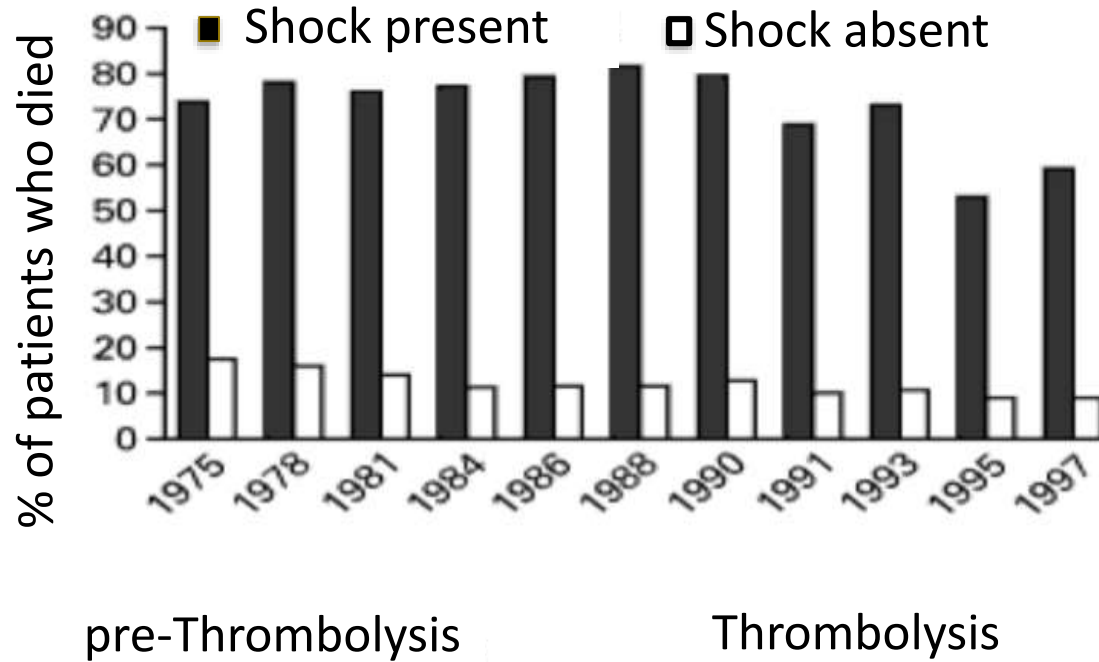


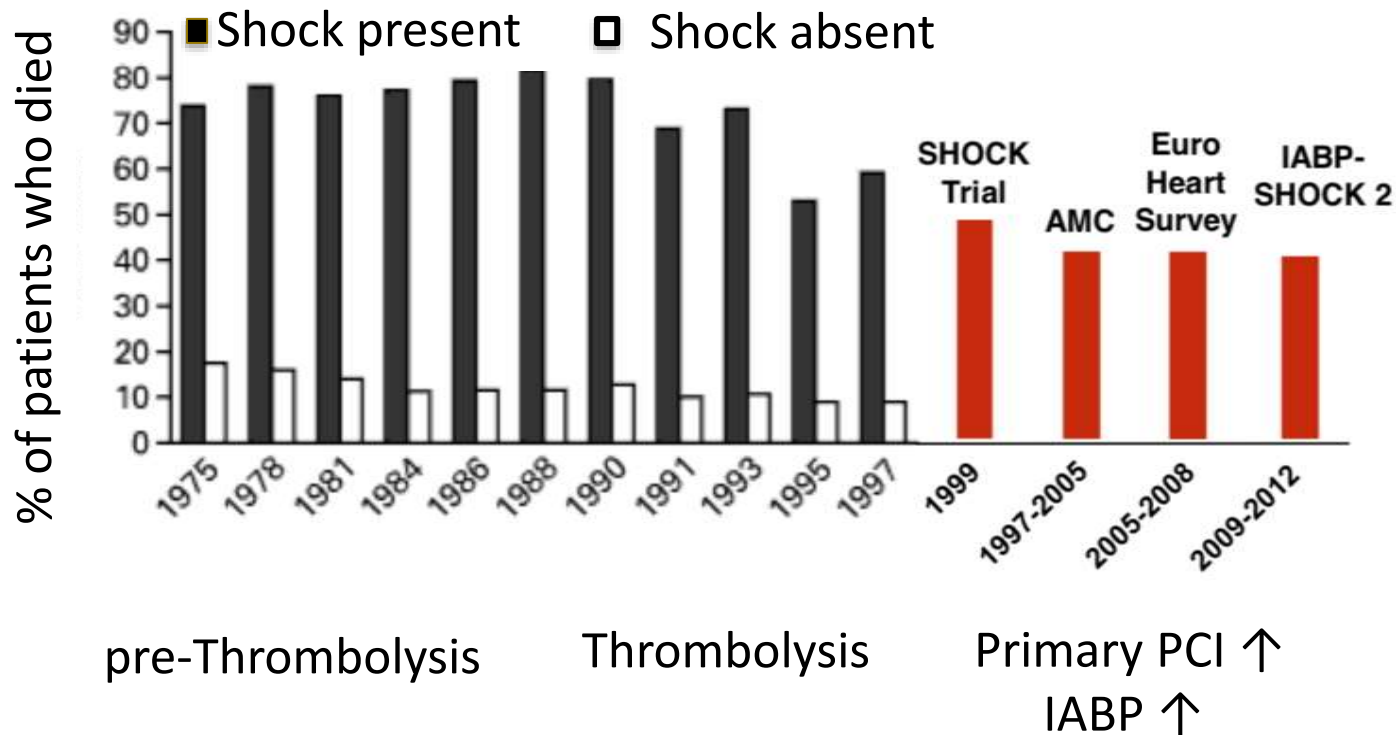
# SHOCK AND MULTIVESSEL DISEASE: HOW MUCH REVASCULARIZATION IS ENOUGH?

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*Argentina*

# MORTALITY IN CARDIOGENIC SHOCK



# MORTALITY IN CARIOGENIC SHOCK



<p><b>Emergency invasive evaluation</b> is indicated in patients with acute heart failure or cardiogenic shock complicating ACS.</p>	<p>I</p>	<p>B</p>
<p><b>Emergency PCI</b> is indicated for patients with cardiogenic shock due to STEMI or NSTEMI-ACS if coronary anatomy is amenable.</p>	<p>I</p>	<p>B</p>
<p><b>Emergency CABG</b> is recommended for patients with cardiogenic shock if the coronary anatomy is not amenable to PCI.</p>	<p>I</p>	<p>B</p>



# SHOCK TRIAL AT 30 DAYS

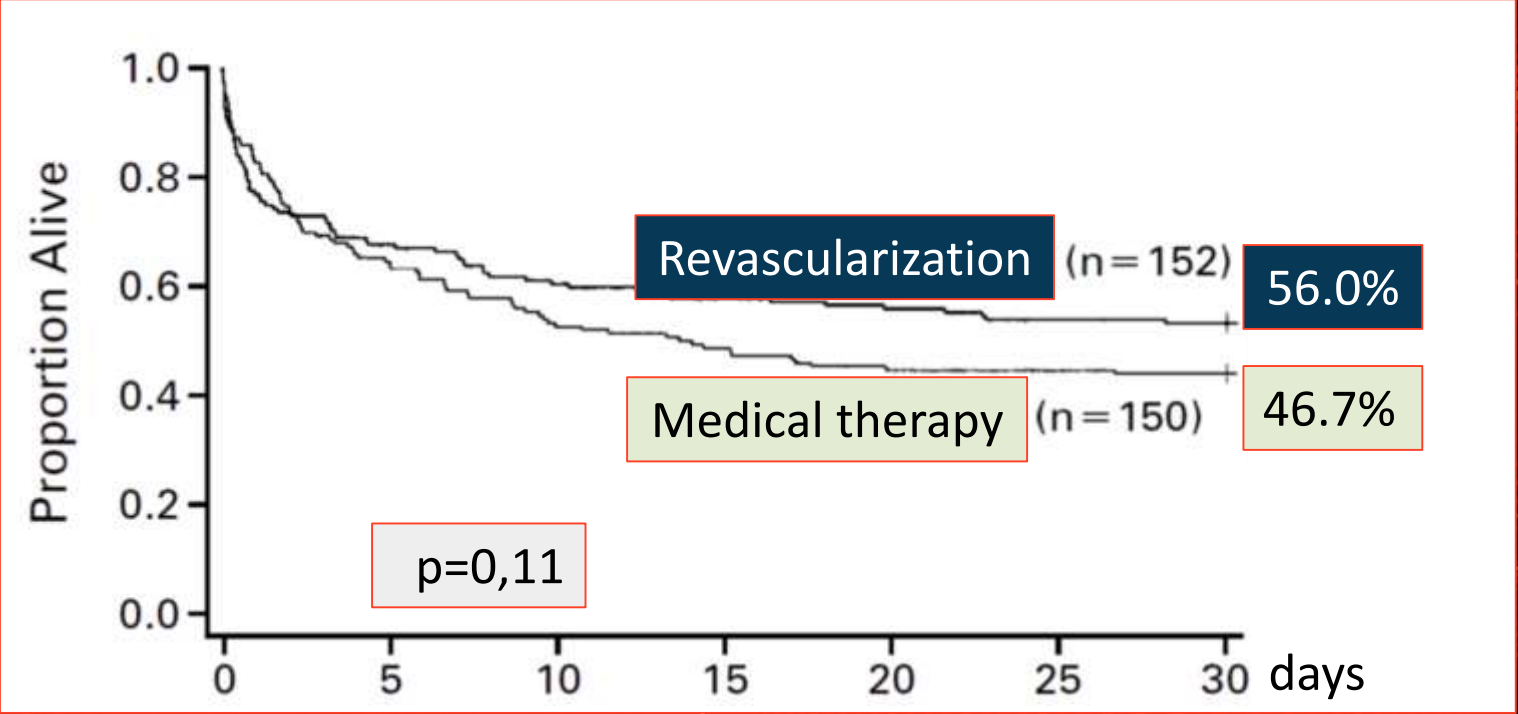
180 days

p=0,027

50.3%

53.1%

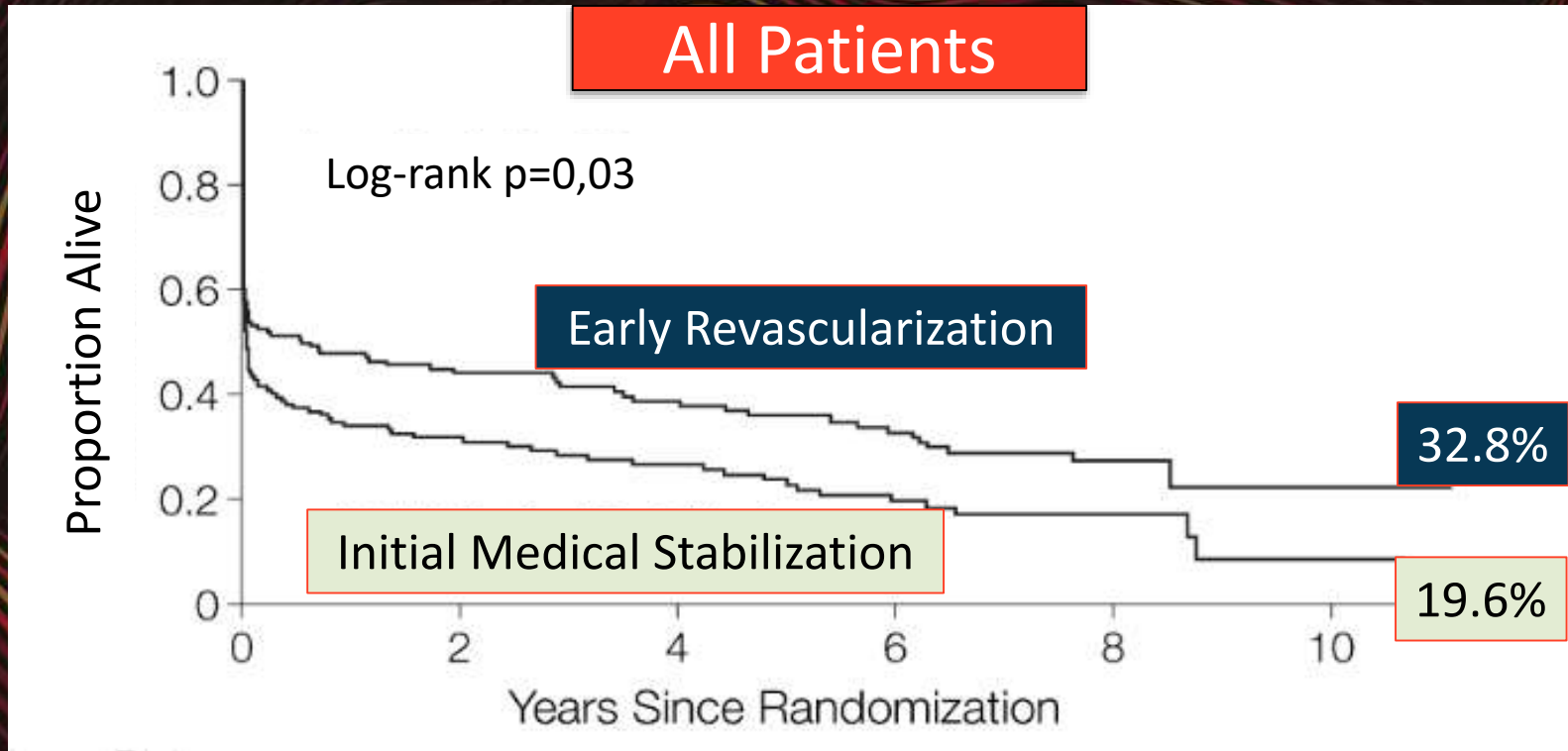
NNT= 8



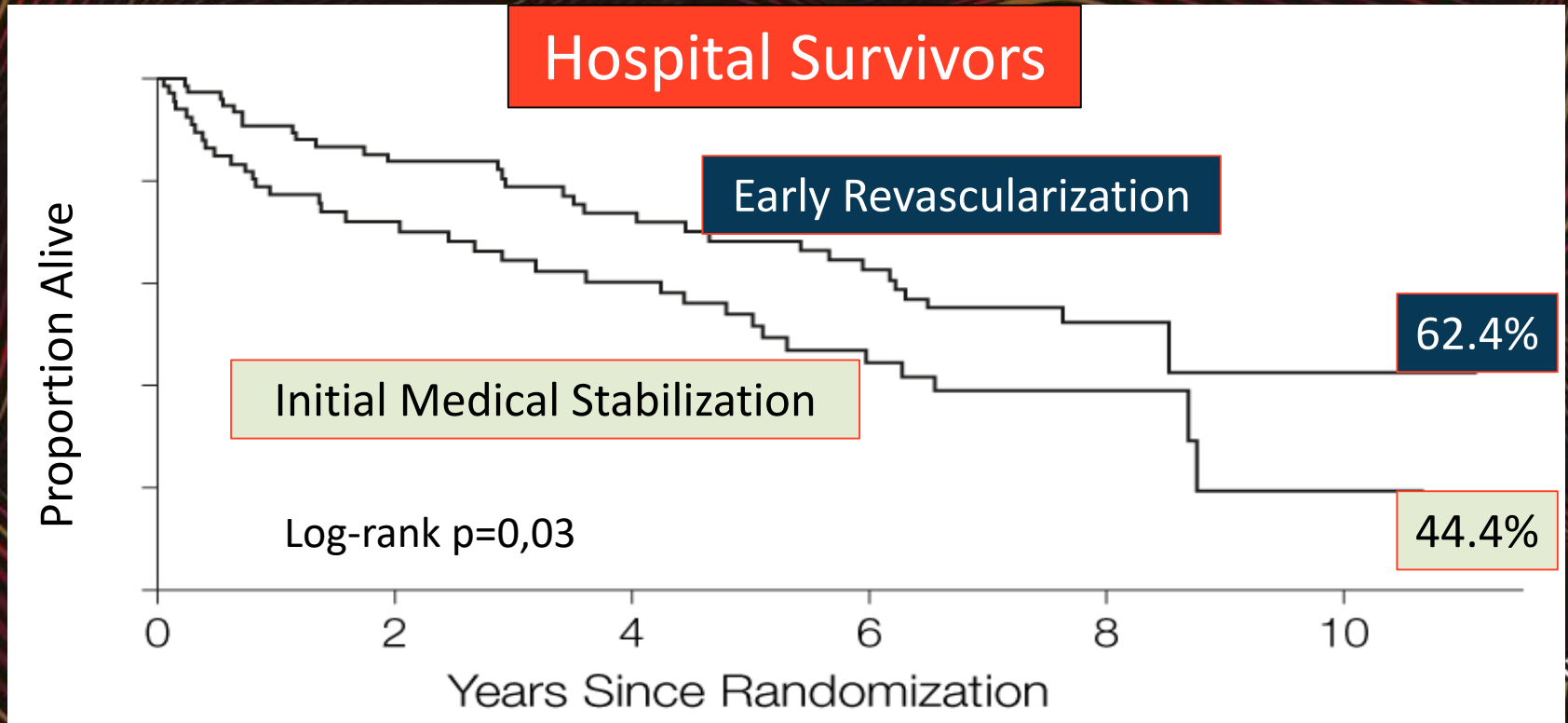
Hochman JS et al. *N Engl J Med.* 1999;341:625-634.

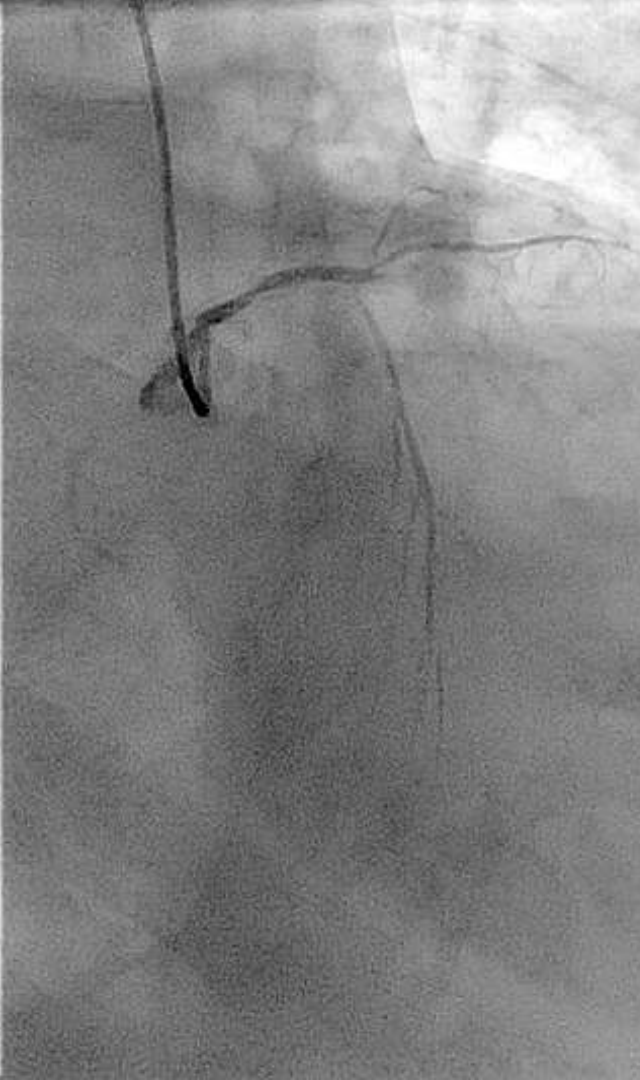


# SHOCK TRIAL: LONG-TERM SURVIVAL

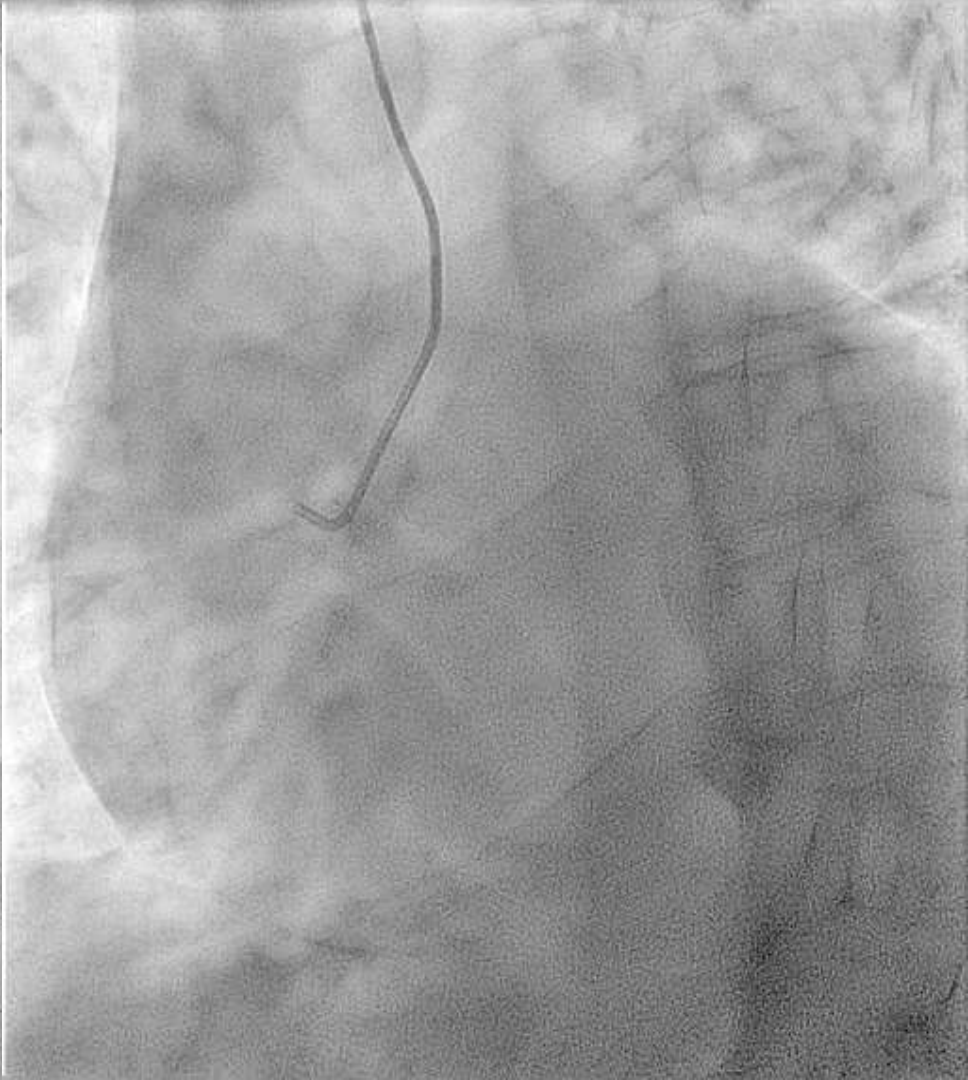
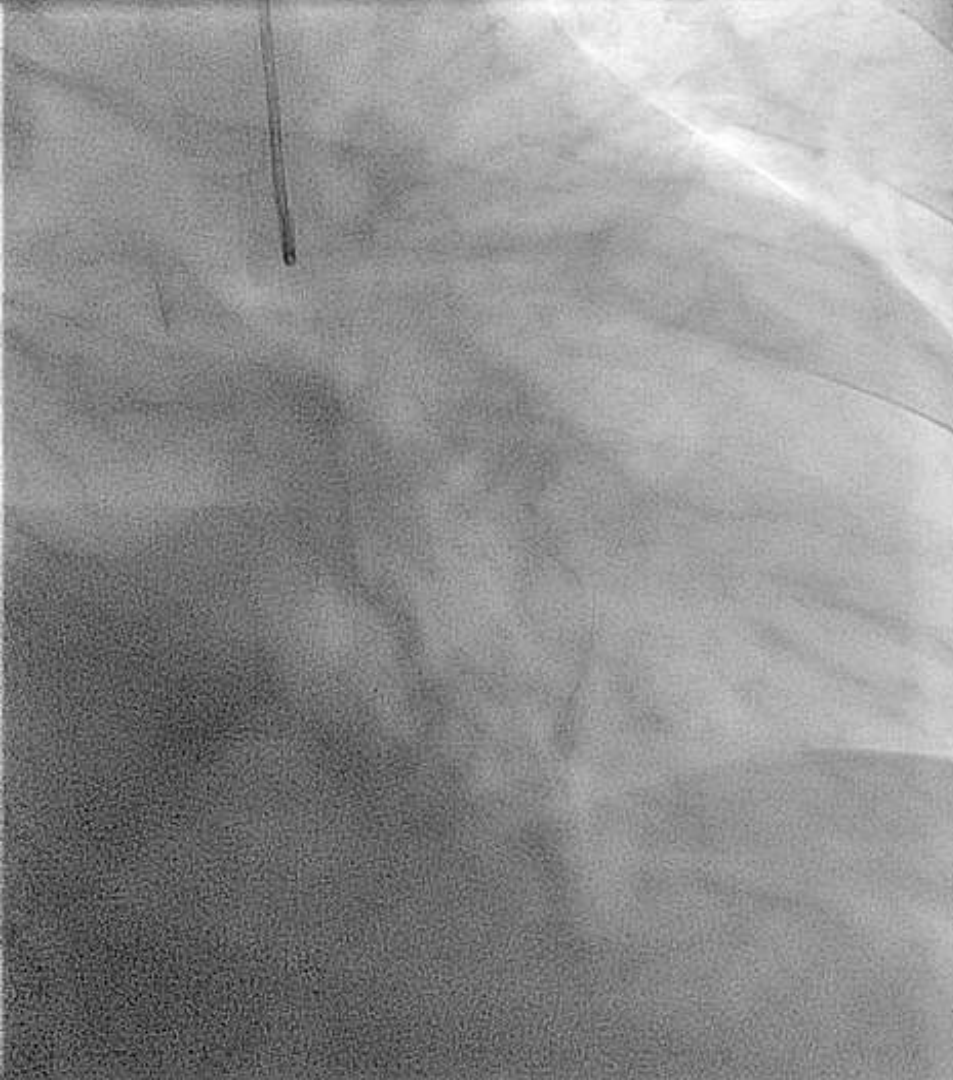


# SHOCK TRIAL: LONG-TERM SURVIVAL



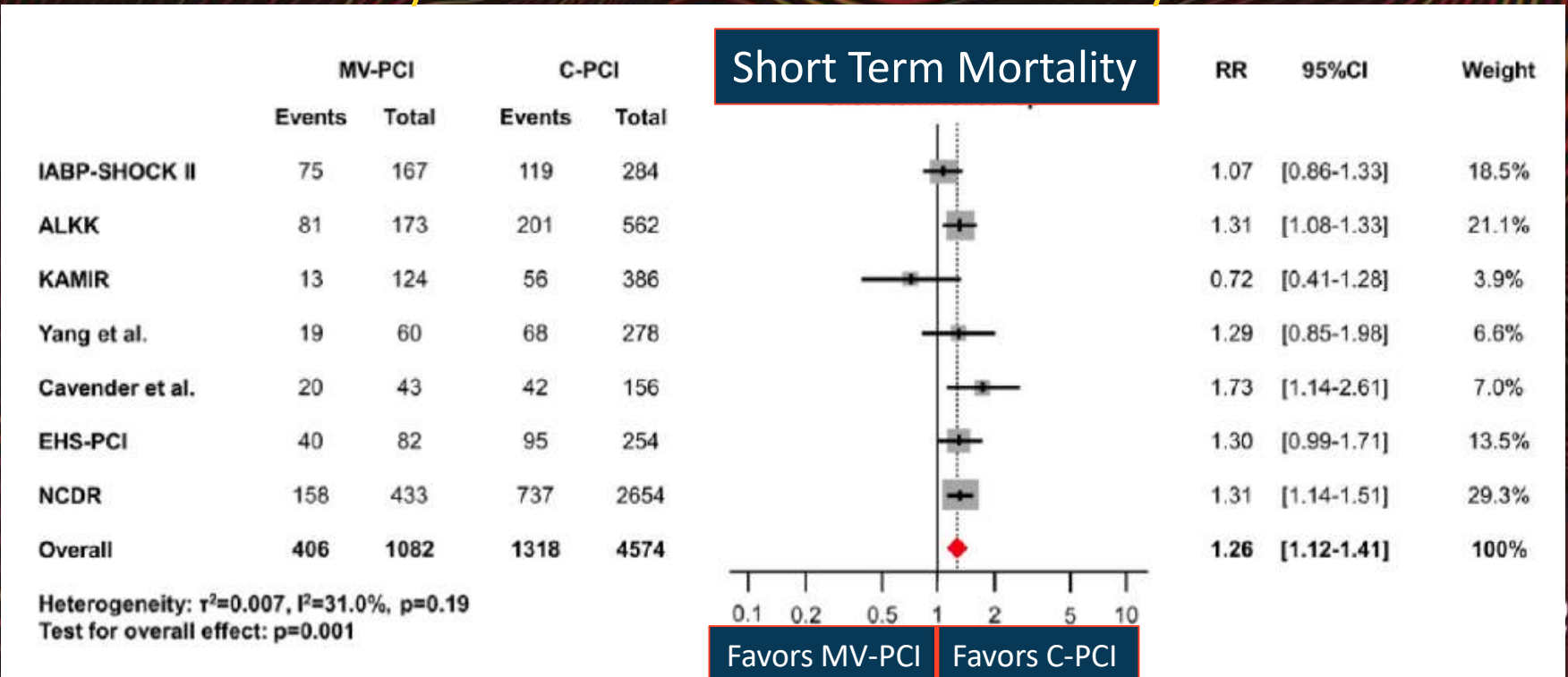






# MULTIVESSEL VS. CULPRIT LESION ONLY PCI IN CARDIOGENIC SHOCK COMPLICATING AMI:

## A systematic review and meta-analysis

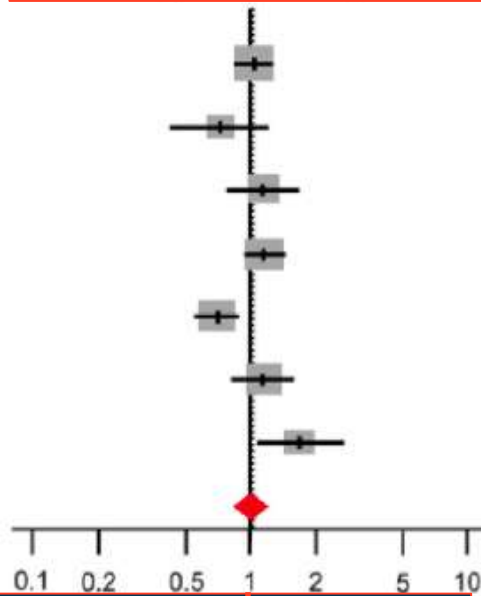


# MULTIVESSEL VS. CULPRIT LESION ONLY PCI IN CARDIOGENIC SHOCK COMPLICATING AMI:

## A systematic review and meta-analysis

### Long Term Mortality

	MV-PCI		C-PCI		RR	95%CI	Weight
	Events	Total	Events	Total			
IABP-SHOCK II	91	167	149	284	1.04	[0.87-1.24]	19.3%
KAMIR	16	124	69	386	0.72	[0.43-1.19]	9.0%
Yang et al.	21	60	85	278	1.14	[0.78-1.69]	12.0%
Cavender et al.	32	43	101	156	1.15	[0.93-1.42]	18.1%
Mylotte et al.	37	66	82	103	0.70	[0.56-0.89]	17.2%
van der Schaaf et al.	22	37	66	124	1.12	[0.82-1.53]	14.3%
SHOCK	7	9	26	57	1.71	[1.09-2.67]	10.3%
<b>Overall</b>	<b>226</b>	<b>506</b>	<b>578</b>	<b>1387</b>	<b>1.03</b>	<b>[0.85-1.25]</b>	<b>100%</b>



Heterogeneity:  $\tau^2=0.043$ ,  $I^2=67.8\%$ ,  $p=0.005$

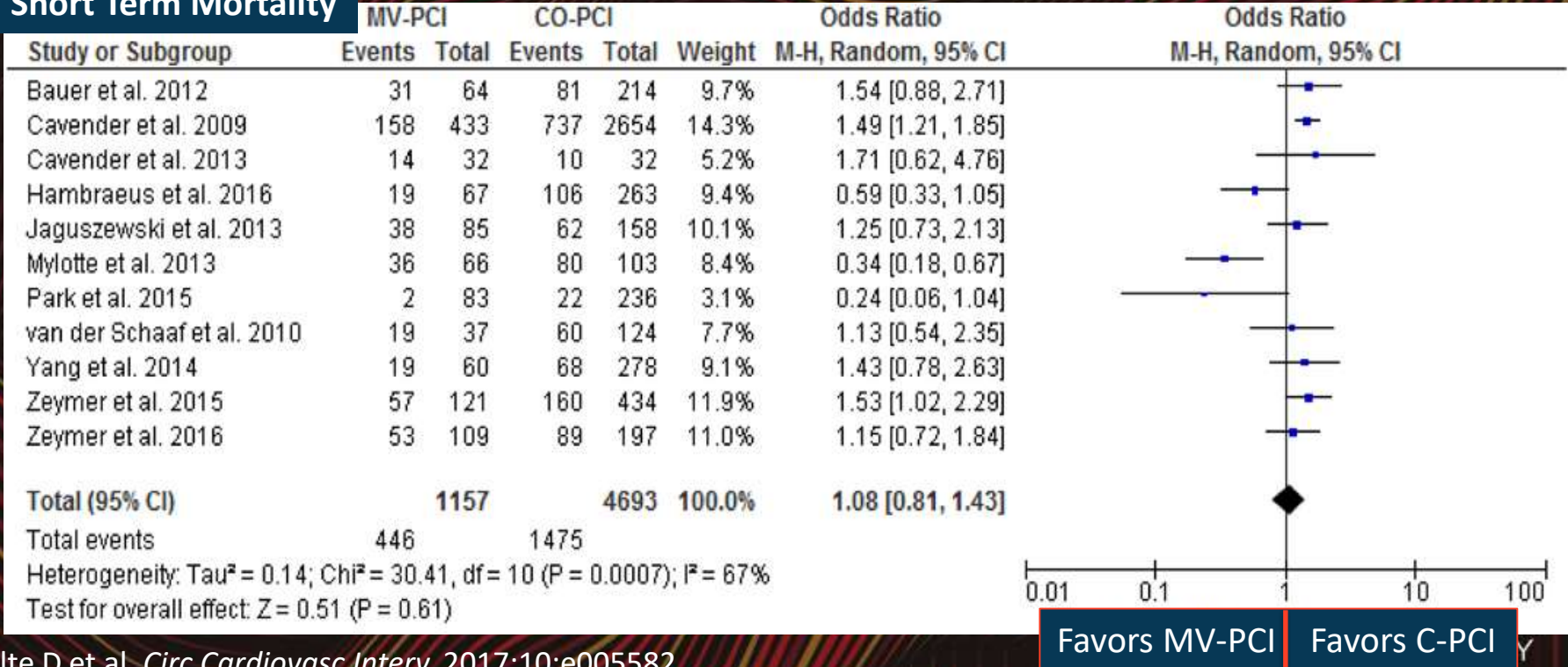
Test for overall effect:  $p=0.77$

Favors MV-PCI

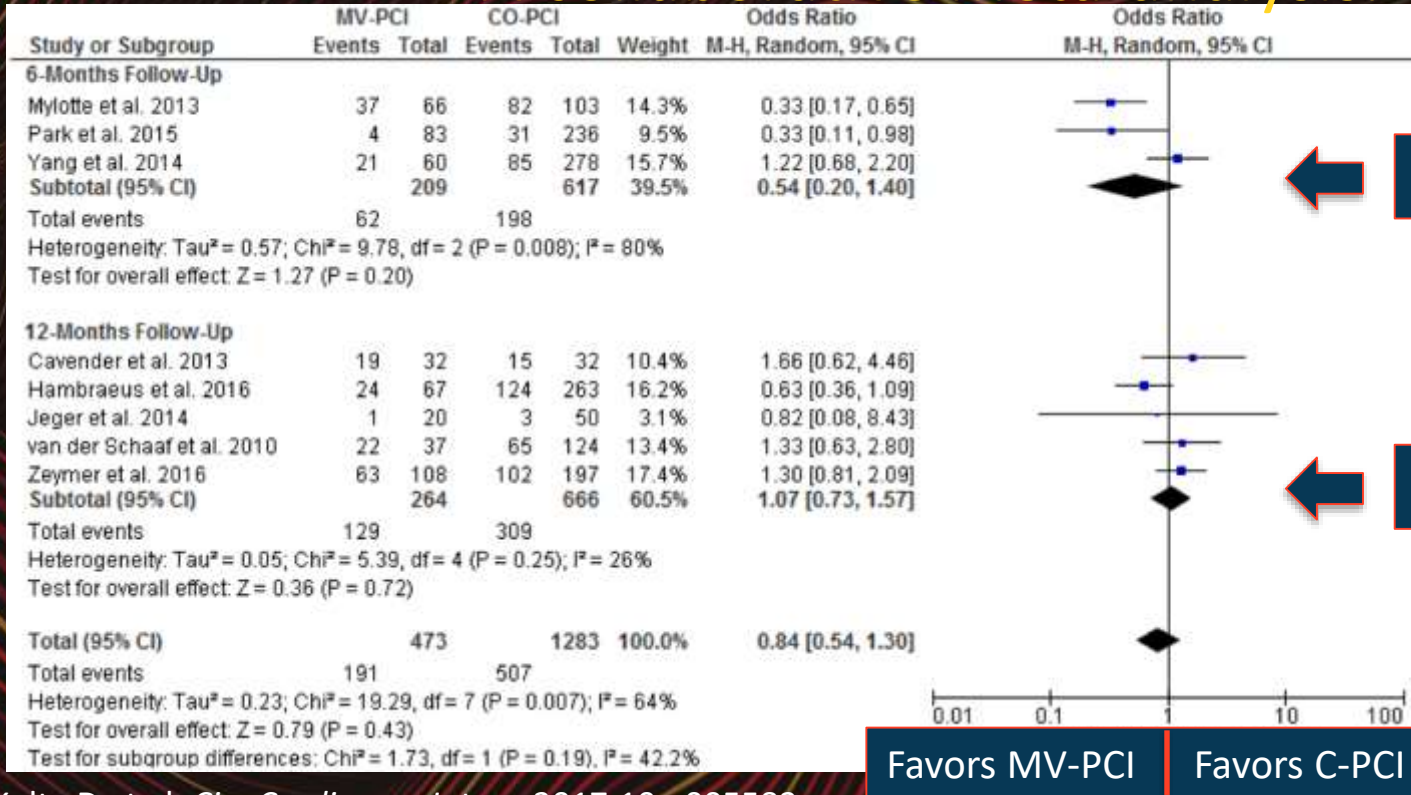
Favors C-PCI

# CULPRIT VESSEL-ONLY VS. MULTIVESSEL PCI IN PATIENTS WITH CARDIOGENIC SHOCK COMPLICATING STEMI: A collaborative meta-analysis.

## Short Term Mortality



# CULPRIT VESSEL-ONLY VS. MULTIVESSEL PCI IN PATIENTS WITH CARDIOGENIC SHOCK COMPLICATING STEMI: A collaborative meta-analysis.



6-month mortality

12-month mortality

Favors MV-PCI | Favors C-PCI



# CULPRIT-SHOCK Trial

## The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

DECEMBER 21, 2017

VOL. 377 NO. 25

### 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\*



# CULPRIT-SHOCK Trial

## Study hypothesis

***Culprit lesion only*** (with possible staged revascularization)  
is superior to ***immediate multivessel PCI*** in multivessel  
coronary artery disease patients with cardiogenic shock,  
complicating acute myocardial infarction.



# CULPRIT-SHOCK Trial

## Primary Study Endpoint

- 30-day all-cause mortality or renal replacement therapy.

## Secondary Study Endpoints

- 30-day all-cause mortality
- Renal failure with requirement of renal replacement therapy
- Recurrent myocardial infarction.
- Re-hospitalization for congestive heart failure
- Repeat revascularization.
- Time to hemodynamic stabilization
- Duration of catecholamine therapy
- Serial creatinine-clearance
- Length of ICU-stay
- Requirement and length of mechanical ventilation
- SAPS II



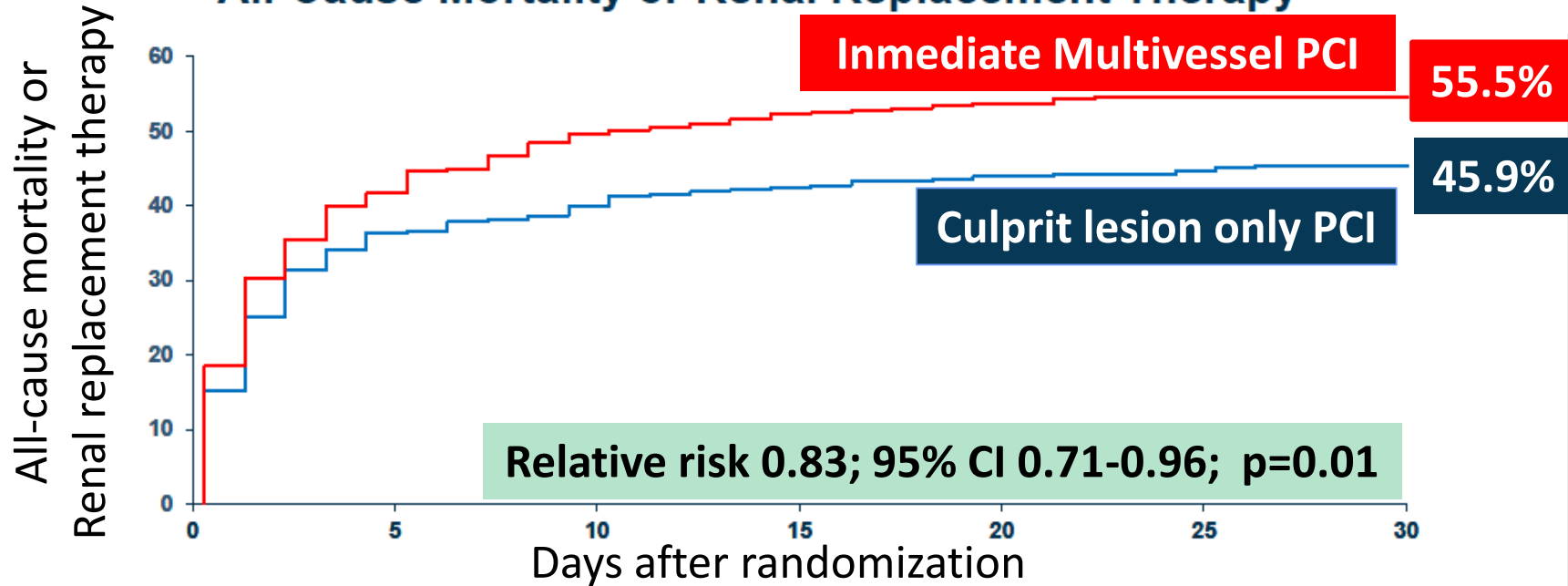


# CULPRIT-SHOCK Trial



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## Primary Study Endpoint All-Cause Mortality or Renal Replacement Therapy

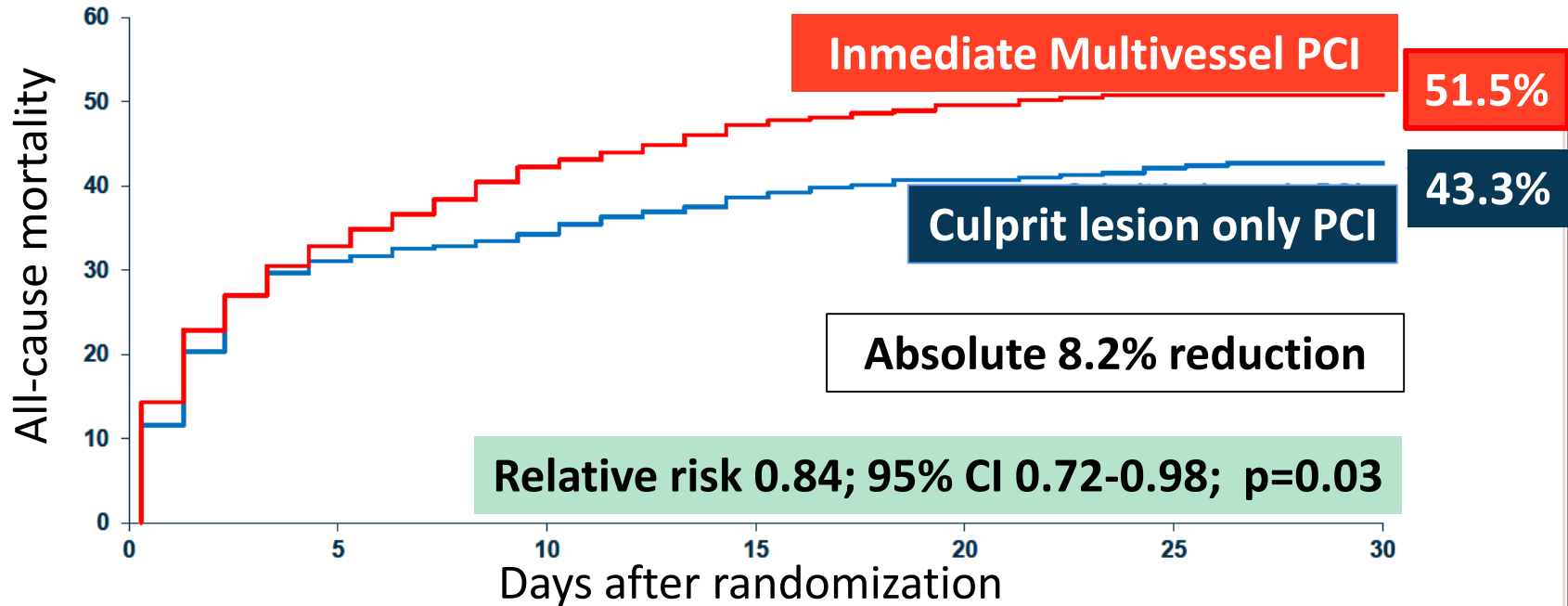


# CULPRIT-SHOCK Trial



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## All-Cause Mortality

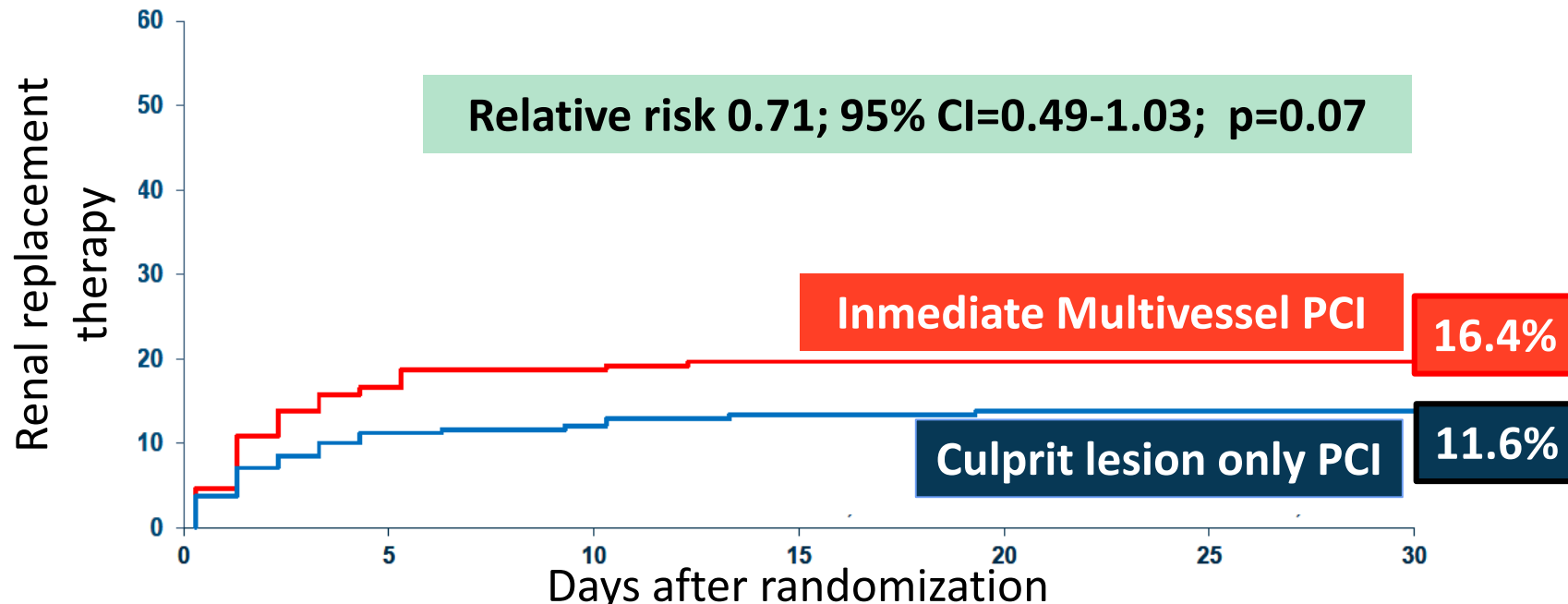


# CULPRIT-SHOCK Trial



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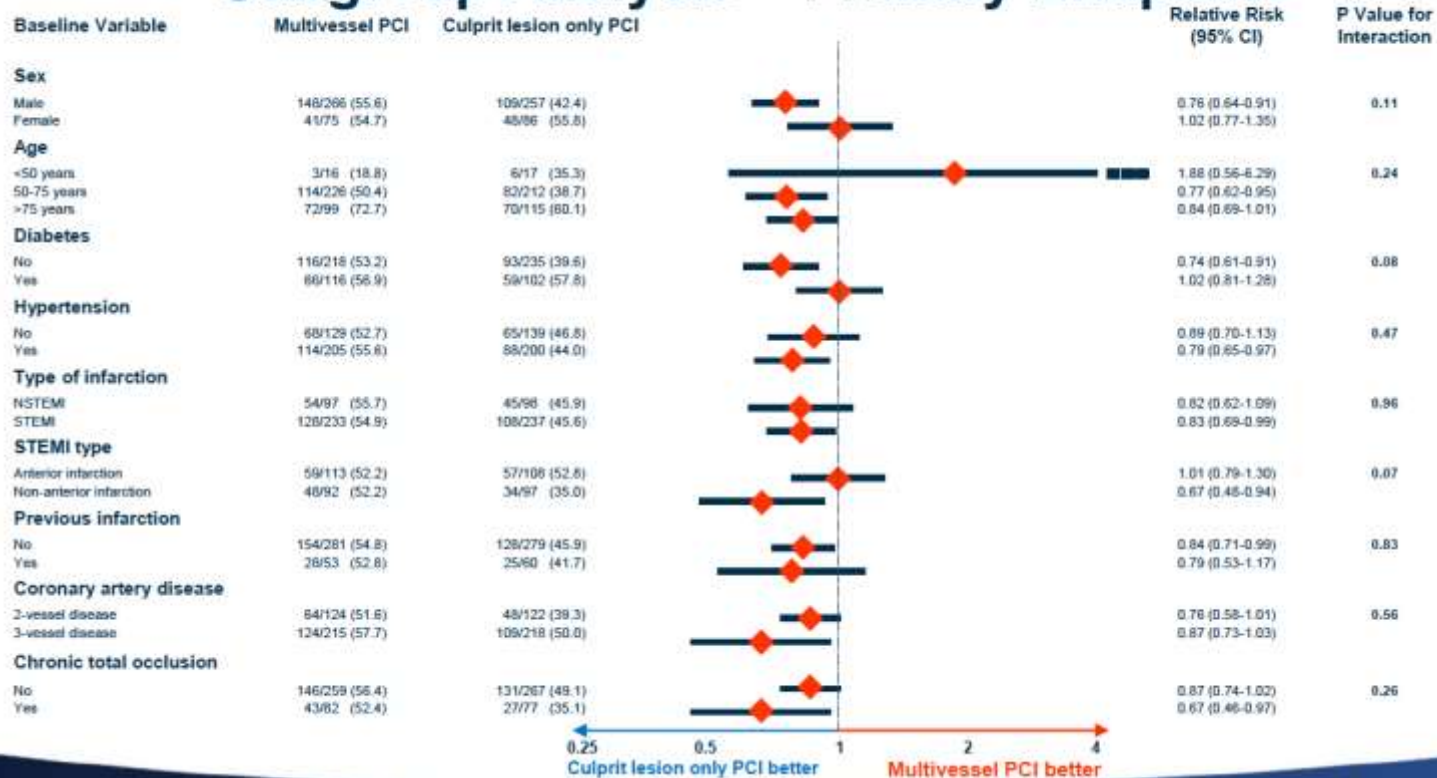
## Renal Replacement Therapy



# CULPRIT-SHOCK Trial

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HERZZENTRUM

## Subgroup Analysis – Primary Endpoint



ACADEMY

# CULPRIT-SHOCK Trial

## Conclusions (authors)

- In patients with **MVD** and **cardiogenic shock** complicating AMI, ***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 **challenged the recommendations of the 2014 guidelines.**

# CULPRIT-SHOCK Trial

## Conclusions (personal)

- CULPRIT-SHOCK provides evidence that routine, immediate and complete revascularization in patients with AMI complicated with cardiogenic shock **is not** mandatory.
- However, these results should not preclude operators from using clinical judgement in cases of very severe lesions in major non-culprit vessels, or in cases where a clear culprit lesion cannot be identified, specially if haemodynamic mechanical support is available.

# 2017 ESC GUIDELINES FOR THE MANAGEMENT OF PATIENTS PRESENTING WITH STEMI

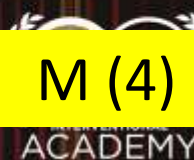
Recommendations		
Routine revascularization of non-IRA lesions should be considered in STEMI patients with multivessel disease before hospital discharge.	IIa	A
Non-IRA PCI during the index procedure should be considered in patients with cardiogenic shock	IIa	C



# ACC/AATS/AHA/ASE/ASNC/SCAI/SCCT/STS 2016 APPROPRIATE USE CRITERIA FOR CORONARY REVASCULARIZATION IN PATIENTS WITH ACS

Successful treatment of the culprit artery by primary PCI  
**followed by immediate revascularization of 1 or more  
non-culprit arteries** during the same procedure

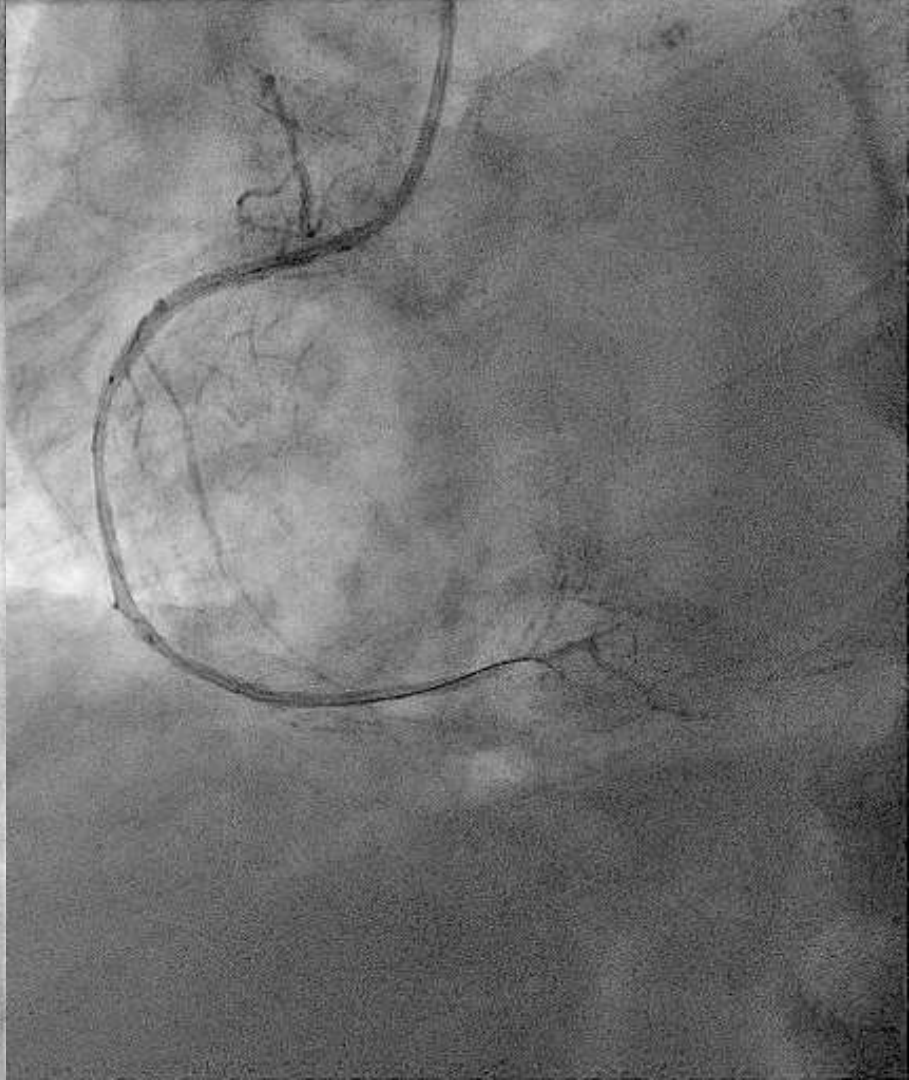
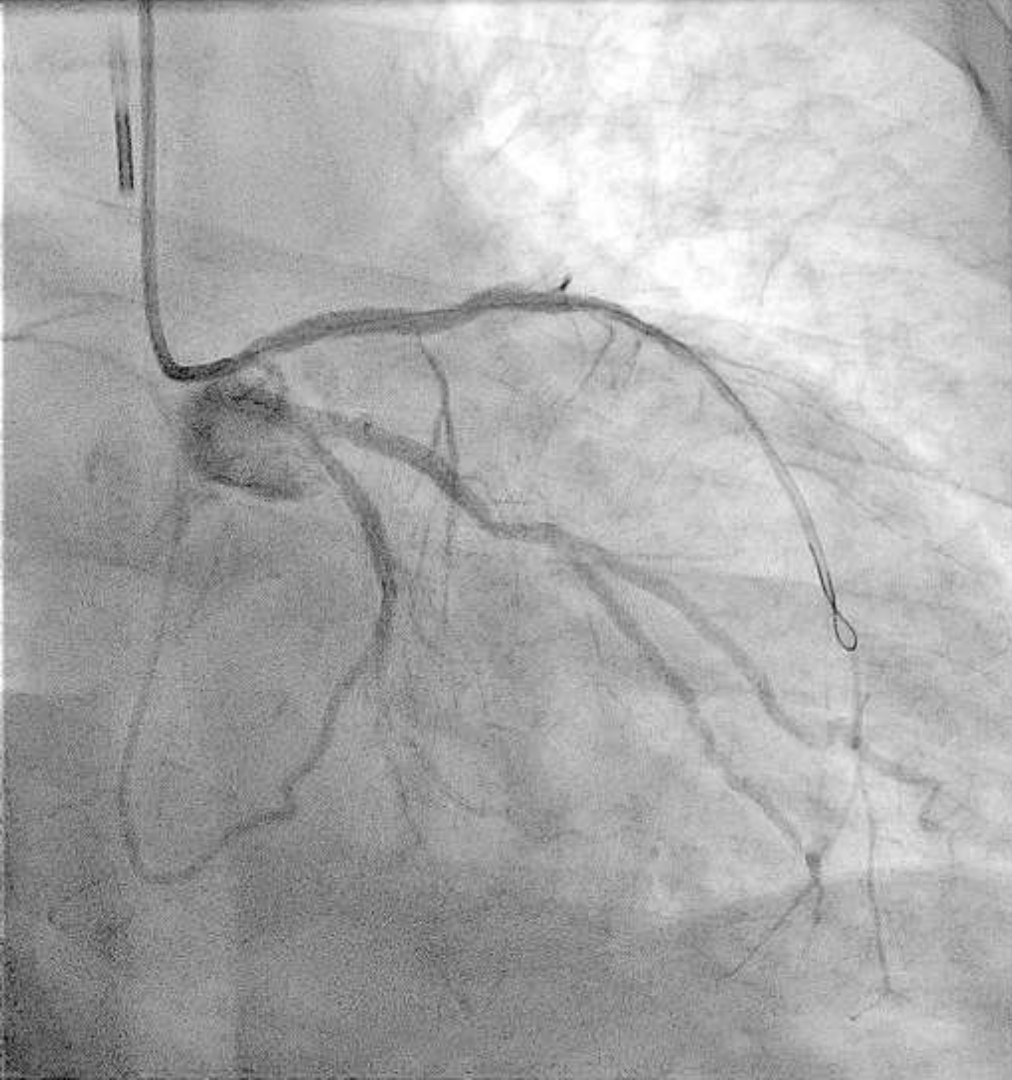
- |                                                                                                                                                                                                 |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"><li>• <b>Cardiogenic shock</b> persisting after PCI of the presumed culprit artery</li><li>• PCI or CABG of 1 or more additional vessels</li></ul>            | A (8) |
| <ul style="list-style-type: none"><li>• <b>Stable</b> patient immediately following PCI of the presumed artery</li><li>• One or more additional <b>severe</b> stenosis</li></ul>                | M (6) |
| <ul style="list-style-type: none"><li>• <b>Stable</b> patient immediately following PCI of the presumed artery</li><li>• One or more additional <b>intermediate</b> (50-70%) stenosis</li></ul> | M (4) |

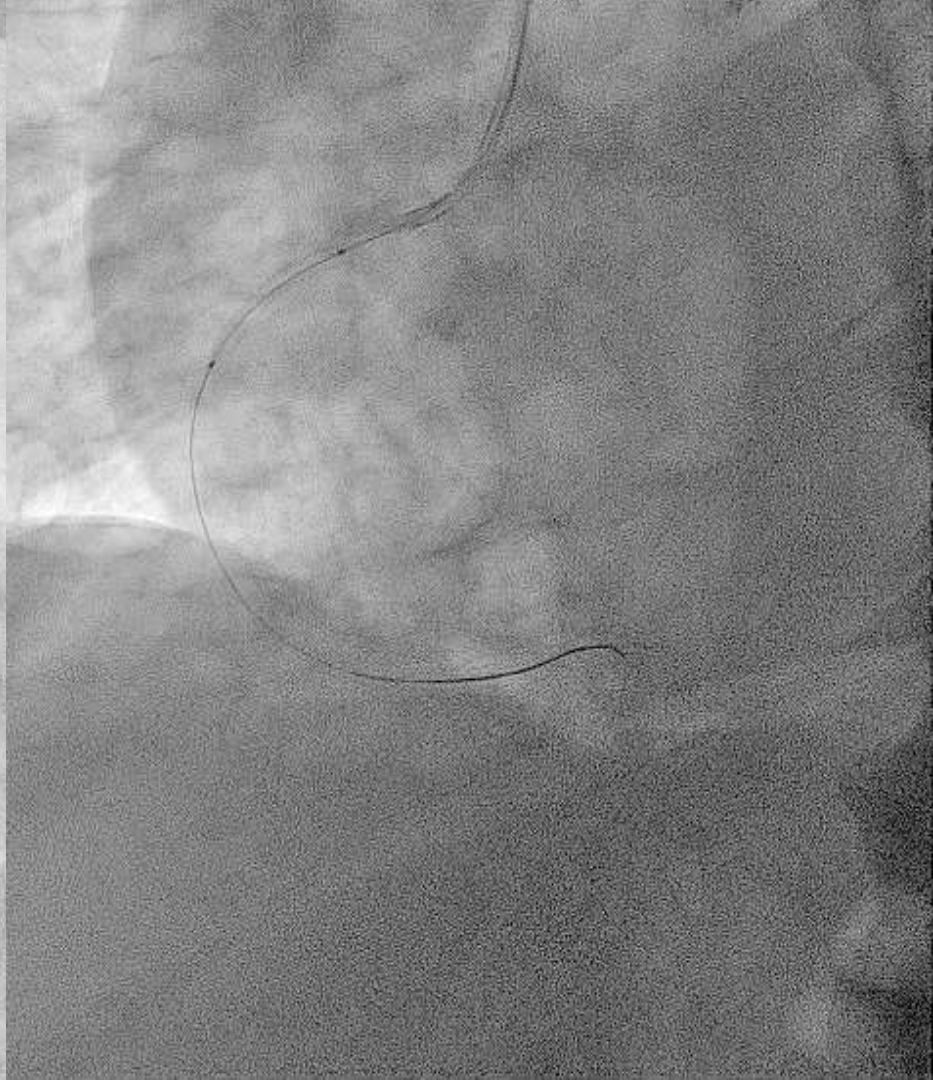
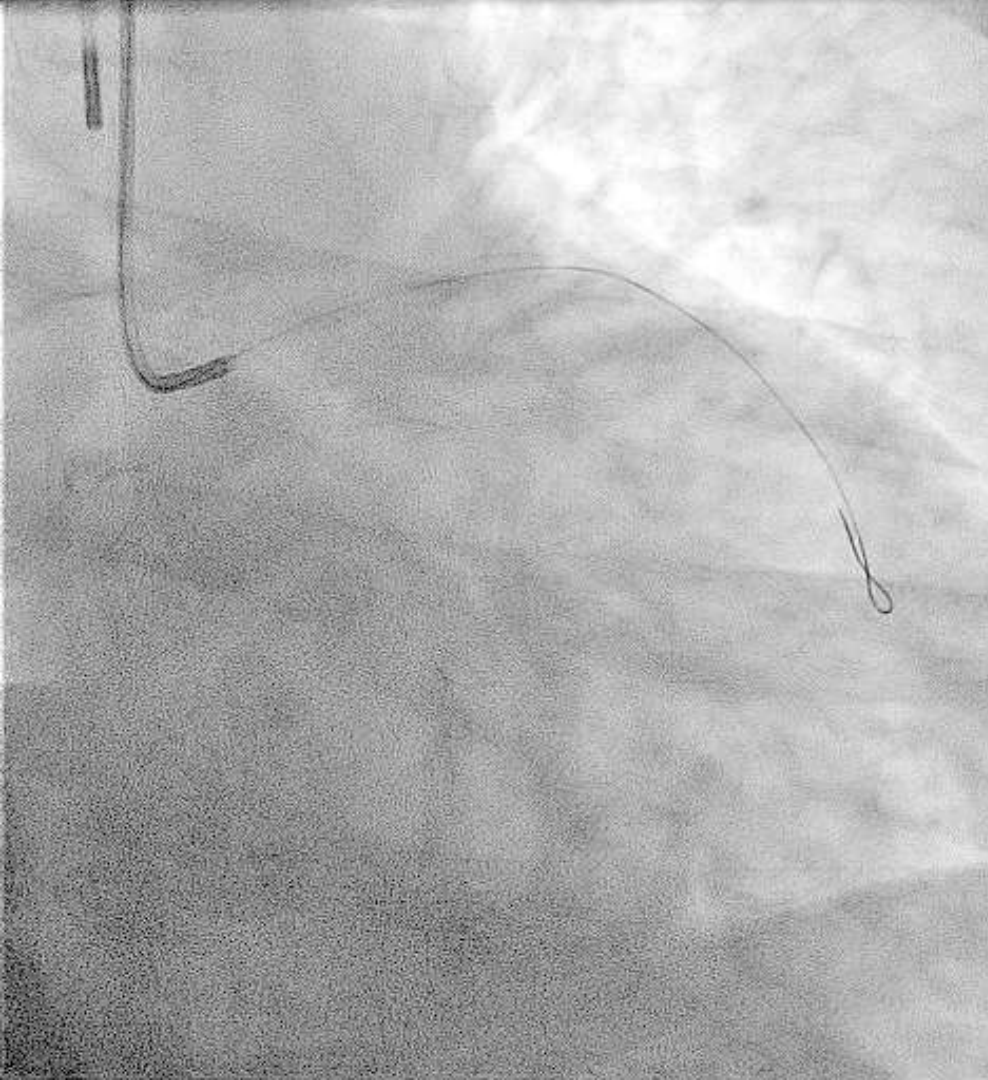




# 2018 ESC/EACTS GUIDELINES ON MYOCARDIAL REVASCULARIZATION

Recommendations		
<b>Strategy</b>		
Routine revascularization of non-IRA lesions should be considered in patients with multivessel disease before hospital discharge.	Ila	A
CABG should be considered in patients with ongoing ischaemia and large areas of jeopardized myocardium if PCI of the IRA cannot be performed.	Ila	C
In cardiogenic shock, routine revascularization of non-IRA lesions is not recommended during primary PCI.	III	B
<b>Technique</b>		
Routine use of thrombus aspiration is not recommended.	III	A





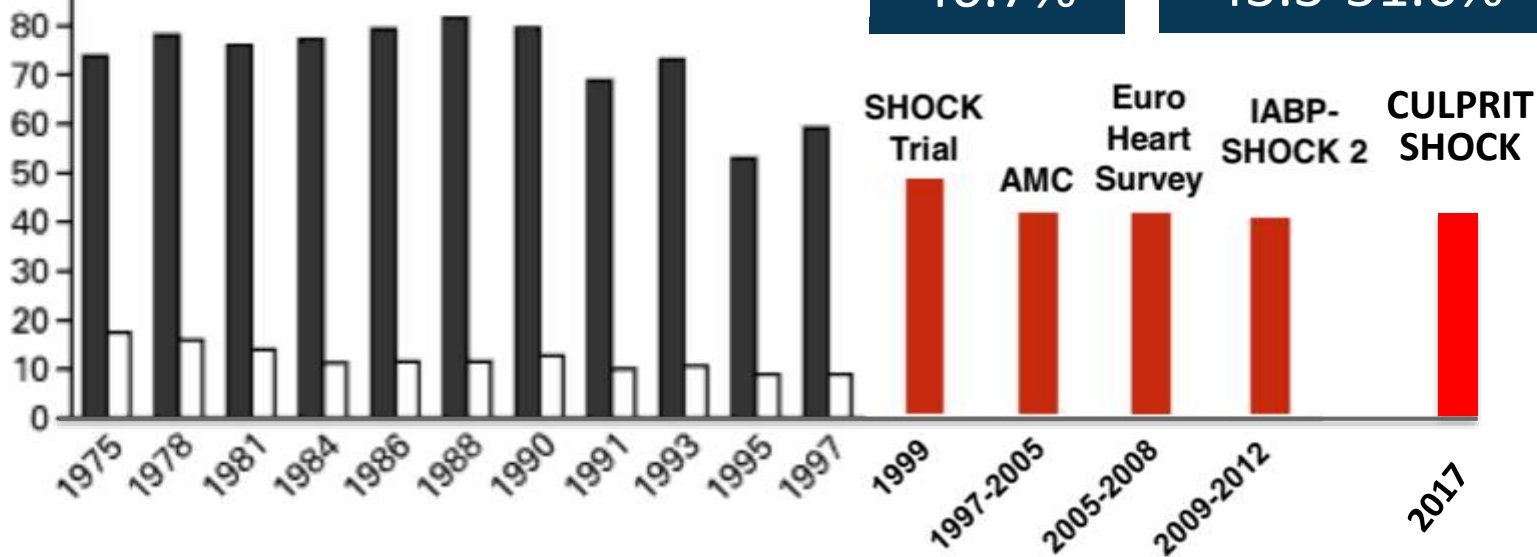
# MORTALITY IN CARDIOGENIC SHOCK

% of patients who died

■ Shock present    □ Shock absent

46.7%

43.3-51.6%



pre-Thrombolysis

Thrombolysis

Primary PCI ↑  
IABP ↑

# TAKE HOME MESSAGE

KEEP IT SHORT

KEEP IT SIMPLE

# REVASCULARIZATION OF PATIENTS WITH MULTIVESSEL DISEASE IN CARDIOGENIC SHOCK: HOW MUCH IS ENOUGH?

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*Hospital San Juan de Dios*  
*Buenos Aires*  
*Argentina*