STEMI:
kompletní revaskularizace vs „culprit only“

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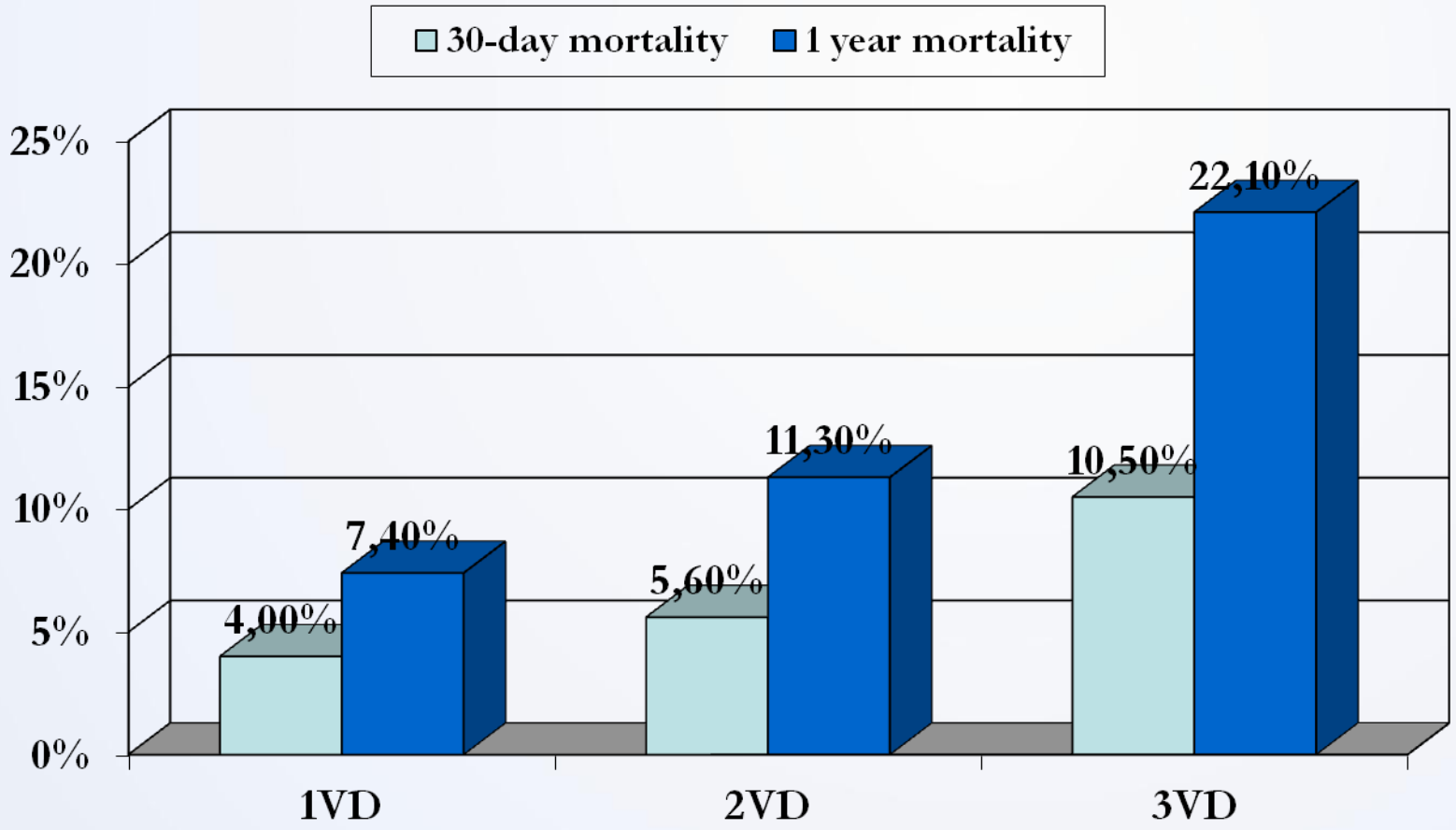
Rozsah koronárního postižení

(období 2005 – 2007, n=16 056)



1VD	2VD	3VD
38,4%	30,6%	31%

ESC guidelines revaskularizace (2014)

- The infarct-related artery should be systematically treated during the initial intervention.
- The radial approach should be the preferred method of access
- Stenting *(with DES)* should be preferred over balloon angioplasty in the setting of primary PCI

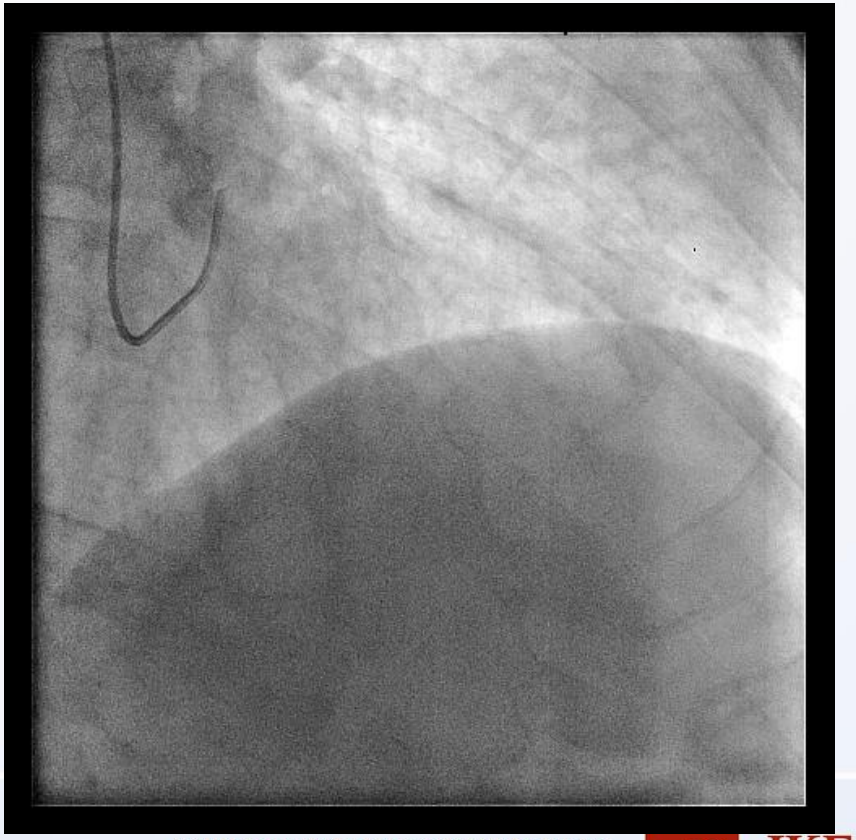
- **Evidence supporting immediate (preventive) intervention in non-infarct-related lesions is a matter of debate**

Kazuistika

- Muž 55 let,
- PCI ACD prox. 2009
- 2 hodiny trvající stenokardie
- STEMI přední stěny
- Killip I

- Angiograficky nemoc 3 tepen

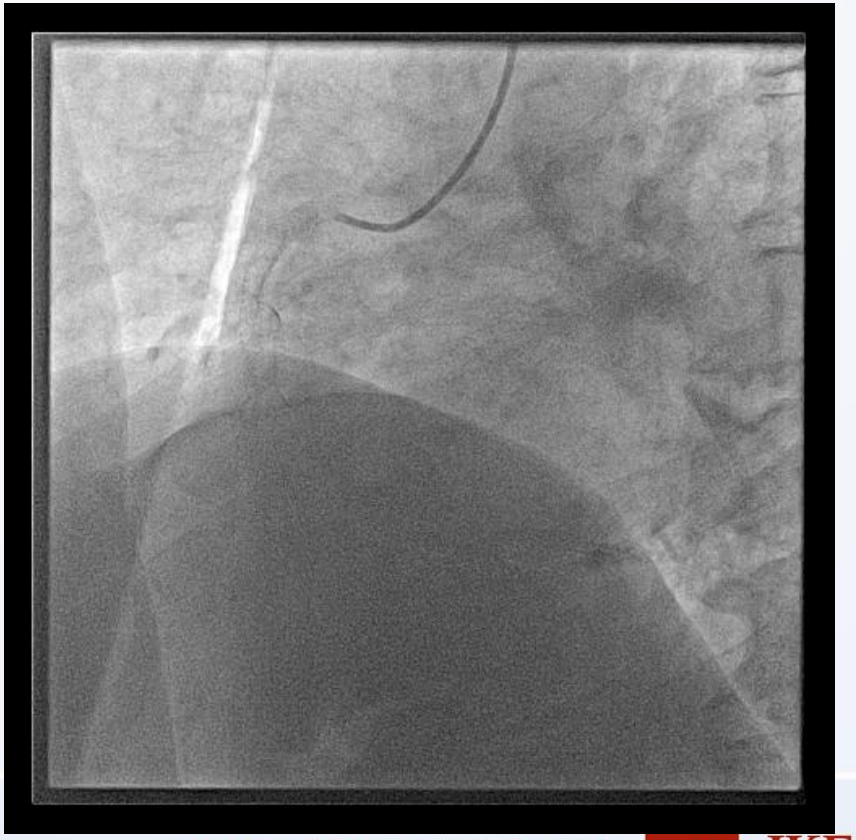
Uzávěr RIA, TIMI 0 flow



Kazuistika

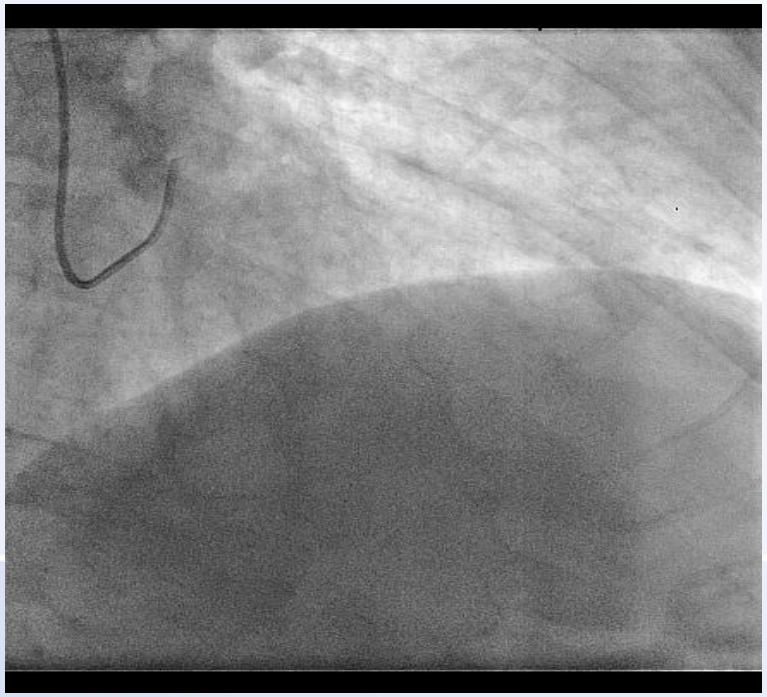
Stenóza RC

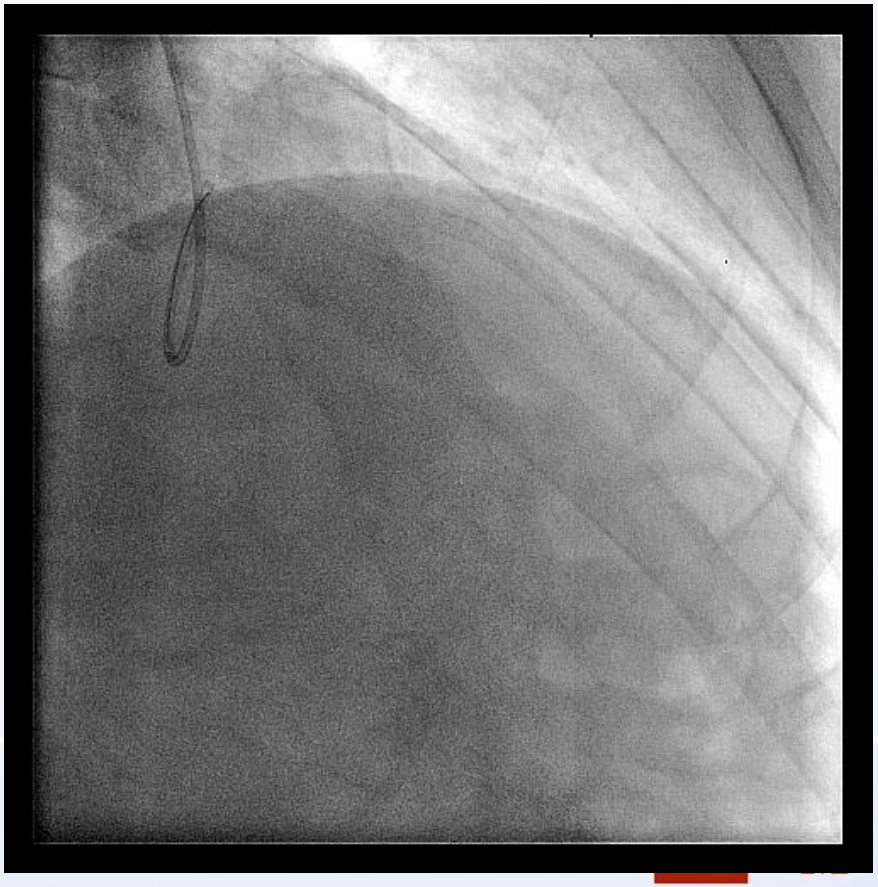
Stenóza ACD



Multivessel disease: strategie primární PCI

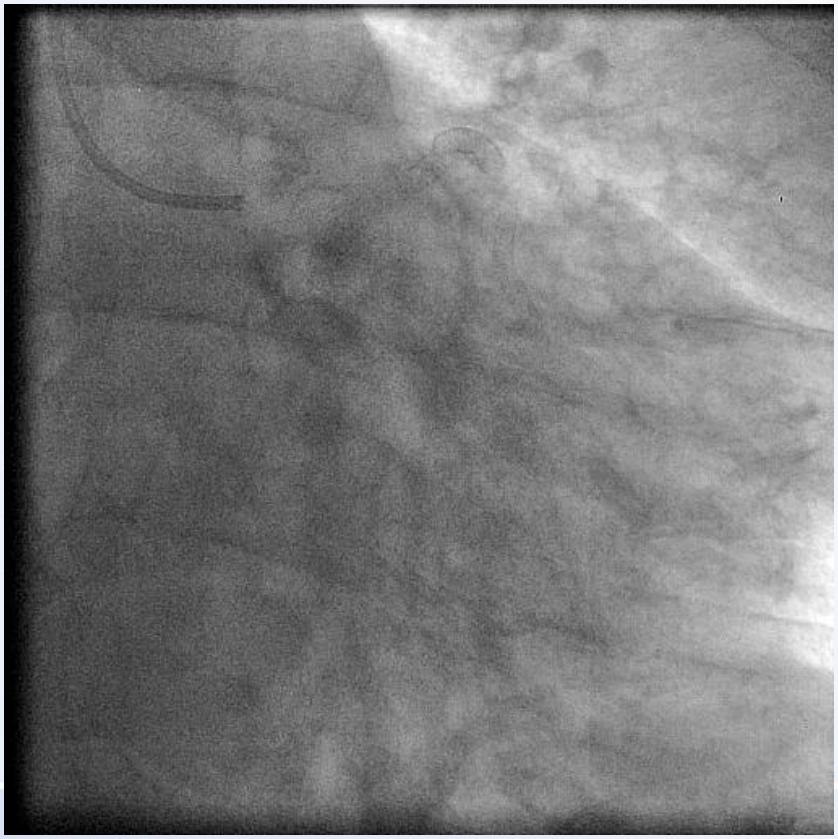
1. PCI infarktové tepny
2. Okamžitá multivessel PCI
3. Plánovaná multivessel PCI





Okamžitá multivessel PCI

PCI RC + DES



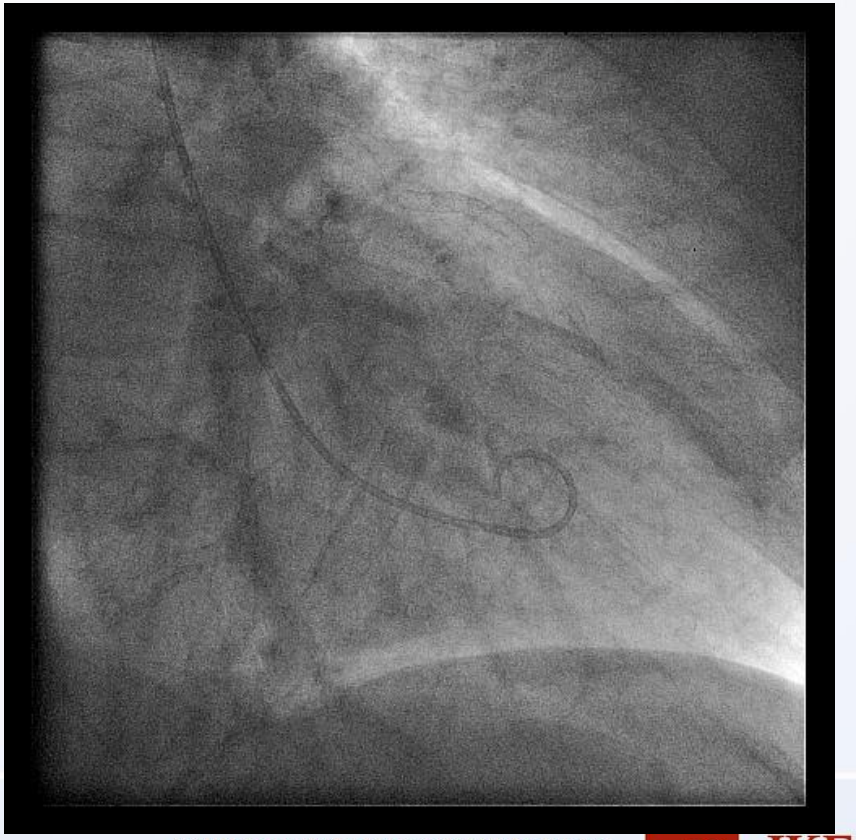
PCI ACD + DES

Multivessel PCI: kompletní revaskularizace

Okamžitá multivessel PCI

- Radiální přístup
- Kontrast 180 ml
- Fluoro time 9 minut
- Doba výkonu 56 min

Zachovalá funkce LK, EF 55%



EDITOR'S CHOICE

A randomised trial of target-vessel versus multi-vessel revascularisation in ST-elevation myocardial infarction: major adverse cardiac events during long-term follow-up

Luigi Politi, Fabio Sgura, Rosario Rossi, Daniel Monopoli, Elisa Guerri, Chiara Leuzzi, Francesca Bursi, Giuseppe Massimo Sangiorgi, Maria Grazia Modena

- 214 consective STEMI patients with multivessel disease
- Randomised to Culprit-only (n=**84**), MV-PCI at time of index PCI (n=**65**) or MV-PCI with staged intervention of N-IRA lesions (n=**64**)
- 1° endpoint: MACE = cardiac or non-cardiac death, in-hospital death, re-infarction, re-hospitalisation for ACS or repeat coronary revascularisation
- For repeat revascularisation either by CABG or PCI, justification required with evidence of significant ischaemia on provocation testing
- Mean follow-up of 2.5yrs

Heart. 2010 May;96(9):662-7

Politi a spol.

	Culprit only	Staged revasc	Complete revasc	
Overall MACE	42 (50.0%)	13 (20.0%)	15 (23.1%)	<0.001
Re-PCI	25 (29.8%)	7 (10.8%)	5 (7.7%)	<0.001
CABG	3 (3.6%)	2 (3.1%)	2 (3.1%)	0.980
Repeat revascularisation	28 (33.3%)	8 (12.3%)	6 (9.2%)	<0.001
Re-hospitalisation	30 (35.7%)	9 (13.8%)	8 (12.3%)	<0.001
Re-infarction	7 (8.3%)	4 (6.2%)	2 (3.1%)	0.412
Death	13 (15.5%)	4 (6.2%)	6 (9.2%)	0.170
Cardiac death	10 (11.9%)	2 (3.1%)	4 (6.3%)	0.120
Inhospital death	7 (8.3%)	0 (0%)	2 (3.1%)	0.037

CABG, coronary artery bypass grafting; COR, culprit-only revascularisation; CR, complete revascularisation; MACE, major adverse cardiac event; PCI, percutaneous coronary intervention; SR, staged revascularisation.

2013: Multivessel bests culprit-only PCI in STEMI pts. with shock, cardiac arrest

- 266 STEMI patients with cardiogenic shock / cardiac arrest

	Multivessel - culprit PCI only	Immediate Multivessel PCI	Single vessel disease
N	103	66	97
6-months survival	20,4%	43,9%	42,3%

More complete revascularization improve outcome in critically ill patients

Mylotte, JACC Cardiovascular Interventions, 2013

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

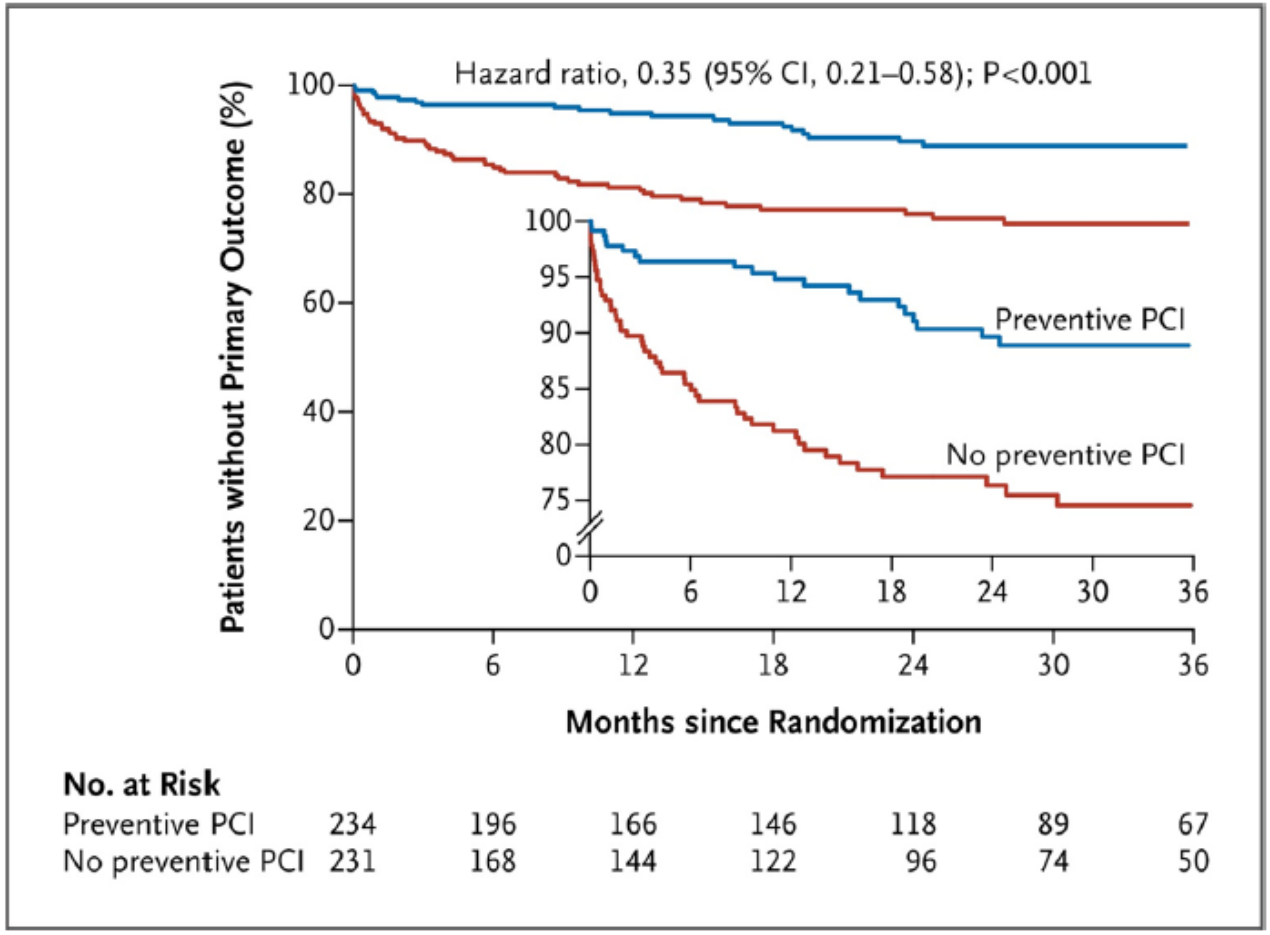
Randomized Trial of Preventive Angioplasty in Myocardial Infarction

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*

- 465 STEMI patients
- Randomised following IRA-PCI to receive complete revascularisation (n=234) or culprit-only PCI (n=231)
- N-IRA PCI undertaken at index PCI
- 1° endpoint: Cardiac death, non-fatal MI or refractory angina
- 2° endpoints included repeat PCI, non-cardiac death and individual components of 1° endpoint
- Trial stopped early, mean follow-up 23 months

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

PRAMI trial



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

PRAMI trial

Table 3. Prespecified Clinical Outcomes.*

Outcome	Preventive PCI (N = 234)	No Preventive PCI (N = 231)	Hazard Ratio (95% CI)	P Value
	no. of events			
Primary outcome				
Death from cardiac causes, nonfatal myocardial infarction, or refractory angina†	21	53	0.35 (0.21–0.58)	<0.001
Death from cardiac causes or nonfatal myocardial infarction†	11	27	0.36 (0.18–0.73)	0.004
Death from cardiac causes	4	10	0.34 (0.11–1.08)	0.07
Nonfatal myocardial infarction	7	20	0.32 (0.13–0.75)	0.009
Refractory angina	12	30	0.35 (0.18–0.69)	0.002
Secondary outcomes				
Death from noncardiac causes	8	6	1.10 (0.38–3.18)	0.86
Repeat revascularization	16	46	0.30 (0.17–0.56)	<0.001

* All patients underwent infarct-artery PCI.
† Only the first event per patient is listed.

Managing multi-vessel disease detected at P-PCI for STEMI:

The **C**omplete **v**ersus **L**esion-only **PR**imary PCI **T**rial (**CvLPRIT**)

Anthony H Gershlick

University Hospitals of Leicester

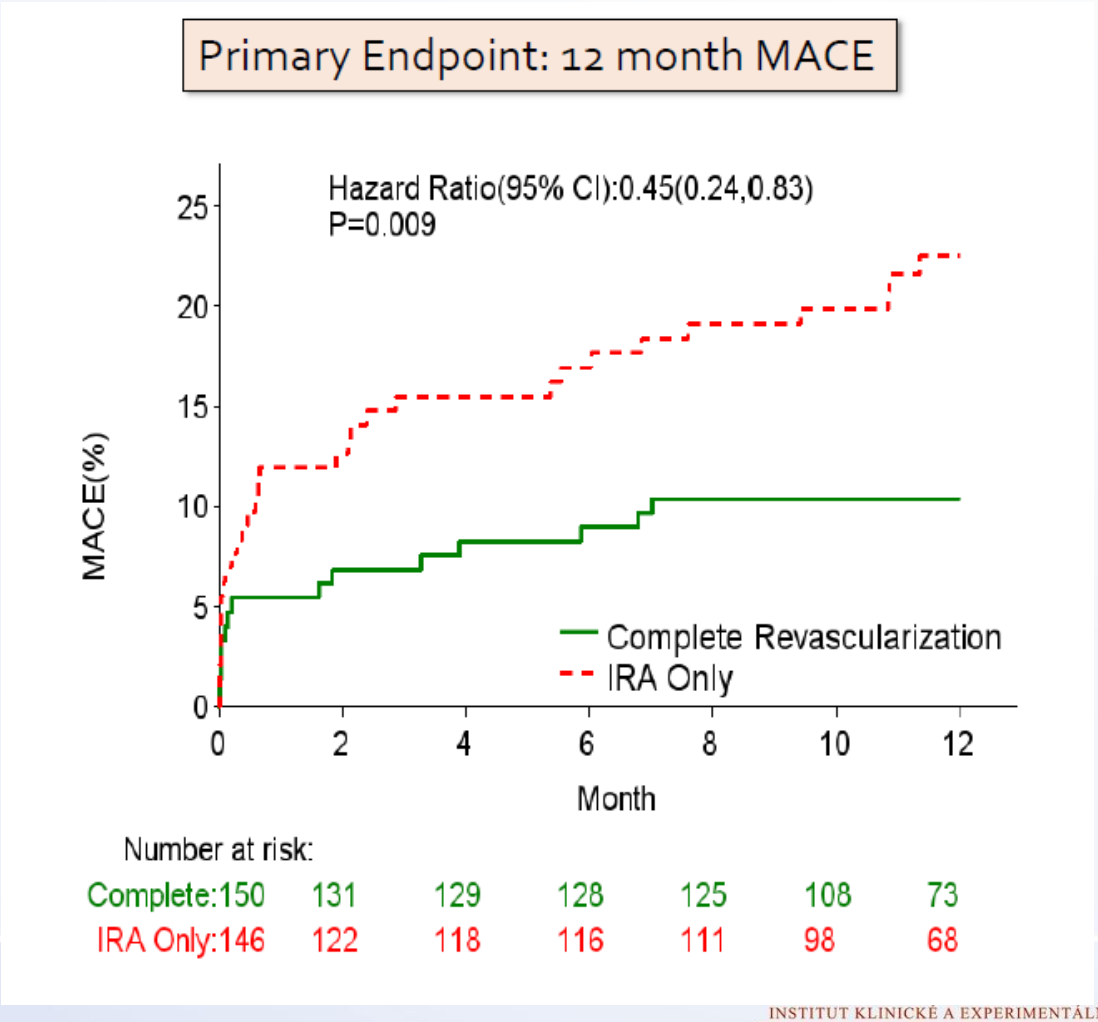
United Kingdom

On behalf of the CvLPRIT Investigators

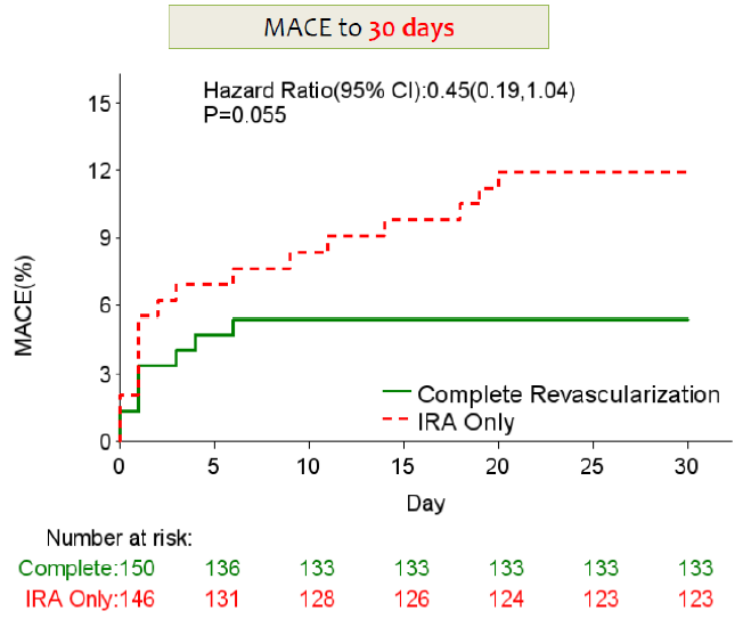
- 298 STEMI patients
- Randomised open-label study
- Compared treatment of IRA only (146 pts) with complete revascularisation (150 pts) during index admission for ST-elevation Myocardial Infarction
- Randomisation stratified for:
  - site of infarct (Anterior vs. non-anterior)
  - Symptom onset to balloon time (less than or greater than 3hrs)

- 1° outcome: MACE – total mortality/recurrent MI/heart failure and ischaemia-driven revascularisation at 12 months

CvLPRIT study



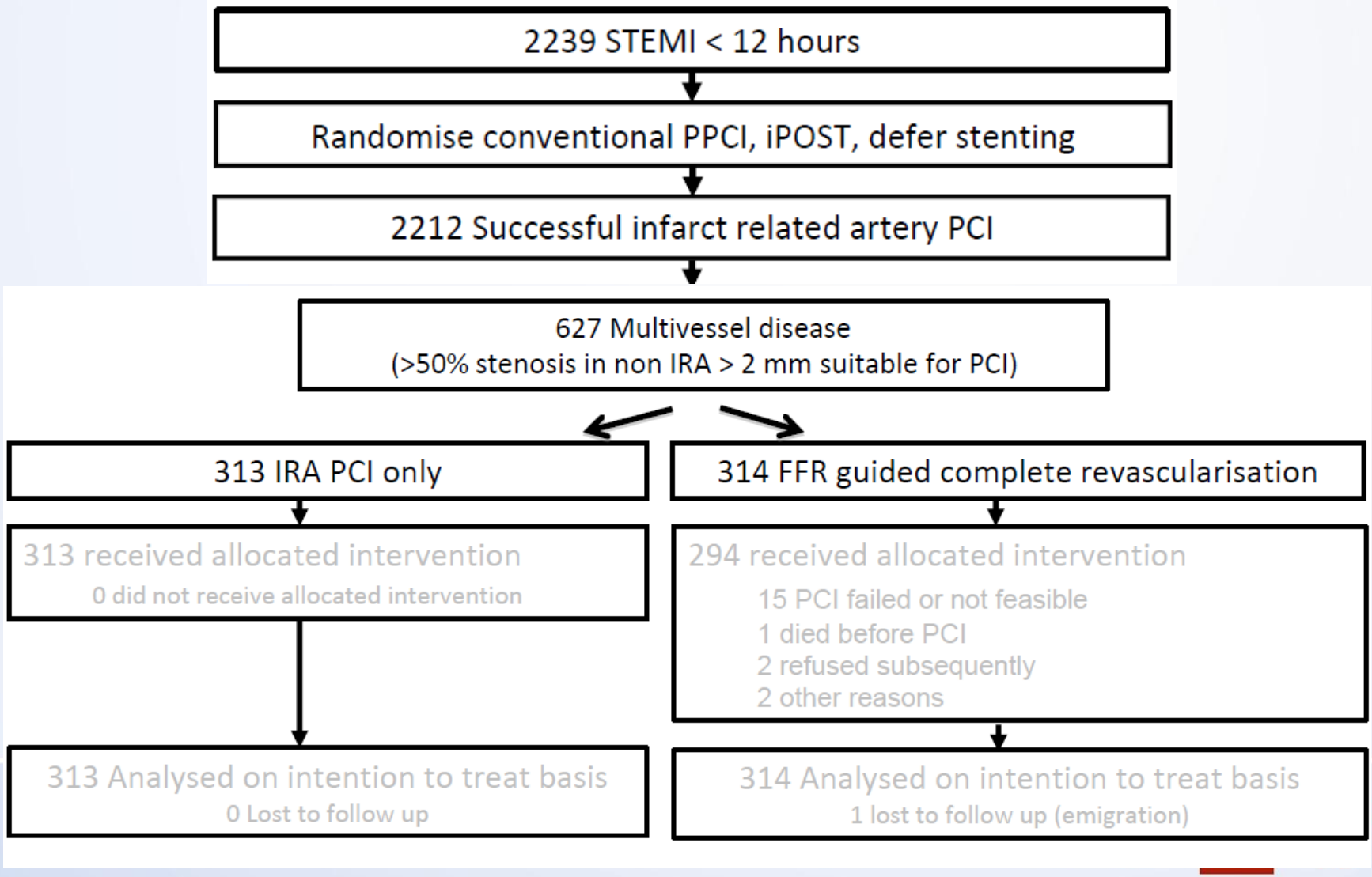
CvLPRIT study



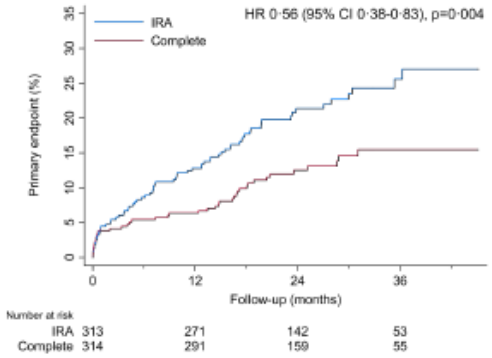
Variable	IRA only (N=146)	Complete Revascularisation (N=150)	HR (95% CI)	P value
Time to First Event				
MACE	31 (21.2)	15 (10.0)	0.45 (0.24, 0.84)	0.009
All-cause mortality	6 (4.1)	2 (1.3)	0.32 (0.06, 1.60)	0.14
Recurrent MI	4 (2.7)	2 (1.3)	0.48 (0.09, 2.62)	0.39
Heart failure	9 (6.2)	4 (2.7)	0.43 (0.13, 1.39)	0.14
Repeat Revascularisation	12 (8.2)	7 (4.7)	0.55 (0.22, 1.39)	0.2
Total number of events reported				
All-cause mortality	10 (6.9)	4 (2.7)	0.38 (0.12, 1.20)	0.09
Recurrent MI	4 (2.7)	2 (1.3)	0.47 (0.09, 2.59)	0.38
Heart Failure	10 (6.9)	5 (3.3)	0.47 (0.16, 1.38)	0.16
Repeat Revascularisation	16 (11.0)	8 (5.3)	0.46 (0.20, 1.08)	0.07
Adverse Events reported				
CV mortality	7 (4.8)	2 (1.3)	0.27 (0.06, 1.32)	0.11
Stroke	2 (1.4)	2 (1.3)	0.95 (0.13, 6.77)	0.96
Major Bleed	7 (4.8)	4 (2.7)	0.55 (0.16, 1.87)	0.34

ITT Population				
Variable	**IRA only**	**Complete Revascularisation**	**HR (95% CI)**	**P**
All-cause mortality or Recurrent MI	14/146 (9.6%)	6/150 (4.0%)	0.41 (0.16, 1.07)	0.060
All-cause mortality, Recurrent MI or Heart Failure	19/146 (13.0%)	8/150 (4.7%)	0.40 (0.18, 0.92)	0.025

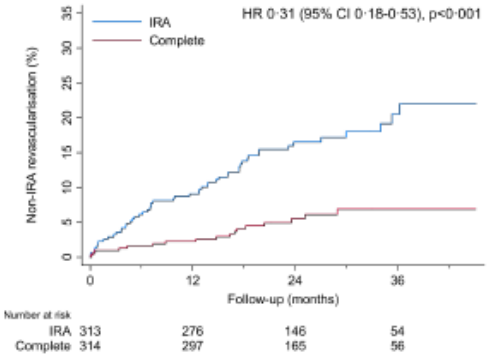
DANAMI 3 - PRIMULTI



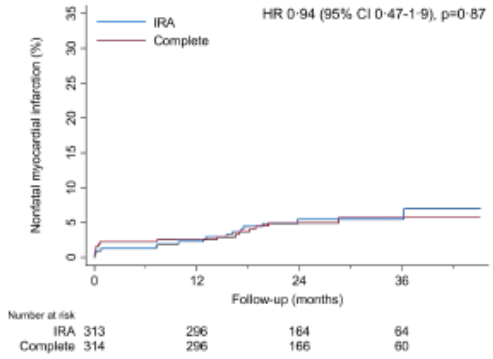
	IRA only (n = 313)	Complete revascularisation (n = 314)	HR [95% CI]	p
Primary endpoint	68 (22%)	40 (13%)	0·56 [0·38 – 0·83]	0·004
All-cause death	11 (4%)	15 (5%)	1·4 [0·63 – 3·0]	0·43
Nonfatal MI	16 (5%)	15 (5%)	0·94 [0·47 – 1·9]	0·87
Ischemia-driven revascularisation*	52 (17%)	17 (5%)	0·31 [0·18 – 0·53]	<0·001



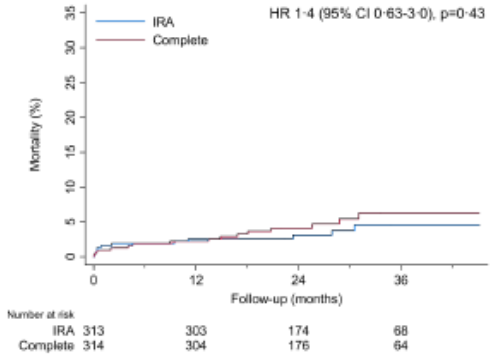
Composite



Revascularisation



Non fatal MI



All cause death

PRAGUE-13 (Hlinomaz, Euro PCR 2015)

Table 1. Long-term Outcomes in STEMI Patients by Strategy

	Complete Revascularization	Conservative Management	HR (95% CI)
Primary Composite Endpoint	16.0%	13.9%	1.35 (0.66-2.74)
All-Cause Mortality	5.7%	6.5%	0.91 (0.30-2.70)
Nonfatal MI	10.4%	7.4%	1.71 (0.66-4.41)
Stroke	0	2.8%	–

Srovnání 3 RCT

Table 1. Contemporary randomized trials			
	PRAMI (n=465)	**CvLPRIT (n=296)**	**PRIMULTI (n=627)**
No patients per center per year	19	23	105
Lesion criteria	>50% DS	>70% DS or >50% DS in 2 views	>50% DS and FFR <0.80 or >90% DS
Strategy for non-IRA lesions	Immediate	Immediate or staged within index admission	Staged within index admission
Primary endpoint	D/MI/refractory ischemia	D/MI/HF/isch D R	D/MI/isch D R
Power (80%)	20% reduced to 14% (30% Rx effect)	37% PEP reduced to 22% (40% Rx effect)	18% PEP reduced to 13% (30% Rx effect)
Result	23% reduced to 9% (65% Rx effect)	21% reduced to 10% (55% Rx effect)	22% reduced to 13% (44% Rx effect)

IRA: infarct-related artery; DS: diameter stenosis; FFR: fractional flow reserve; D: death; MI: myocardial infarction; HF: heart failure; isch D R: ischemia, death, revascularization; Rx: prescription drugs; PEP: primary endpoints.

From Engstrom T et al, The Primulti Study presentation, ACC 2015, San Diego. Reprinted with permission.

Probíhající studie

Studie	N	Strategie	Timing	Primární endpoint	Doba
COMPLETE	3900	IRA only vs complete (angio>70% nebo FFR 50-70%	Staged 72 hodin	+ (CV), IM 4 roky	2018
Compare Acute	885	IRA only vs FFR guided PCI	Immediate	MACCE 12 měs.	2017
PRIME-TIME	?	IRA only vs complete (FFR<0,80)	Immediate vs staged (1-3 měs.)	+, MI 12 měs.	?

Závěry metaanalýzy 4 randomizovaných studií kompletní vs IRA-only revaskularizace u STEMI

- Provedení PCI jiné nežli infarktové léze v akutní fázi STEMI současně s primární **PCI je bezpečné**
- **Kompletní revaskularizace** u STEMI vede k:
  - Snížení trendu celkové i kardiovaskulární mortality
  - Snížení výskytu IM i nutnosti následné revaskularizace
  - **Čím významnější stenóza, tím větší efekt „preventivní“ PCI**
- Nevyřešené otázky:
  - Timing PCI neinfarktové tepny
    - Okamžitá multivessel PCI
    - **Staged PCI** (před dimisí, cca 3-5 den)
  - hodnocení významnosti stenózy neinfarktové tepny
    - Angiografie, FFR, jiný test?