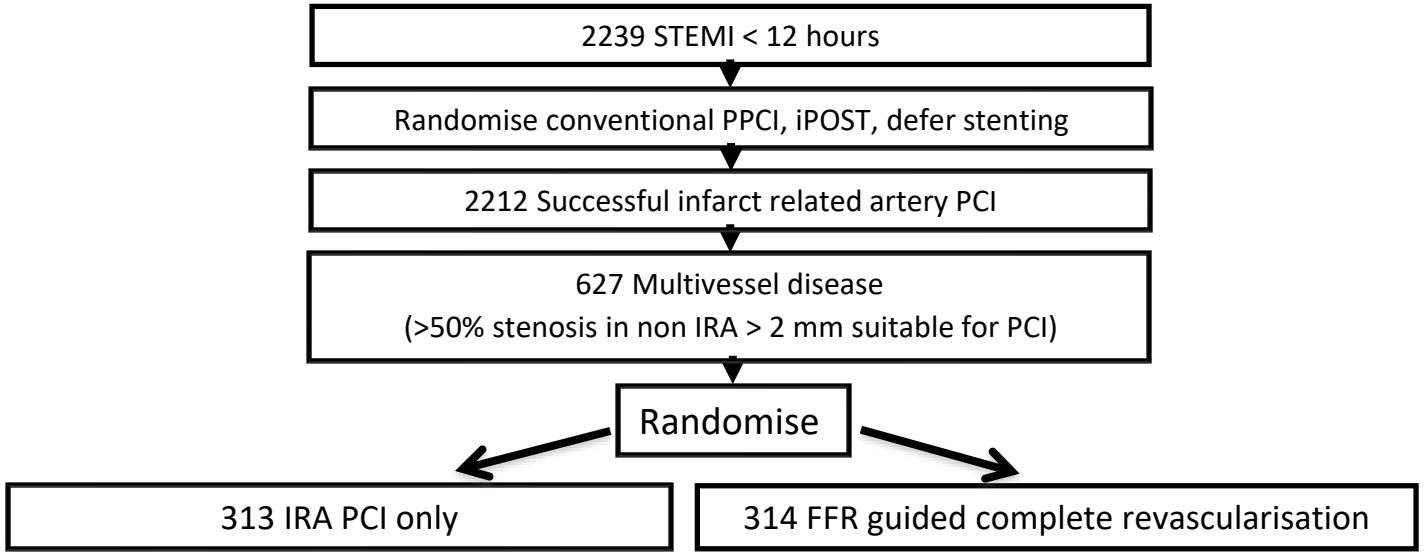
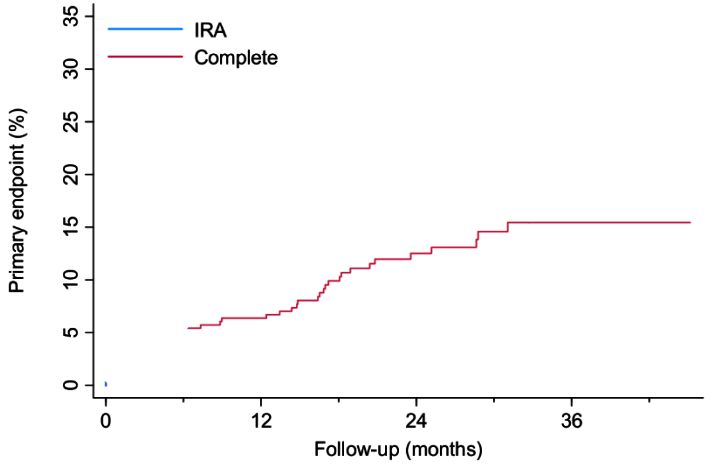
Dr Henning Kelbæk, Department of Cardiology, Roskilde Hospital, DK-4000 Roskilde, Denmark
hkelbaek@dadlnet.dk

DANAMI3-TRIAL PROGRAM



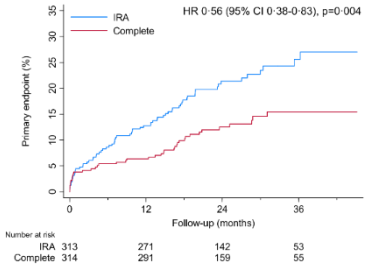
DANAMI3-PRIMULTI

Primary endpoint

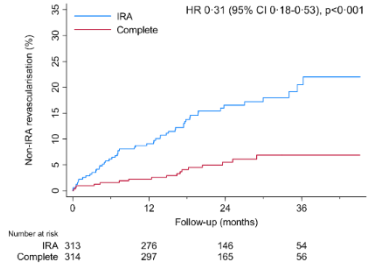


DANAMI3-PRIMULTI

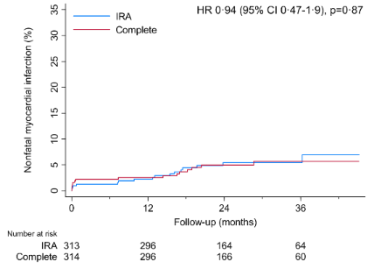
Individual components of primary endpoint



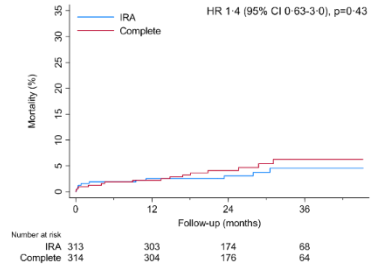
Composite



Revascularisation



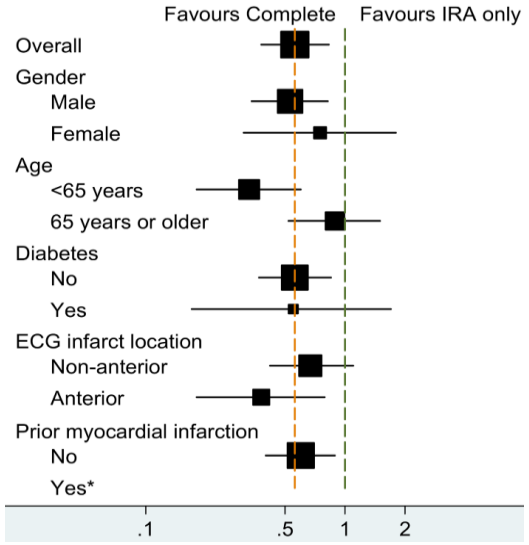
Non fatal MI



All cause death

DANAMI3-PRIMULTI

Subgroup analysis



	Number of patients	Events	Hazard Ratio (95% CI)	$P_{interaction}$
Overall	627	108	0.56 (0.34–0.83)	
Gender	506	88	0.53 (0.34 – 0.82)	0.5
Male	121	20	0.75 (0.31 – 1.8)	
Female				
Age	339	55	0.33 (0.18 – 0.60)	0.02
<65 years	288	53	0.89 (0.52 – 1.5)	
65 years or older				
Diabetes	556	94	0.56 (0.37 – 0.85)	1.0
No	71	14	0.55 (0.17 – 1.7)	
Yes				
ECG infarct location	410	72	0.67 (0.42 – 1.1)	0.2
Non-anterior	217	36	0.38 (0.18 – 0.79)	
Anterior				
Prior myocardial infarction	583	102	0.60 (0.40 - 0.89)	-
No	44	6	-	
Yes*				

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

DANAMI3-PRIMULTI

Conclusions

Complete FFR guided revascularisation of multivessel disease in STEMI patients, staged within the index admission, reduced the primary endpoint of all cause death, reinfarction and repeat revascularisation

40% of repeat revascularisations were urgent

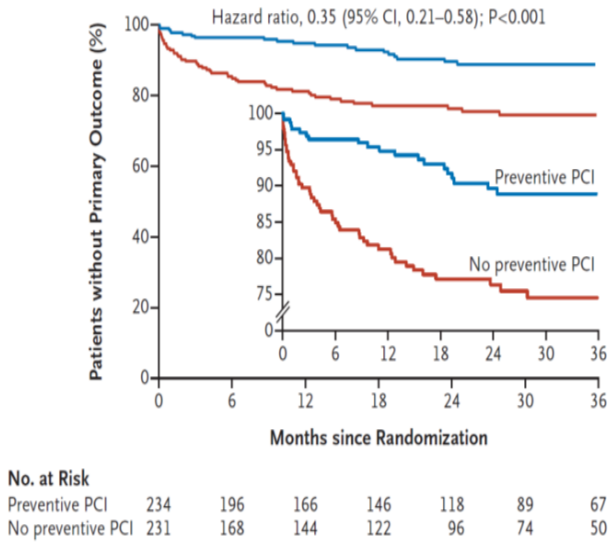
However, the reduction in the primary endpoint was driven by repeat revascularisations and not by hard endpoints

Therefore, although complete revascularisation should be recommended, any condition that makes complex PCI unattractive may support a more conservative strategi of IRA PCI only

DANAMI3-PRIMULTI

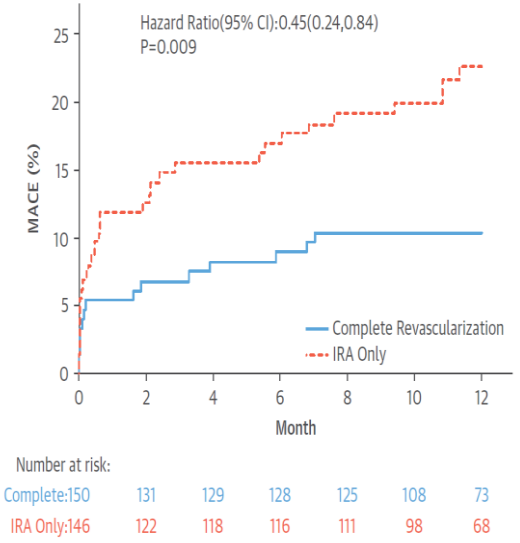
The PRAMI, CvLPRIT, and DANAMI-3-PRIMULTI trials
MACE

The PRAMI trial



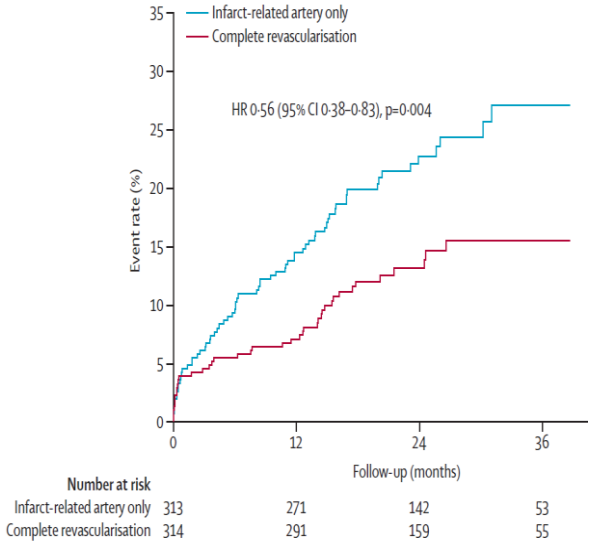
Wald DS et al. N Engl J Med 2013;369:1115-23

The CvLPRIT trial



Gershlick AH et al. JACC 2015;65:963-72

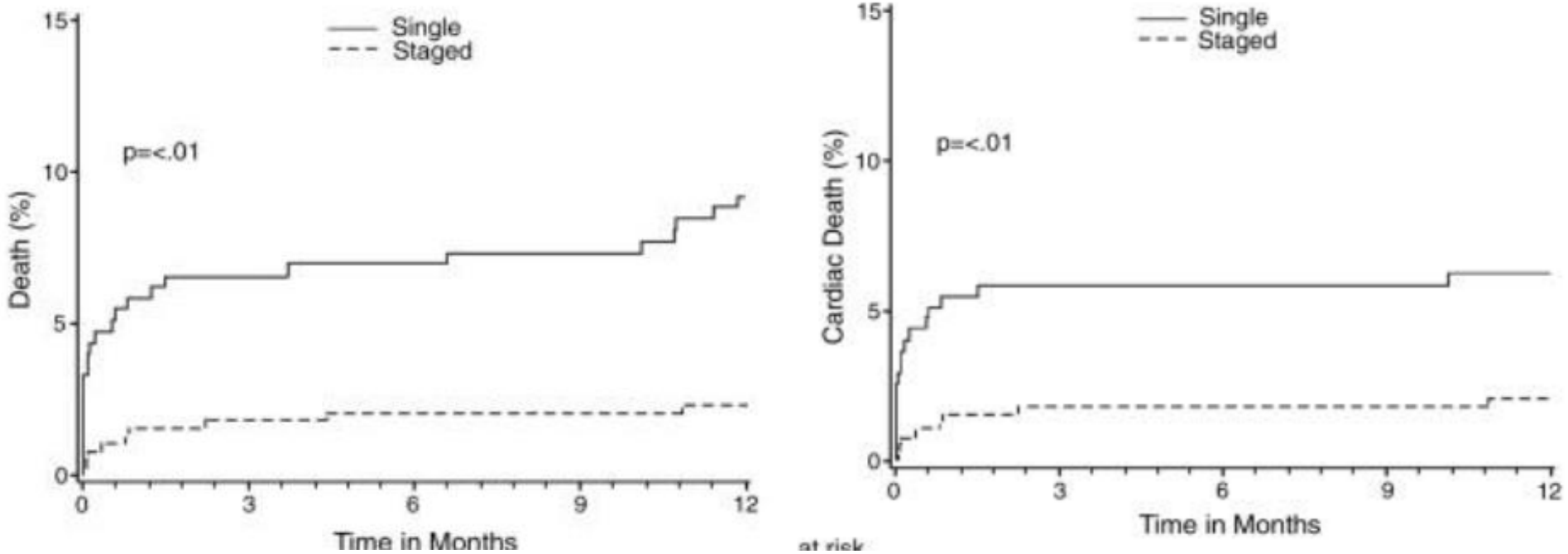
The DANAMI3-PRIMULTI trial



Engstrøm T et al. Lancet 2015;386:665-71

Single vs Staged PCI in Ptes with MVD: Horizons AMI

668 ptes con IAM ST



Kornowski et al. JACC 2011;58:704-11

COMPARE-ACUTE

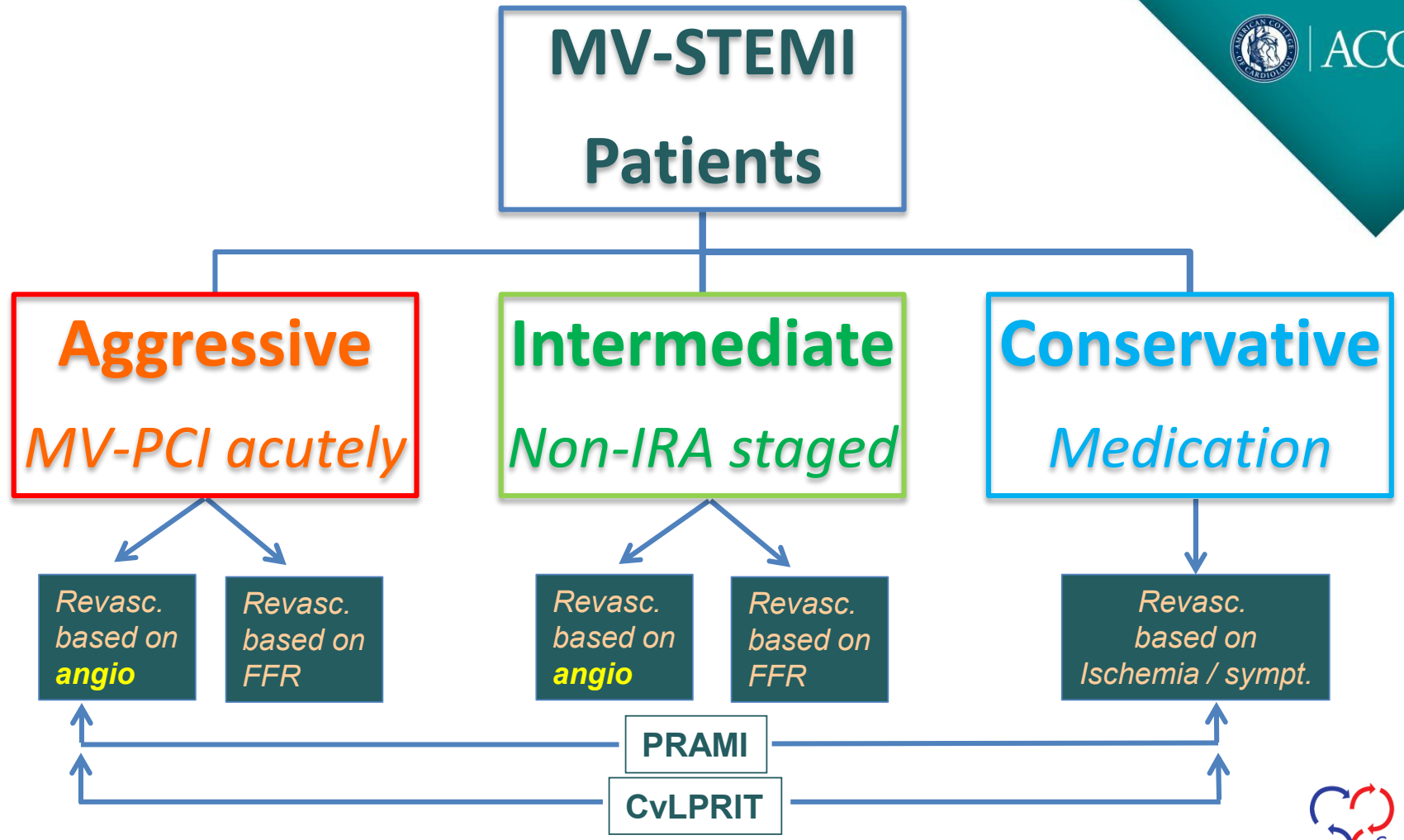
Randomised trial of FFR-guided complete revascularization *versus* infarct artery only treatment in multivessel STEMI patients

On behalf of all COMPARE-ACUTE investigators

Pieter Smits

Maasstad Hospital

Rotterdam, The Netherlands

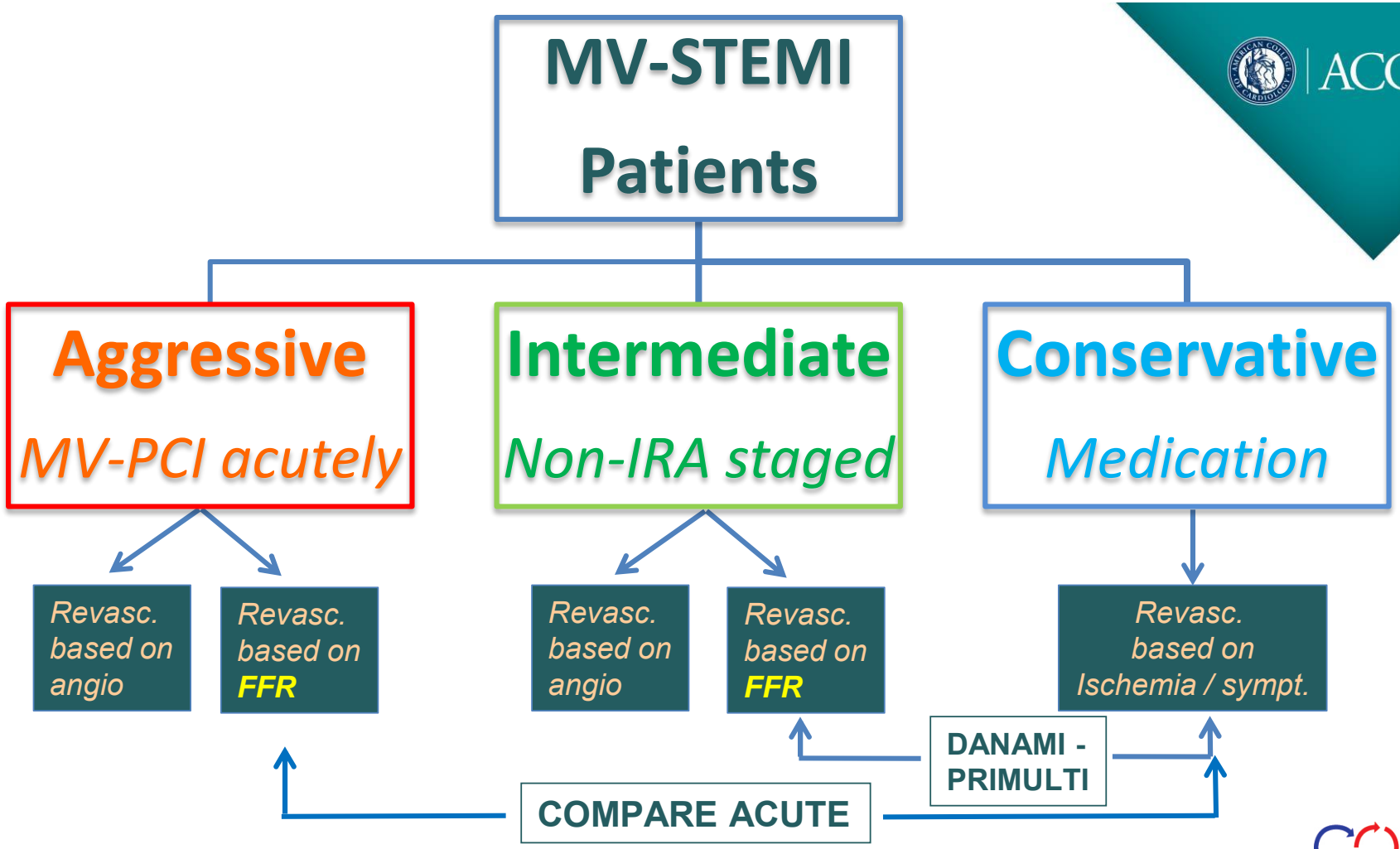


PRAMI: Wald et al. NEJM 2013; 369: 1115-23

CvLPRIT: Gerschlick et al. JACC 2015; 65: 963-72

Compare Acute

Pieter Smits, ACC 2017

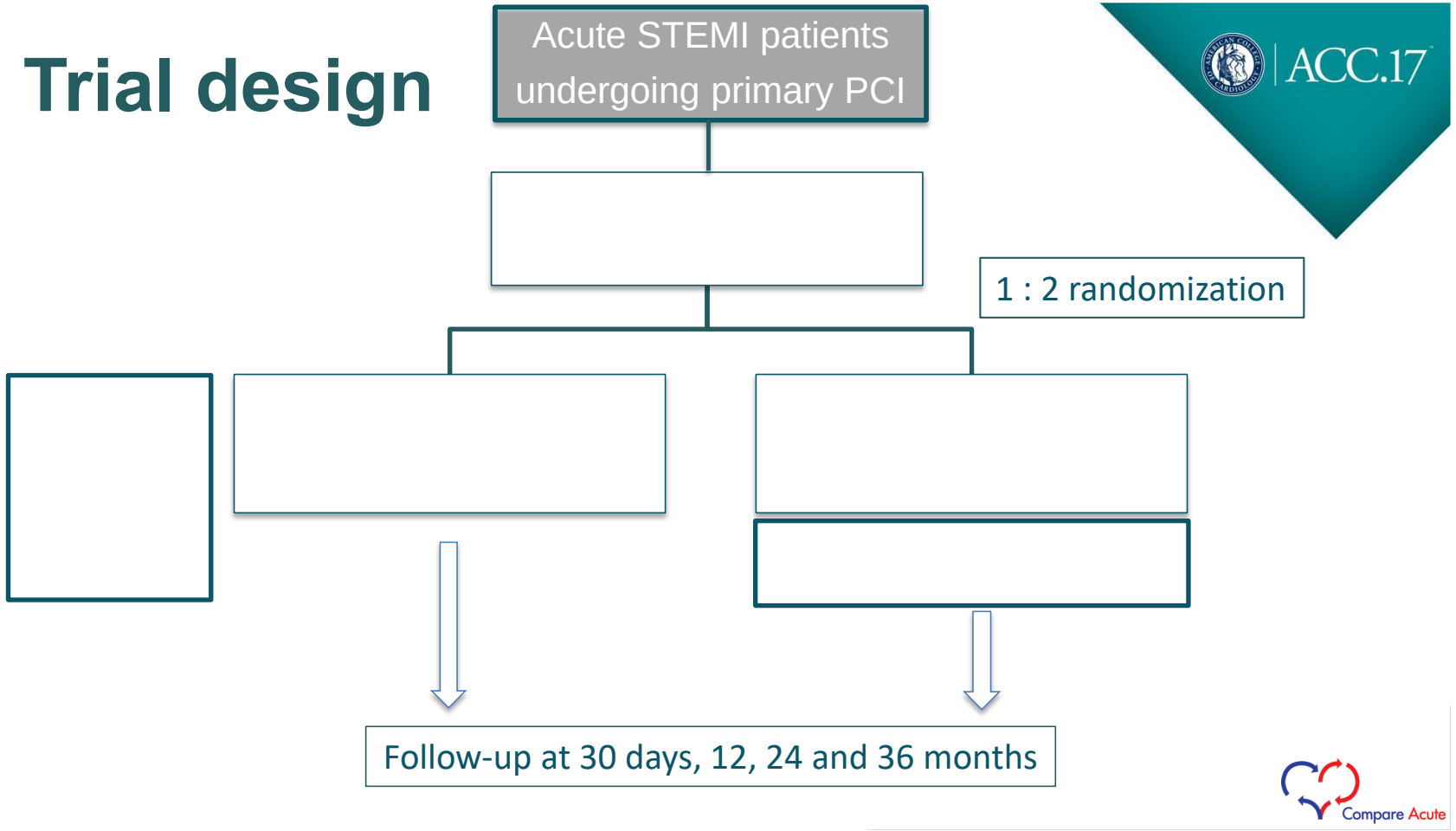


DANAMI-3-PRIMULTI: Engstrom et al. Lancet 2015; 386: 665-71

Pieter Smits, ACC 2017

COMPARE-ACUTE Trial

Trial design



P Smits. ACC 2017, March 18, 2017, at NEJM.org. DOI: 10.1056/NEJMoa1701067

COMPARE-ACUTE Trial

- Approximately half (46.9%) of the lesions in non-related arteries considered significant on coronary angiography had an FFR value >0.8 and were therefore not physiologically significant.

- Deferring treatment of angiographically significant coronary lesions in non-related arteries with FFR>0.8 is safe and efficient.

P Smits. ACC 2017, March 18, 2017, at NEJM.org. DOI: 10.1056/NEJMoa1701067

Up-Coming Trials

- COMPLETE Trial: N=3900
  - Culprit only vs staged procedures
- CROSS-AMI;
  - Culprit only vs. Stress echo-guided PCI

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CLINICAL DOCUMENT

ACC/AATS/AHA/ASE/ASNC/SCAI/ SCCT/STS 2016 Appropriate Use

TABLE 1.1 STEMI—Immediate Revascularization by PCI

	Indication	Appropriate Use Score (1-9)
Revascularization of the Presumed Culprit Artery by PCI (Primary PCI)		
1.	■ Less than or equal to 12 hours from onset of symptoms	**A (9)**
2.	■ Onset of symptoms within the prior 12–24 hours AND ■ Severe HF, persistent ischemic symptoms, or hemodynamic or electrical instability present	**A (8)**
3.	■ Onset of symptoms within the prior 12–24 hours AND ■ Stable without severe HF, persistent ischemic symptoms, or hemodynamic or electrical instability	**M (6)**
Successful Treatment of the Culprit Artery by Primary PCI Followed by Immediate Revascularization of 1 or More Nonculprit Arteries During the Same Procedure		
4.	■ Cardiogenic shock persisting after PCI of the presumed culprit artery ■ PCI or CABG of 1 or more additional vessels	**A (8)**
5.	■ Stable patient immediately following PCI of the presumed culprit artery ■ One or more additional severe stenoses	**M (6)**
6.	■ Stable patient immediately following PCI of the presumed culprit artery ■ One or more additional intermediate (50%–70%) stenoses	**M (4)**

The number in parenthesis next to the rating reflects the median score for that indication.

A = appropriate; CABG = coronary artery bypass graft; HF = heart failure; M = may be appropriate; PCI = percutaneous coronary intervention; R = rarely appropriate; STEMI = ST-segment elevation myocardial infarction.

Manesh R. Patel et al; J Am Coll Cardiol ACC VOL. 69, NO. 5, 2017 FEBRUARY 7, 2017:570–91
DOI: 10.1016/j.jacc.2016.10.034

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CLINICAL DOCUMENT

ACC/AATS/AHA/ASE/ASNC/SCAI/SCCT/STS 2016 Appropriate Use Criteria for Coronary Revascularization in Patients With Acute Coronary Syndromes

TABLE 1.3 STEMI—Revascularization of Nonculprit Artery During the Initial Hospitalization

Indication		Appropriate Use Score (1-9)
Successful Treatment of the Culprit Artery by Primary PCI or Fibrinolysis Revascularization of 1 or More Nonculprit Arteries During the Same Hospitalization		
Revascularization by PCI or CABG		
10.	■ Spontaneous or easily provoked symptoms of myocardial ischemia ■ One or more additional severe stenoses	**A (8)**
11.	■ Asymptomatic ■ Findings of ischemia on noninvasive testing ■ One or more additional severe stenoses	**A (7)**
12.	■ Asymptomatic (no additional testing performed) ■ One or more additional severe stenoses	**M (6)**
13	■ Asymptomatic (no additional testing performed) ■ One or more additional intermediate stenoses	**R (3)**
14.	■ Asymptomatic ■ One or more additional intermediate (50%-70%) stenoses ■ FFR performed and ≤0.80	**A (7)**

The number in parenthesis next to the rating reflects the median score for that indication.

A = appropriate; CABG = coronary artery bypass graft; FFR = fractional flow reserve; M = may be appropriate; PCI = percutaneous coronary intervention; R = rarely appropriate; STEMI = ST-segment elevation myocardial infarction.

Manesh R. Pat
DOI: 10.1016/

Final Conclusions

- Culprit-vessel PCI with in-hospital staged nonculprit PCI leads to lower risks of death and repeat revascularization at 2 years.
- The use od iFR/FFR may help to decide a better “complete functional Revascularisation” for STEMI PCI.
- Complete revascularisation should be done to Improve Prognosis and Reduce Costs!

COMPLETE Trial: Study Design

A randomized, comparative effectiveness study of complete versus culprit-only revascularization strategies to treat multi-vessel disease after 1o PCI for STEMI

STEMI with successful PCI for STEMI (primary, rescue or pharmacoinvasive) + ≥ 70% stenosis or ≥ 50% with FFR < 0.80

RANDOMIZED
Within 72 h of index STEMI PCI

COMPLETE REVASC
Staged PCI of all suitable non-culprit lesions (< 45 d)
N=1950

CULPRIT LESION-ONLY REVASC
No further revsac of non-culprit lesions (OMT Alone)
N=1950

ALL patients receive OMT (ASA, Ticagrelor, Statin, Beta Blocker, RF Modification)

Follow-up: Discharge, 30 Days, 6 mos, then Annually (avg. duration = 4 yrs)

Primary Outcome: CV Death / MI
Key Secondary Outcome: CV Death/MI/Ischemia driven revascularization

Randomization stratified for intended timing of PCI: within vs after initial hospitalization

- **The focused update does not, however, give a recommendation on when to perform PCI of the non-infract artery.**
- **The COMPLETE trial will evaluate the strategy of culprit lesion only revascularization versus complete revascularization using a staged PCI approach (within 45 days of the index procedure).**

Primary percutaneous coronary intervention for myocardial reperfusion in ST-elevation myocardial infarction: procedural aspects (strategy and technique)

Recommendations	Class	Level
Strategy		
Routinerevascularizationofnon-IRAlesionsshouldbeconsidered inpatientswithmultivesseldiseasebeforehospitaldischarge.	IIa	A
CABGshouldbeconsideredinpatientswithongoingischaemiaand largeareasofjeopardizedmyocardiumifPCIoftheIRAcannotbe performed.	IIa	C
Technique		
Routineuseofthrombusaspirationisnotrecommended.	III	A

2018 ESC/EACTS Guidelines on myocardial revascularisation
European Heart Journal (2018) 00, 1-96 - doi:10.1093/eurheartj/ehy394

TCT Russia
At
TCT 2013
When To Acutely Perform Multivessel PCI in STEMI?

George D. Dangas, MD, PhD, FACC, FESC

Professor of Medicine

Mount Sinai Medical Center, New York, NY

Mount Sinai

TCT2012

CARDIOVASCULAR RESEARCH FOUNDATION
a passion for innovation

When to do MV PCI in STEMI?

1. When the culprit vessel has been treated successfully
2. And the non-culprit vessel has a proximal significant lesion with a lot of myocardium at risk
3. And the features of this lesion predict a good PCI result within 15-20min and <100cc additional contrast load
4. Then we may consider MV PCI in STEMI, particularly if the larger COMPLETE trial is also concordant

- **Decision based on the individual patient remains the rule.**
- **Large contemporary meta-analyses, mostly from obsevational studies, before PRAMI/CVLPRIT are consistent in showing a benefit of staging non-IRA PCI versus either culprit only or immediate MV PCI strategies. The COMPLETE, DANAMI-3 and COMPARE-ACUTE trials will add other pieces to the puzzle.**
- **My practice for STEMI with MVD before & after PRAMI/CVLPRIT: Culprit only, then early planned, staged non-IRA PCI.**

EUROPCR@JIM Feb.2015

Controversies In STEMI

- Culprit versus complete revascularization in MVD
- Culprit versus complete revascularization in cardiogenic shock

Controversies In STEMI

- Culprit versus complete revascularization in MVD

- Culprit versus complete revascularization in cardiogenic shock

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CULPRIT-SHOCK

CULPRIT-SHOCK: A Randomized Trial of Multivessel PCI in Cardiogenic Shock

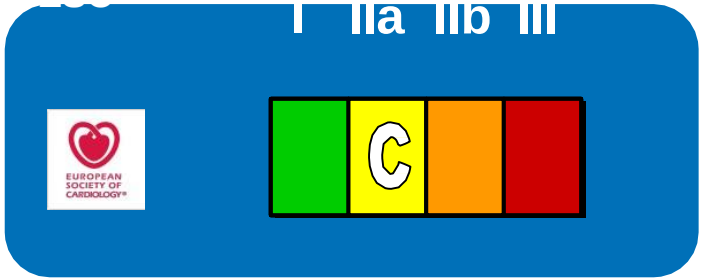
Holger Thiele, MD

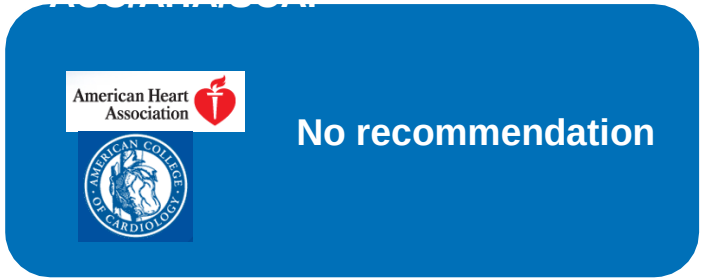
on behalf of the CULPRIT-SHOCK Investigators

Multivessel coronary artery disease present in up to 80% → higher mortality

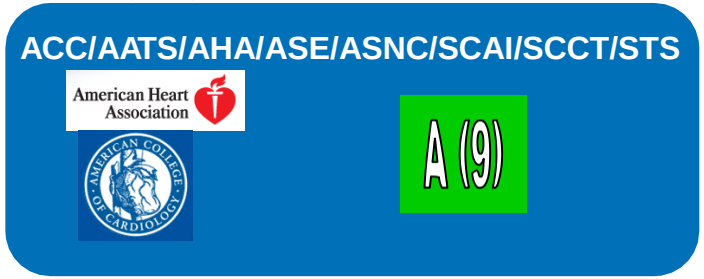
Guidelines

Multivessel PCI in Cardiogenic Shock European and American Recommendations 2017





Appropriate Use Criteria



Ibanez et al. ESC STEMI Guidelines 2017. Eur Heart J 2017; epub

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Multivessel PCI in Cardiogenic Shock?

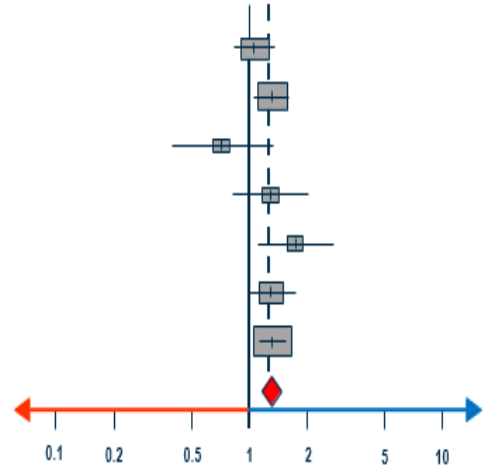
Metaanalysis Mortality – Registry-Data

Short-term follow-up

	MV-PCI		C-PCI		RR	95%CI
	Events	Total	Events	Total		
IABP-SHOCK II	75	167	119	284	1.07	[0.86-1.33]
ALKK	81	173	201	562	1.31	[1.08-1.33]
KAMIR	13	124	56	386	0.72	[0.41-1.28]
Yang et al.	19	60	68	278	1.29	[0.85-1.98]
Cavender et al.	20	43	42	156	1.73	[1.14-2.61]
EHS-PCI	40	82	95	254	1.30	[0.99-1.71]
NCDR	158	433	737	2654	1.31	[1.14-1.51]
Overall	**406**	**1082**	**1318**	**4574**	**1.26**	**[1.12-1.41]**

Heterogeneity: τ^2=0.007, I^2=31.0%, p=0.19

Test for overall effect: p=0.001

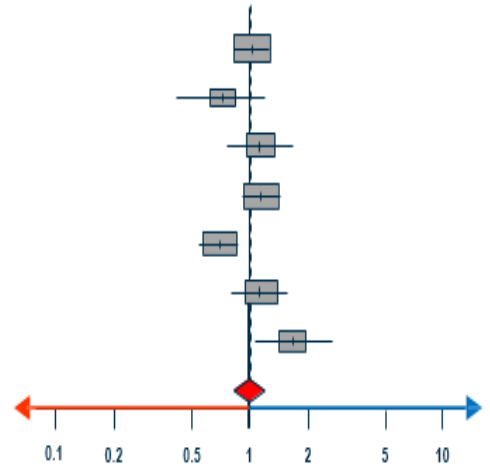


Long-term follow-up

	MV-PCI		C-PCI		RR	95%CI
	Events	Total	Events	Total		
IABP-SHOCK II	91	167	149	284	1.04	[0.87-1.24]
KAMIR	16	124	69	386	0.72	[0.43-1.19]
Yang et al.	21	60	85	278	1.14	[0.78-1.69]
Cavender et al.	32	43	101	156	1.15	[0.93-1.42]
Mylotte et al.	37	66	82	103	0.70	[0.56-0.89]
van der Schaaf et al.	22	37	66	124	1.12	[0.82-1.53]
SHOCK	7	9	26	57	1.71	[1.09-2.67]
Overall	**226**	**506**	**578**	**1387**	**1.03**	**[0.85-1.25]**

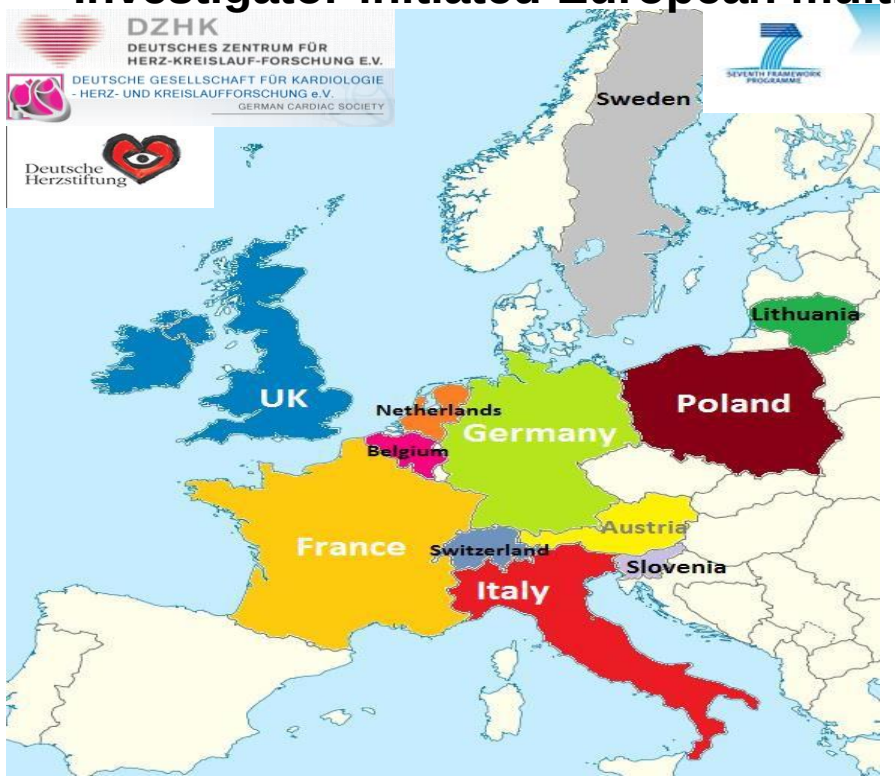
Heterogeneity: τ^2=0.043, I^2=67.8%, p=0.005

Test for overall effect: p=0.77



CULPRIT-SHOCK Trial

Investigator-initiated European multicenter trial; 1:1 randomization



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- Gilles Montalescot
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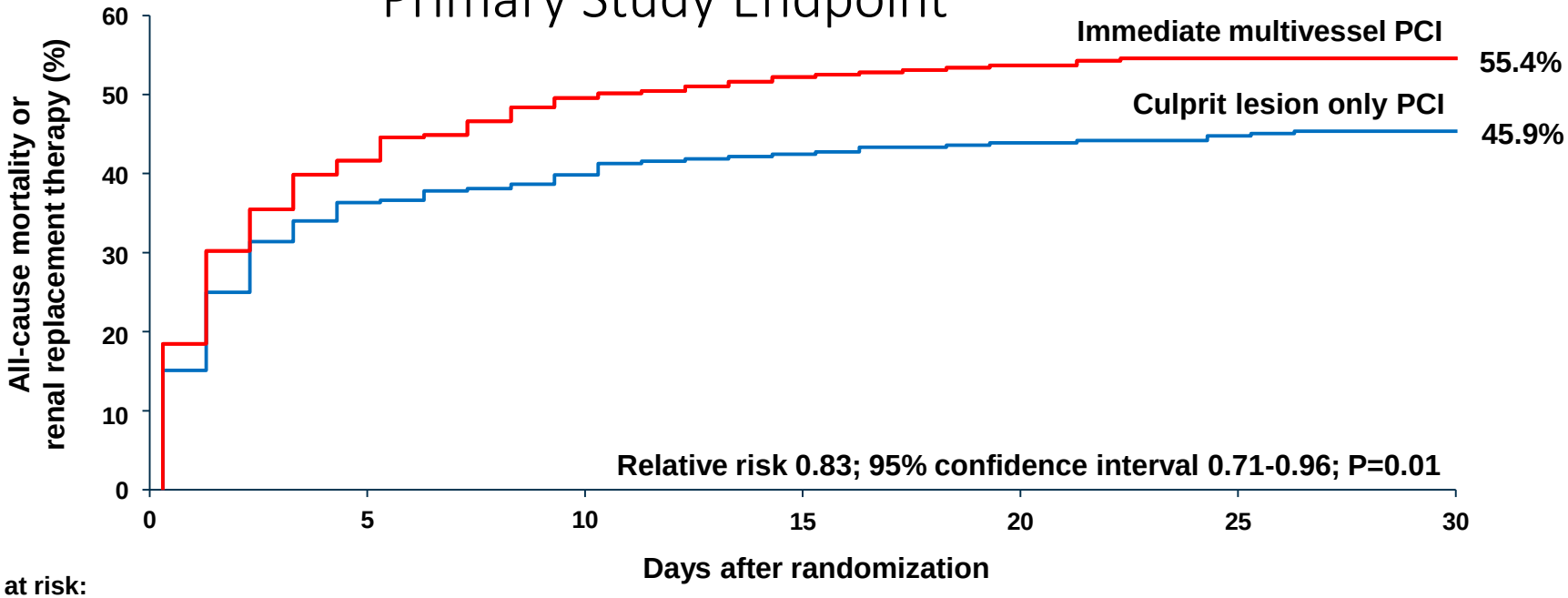
- Holger Thiele
- Pranas Serpytis
- Janina Stepinska
- Christiaan Vrints
- Marko Noc
- Keith Oldroyd
- Stefan Windecker
- Stefano Savonitto

Thiele et al. Am Heart J. 2016;172:160-169

All-Cause Mortality or Renal Replacement Therapy

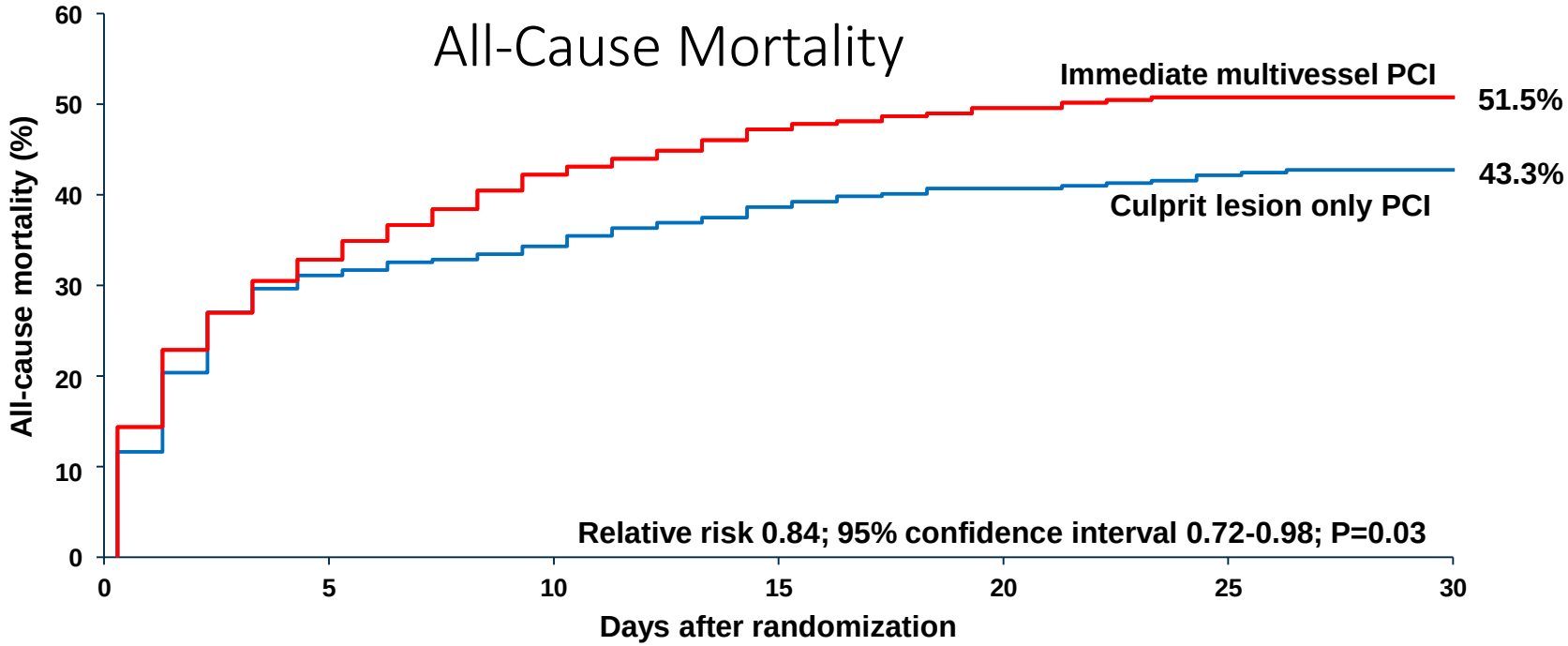
Primary Study Endpoint



Number at risk:

Culprit lesion only PCI	344	219	207	198	192	189	184
Immediate multivessel PCI	341	199	172	162	156	153	152

All-Cause Mortality



Number at risk:

Culprit lesion only PCI	344	237	226	211	203	198	193
Immediate multivessel PCI	341	229	197	179	170	166	165

Conclusions

- **In patients with multivessel coronary artery disease and cardiogenic shock complicating acute myocardial infarction culprit lesion only PCI with possible staged revascularization reduced the composite of mortality or requirement for renal replacement therapy at 30 days.**

- **This effect in the primary outcome was mainly driven by a 30-day mortality reduction.**

- **This largest randomized European multicenter trial in cardiogenic shock complicating myocardial infarction challenges current guideline recommendations.**

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

PCI Strategies in Patients with Acute Myocardial Infarction and Cardiogenic Shock

H. Thiele, I. Akin, M. Sandri, G. Fuernau, S. de Waha, R. Meyer-Saraei, P. Nordbeck, T. Geisler, U. Landmesser, C. Skurk, A. Fach, H. Lapp, J.J. Piek, M. Noc, T. Goslar, S.B. Felix, L.S. Maier, J. Stepinska, K. Oldroyd, P. Serpytis, G. Montalescot, O. Barthelemy, K. Huber, S. Windecker, S. Savonitto, P. Torremante, C. Vrints, S. Schneider, S. Desch, and U. Zeymer, for the CULPRIT-SHOCK Investigators*

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Leipzig Heart Institute LHI

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CULPRIT-SHOCK

CULPRIT-SHOCK: Culprit Lesion Only PCI versus Multivessel PCI in Cardiogenic Shock – 1-Year Results

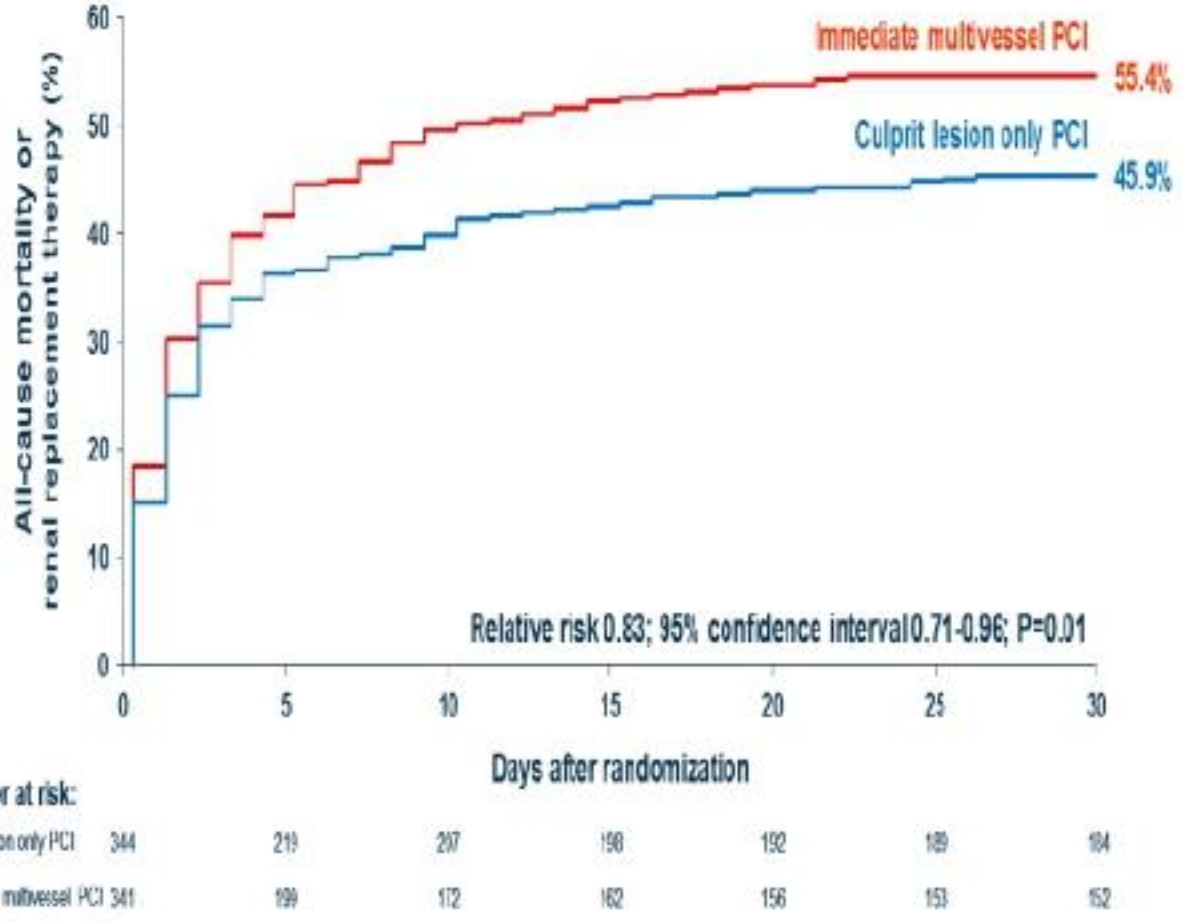
Holger Thiele

on behalf of the CULPRIT-SHOCK Investigators

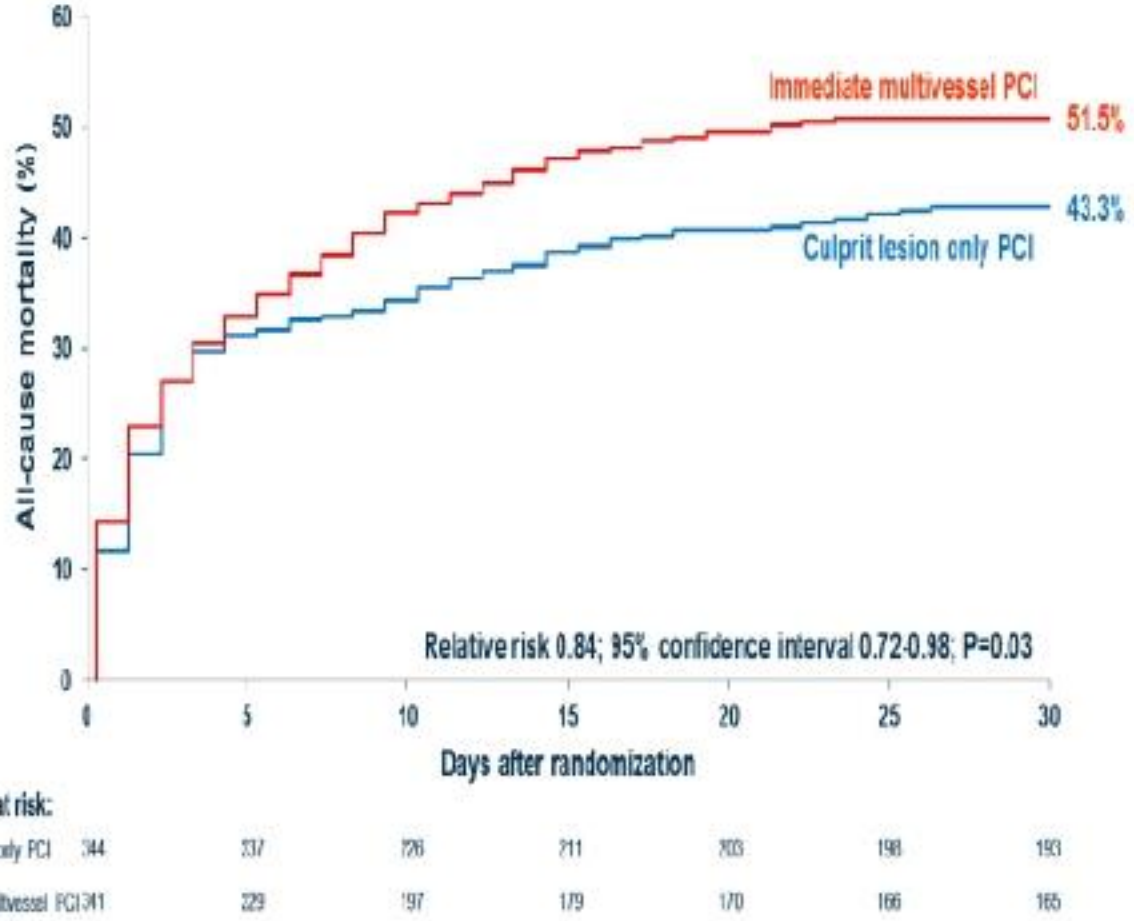
CULPRIT-SHOCK Trial – 30-Day Results

Primary study endpoint – 30 days

All-cause mortality or renal replacement therapy



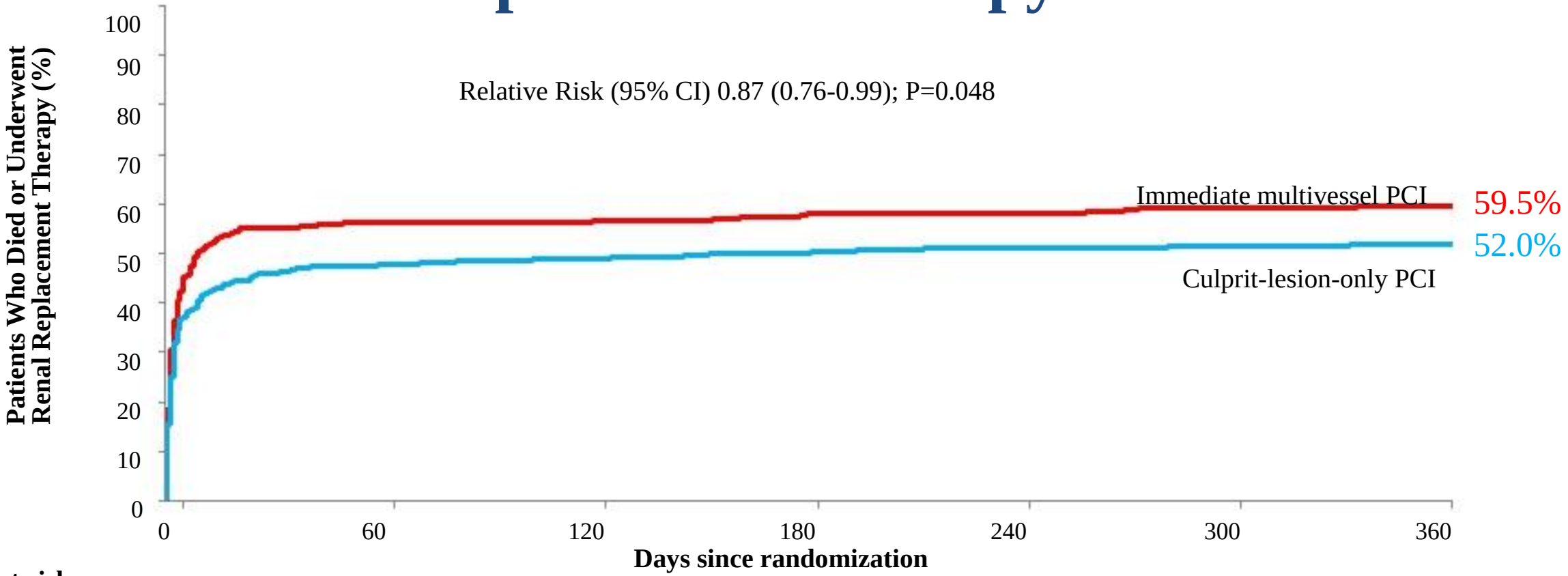
All-cause mortality – 30 days



ESC Congress Munich 2018

Thiele et al. NEJM 2017; 377:2419-2432

1-Year All-Cause Mortality or Renal Replacement Therapy



Number at risk:

Culprit-lesion-only PCI	344	179	174	171	167	165	142
Immediate multivessel PCI	341	149	149	145	142	139	122

N Engl J Med; 2018 August 25, DOI: 10.1056/NEJMoa1808788

www.nejm.org

The NEW ENGLAND JOURNAL of MEDICINE

CULPRIT-SHOCK

ORIGINAL ARTICLE

One-Year Outcomes after PCI Strategies in Cardiogenic Shock

H. Thiele, I. Akin, M. Sandri, S. de Waha-Thiele, R. Meyer-Saraei, G. Fuernau, I. Eitel, P. Nordbeck, T. Geisler, U. Landmesser, C. Skurk, A. Fach, A. Jobs, H. Lapp, J.J. Piek, M. Noc, T. Goslar, S.B. Felix, L.S. Maier, J. Stepinska, K. Oldroyd, P. Serpytis, G. Montalescot, O. Barthelemy, K. Huber, S. Windecker, L. Hunziker, S. Savonitto, P. Torremante, C. Vrints, S. Schneider, U. Zeymer, and S. Desch, for the CULPRIT-SHOCK Investigators*

What is new in the 2018 Guidelines?

New recommendations

UPGRADES
Immediate coronary angiography and revascularization, if appropriate, in survivors of out-of-hospital cardiac arrest and an ECG consistent with STEMI

DOWNGRADES
Bivalirudin for PCI in NSTE-ACS
Bivalirudin for PCI in STEMI

NEW RECOMMANDATIONS
Routine revasularization of non-IRA lesions in myocardial infarction with cardiogenic shock

Changes compared with the 2014 version of the Myocardial Revascularization Guidelines that were due to updates for consistency with other ESC Guidelines published since 2014 are not shown.

Percutaneous coronary intervention in ACS patients with cardiogenic shock

Recommendations	Class	Level
Strategy		
Incardiogenicshock,routinerevascularizationofnon-IRAlesionsis notrecommendedduringprimaryPCI.	III	B

2018 ESC/EACTS Guidelines on myocardial revascularisation
European Heart Journal (2018) 00, 1-96 - doi:10.1093/eurheartj/ehy394

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