Danish registry of ACS
DANAMI Studies

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Rigshospitalet
Copenhagen

Dansk HjerteStatistik 2010

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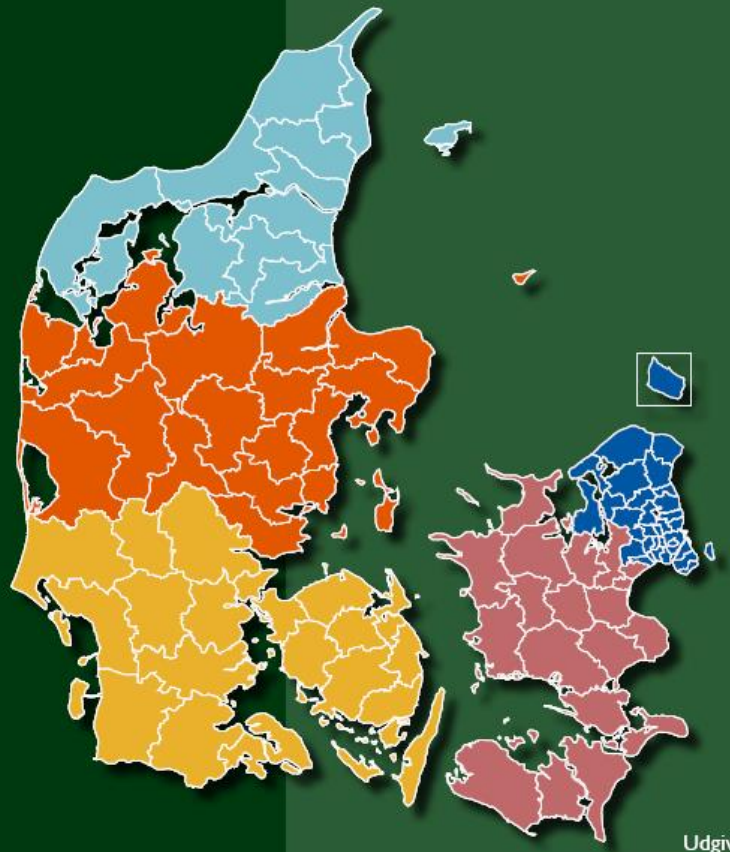
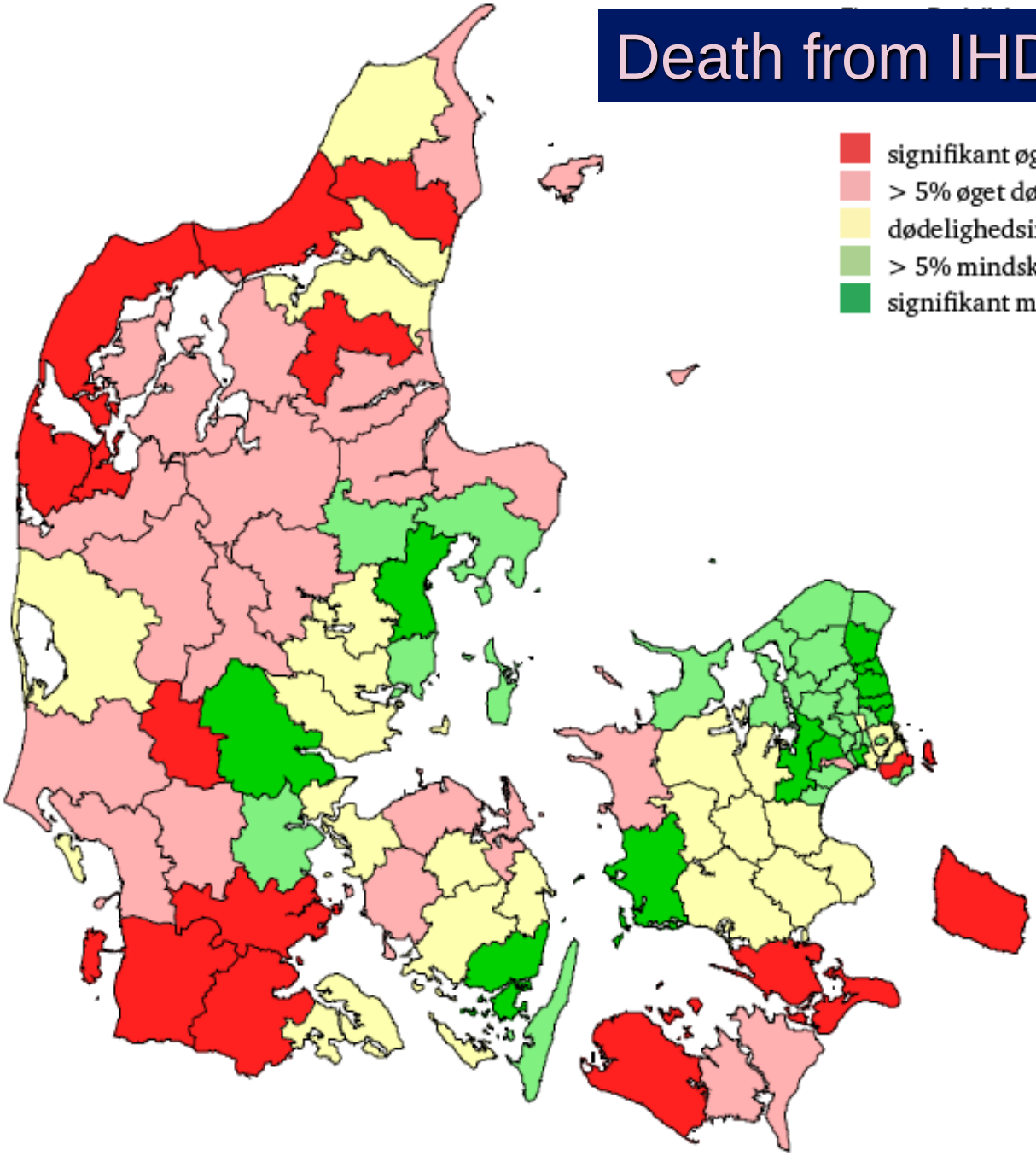


Udgivet af
HJERTEFORENINGEN
i samarbejde med
Statens Institut for Folkesundhed
Syddansk Universitet

HJERTEFORENINGEN

Bindet til HjerteStatistik 2010

Death from IHD 2005-2008

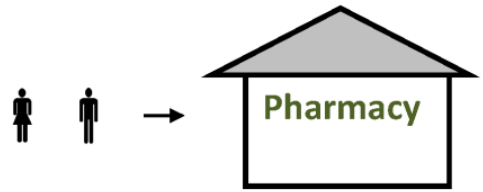


Danish registries

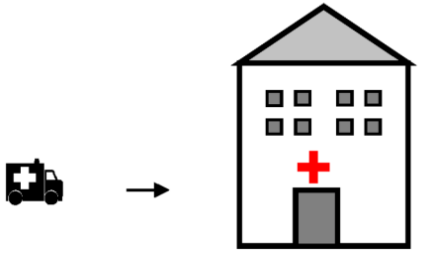
Birth
010111-xxxx

inclusion

- The Danish national prescription register



- The national patient register



endpoints

- The civil register → vital status
- The register of causes of death

AMI and Triple Therapy Inclusion and endpoints

Admitted with first- time MI between 2000-2005
Age ≥ 30 years

Claimed at least one prescription within 90 days
of
aspirin
clopidogrel
vitamin K antagonists

inclusion

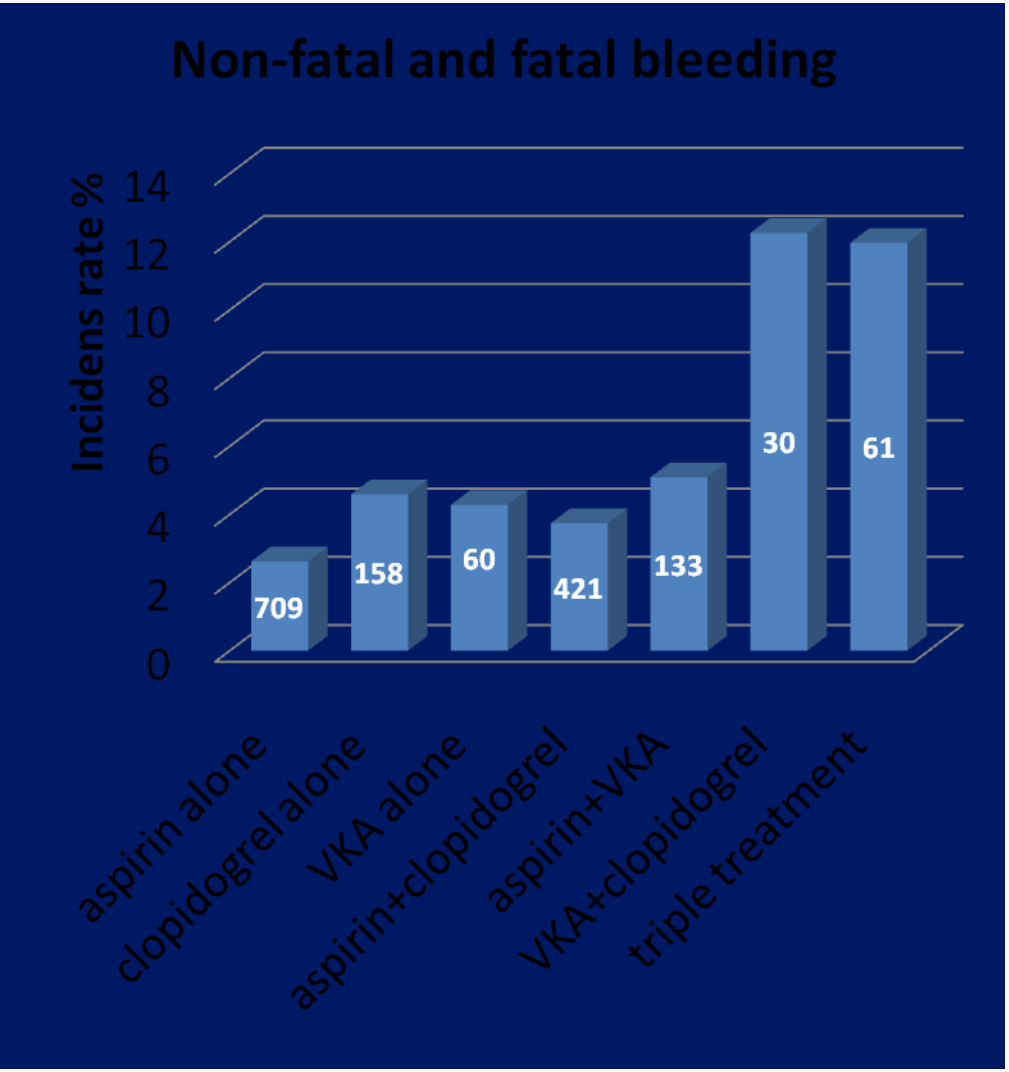
N=40 812

Monotherapy	aspirin
	clopidogrel
	vitamin K antagonists
Dual therapy	aspirin+clopidogrel
	Vitamin K antagonists+ aspirin
	Vitamin K antagonists+ clopidogrel
Triple therapy	all three drugs

endpoints

Non-fatal + fatal bleeding after 18

Results



Bleeding

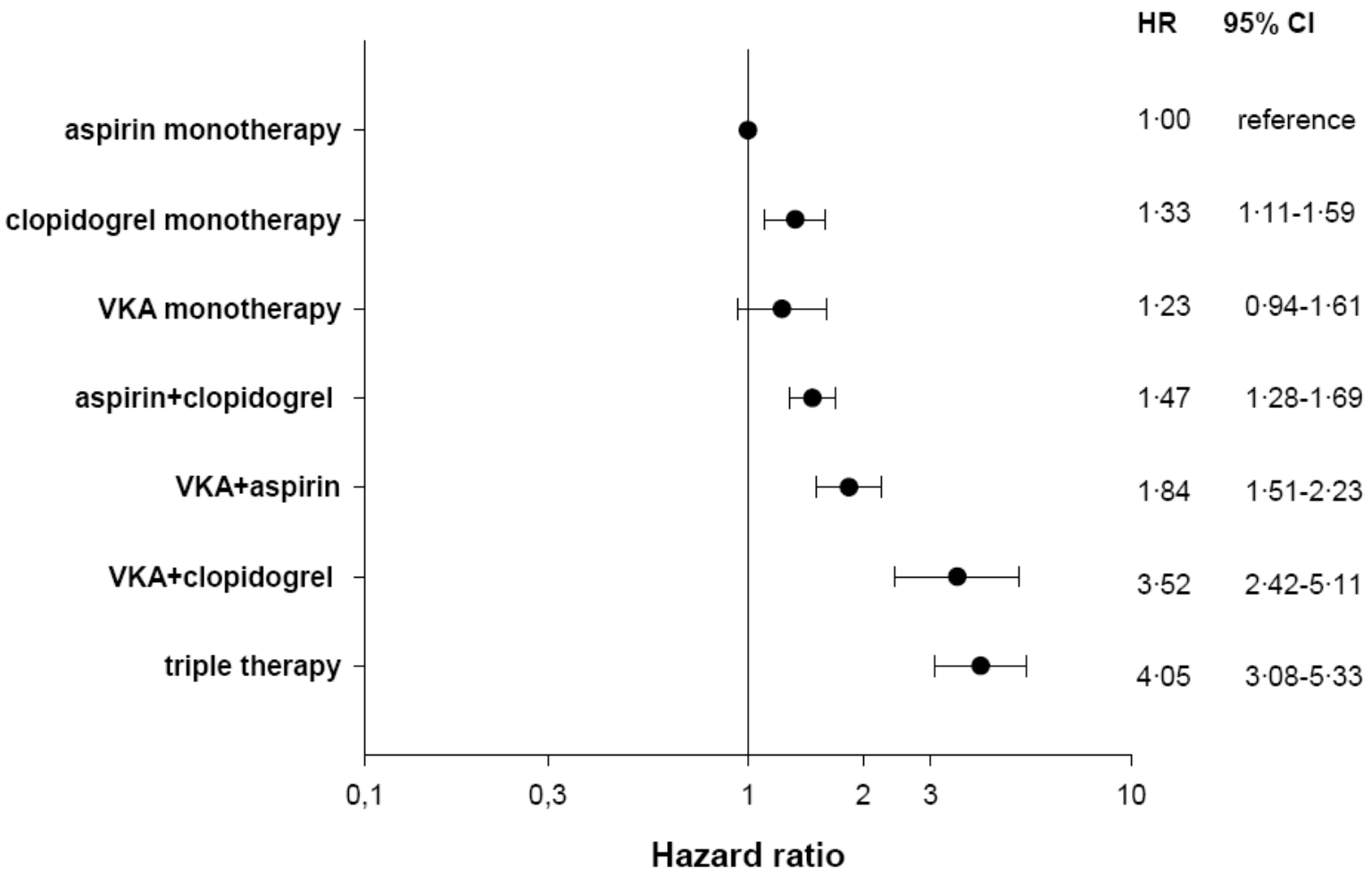
- Increased age
- Male sex
- Malignant disease
- Previous bleeding

Treatment

- Cardiac heart failure
- Diabetes
- NSAIDs
- PPIs

Results

Figure 2A: Adjusted risk of non-fatal and fatal bleedings



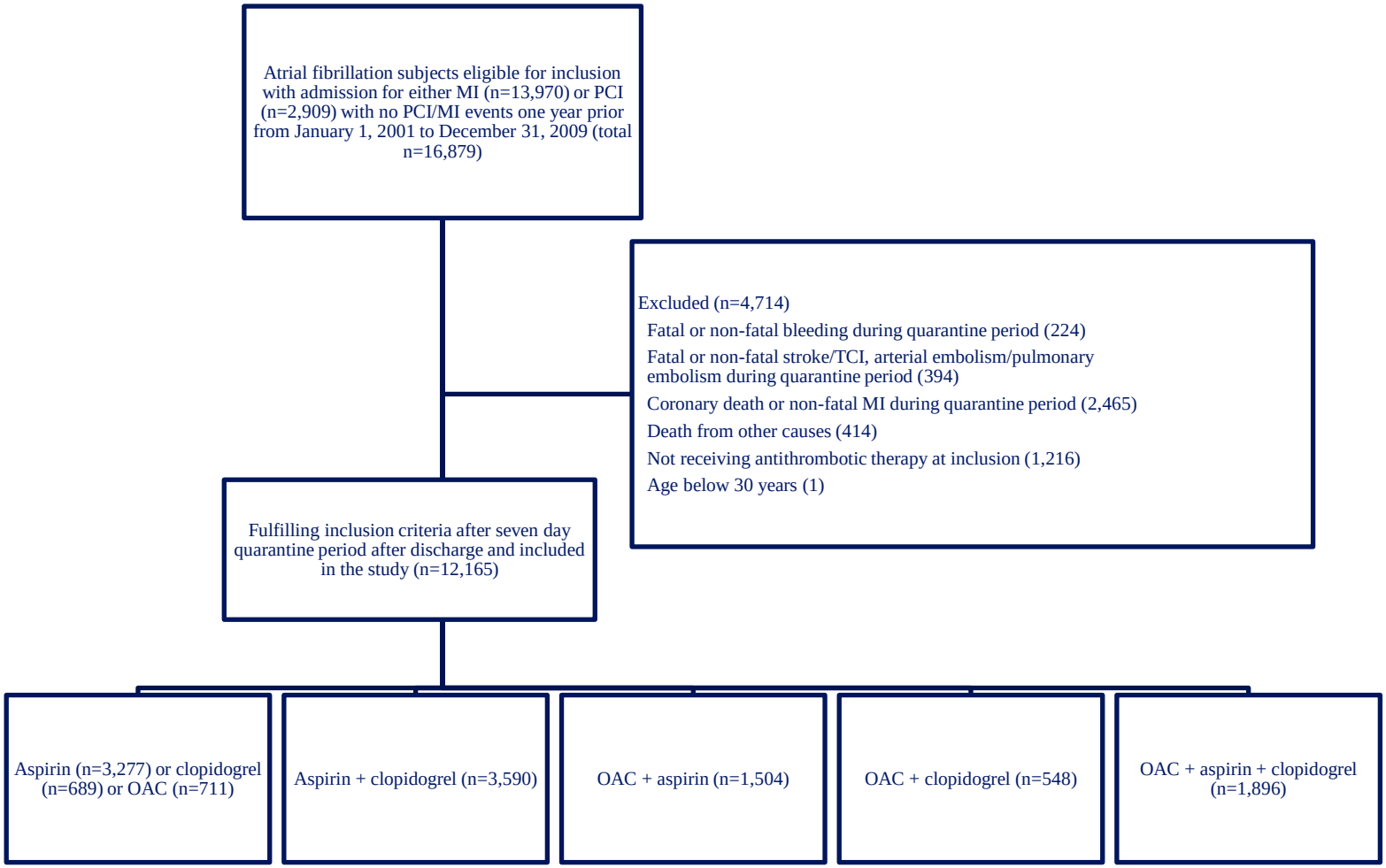
Results

- Numbers needed to harm

- If experiencing a bleeding:
  Risk of re-MI and death x 3

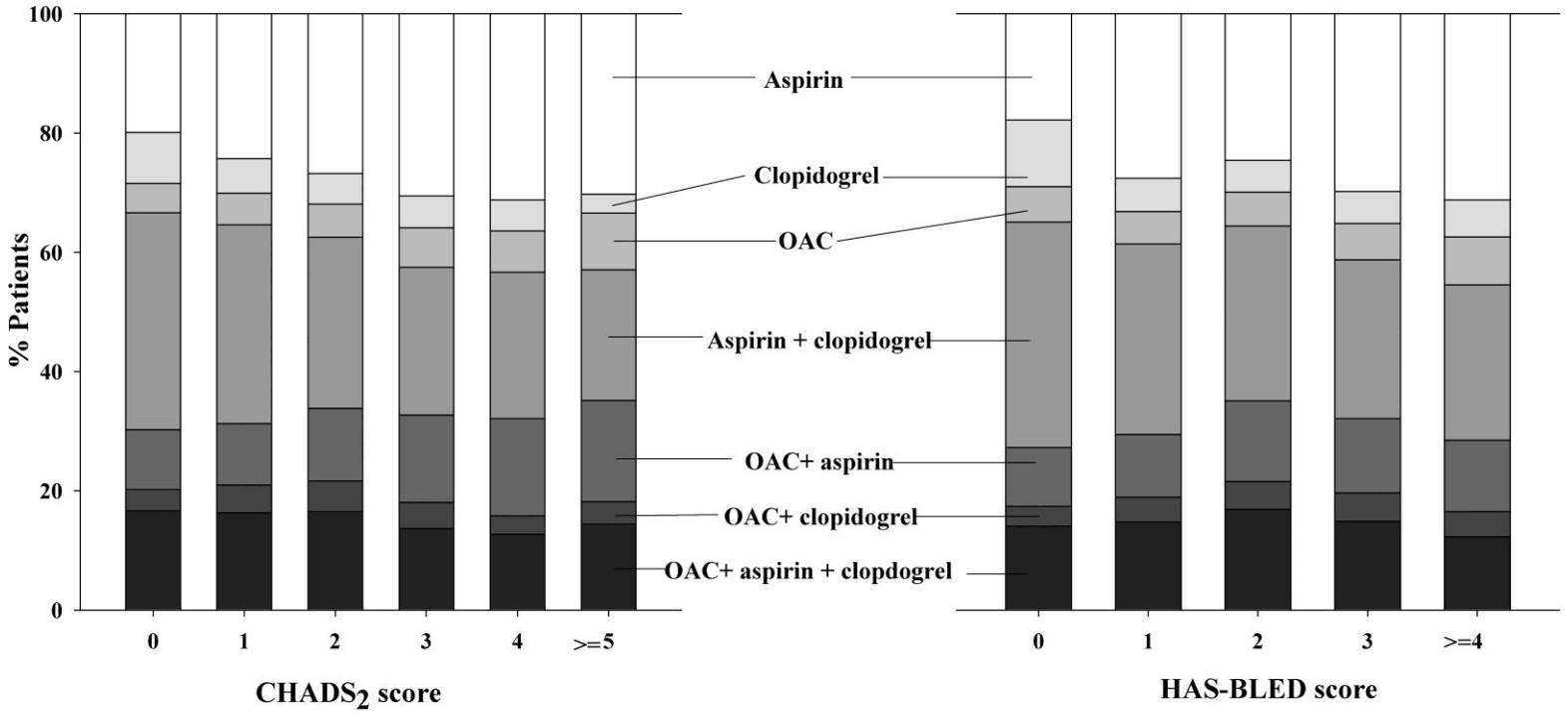
	NNH, adjusted
Monotherapy	
aspirin alone	Reference
clopidogrel alone	115·7
VKA alone	165·9
Dual therapy	
aspirin+clopidogrel	81·2
aspirin+VKA	45·4
VKA+clopidogrel	15·2
Triple therapy	
triple treatment	12·5

Atrial Fibrillation Patients with MI or PCI n= 16.879



Lamberts M…….Gislason G et al. JACC 2013

Initial antithrombotic treatment and crude rates of ischemic stroke and bleeding according to predicted risk

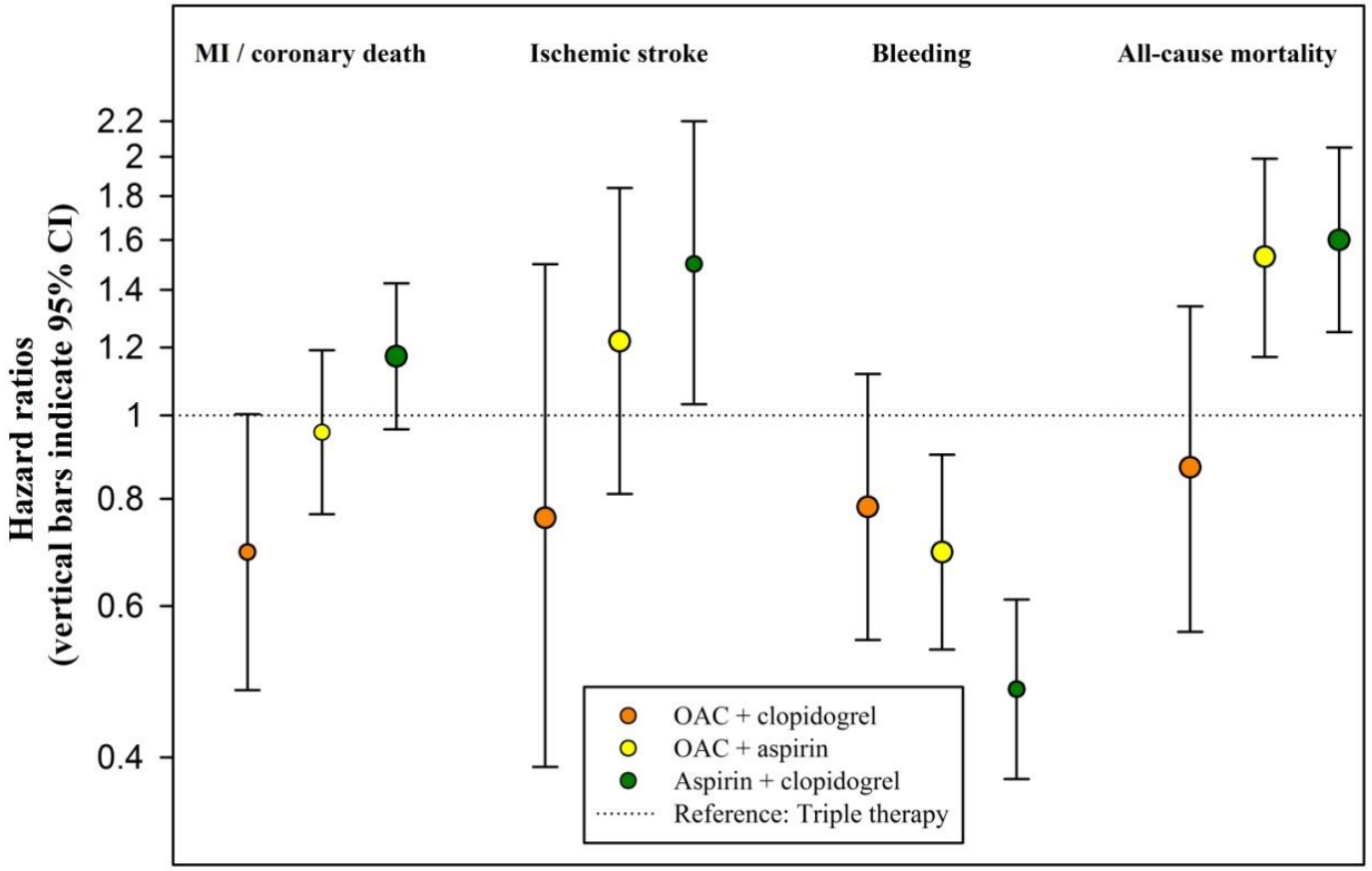


Crude rates	2.5	4.1	6.3	8.9	19.0	23.1
No. of ischemic strokes	27	116	201	156	122	58

Crude rates	4.7	5.1	8.3	9.8	14.1
No. of bleedings	19	121	367	196	66

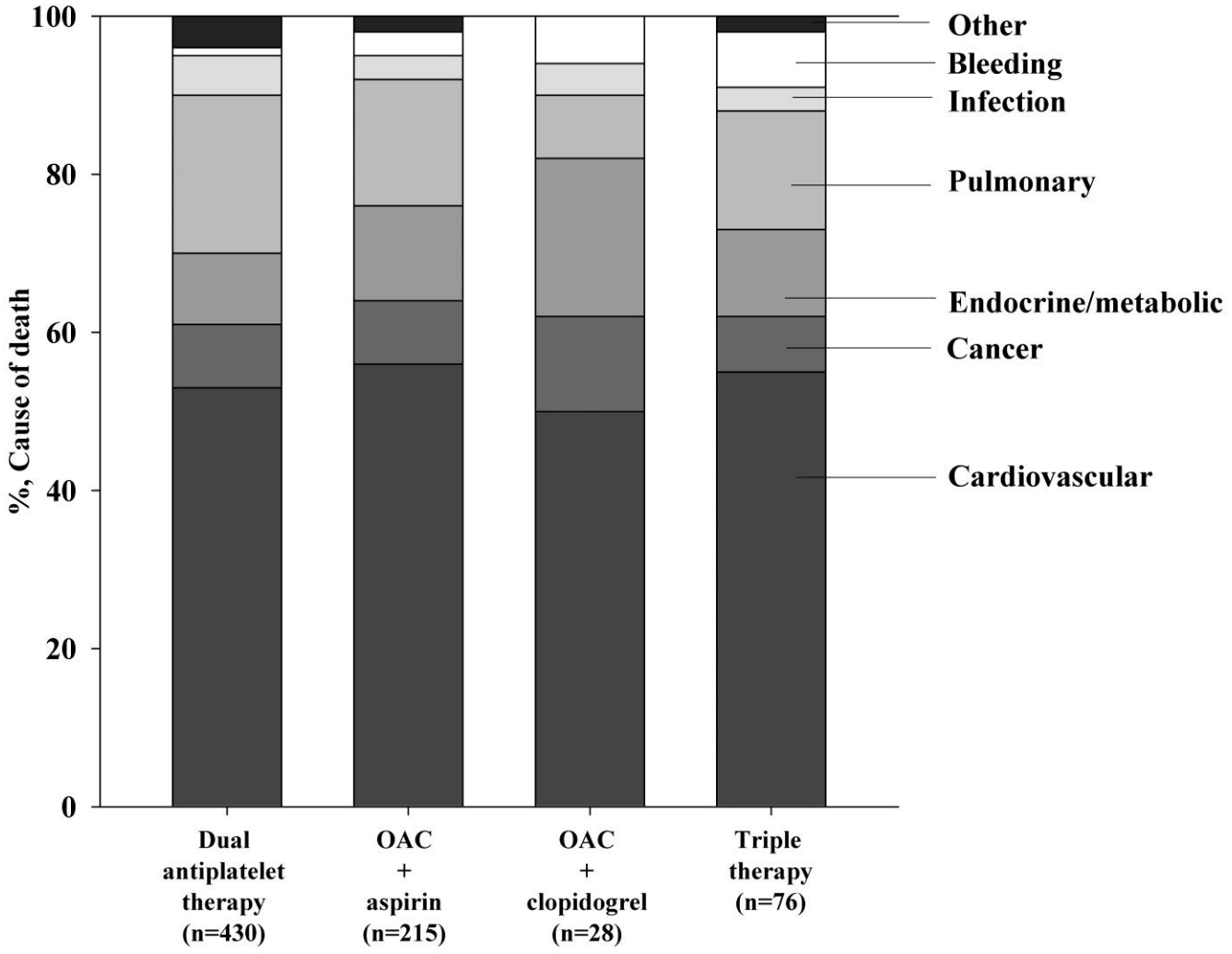
Lamberts M…….Gislason G et al. JACC 2013

Benefit and safety with triple therapy versus dual therapies



Lamberts M…….Gislason G et al. JACC 2013

Cause of death according to antithrombotic treatment at time of death



Lamberts M…….Gislason G et al. JACC 2013

DANAMI Studies

Copenhagen University
Department of Cardiology
Rigshospitalet
Copenhagen

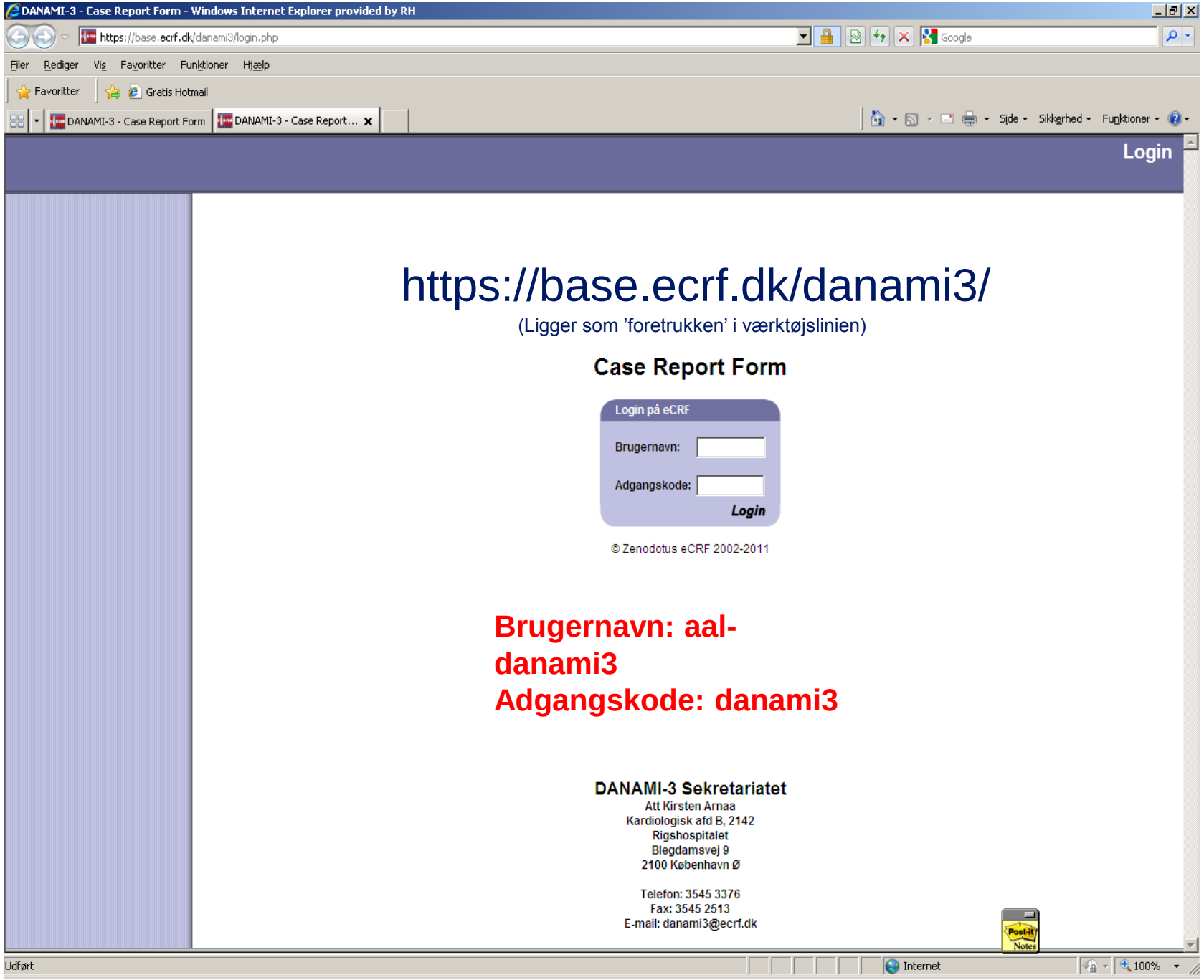
DANAMI 3

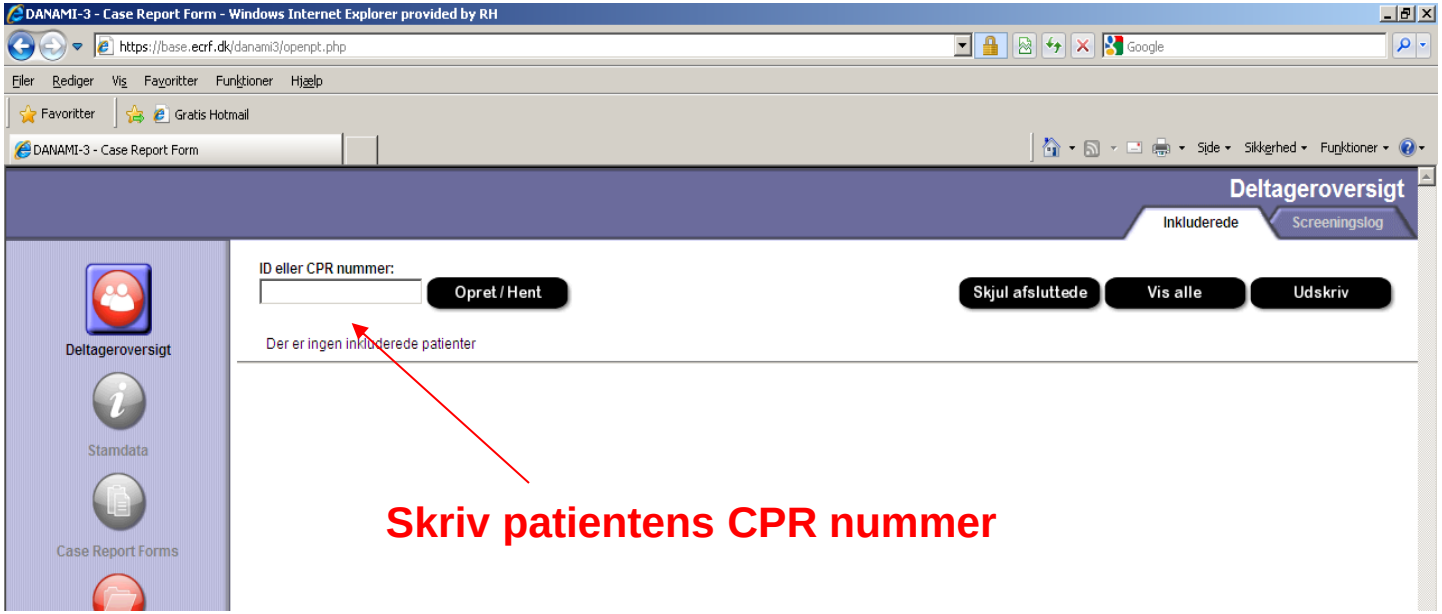
Rationale and setup

Thomas Engstrøm
Copenhagen University Hospital
Rigshospitalet
Denmark

DANAMI-3

- Randomisering
- Postconditionering
- Deferred stenting
- PRIMULTI (Flerkarsyge)
- Flowchart

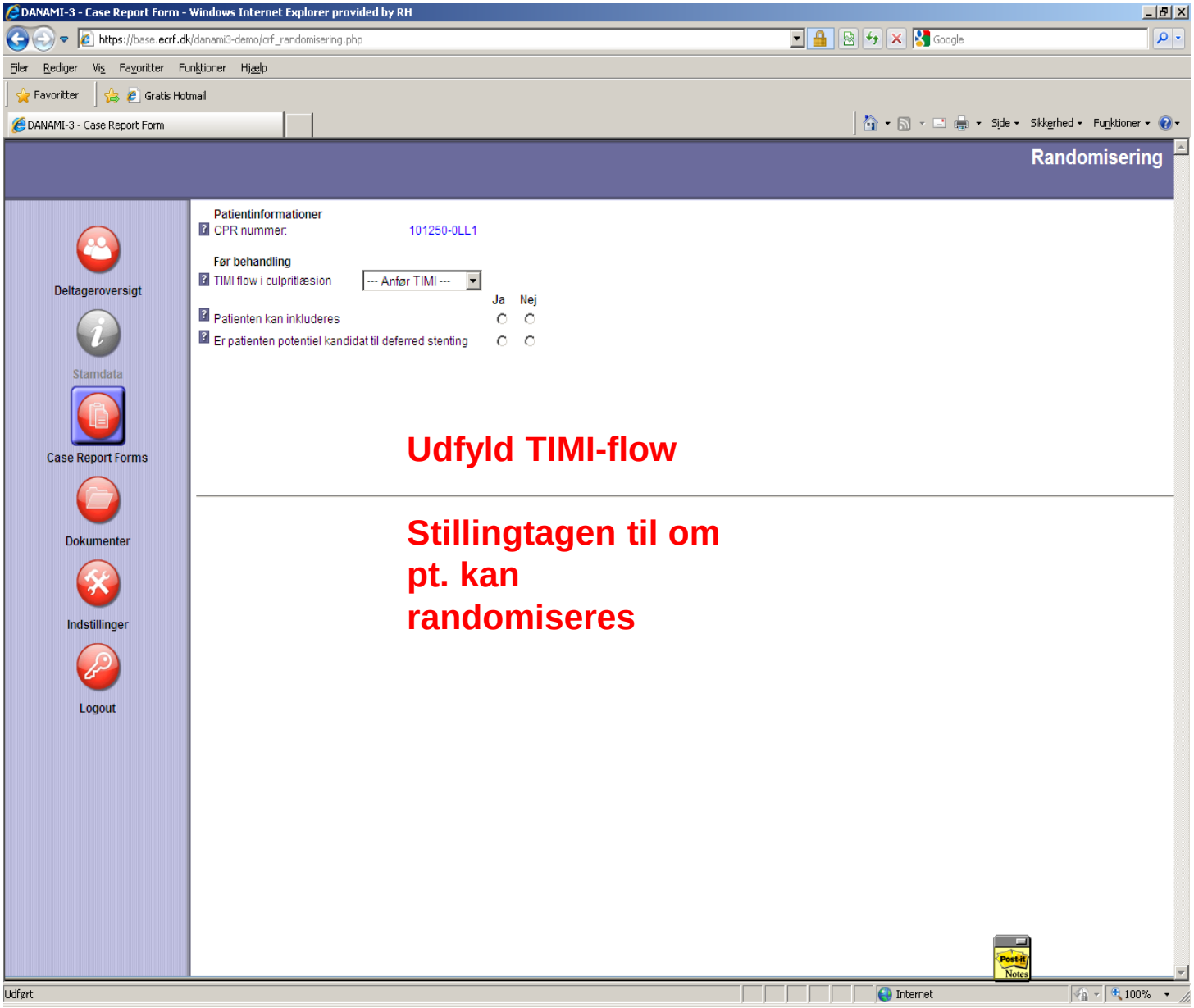

DANAMI-3 - Case Report Form - Windows Internet Explorer provided by RH
https://base.ecrf.dk/danami3/login.php
Filer Rediger Vis Favoritter Funktioner Hjælp
Favoritter
Gratis Hotmail
DANAMI-3 - Case Report Form
DANAMI-3 - Case Report...
Side Sikkerhed Funktioner
Login
https://base.ecrf.dk/danami3/
(Ligger som 'foretrukken' i værktøjslinien)
Case Report Form
Login på eCRF
Brugernavn:
Adgangskode:
Login
© Zenodotus eCRF 2002-2011
Brugernavn: aal-danami3
Adgangskode: danami3
DANAMI-3 Sekretariatet
Att Kirsten Arnaa
Kardiologisk afd B, 2142
Rigshospitalet
Blegdamsvej 9
2100 København Ø
Telefon: 3545 3376
Fax: 3545 2513
E-mail: danami3@ecrf.dk
Udført
Internet
100%

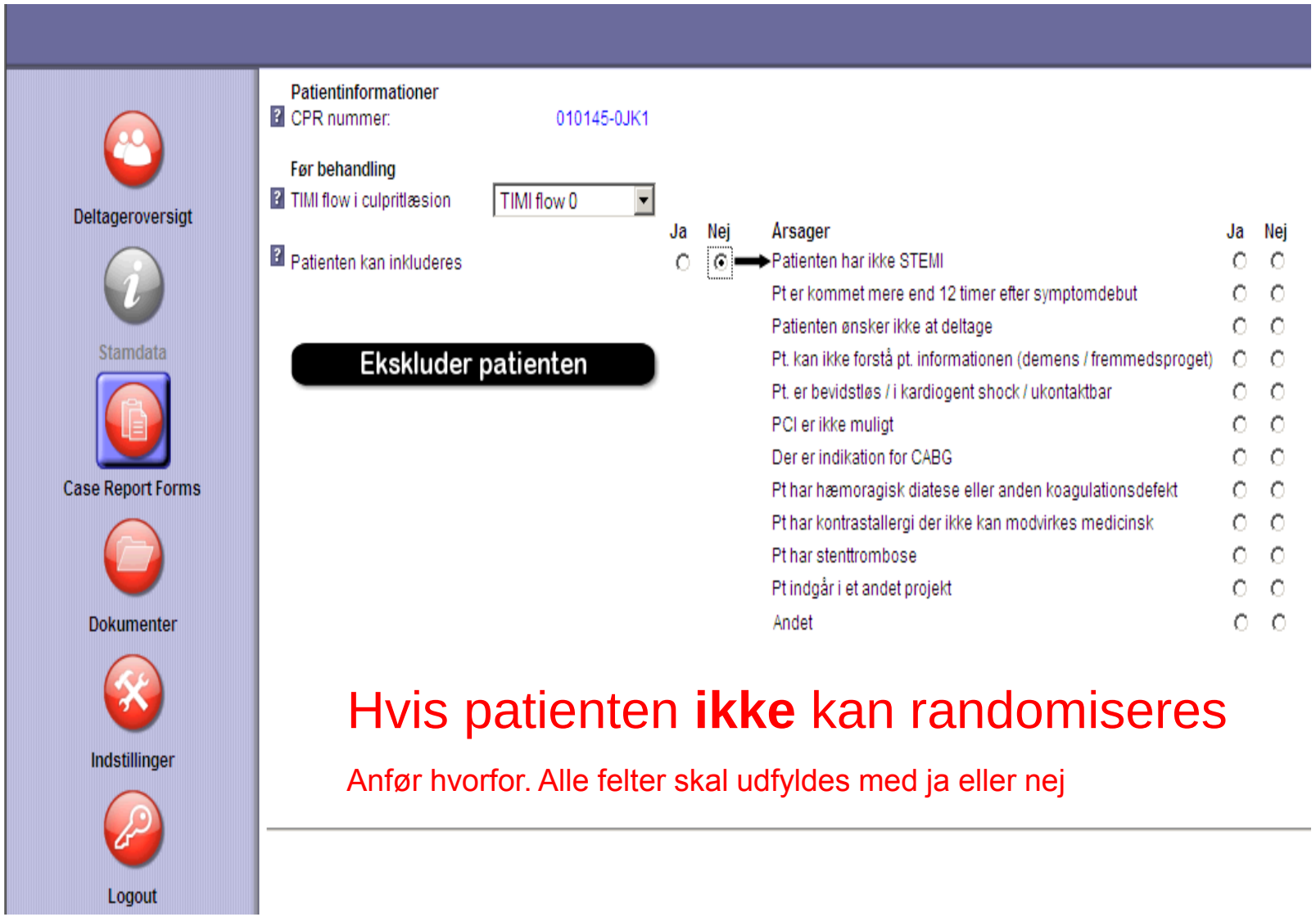


Skriv patientens CPR nummer

Herefter

Bekræft med OK

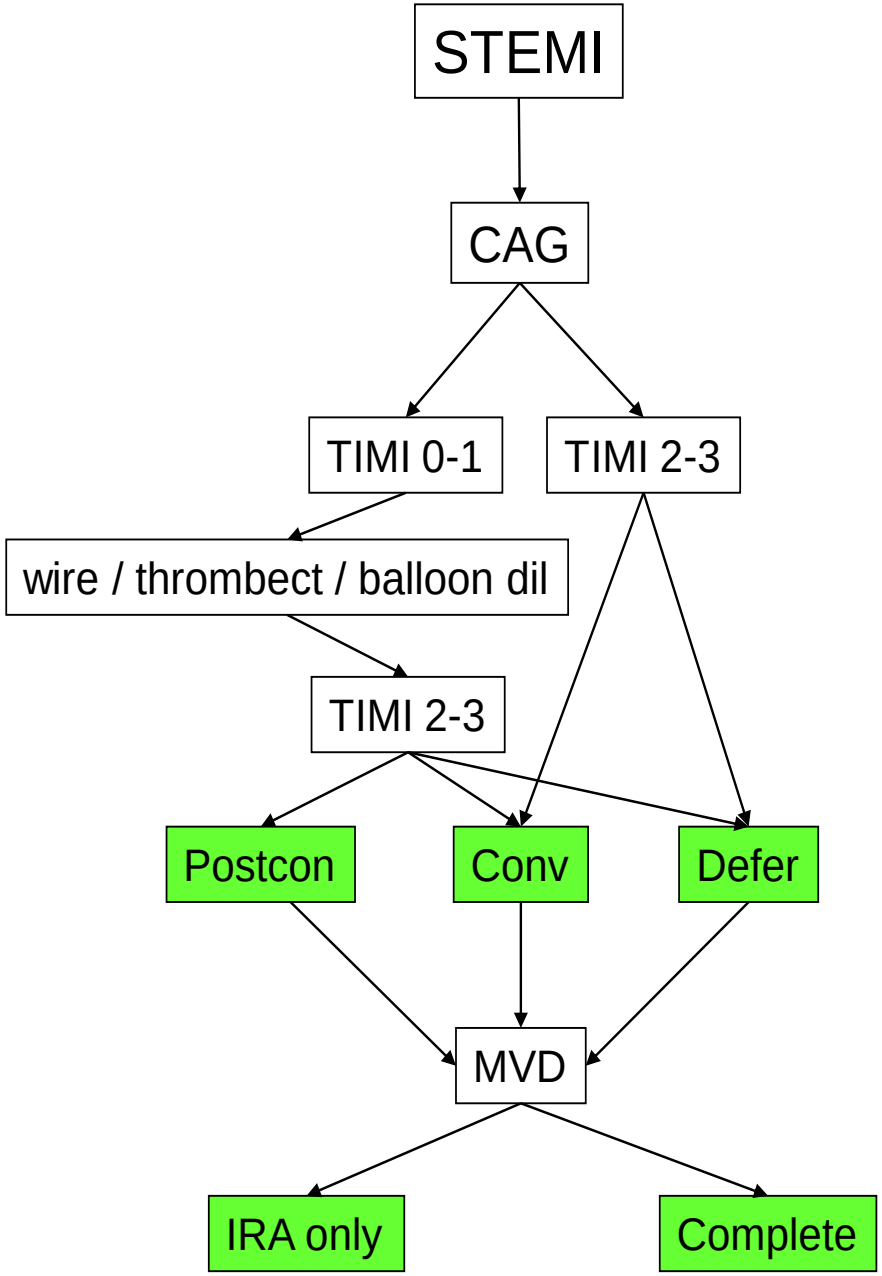

DANAMI-3 - Case Report Form - Windows Internet Explorer provided by RH
https://base.ecrf.dk/danami3-demo/crf_randomisering.php
Filer Rediger Vis Favoritter Funktioner Hjælp
Favoritter
Gratis Hotmail
DANAMI-3 - Case Report Form
Side Sikkerhed Funktioner
Randomisering
Deltageroversigt
Stamdata
Case Report Forms
Dokumenter
Indstillinger
Logout
Patientinformationer
CPR nummer:
101250-0LL1
Før behandling
TIMI flow i culpritlæsion
--- Anfør TIMI ---
Ja
Nej
Patienten kan inkluderes
Er patienten potentiel kandidat til deferred stenting
Udfyld TIMI-flow
Stillingtagen til om pt. kan randomiseres
Udført
Internet
100%



Hvis patienten **ikke** kan randomiseres

Anfør hvorfor. Alle felter skal udfyldes med ja eller nej

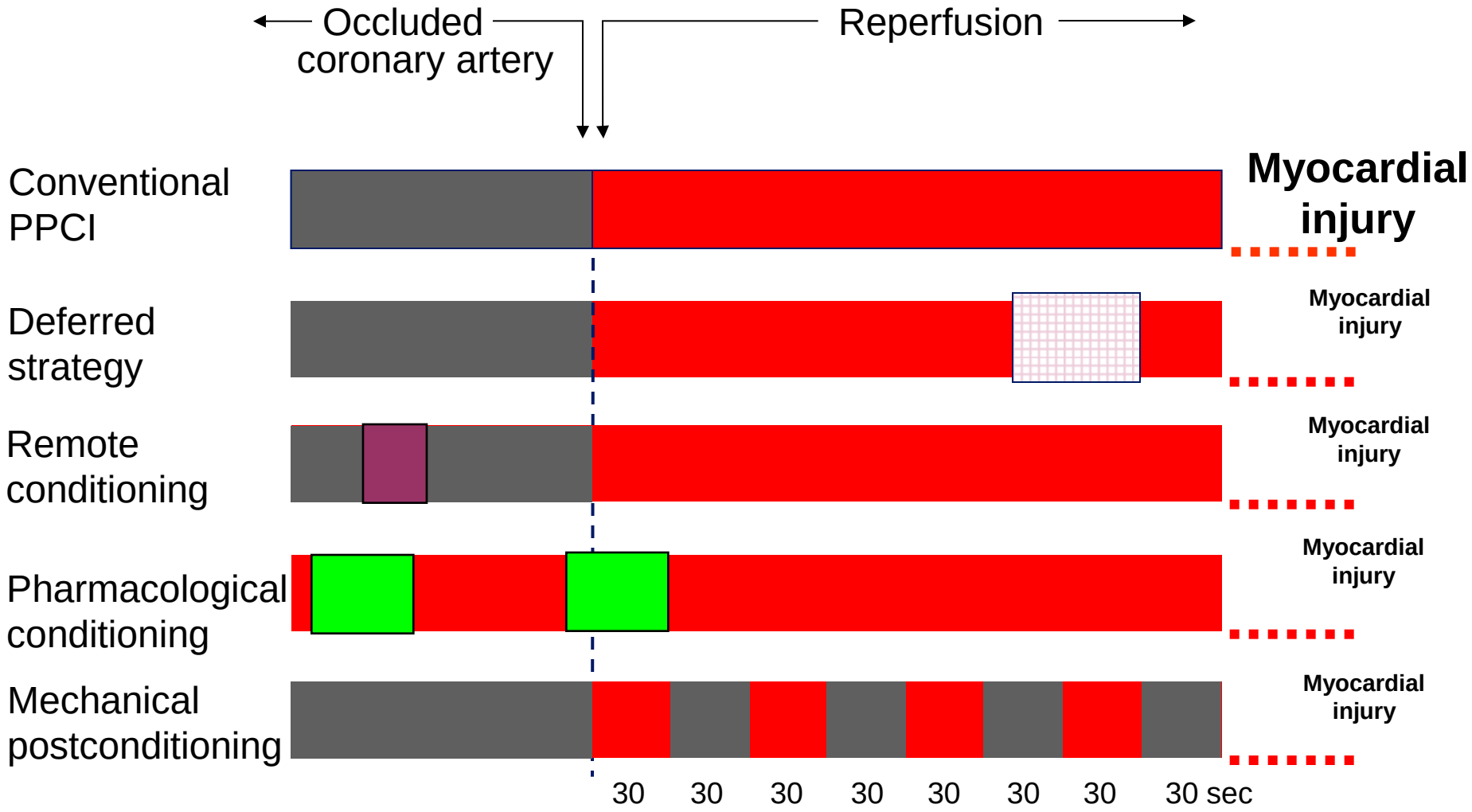
DANAMI-3



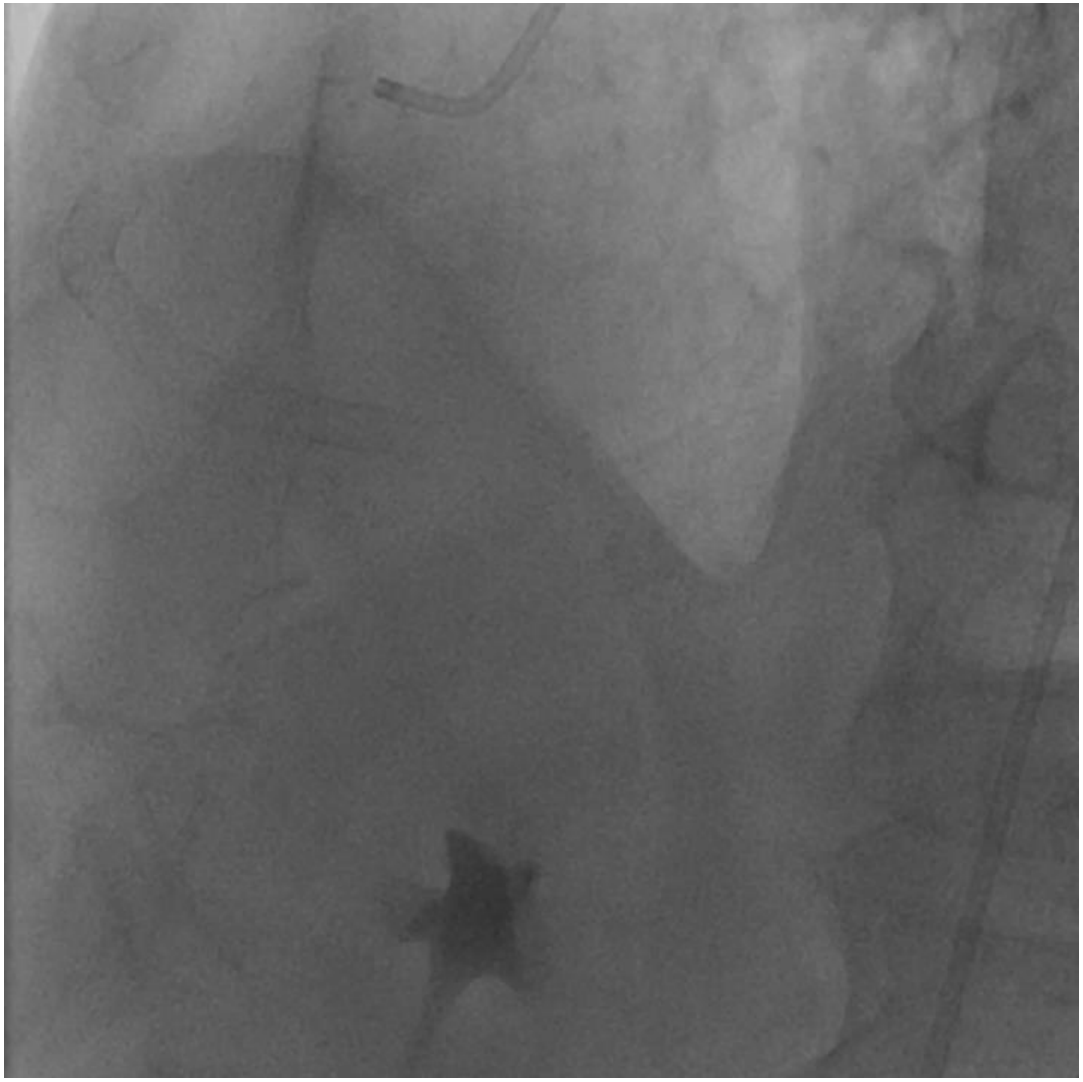
1. Randomisation

2. Randomisation (PRIMULTI)

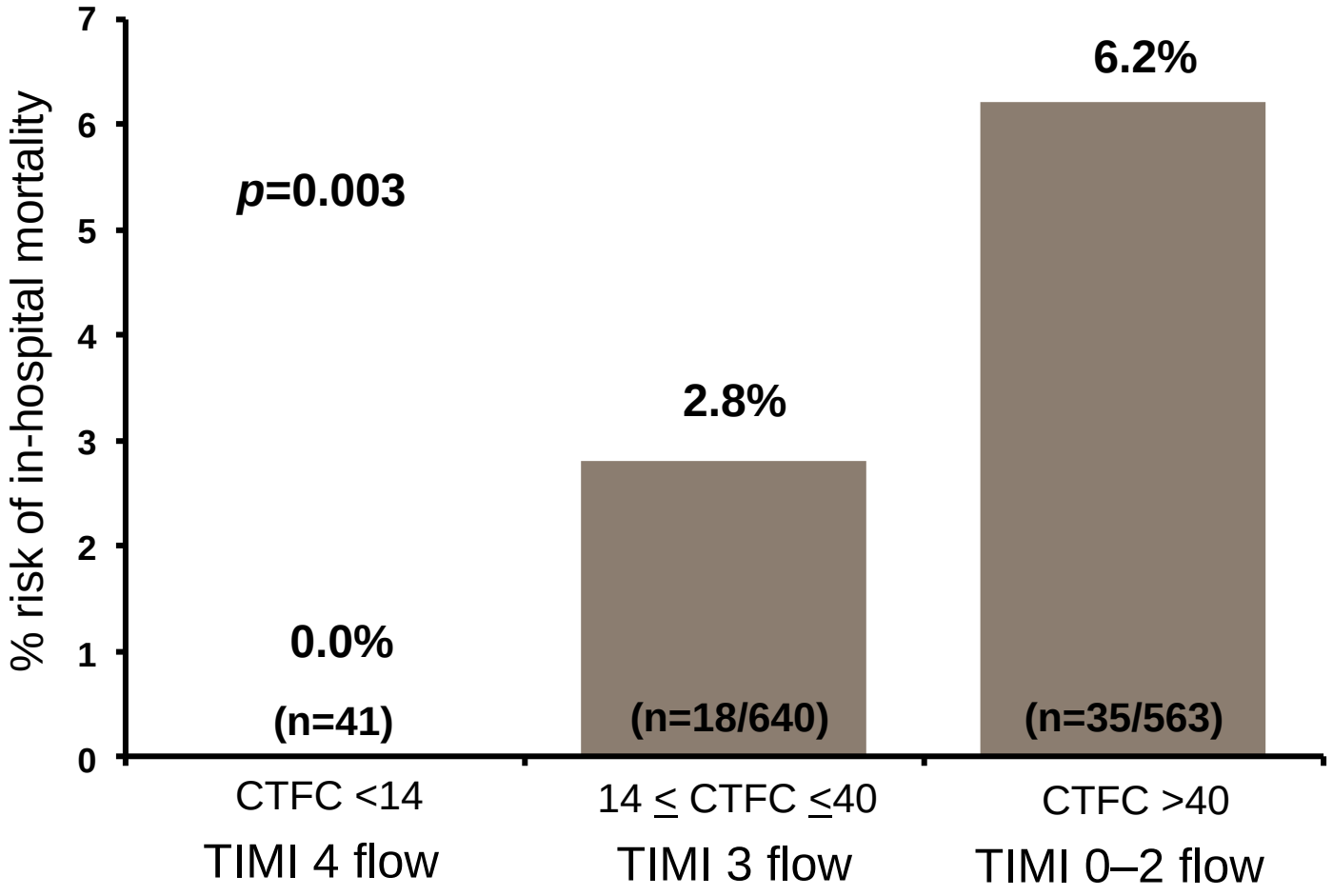
Cardioprotective strategies



Angiographic picture – no flow

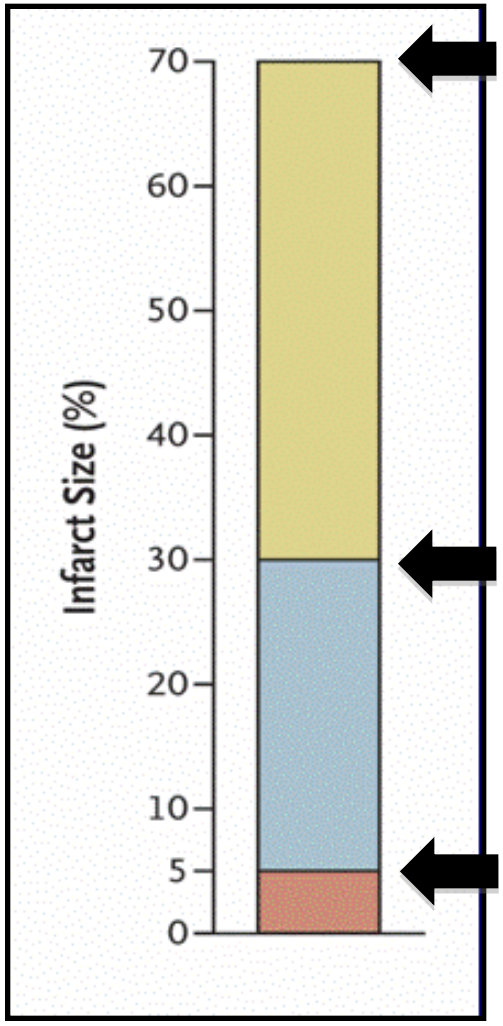


In-hospital mortality and TIMI flow



Gibson. Circulation 1999

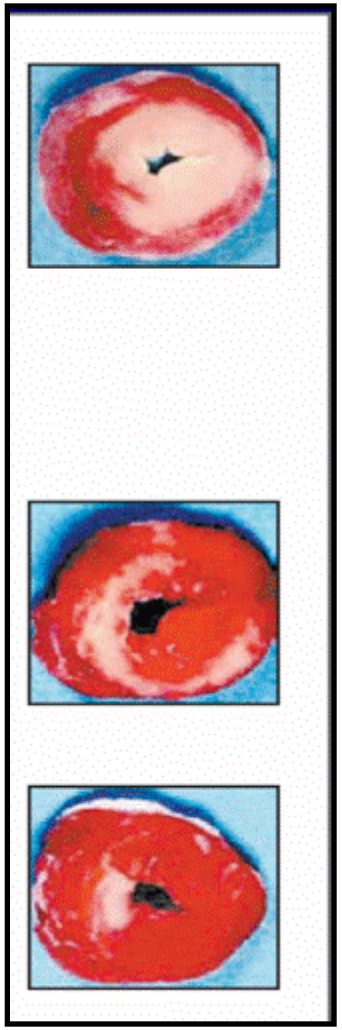
Treatment of acute myocardial infarction



Myocardial infarction without reperfusion

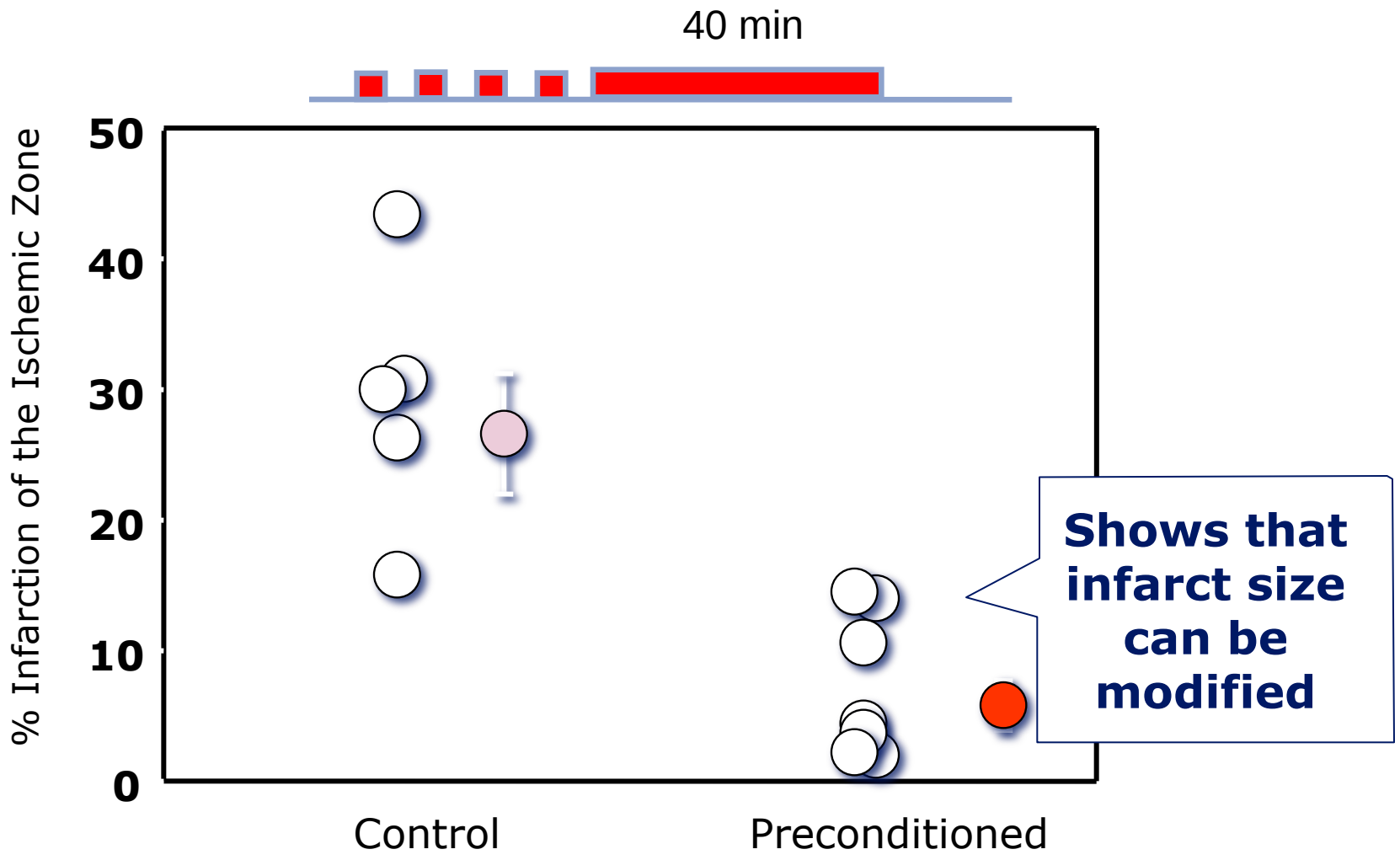
Myocardial infarction with reperfusion

Myocardial infarction with reperfusion and cardioprotection



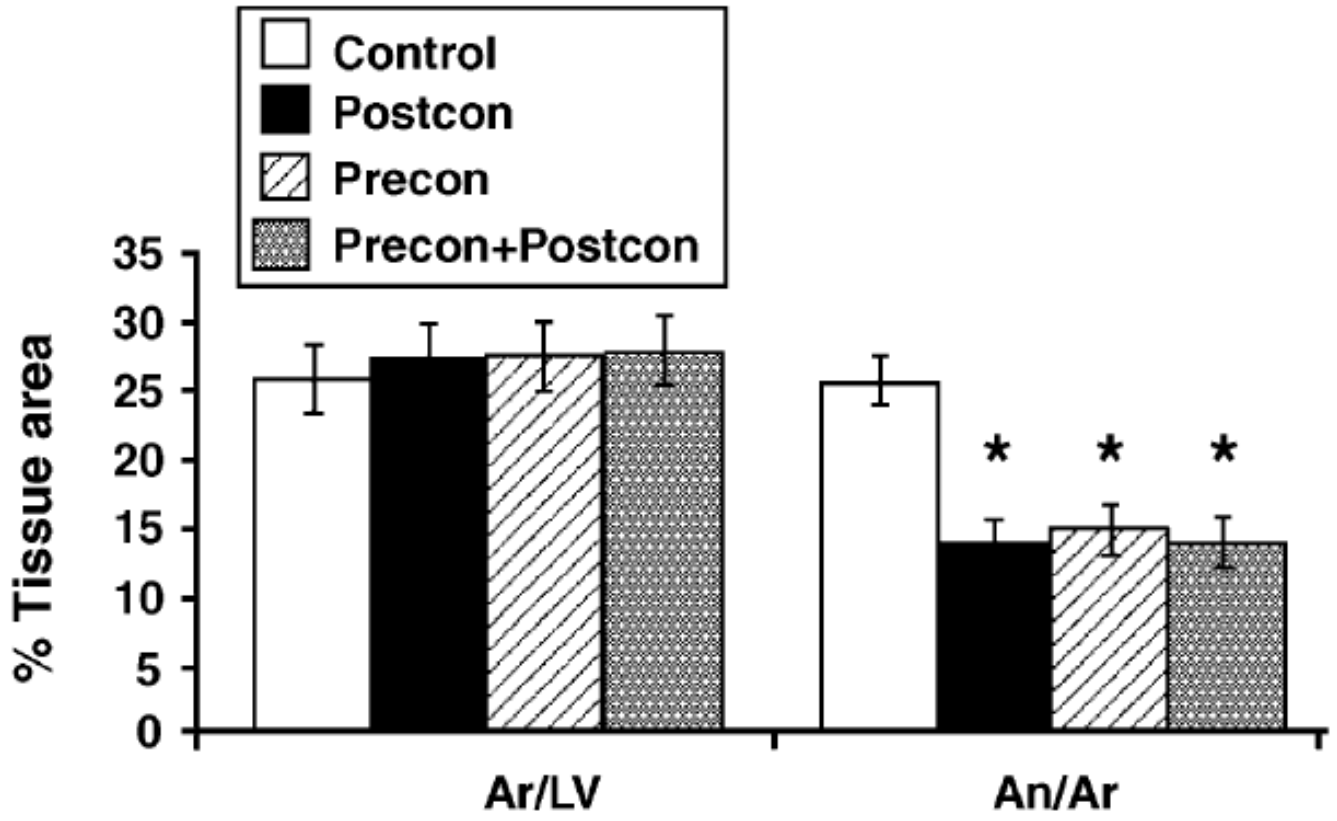
Murry et al. Circulation 1986; Yellon & Hausenloy. N Engl J Med 2007

ischemic preconditioning



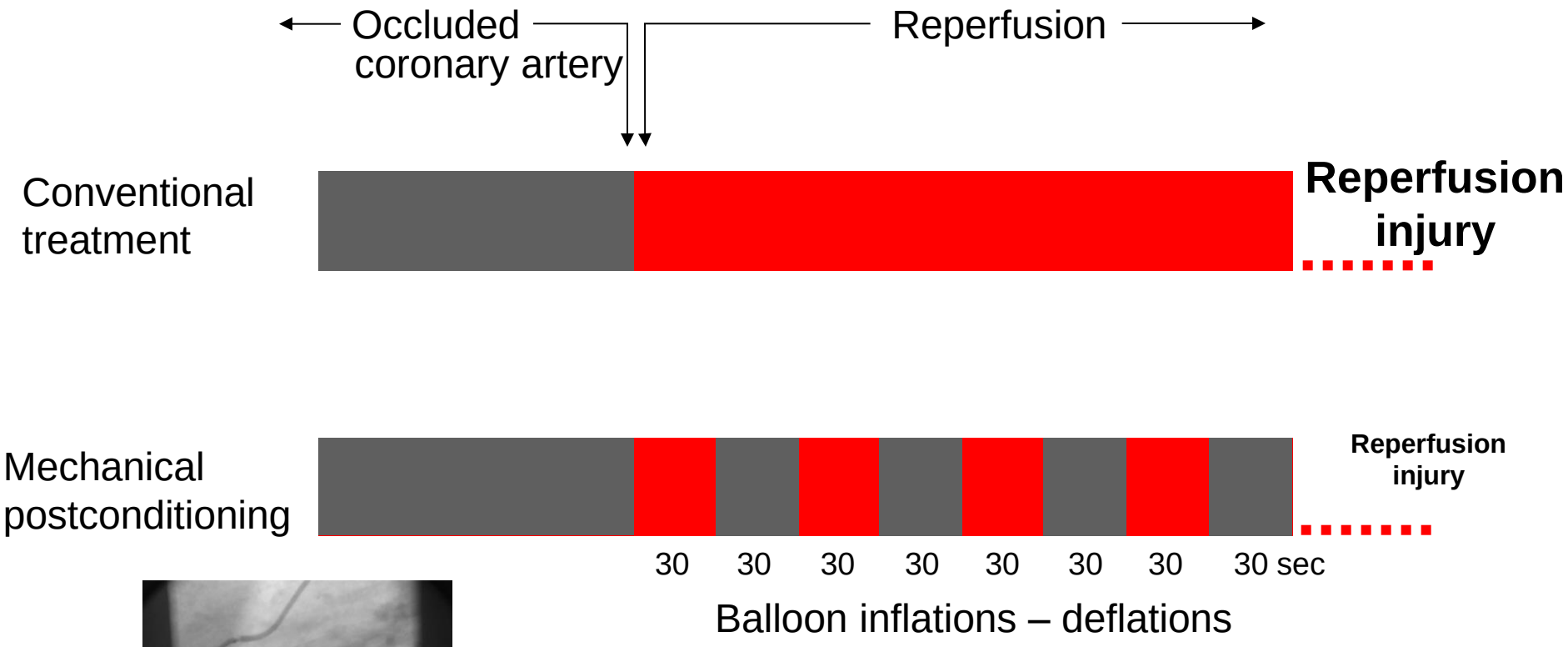
Murry et al, Circulation 1986;74:1124-1136

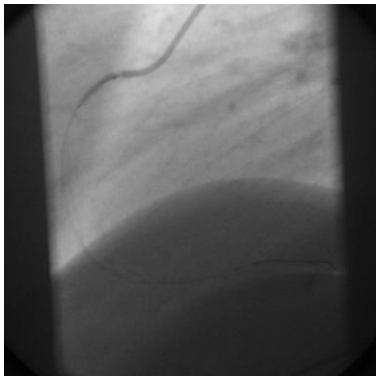
Postconditioning – rabbit study



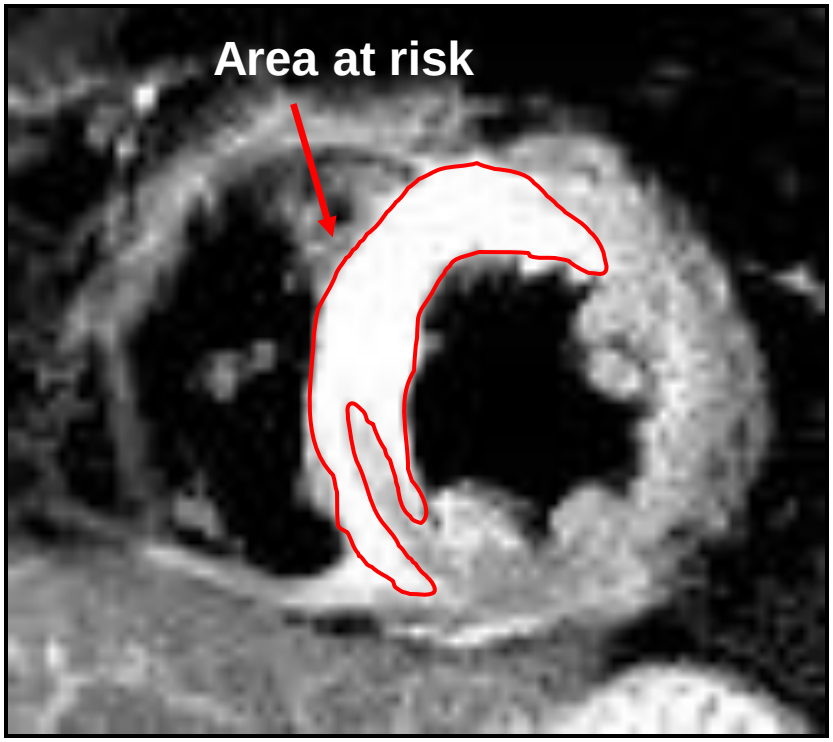
Zhao et al. Am J Physiol 2003

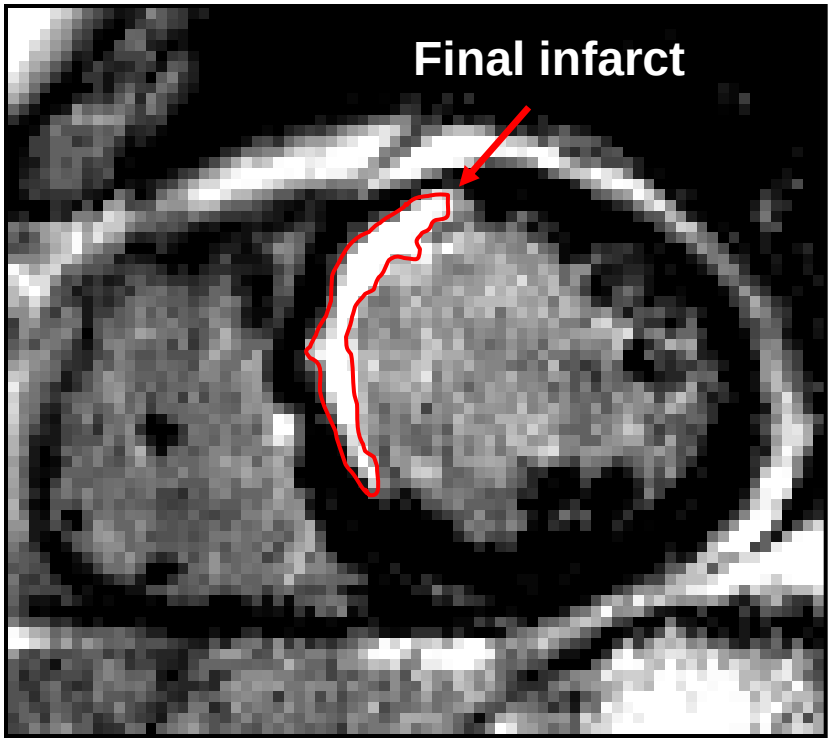
Mechanical postconditioning





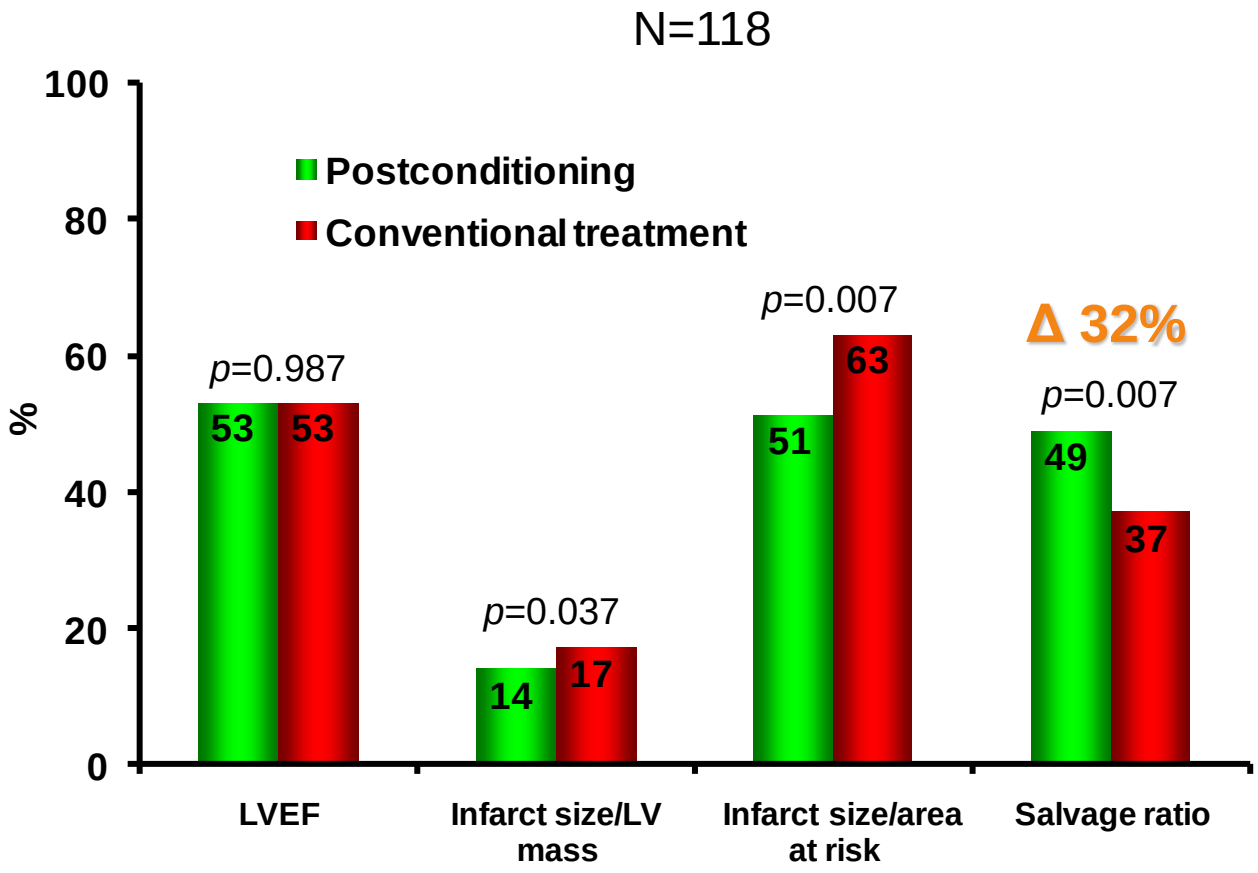
Method – salvage index





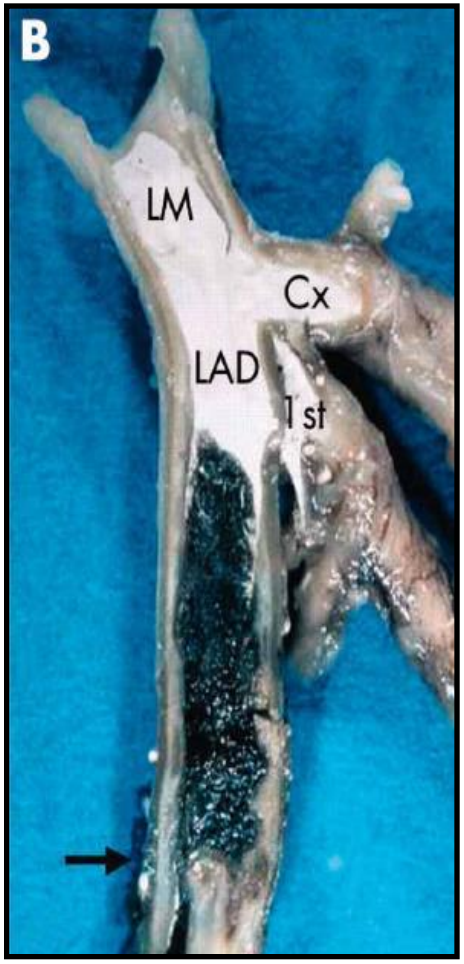
$$\text{Salvage index:} \quad \frac{\text{Area at risk} - \text{infarct}}{\text{Area at risk}}$$

POSTCON – Magnetic resonance scan (MRI)



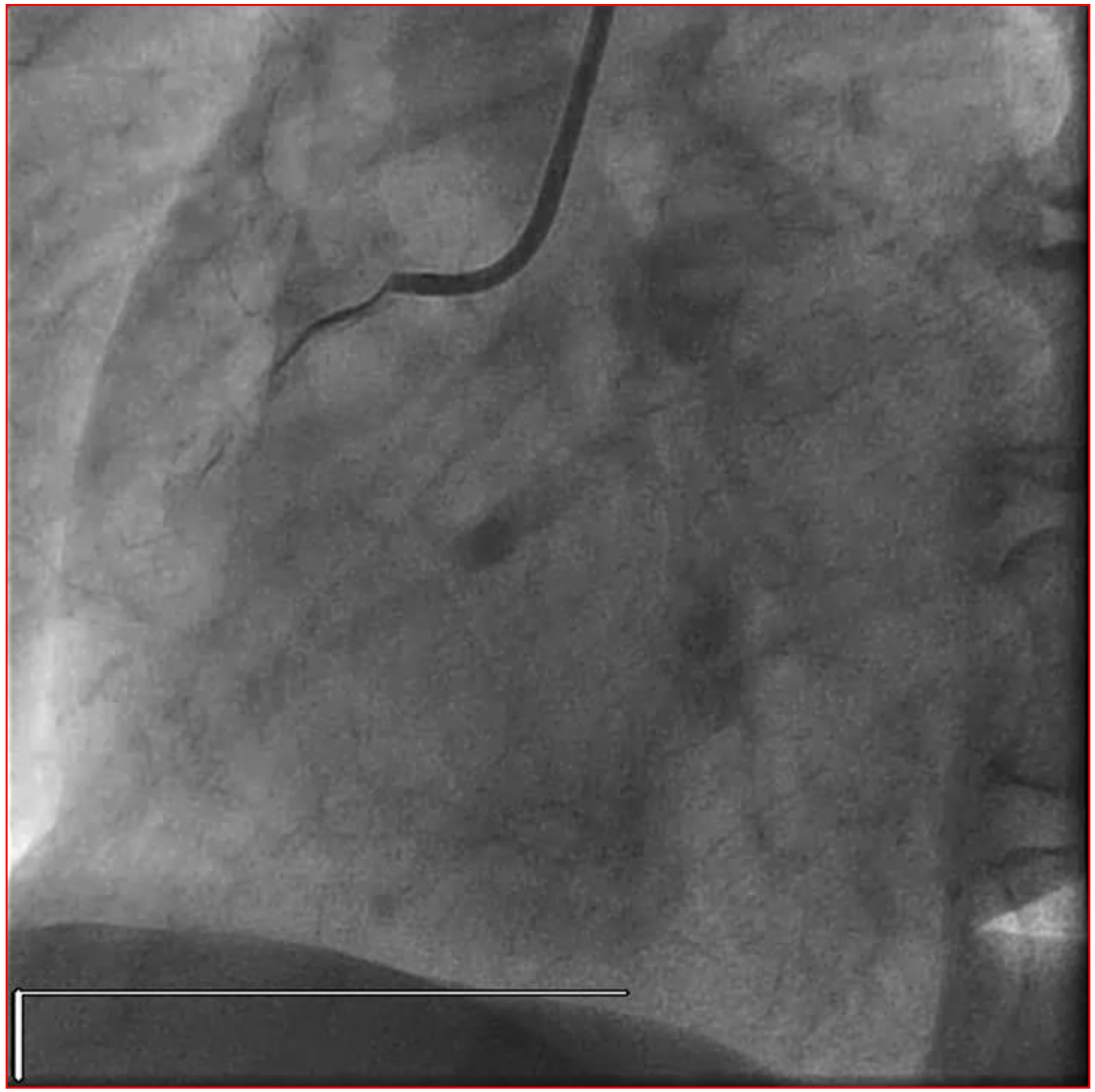
Lønborg et al. Circ Cadiovasc Interv 2010

The thrombus revisited

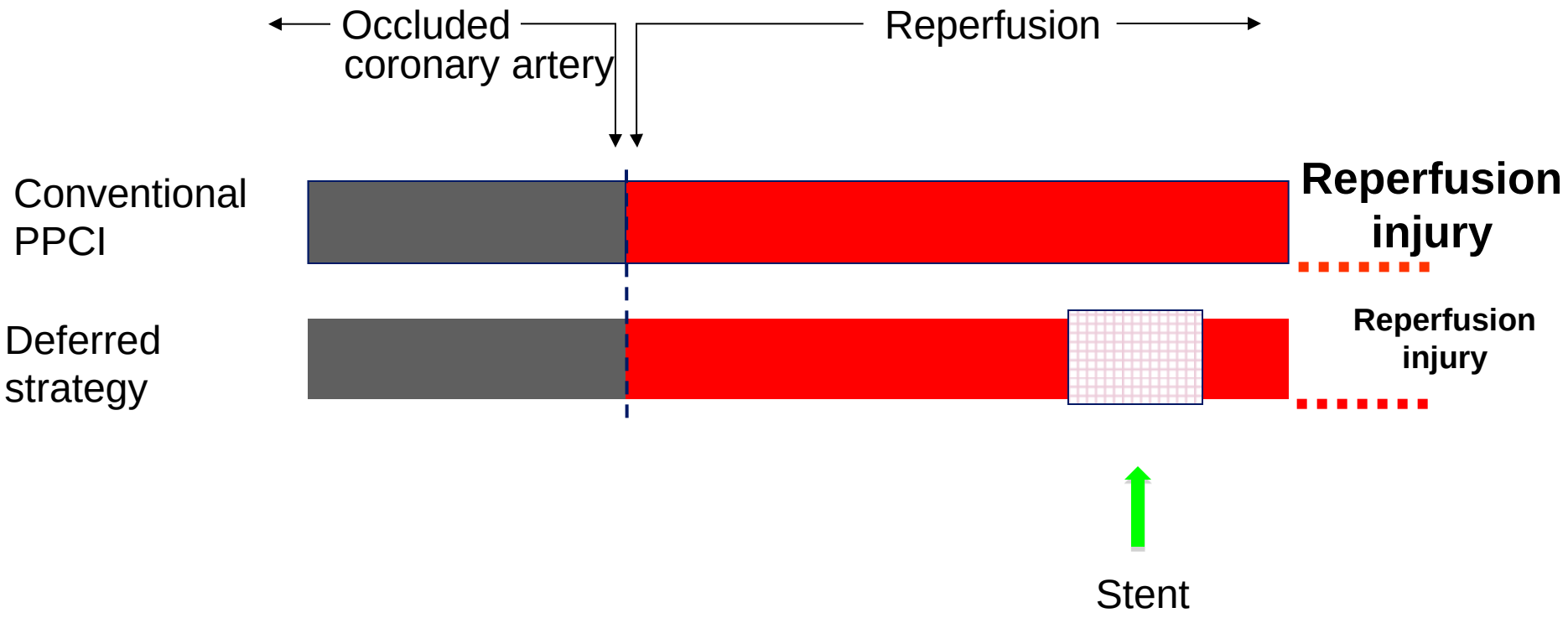


Deferred stent strategi

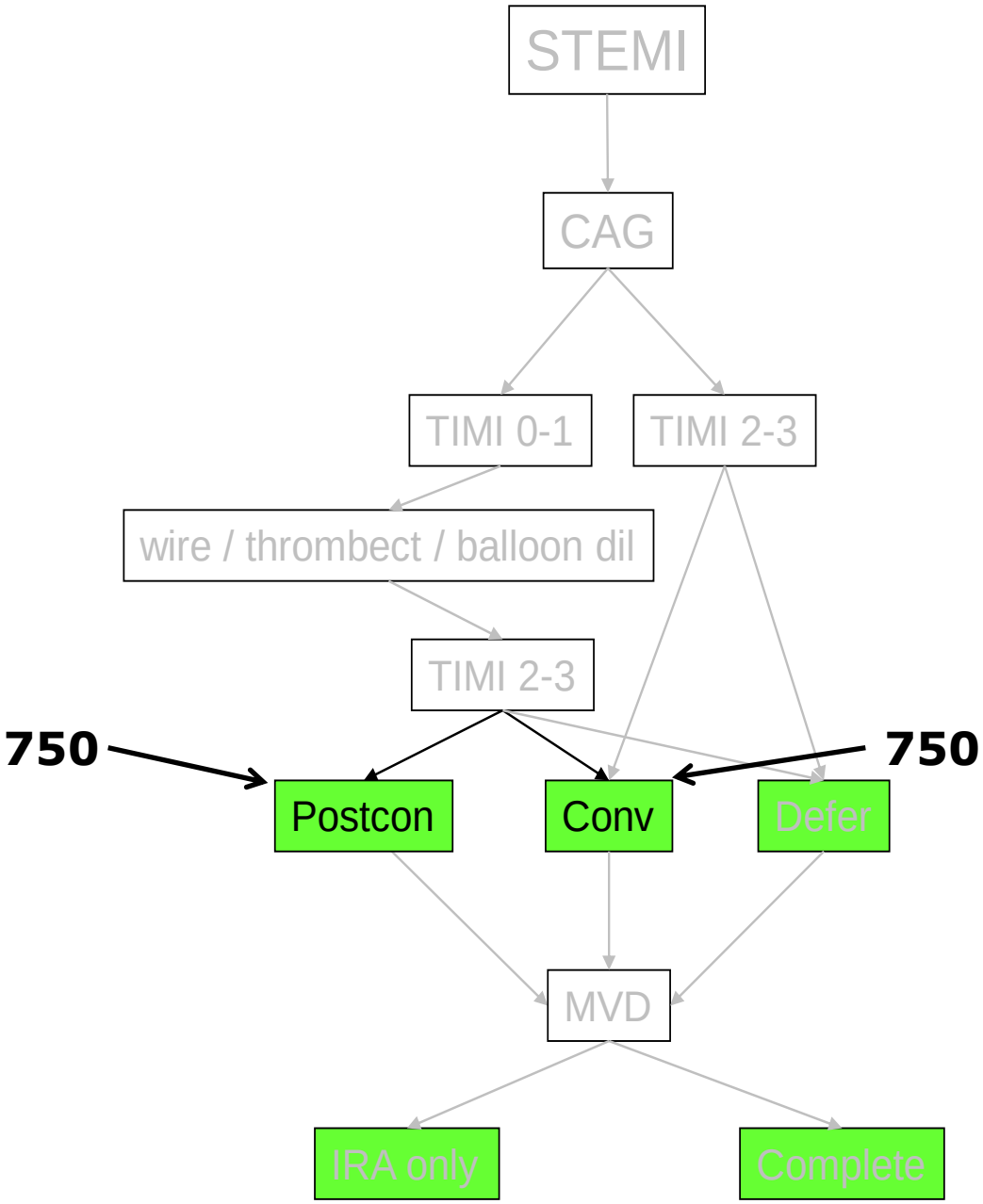
Acute



Deferred stenting



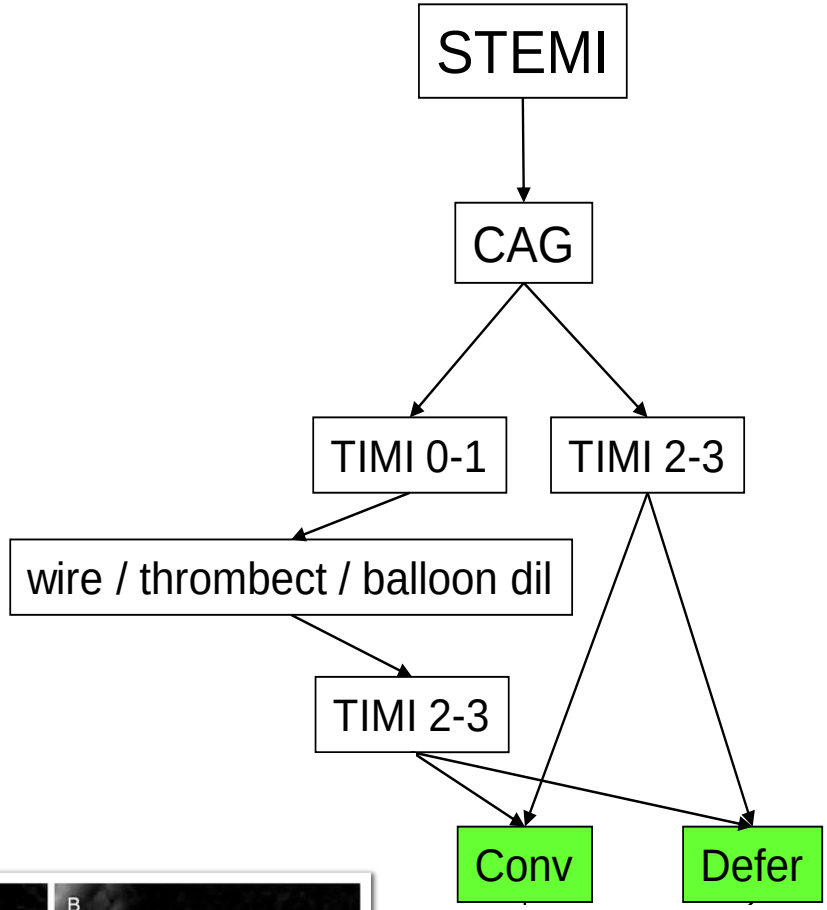
DANAMI-3

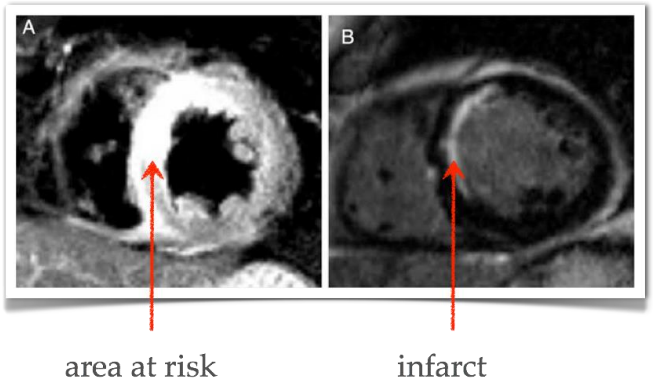


1. Randomisation

2. Randomisation (PRIMULTI)

DANAMI-3





Myocardial salvage

Endpoints

Primary

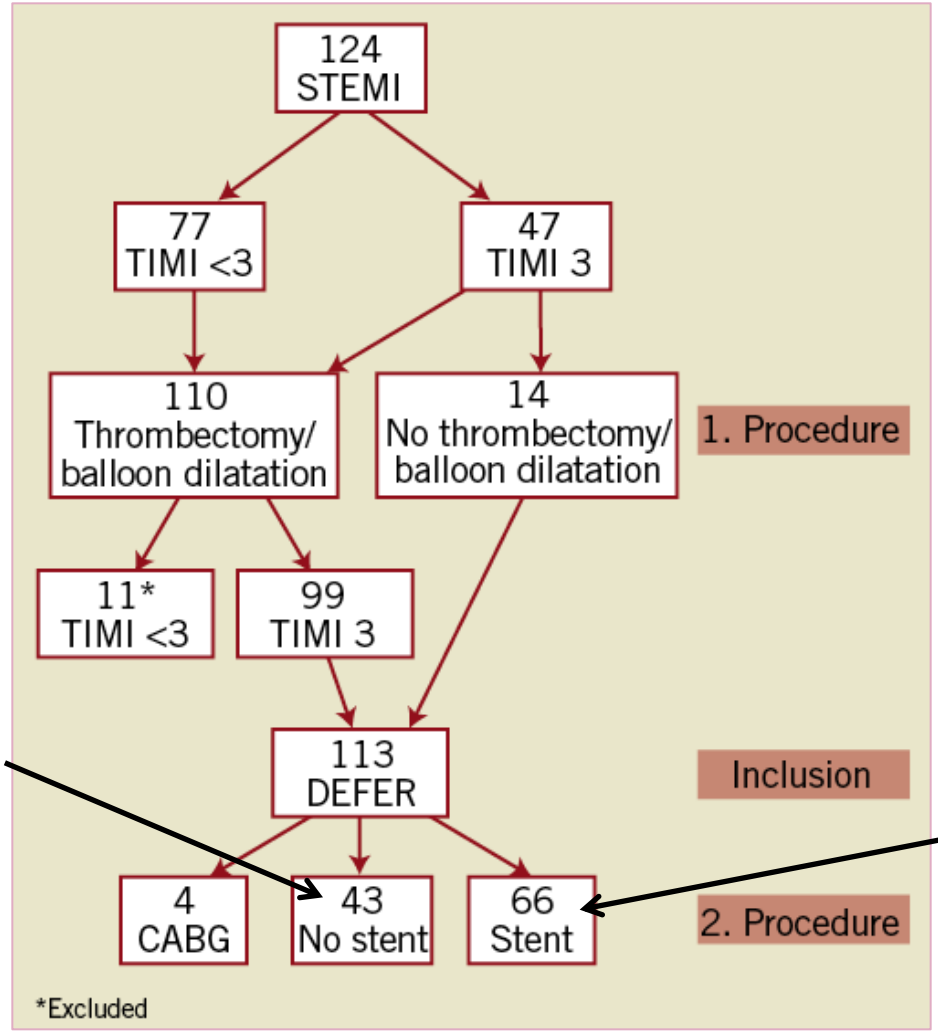
Cardiac death, re-admission heart failure (postcon vs. control)

Cardiac death, re-infarction, re-admission heart failure (Defer vs. Control)

Secondary

MRI measures

Deferred stenting in STEMI – a pilot



3 mo control angio

>35% stenosis

Eurointervention 2013;8:1126-1133

Deferred stenting in STEMI – a pilot

	N=32
Final infarct size, g	11.2 (10.2)
Area at risk, g	48.8 (22.2)
LV mass, g	170.0 (40.8)
LVEF baseline, %	54.2 (9.4)
LVEF 3 months, %	64.9 (7.7)*
Final infarct size / area at risk, %	20.9 (16.6)
Final infarct size / LV mass, %	6.3 (5.2)
Myocardial salvage index	0.79 (0.17)

Mean values (SD); LV: left ventricular; EF: ejection fraction; *p <0.05 compared with LVEF baseline

Eurointervention 2013;8:1126-1133

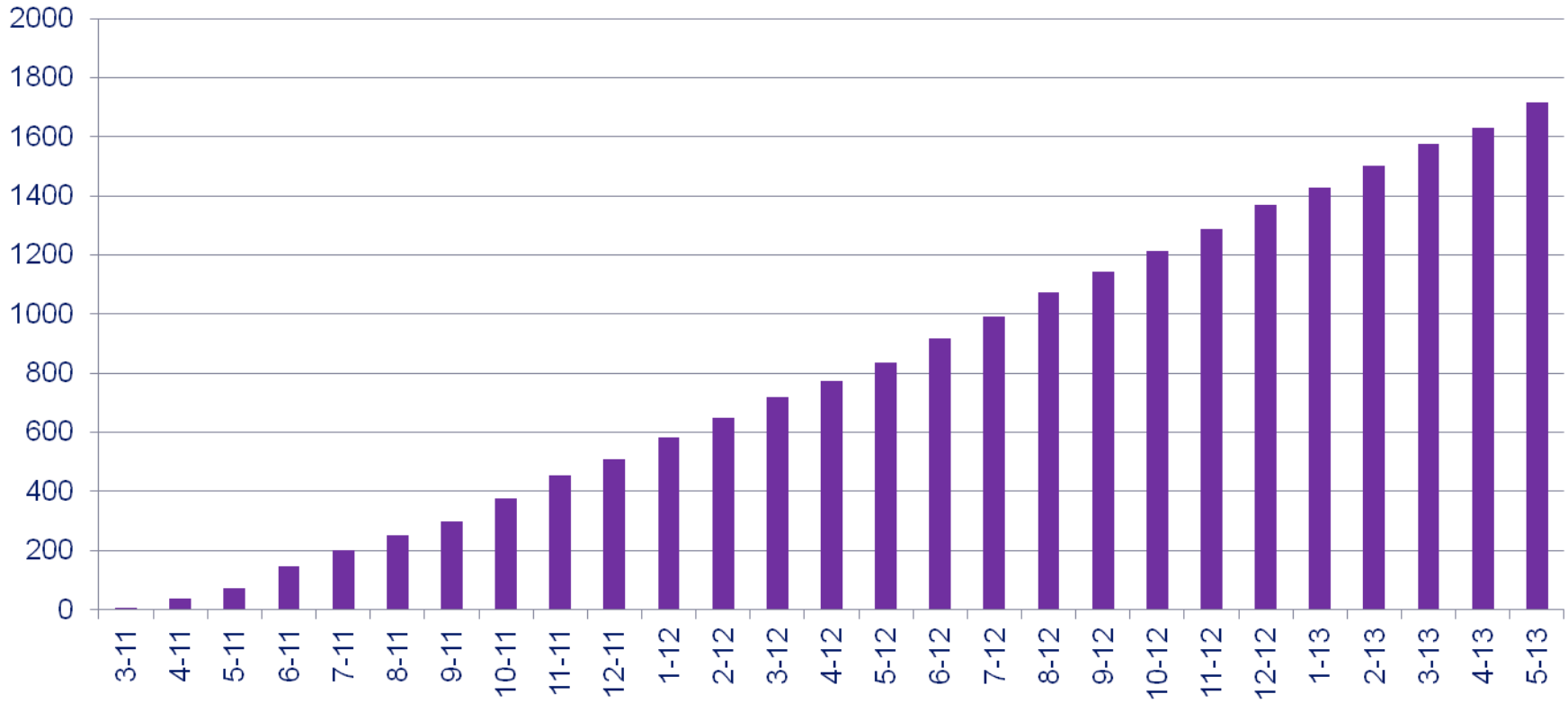
Deferred stenting in STEMI – a pilot

	n	Exenatide	*n*	Placebo	*P*-value
Overall study population					
Salvage index[a]	54	0.71 ± 0.13	51	0.62 ± 0.16	0.003
Infarct size (g)/area at risk (g)	54	0.30 ± 0.15	51	0.39 ± 0.15	0.003
Area at risk (g)	54	42 ± 21	51	39 ± 14	0.43
Final infarct size (g)	60	13 ± 9	57	17 ± 14	0.11
Final infarct size (%LV)	60	11 ± 7	57	12 ± 6	0.33
LVEF 3 months (%)	60	55 ± 9	57	55 ± 11	0.82
Anterior infarct location[b]					
Salvage index[a]	20	0.74 ± 0.11	21	0.62 ± 0.18	0.023
Infarct size (g)/area at risk (g)	20	0.27 ± 0.12	21	0.39 ± 0.19	0.024
Area at risk (g)	20	53 ± 24	21	45 ± 17	0.14
Final infarct size (g)	23	17 ± 11	25	21 ± 19	0.32
Final infarct size (%LV)	23	13 ± 9	25	14 ± 8	0.76
LVEF 3 months (%)	23	55 ± 11	25	51 ± 14	0.27
Non-anterior infarct location[b]					
Salvage index[a]	34	0.69 ± 0.13	30	0.63 ± 0.13	0.05
Infarct size (g)/area at risk (g)	34	0.32 ± 0.14	30	0.39 ± 0.13	0.05
Area at risk (g)	34	34 ± 11	30	35 ± 11	0.99
Final infarct size (g)	37	11 ± 7	32	14 ± 6	0.18
Final infarct size (%LV)	37	10 ± 6	32	11 ± 5	0.19

Lønborg et al. EHJ 2012;33:1491-1499

Included patients May 2013

Total 1715



"DANAMI-4"

- Remote conditioning
- ”KONDI 2”

CONCLUSIONS

- Recent studies from Danish registries confirm the risks associated with triple therapy in patients after MI as well as in patients with chronic atrial fibrillation who suffers MI or undergo PCI
- These results confirm the findings from the “small” randomised WOEST Trial

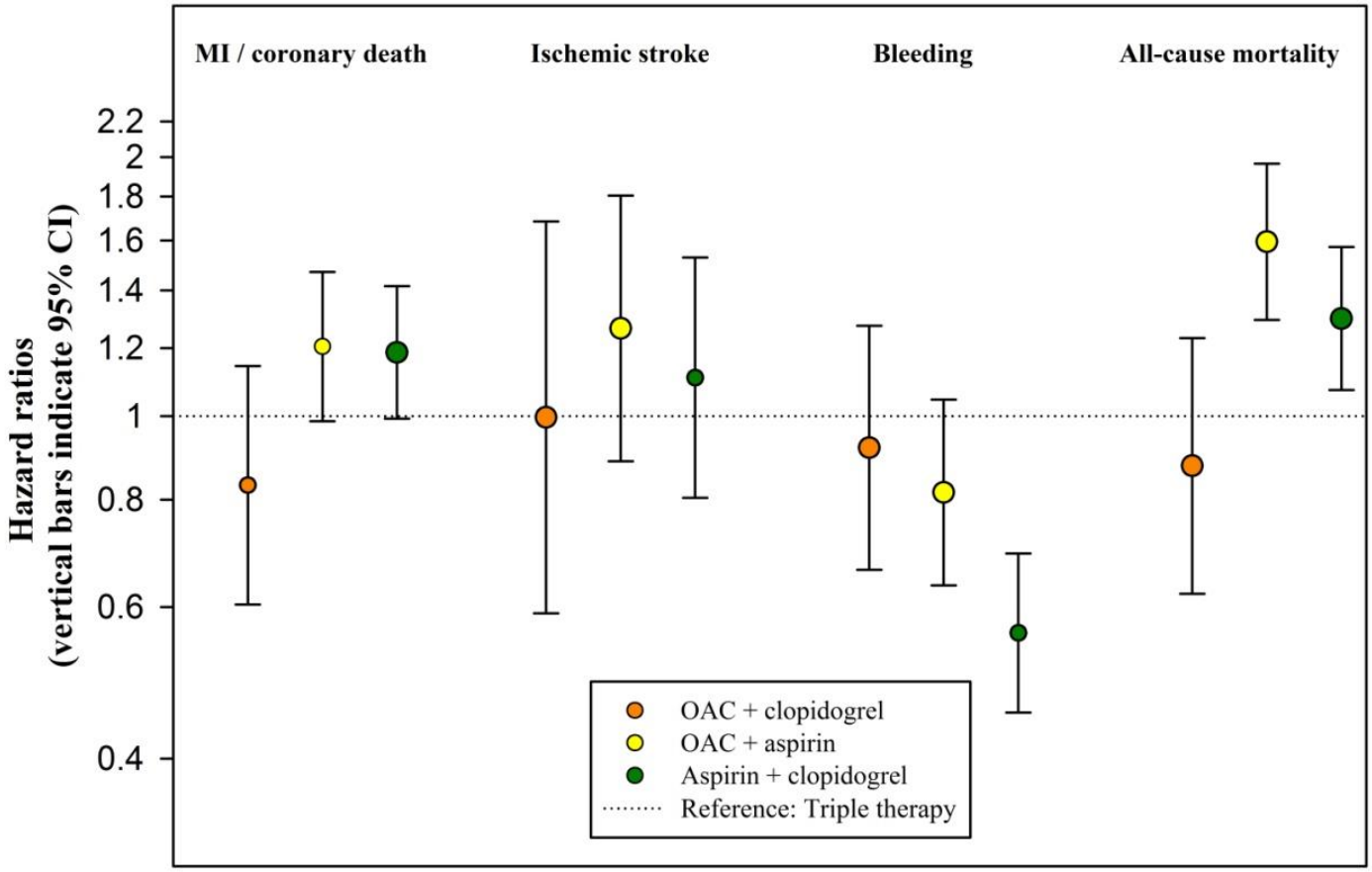
CONCLUSIONS

- No re-flow is associated with a poor clinical outcome
- Mechanical conditioning and deferred stent strategy are promising concepts in reducing myocardial injury in acute infarction
- Clinical studies are needed to see whether surrogate markers can be translated into clinical endpoints


Thank you for your attentio

Benefit and safety with triple therapy versus dual therapies according to baseline antithrombotic treatment regimen

Triple therapy is used as reference (hazard ratio=1.00).



Rationale DANAMI-3

1. Reach a clinical endpoint with respect to mechanical postconditioning

2. Test deferred stent strategi

3. Randomise MVD