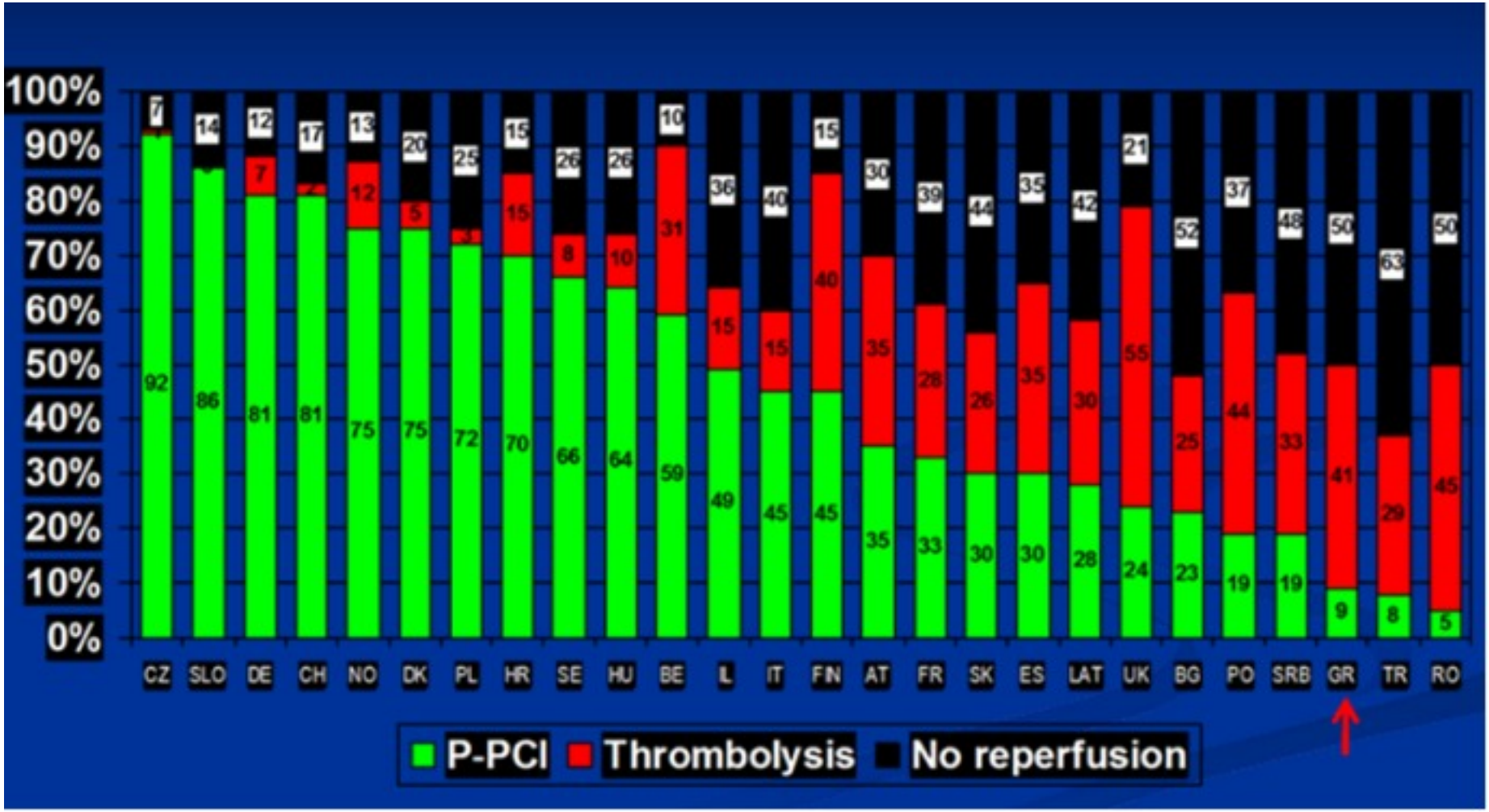
ΠΡΩΤΟΓΕΝΗΣ ΑΓΓΕΙΟΠΛΑΣΤΙΚΗ

Δρ Ιωαννης Ζαριφης

Mr Registry!!

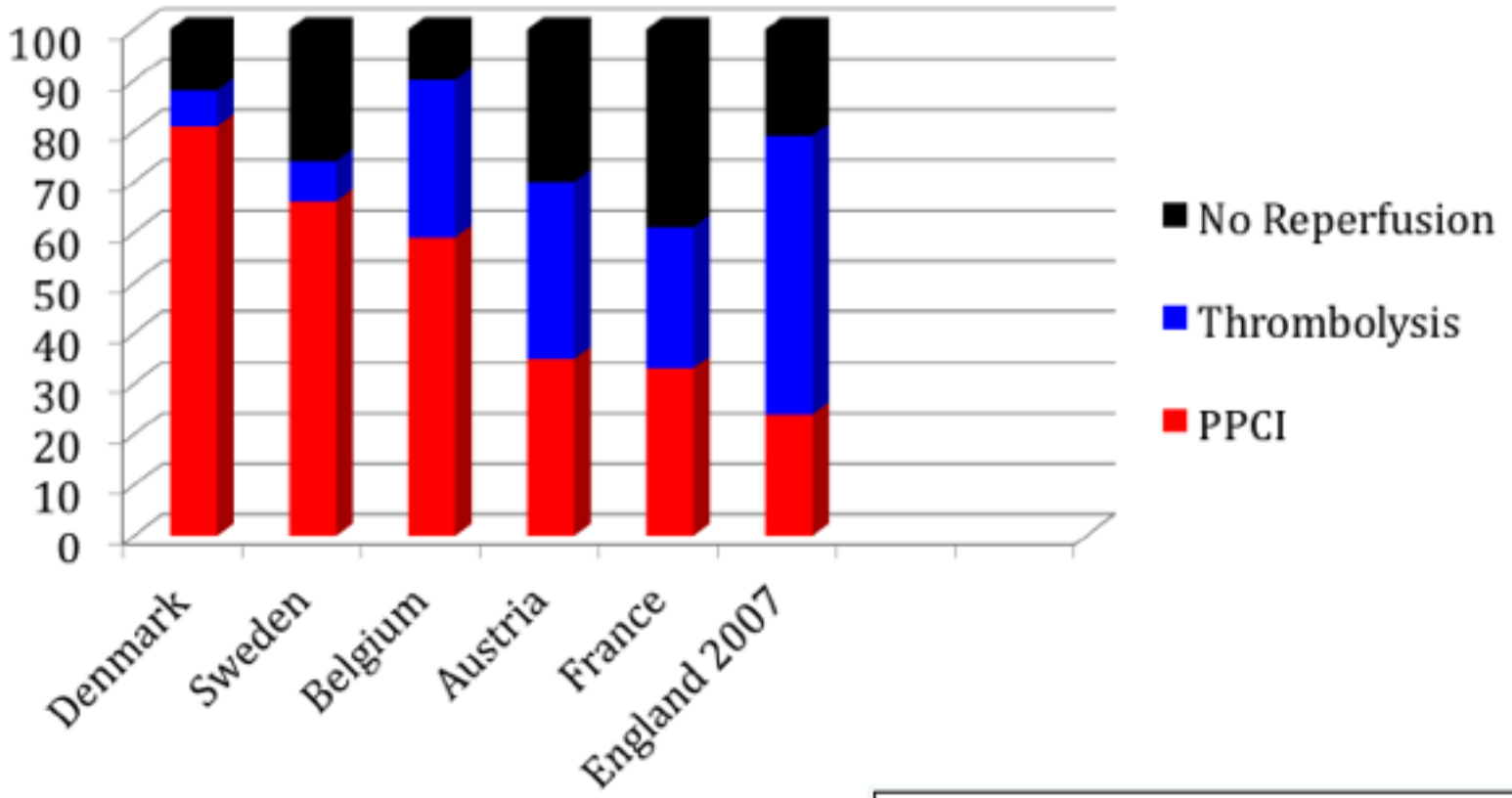
Ευρωπαικά στατιστικά στοιχεία για αντιμετώπιση STEMI



HeartImprovement

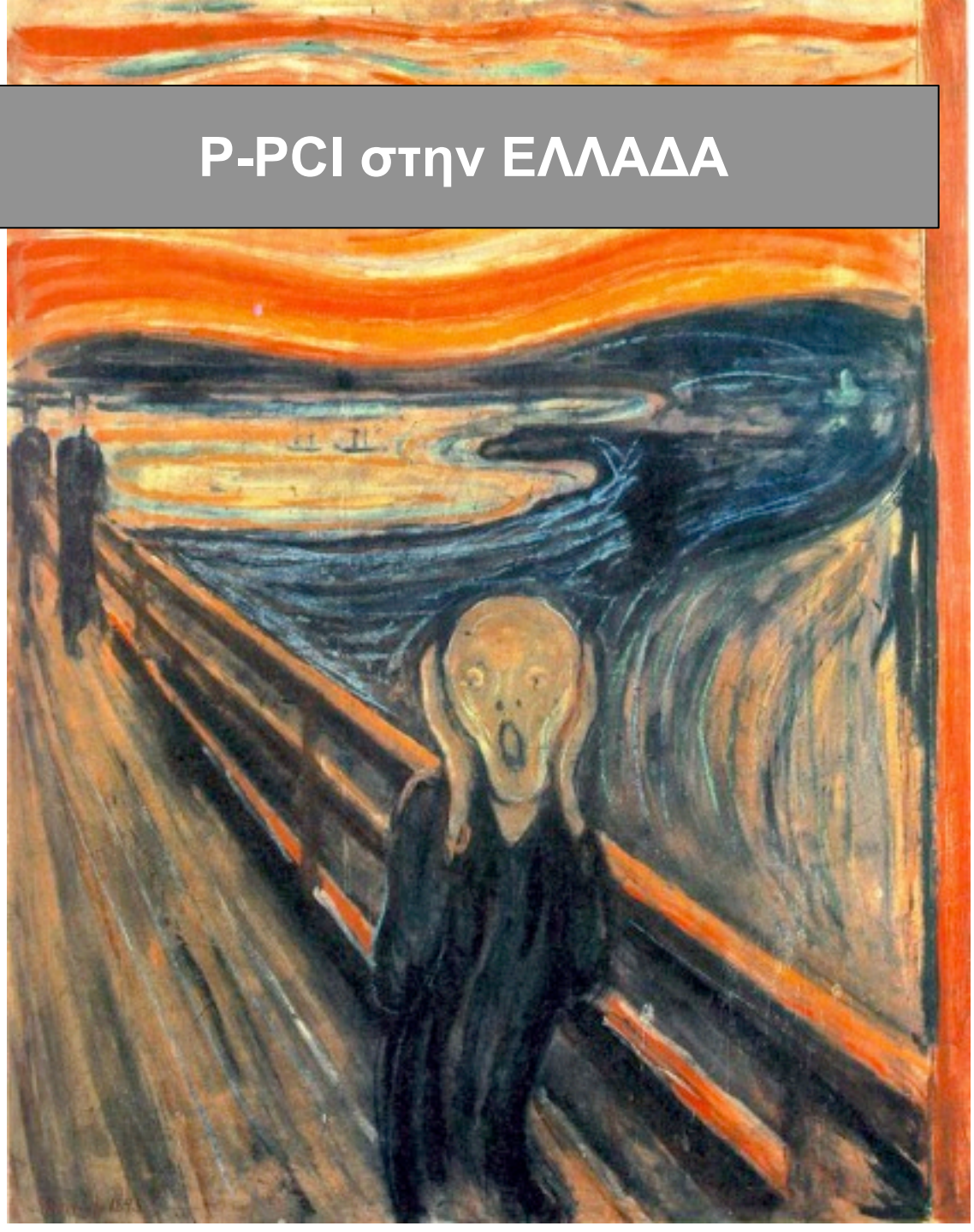
NHS Improvement NHS

REPERFUSION TREATMENT FOR STEMI IN EUROPE

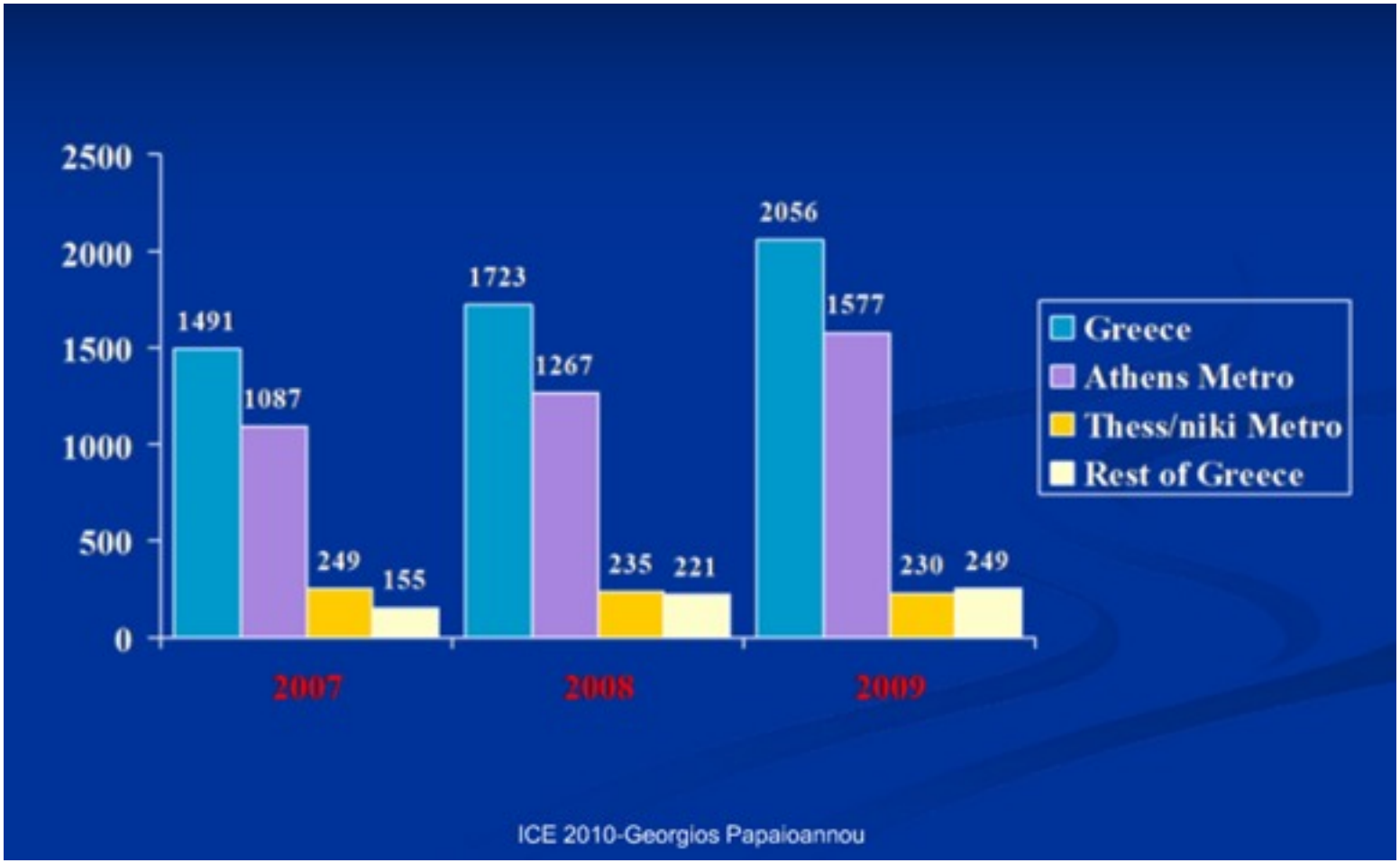


Eur Heart J 2010;31:943-957

P-PCI στην ΕΛΛΑΔΑ



PPCI στην Ελλάδα 2007-09



2011 ACCF/AHA/SCAI Guideline for Percutaneous Coronary

A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines and the Society for Cardiovascular Angiography and Interventions

PCI in Specific Clinical Situations: STEMI

PCI in Specific Clinical Situations: STEMI–Coronary Angiography Strategies in STEMI

A strategy of immediate coronary angiography with intent to perform PCI (or emergency CABG) in patients with STEMI is recommended for

a.Patients who are candidates for primary PCI.

b.Patients with severe heart failure or cardiogenic shock who are suitable candidates for revascularization.

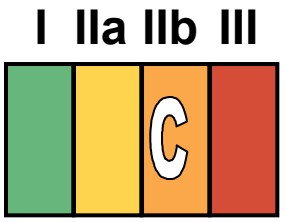
PCI in Specific Clinical Situations: STEMI–Coronary Angiography Strategies in STEMI (cont.)

A strategy of immediate coronary angiography (or transfer for immediate coronary angiography) with intent to perform PCI is reasonable for patients with STEMI, a moderate to large area of myocardium at risk, and evidence of failed fibrinolysis.

PCI in Specific Clinical Situations: STEMI–Coronary Angiography Strategies in STEMI (cont.)

A strategy of coronary angiography (or transfer for coronary angiography) 3 to 24 hours after initiating fibrinolytic therapy with intent to perform PCI is reasonable for hemodynamically stable patients with STEMI and evidence for successful fibrinolysis when angiography and revascularization can be performed as soon as logistically feasible in this time frame.

PCI in Specific Clinical Situations: STEMI–Coronary Angiography Strategies in STEMI (cont.)



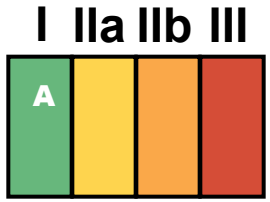
A strategy of coronary angiography performed before hospital discharge might be reasonable in stable patients with STEMI who did not undergo cardiac catheterization within 24 hours of STEMI onset.

PCI in Specific Clinical Situations: STEMI–Coronary Angiography Strategies in STEMI (cont.)

No Benefit

A strategy of coronary angiography with intent to perform PCI is not recommended in patients with STEMI in whom the risks of revascularization are likely to outweigh the benefits or when the patient or designee does not want invasive care.

PCI in Specific Clinical Situations: STEMI–Primary PCI of the Infarct Artery



Primary PCI should be performed in patients within 12 hours of onset of STEMI.

Primary PCI should be performed in patients with STEMI presenting to a hospital with PCI capability within 90 minutes of first medical contact as a systems goal.

PCI in Specific Clinical Situations: STEMI–Primary PCI of the Infarct Artery (cont.)

Primary PCI should be performed in patients with STEMI presenting to a hospital without PCI capability within 120 minutes of first medical contact as a systems goal.

Primary PCI should be performed in patients with STEMI who develop severe heart failure or cardiogenic shock and are suitable candidates for revascularization as soon as possible, irrespective of time delay.

PCI in Specific Clinical Situations: STEMI–Primary PCI of the Infarct Artery (cont.)

Primary PCI should be performed as soon as possible in patients with STEMI and contraindications to fibrinolytic therapy with ischemic symptoms for <12 hours.

Primary PCI is reasonable in patients with STEMI if there is clinical and/or electrocardiographic evidence of ongoing ischemia between 12 and 24 hours after symptom onset.

PCI in Specific Clinical Situations: STEMI–Primary PCI of the Infarct Artery (cont.)

Primary PCI might be considered in asymptomatic patients with STEMI and higher risk presenting between 12 and 24 hours after symptom onset.

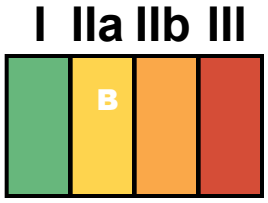
Harm

PCI should not be performed in a noninfarct artery at the time of primary PCI in patients with STEMI without hemodynamic compromise.

Delayed or Elective PCI in Patients with STEMI

PCI is reasonable in patients with STEMI and clinical evidence for fibrinolytic failure or infarct artery reocclusion.

PCI is reasonable in patients with STEMI and a patent infarct artery 3 to 24 hours after fibrinolytic therapy.



PCI is reasonable in patients with STEMI who demonstrate ischemia on noninvasive testing.

Delayed or Elective PCI in Patients with STEMI

PCI of a hemodynamically significant stenosis in a patent infarct artery >24 hours after STEMI may be considered as part of an invasive strategy.

PCI of a totally occluded infarct artery >24 hours after STEMI should not be performed in asymptomatic patients with 1- or 2-vessel disease if patients are hemodynamically and electrically stable and do not have evidence of severe ischemia.

PCI in Specific Clinical Situations: Cardiogenic Shock

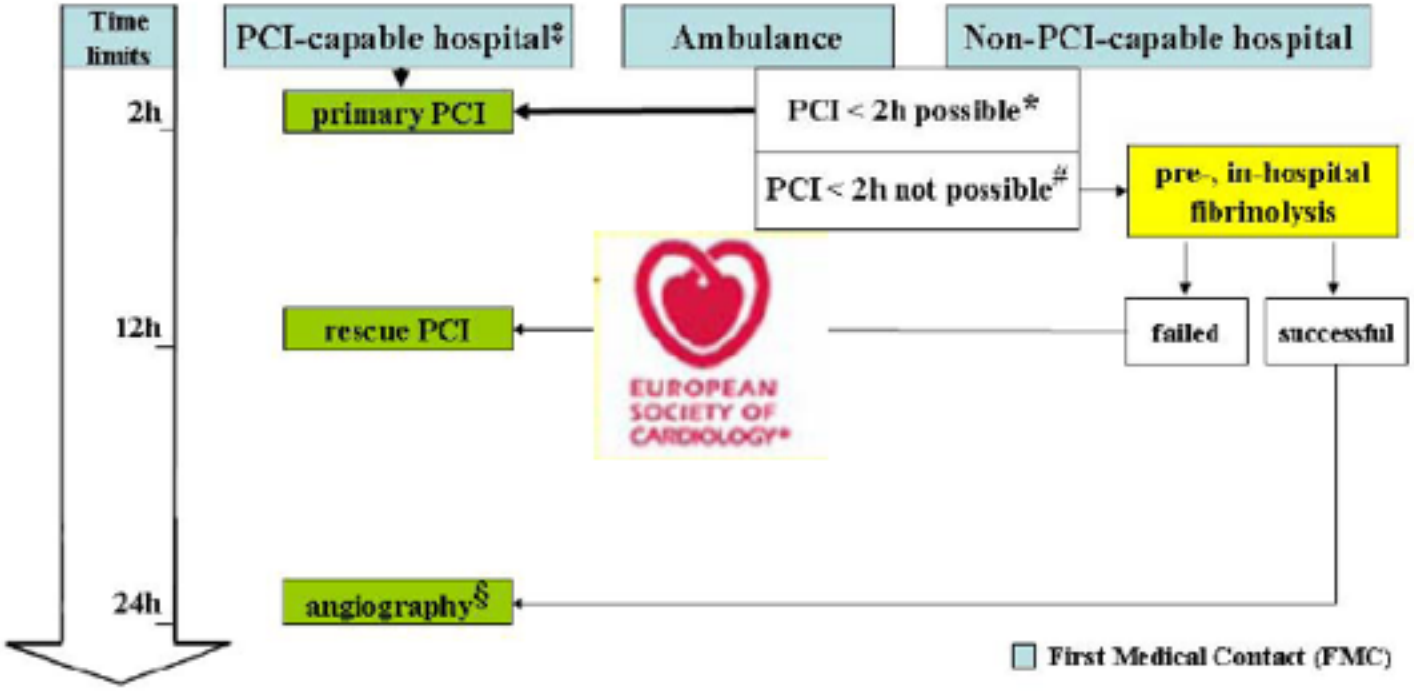
PCI is recommended for patients with acute MI who develop cardiogenic shock and are suitable candidates.

A hemodynamic support device is recommended for patients with cardiogenic shock after STEMI who do not quickly stabilize with pharmacologic therapy.

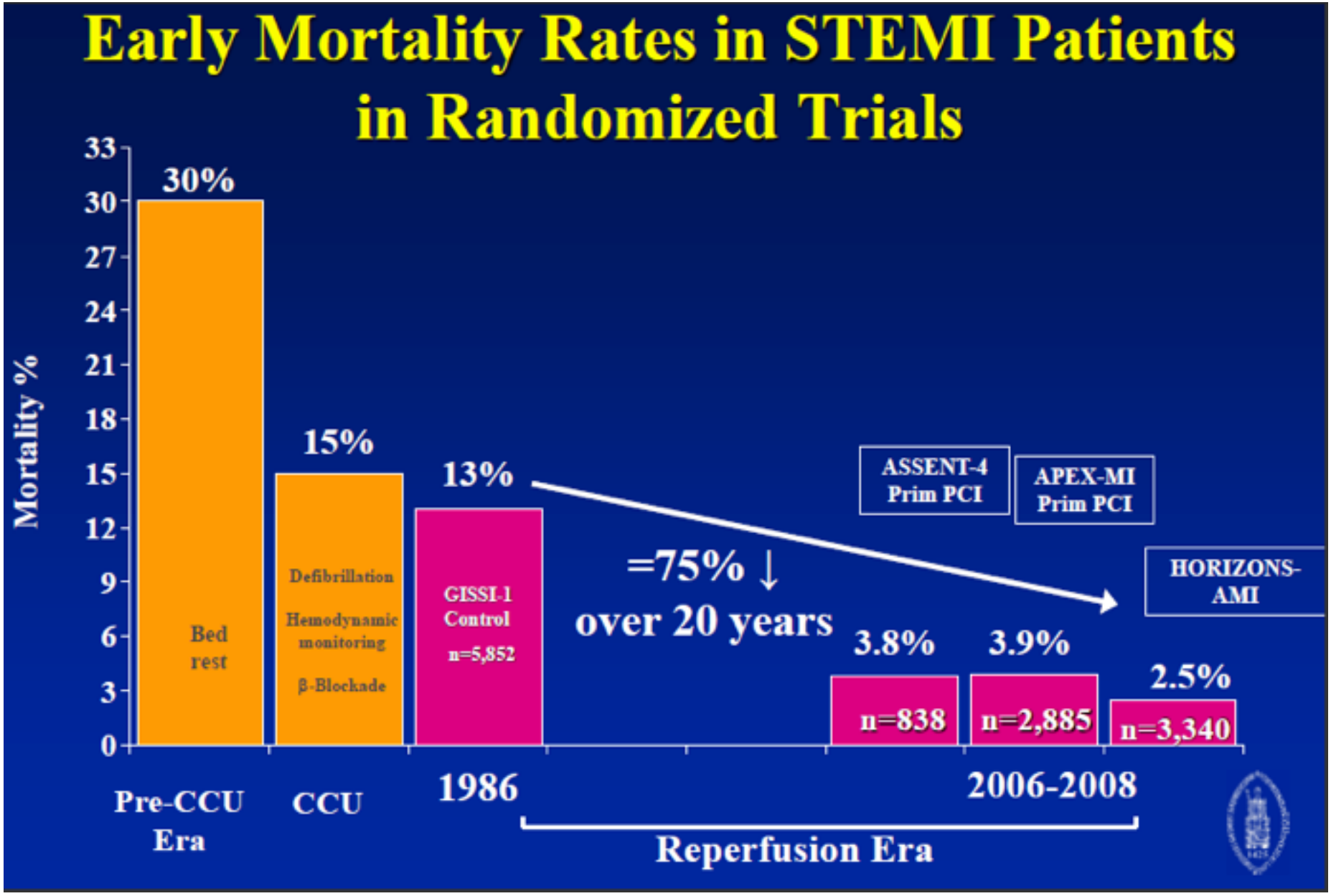
Reperfusion Therapy

Recommendations	Class	LOE
▪ Indicated in all pts with chest pain/discomfort of < 12 h and with persistent ST-segment elevation or (presumed) new LBBB	I	A
▪ Should be considered if there is clinical and/or ECG evidence of ongoing ischaemia if symptoms started > 12 h before	IIa	C
▪ Reperfusion (PCI) in stable pts presenting > 12 h to 24 h after symptom onset	IIb	B
▪ PCI of totally occluded infarct artery in stable pts > 24 h after symptom onset without signs of ischaemia	III	B

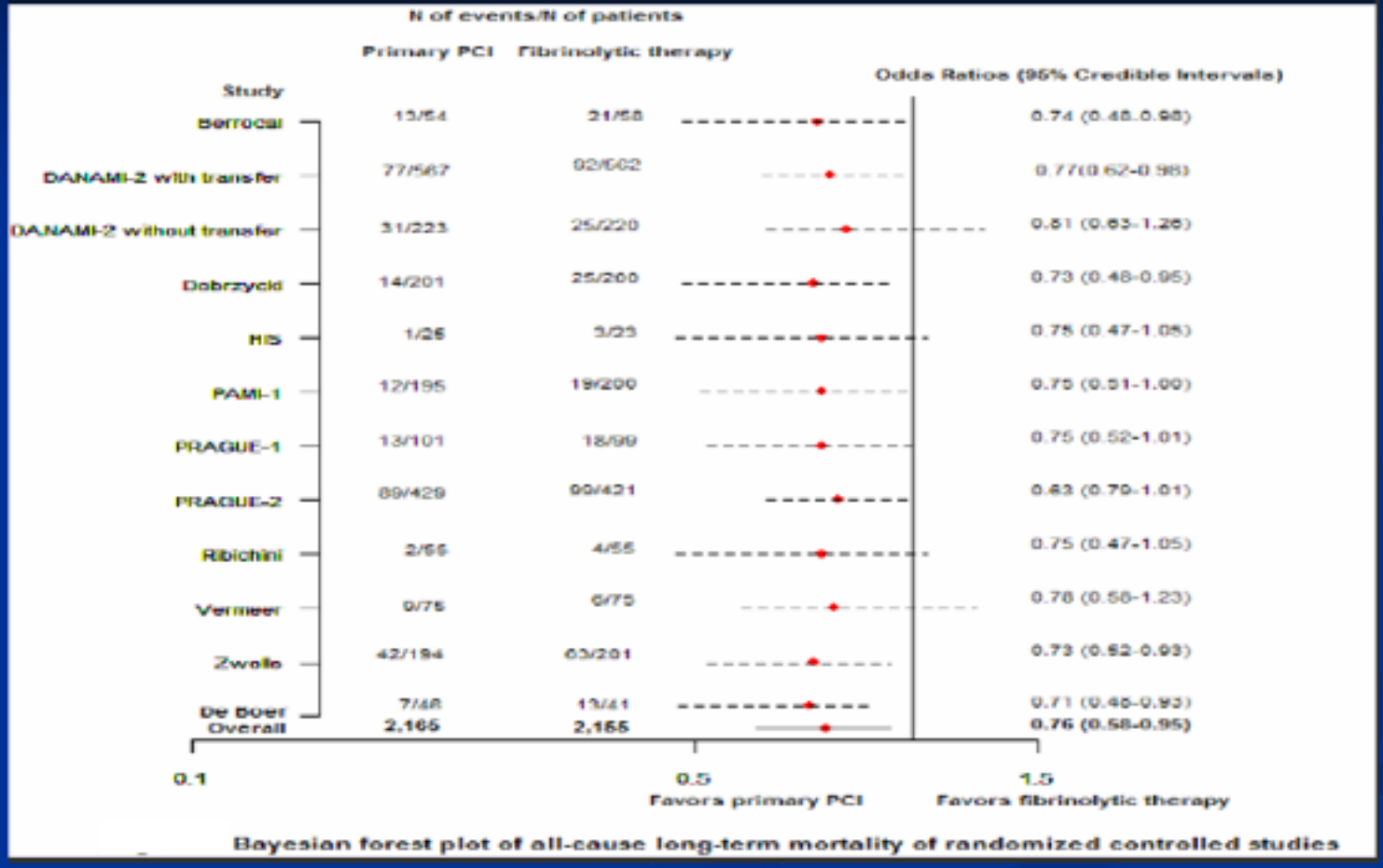
Reperfusion Strategies



Early Mortality Rates in STEMI Patients in Randomized Trials



Long-term mortality in RCTs

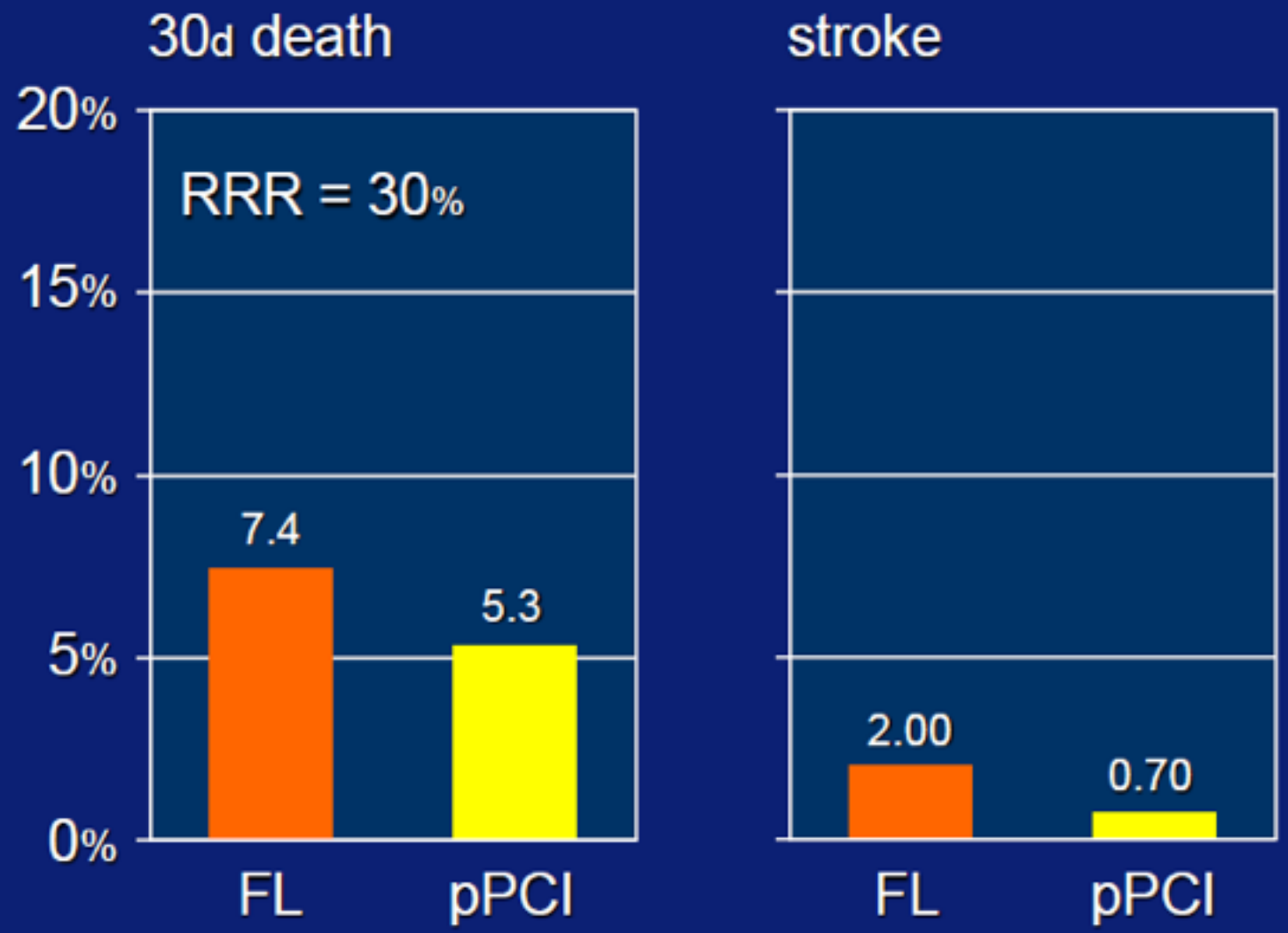


Bayesian forest plot of all-cause long-term mortality of randomized controlled studies

Huynch T et al. Circulation 2009;119:3101.

Meta-analysis (N=7,000)

Erasmus MC



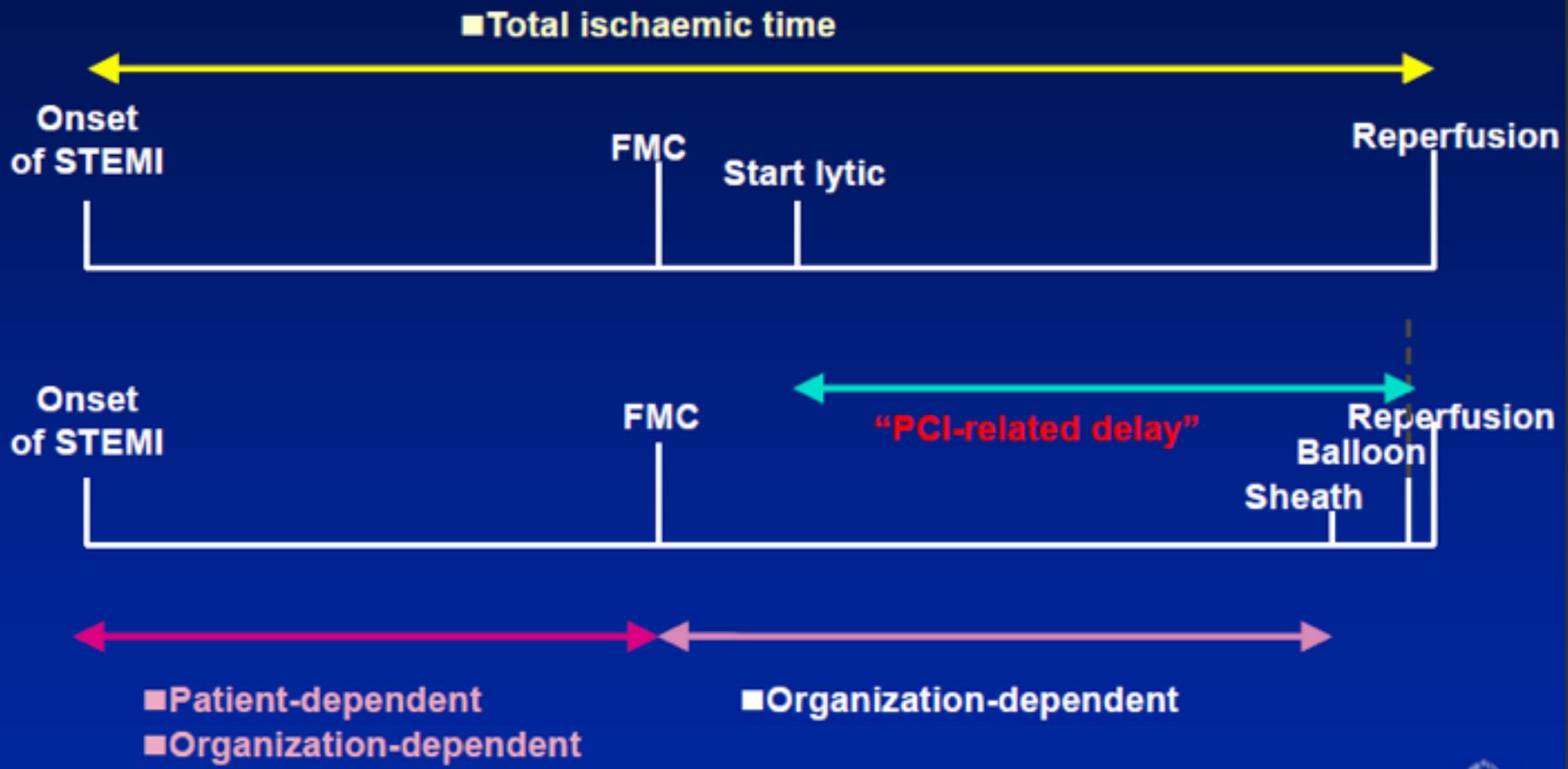
When is FL better than pPCI?

Erasmus MC

- Estimate mortality & bleeding risk if reperfusion therapy would not be installed
- Estimate relative risk reductions by PhR and PCI
- Estimate absolute risks after PhR and PCI
- Take local and regional logistics into account
- Choose

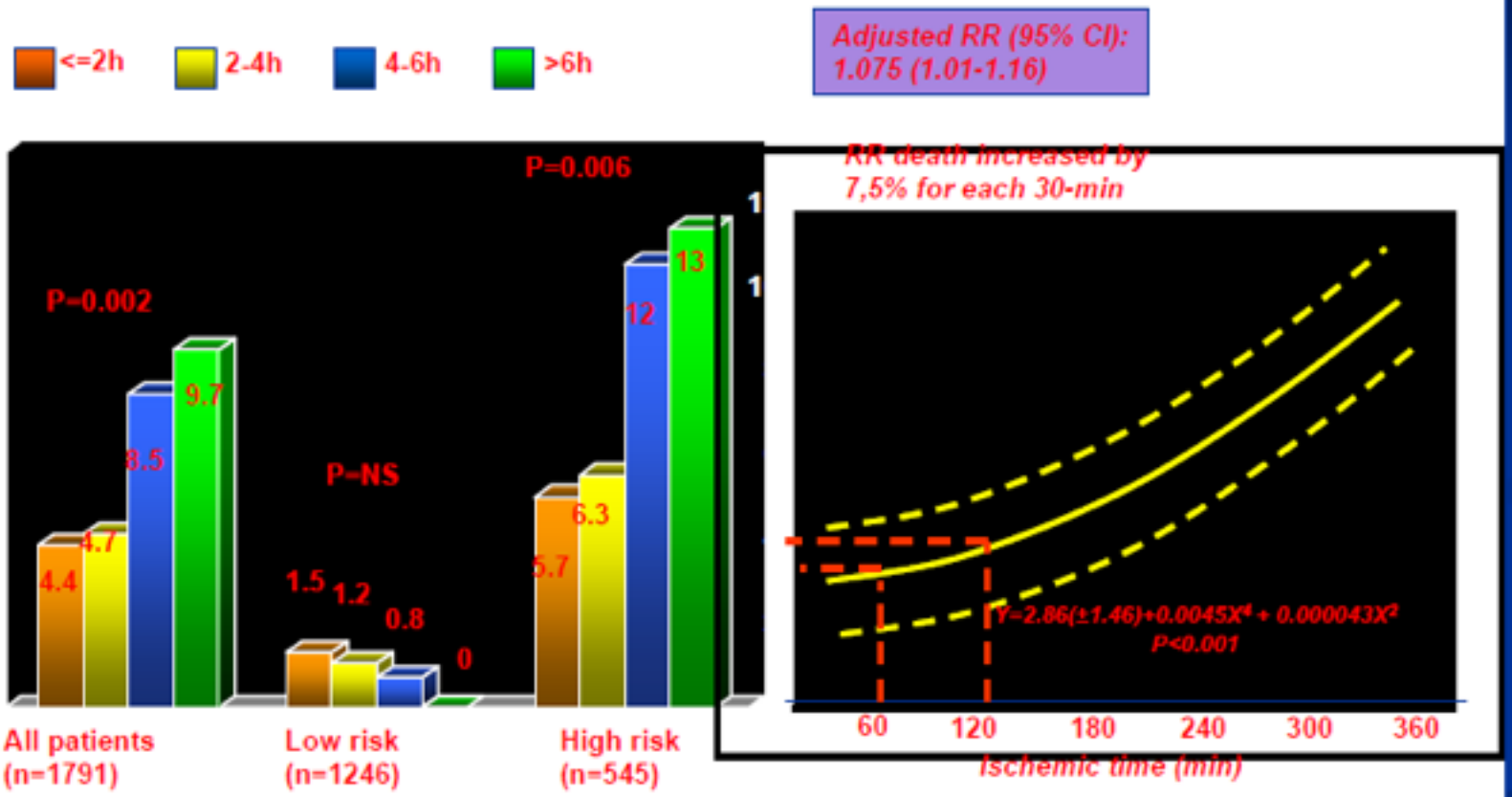
ΚΡΙΣΙΜΑ ΖΗΤΗΜΑΤΑ

Reperfusion Therapy: Important Time Lines



FMC:First Medical Contact or
First Diagnostic ECG

Are time delays to PCI NOT that important? Symptom to balloon and 1-year Mortality (%)

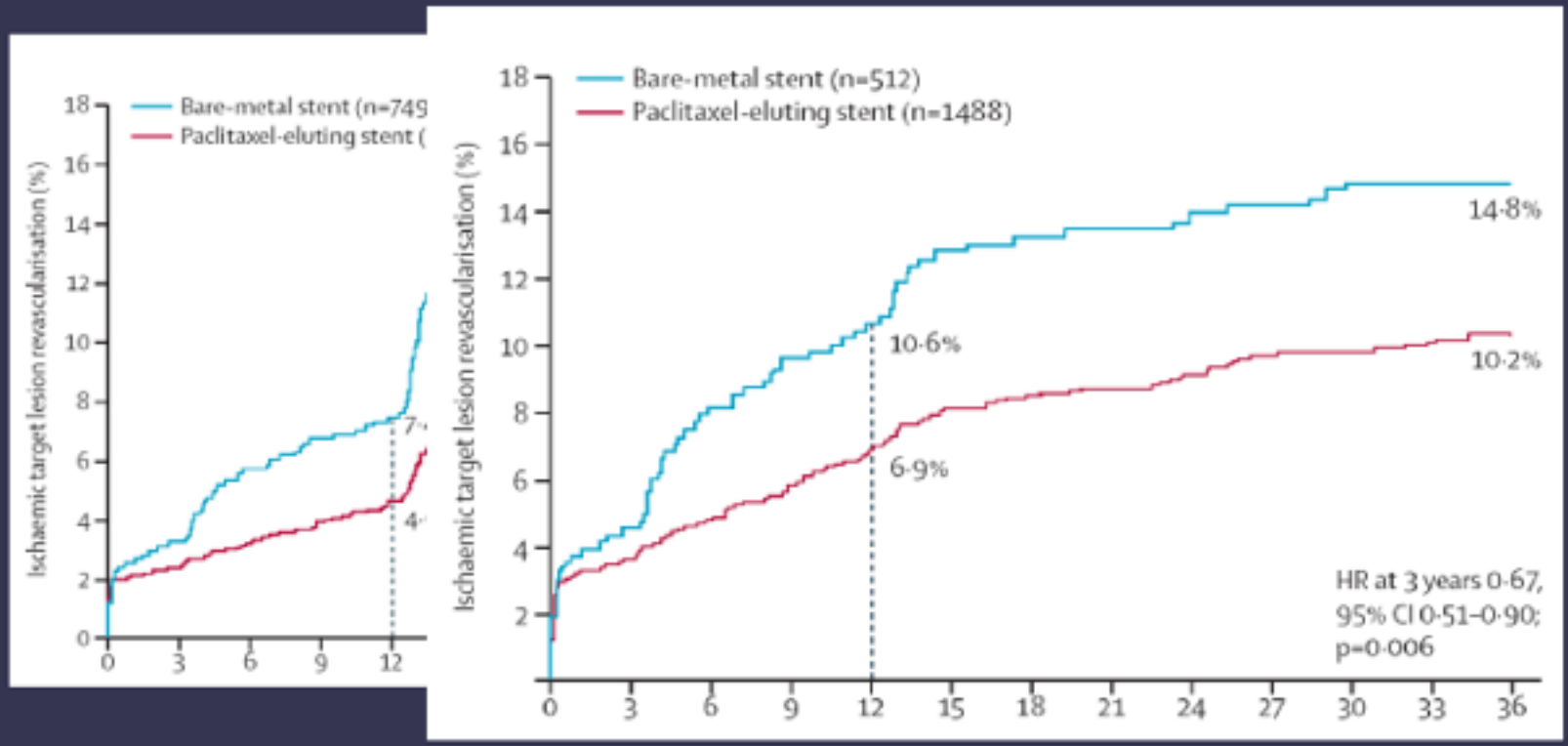


Every min delay counts not only for lytics but also for PCI

De Luca et al. JACC 2003

De Luca, Suryapranata Circulation 2004

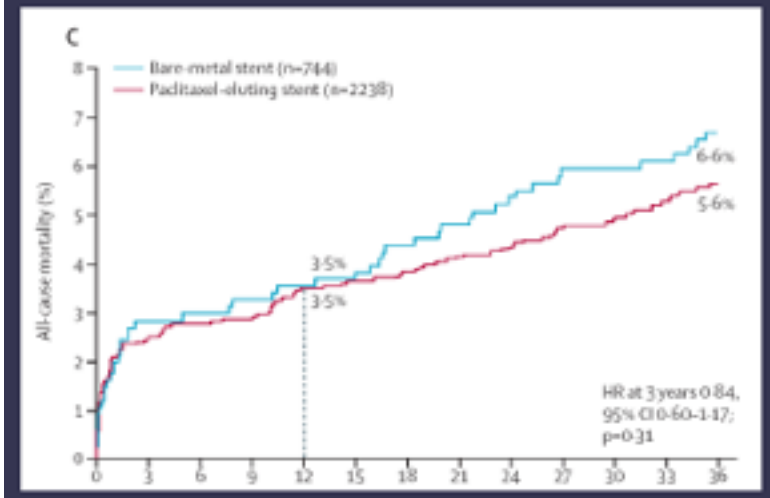
Horizons AMI: 3 Yr F-UP



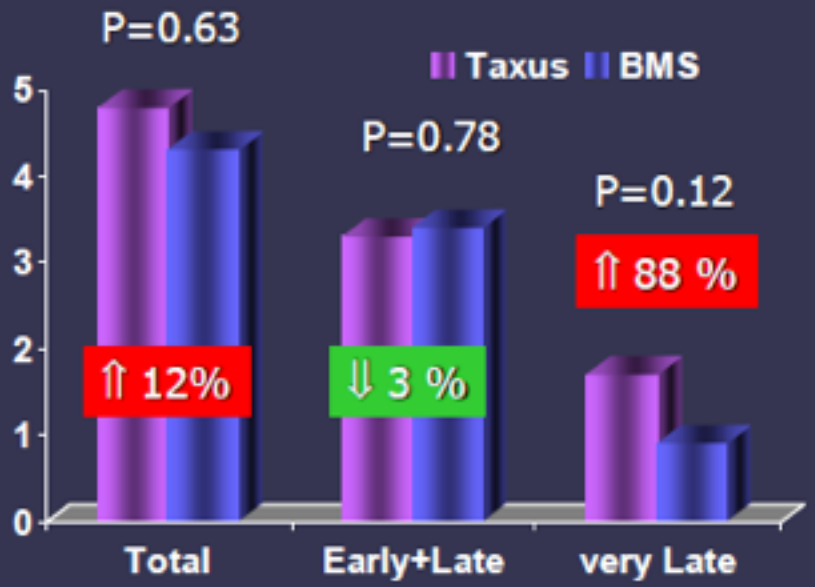
Lancet 2011; 377: 2193–204

Horizons AMI: 3 Yr F-UP

All Cause Mortality



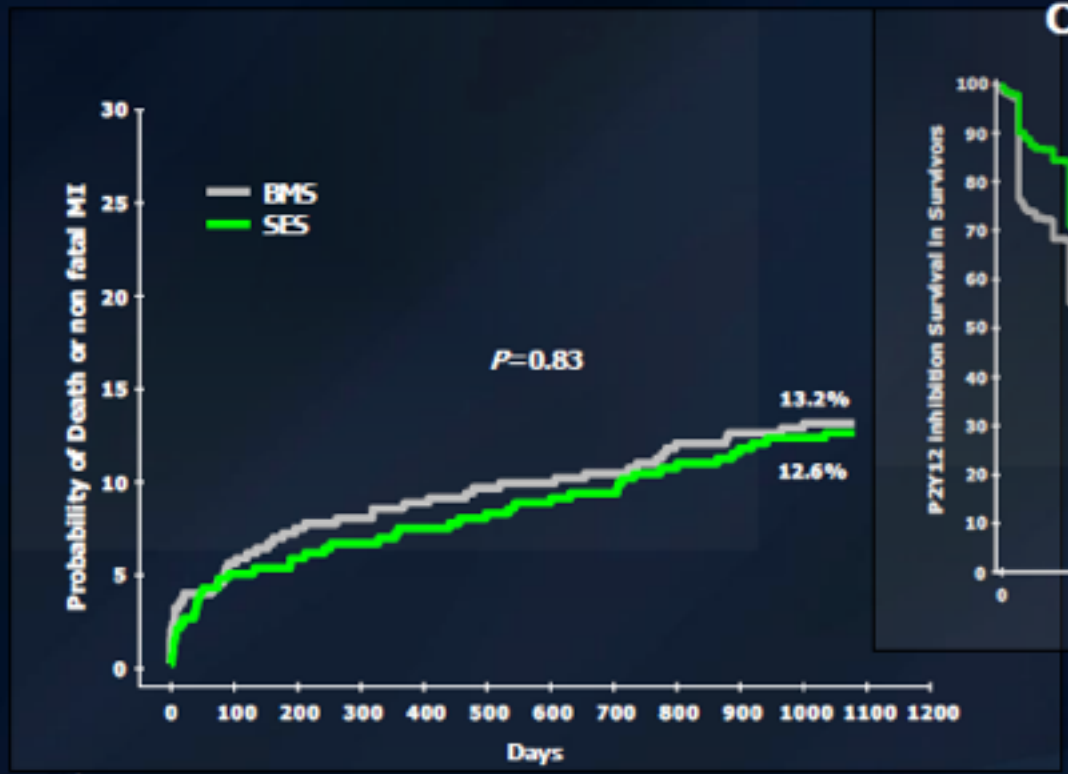
Definite-Probable ST



Lancet 2011; 377: 2193–204

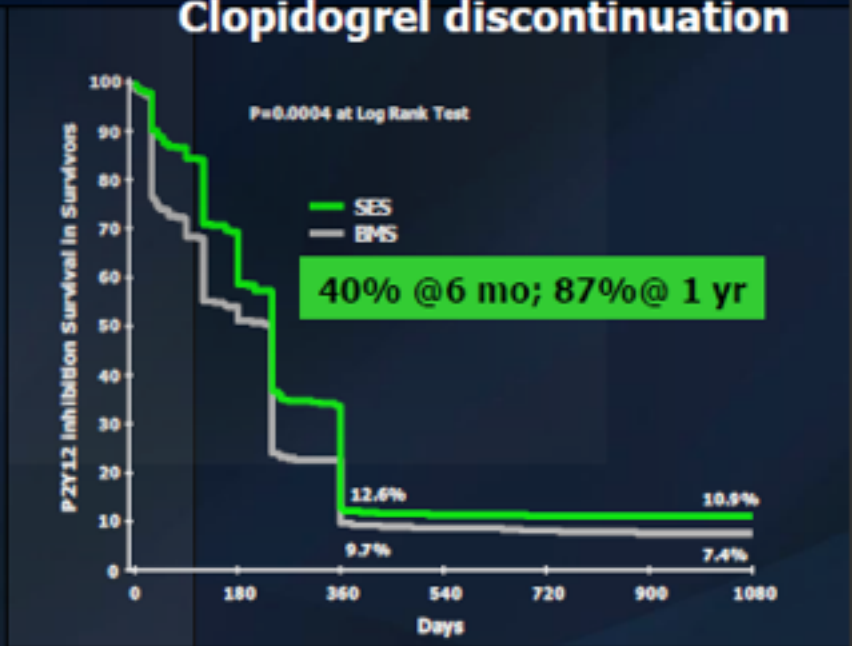
3-year Outcomes

All-cause Death or MI



No. at Risk						
BMS	372	346	336	333	326	321
SES	372	348	339	333	325	321

Clopidogrel discontinuation



MULTISTRATEGY

3-year Outcomes

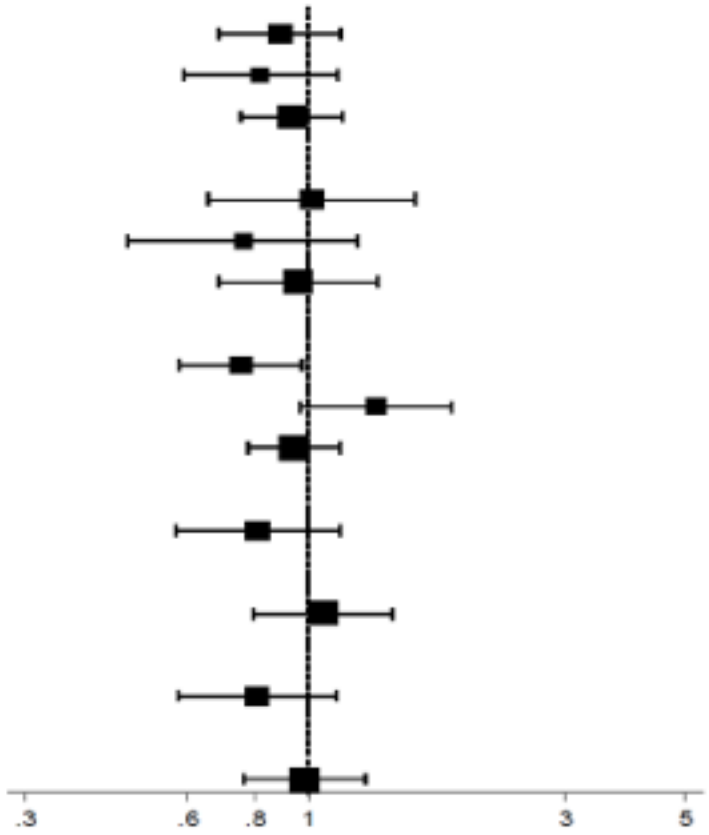
Stent Thrombosis

(CEC adjudicated)

MULTISTRATEGY

Risk of Ischemic Events and Stent Thrombosis Stratified According to Time and Stent Type (BMS vs DES) in STEMI

12 RCTs Comparing DES and BMS in 7,213 STEMI Patients



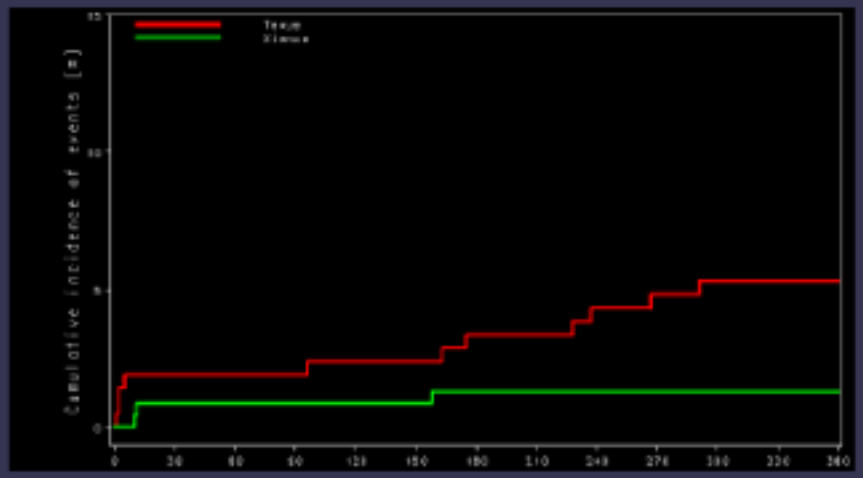
	RR (95% CI)
Death	
0 to 1 year	0.89 (0.68 - 1.15)
1 year to max FU	0.82 (0.59 - 1.13)
0 to max FU	0.93 (0.75 - 1.16)
Cardiac death	
0 to 1 year	1.02 (0.65 - 1.59)
1 year to max FU	0.76 (0.46 - 1.24)
0 to max FU	0.96 (0.68 - 1.35)
MI	
0 to 1 year	0.75 (0.58 - 0.98)
1 year to max FU	1.34 (0.97 - 1.84)
0 to max FU	0.94 (0.77 - 1.14)
Definite ST	
0 to 1 year	0.81 (0.57 - 1.14)
1 year to max FU	1.96 (1.10 - 3.48)
0 to max FU	1.06 (0.79 - 1.43)
Definite/ Probable ST	
0 to 1 year	0.80 (0.57 - 1.13)
1 year to max FU	2.01 (1.15 – 3.51)
0 to max FU	0.99 (0.76 - 1.28)

Räber, Windecker

COMPARE STUDY: Xience versus Taxus

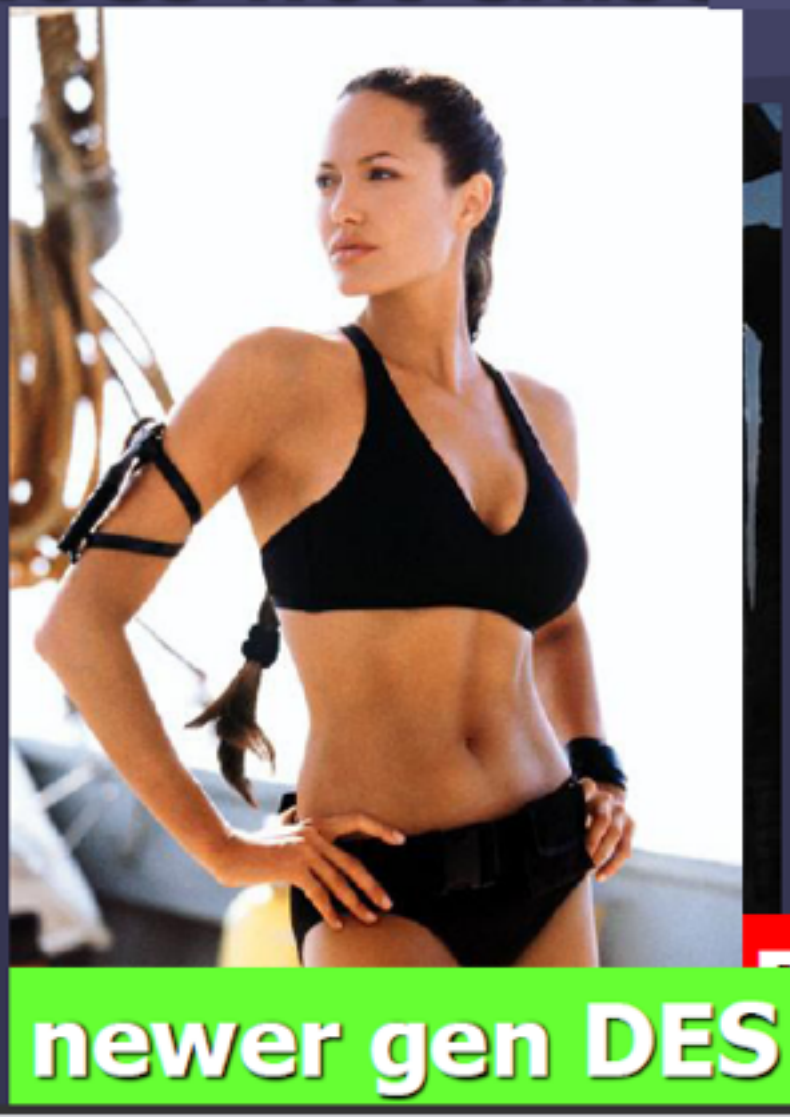
Compare Study
STEMI SUBSET

Clinically driven TVR



Stent Thrombosis prob/poss/def ARC

Perfection does not exist ?



Future (Interventional) Therapies and New Devices for STEMI in 2050

- Genes
- Stem cells
- Pharmacogenomics

What else ?

New Interventions or Devices

- Better stents
- Wireless remote monitoring of ischaemia in patients at high risk of recurrent MI
- Therapeutic hypopothermia (cardiac arrest)
- Mechanical LV unloading
- Improved thrombus removal

Remaining Problems Anno 2011

- Delay between symptom onset and call for medical help
- System delays for offering primary PCI
- Bleeding complications with lytic agents (elderly)
- High mortality/morbidity post discharge
- High prehospital mortality (sudden death)
- High mortality of cardiogenic shock

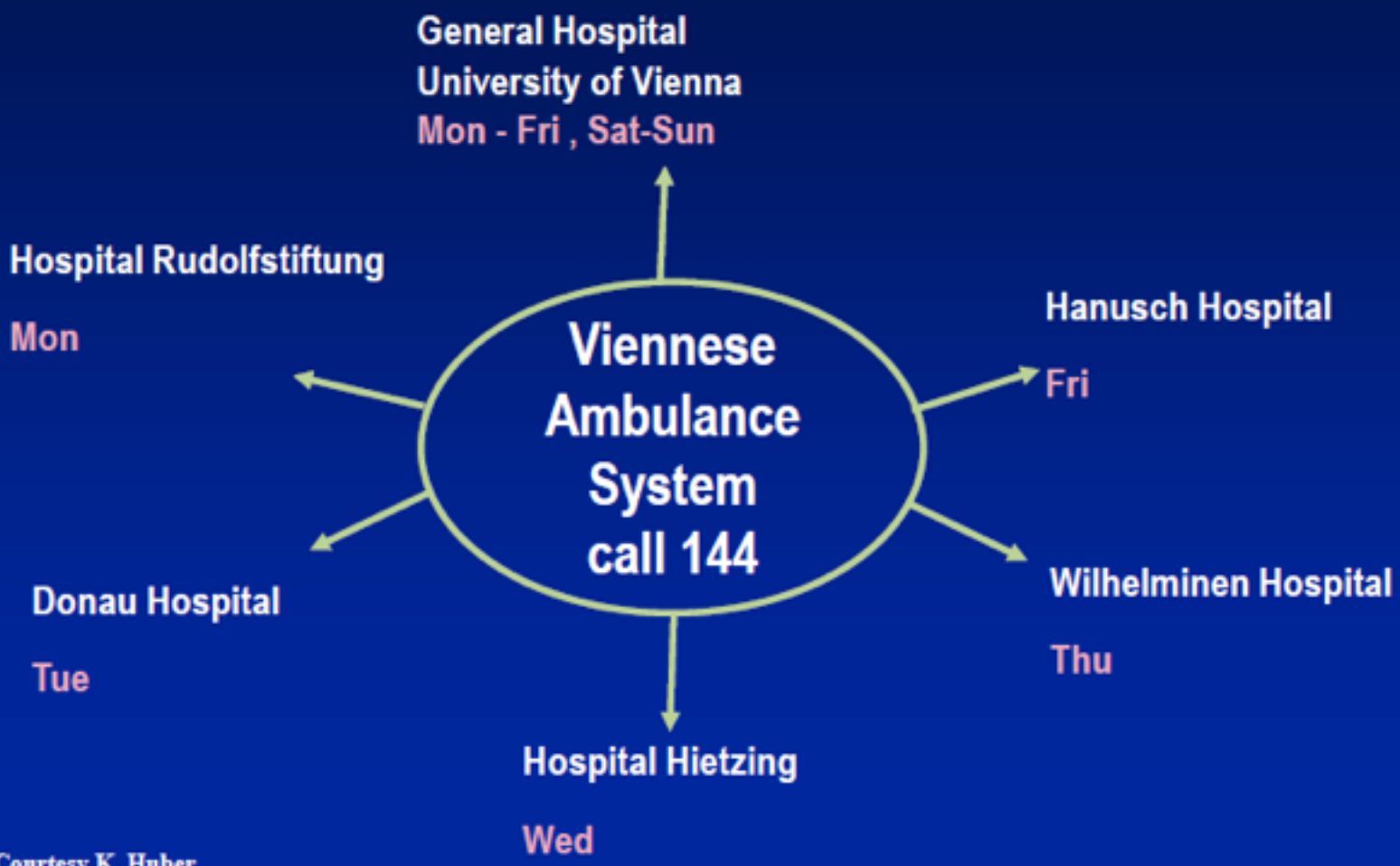
Shortening Delay
Onset of Symptoms-Medical Help

- New public campaign ????
  - -internet possibilities
  - -people more concerned about health

The Vienna model

all cath labs active between 07.00h and 16.00h

permanent availability of cath labs and teams during non-official catheter times



Courtesy K. Huber

ΜΟΝΤΕΛΛΟ ΘΕΣΣΑΛΟΝΙΚΗΣ

ΚΑΘΗΜΕΡΙΝΑ 8-14.00,
ΜΕΤΑ ΑΚΟΛΟΥΘΩΣ ΠΡΟΣ ΤΟ ΠΡΟΓΡΑΜΜΑ ΕΦΗΜΕΡΙΩΝ

State of NHS is medieval, says French minister

By Peter Foster

BRITAIN'S health service is in an "intolerable" state for a modern nation in the 21st century and is failing its citizens, according to the French minister of health.

Bernard Kouchner, the founder of the health charity Médecins Sans Frontières, gave his damning view that the NHS was "medieval" as the British Government pre-

resources, M Kouchner said, Britain would never succeed in bringing the NHS to an acceptable standard. "Progress in health will always cost more. The question is this: are you willing to pay more?"

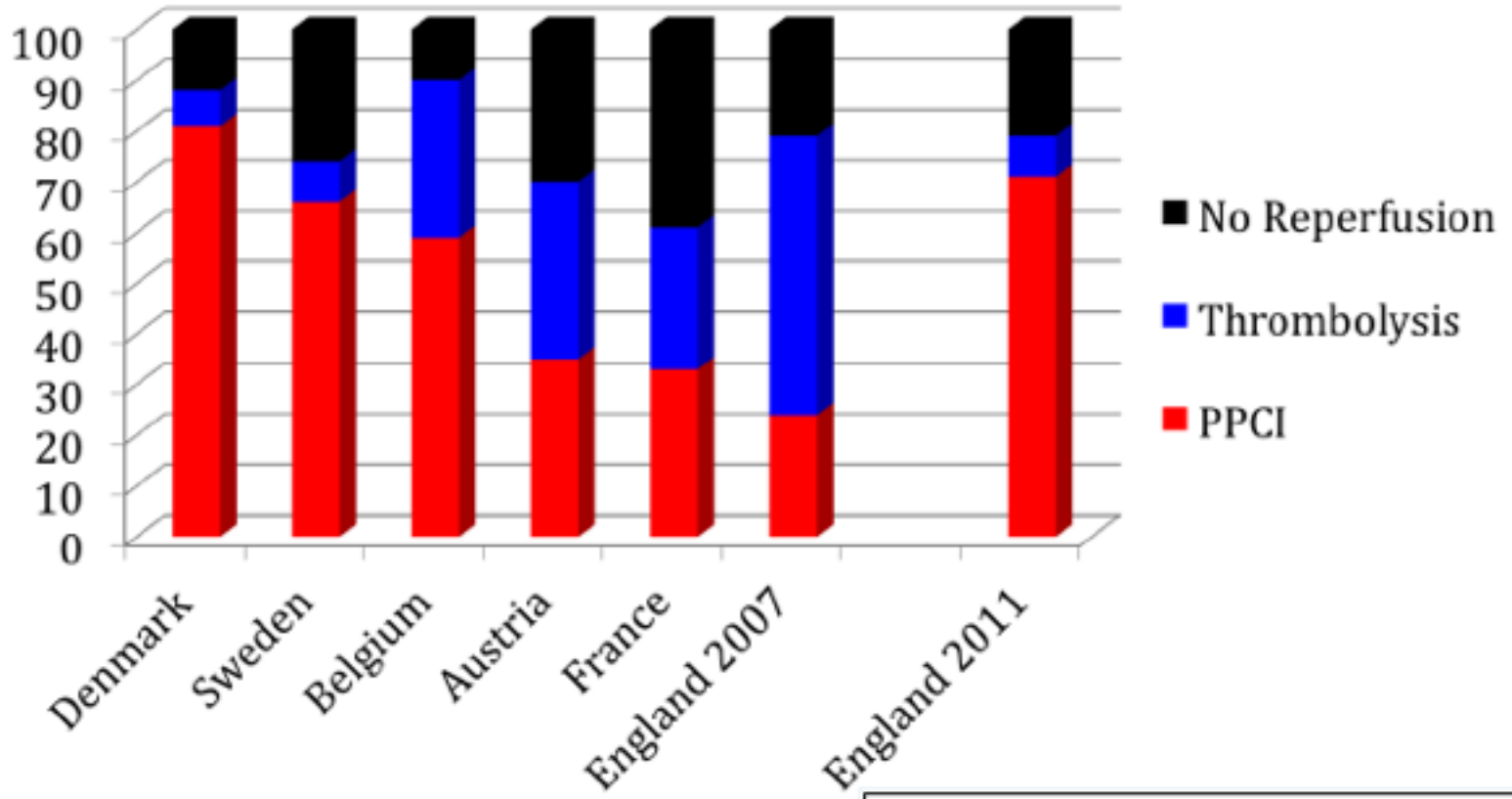
M Kouchner said the British system of registering with a family GP was one of the fundamental flaws of the NHS structure. "You have made big mistakes. The structure is

Daily Telegraph
October 5th, 2001

HeartImprovement

NHS Improvement NHS

REPERFUSION TREATMENT FOR STEMI IN EUROPE



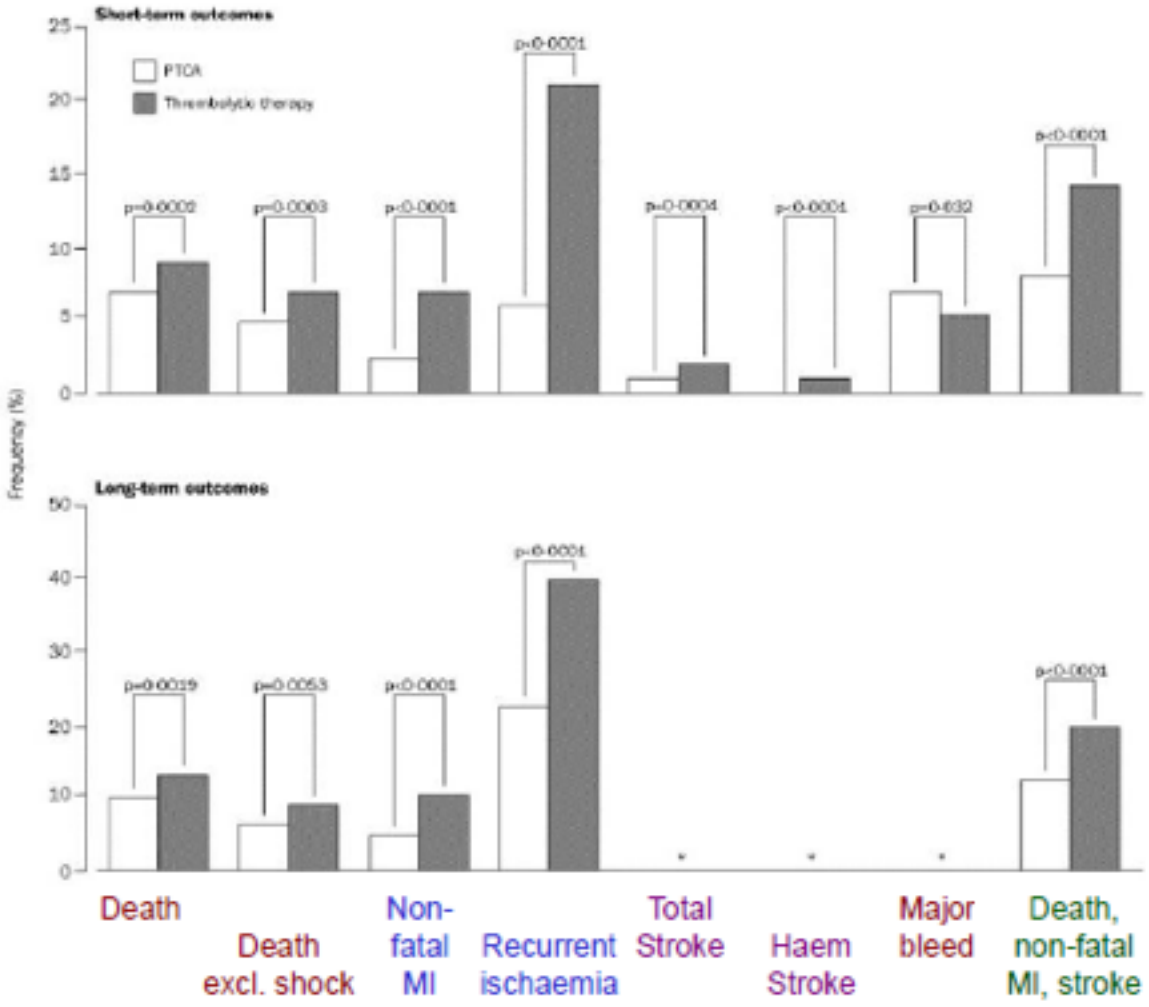
Eur Heart J 2010;31:943-957

ΣΥΜΠΕΡΑΣΜΑΤΑ

- Είναι απίθανο ότι νέες παρεμβατικές μέθοδοι θα έχουν σημαντική επίδραση στην θνητότητα ασθενών με STEMI στο άμεσο μέλλον
- Μεγαλύτερο όφελος μπορούμε να έχουμε από την μείωση του συνολικού ισχαιμικού χρόνου.

PPCI vs Lysis Meta Analysis

Keeley et al. Lancet 2003;361:13



British Cardiovascular Society

DH Department of Health

National Infarct Angioplasty Project (NIAP) (2005-8)

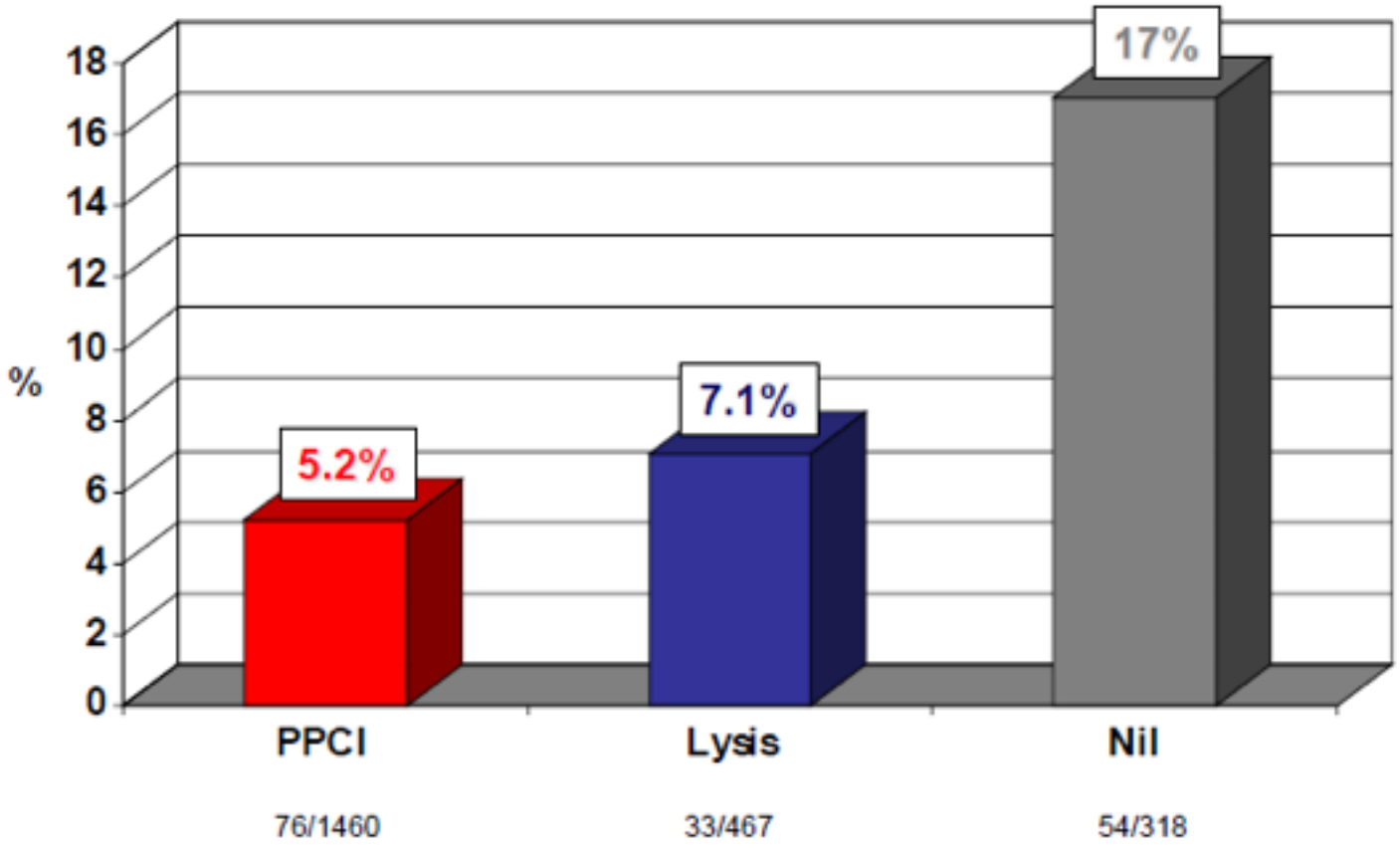
- To determine appropriateness & feasibility of national rollout of PPCI
- Up to £1m ($1.5m) of funding allocated by DH for data collection
- DH approached BCS & BCIS for collaboration
- 7 Pilot sites
- All STEMIs over 1 year, then 1-year follow-up

British Cardiovascular Society

DH Department of Health

NIAP: In-hospital Mortality

(all patients, includes shock)



National Infarct Angioplasty Project (NIAP)

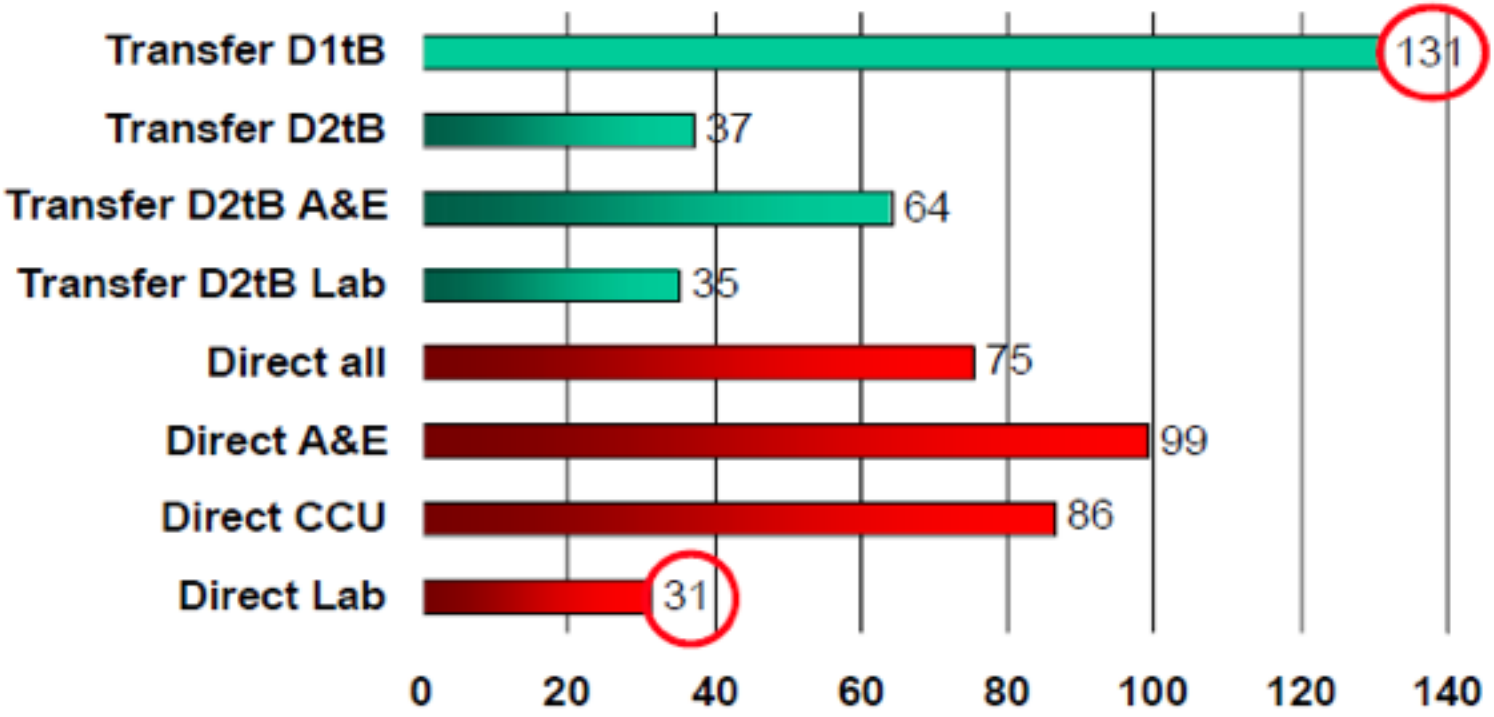
NCD Registry (NCDR) - DTB times

British Cardiovascular Society

DH Department of Health

Median Door-to-Balloon times

(minutes, n=1,460)



Via non-PPCI Centre

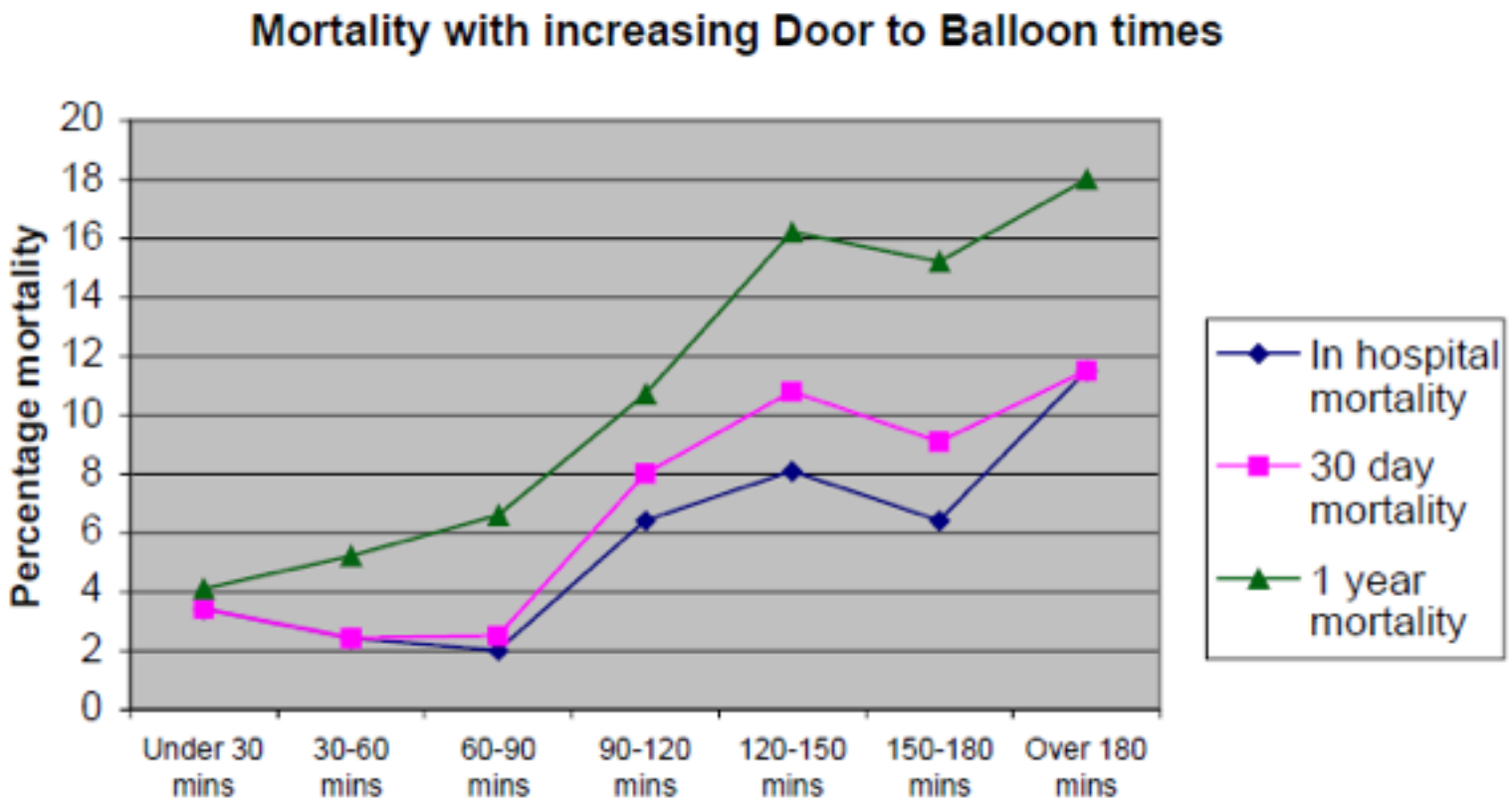
Direct to PPCI Centre

National Infarct Angioplasty Project (NIAP)

British Cardiovascular Society

DH Department of Health

Mortality: PPCI direct admissions (DTB time)



National Infarct Angioplasty Project (NIAP)

British Cardiovascular Society

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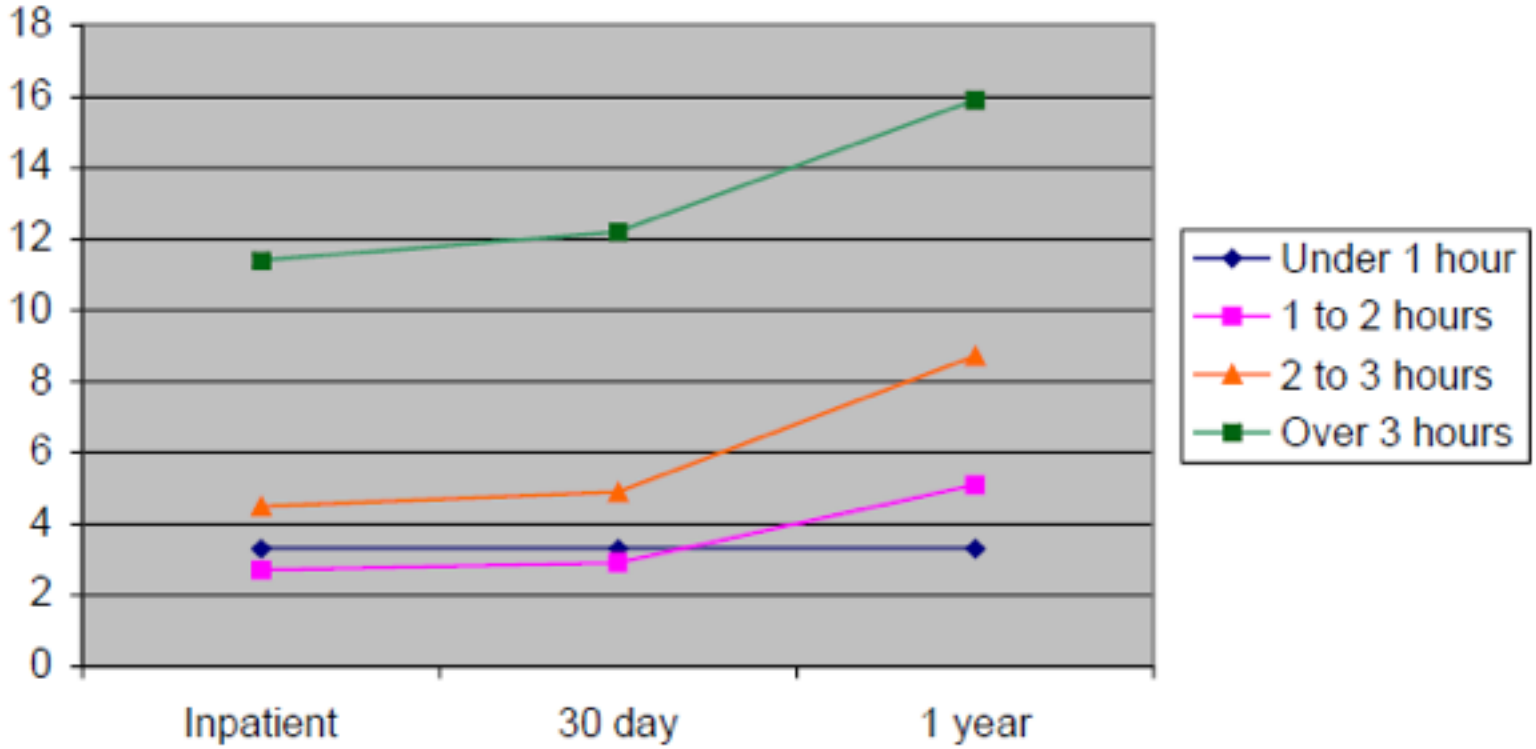
All PPCI patients (CTB time)

Mortality with increasing call to balloon time



National Infarct Angioplasty Project (NIAP)

British Cardiovascular Society

DH Department of Health

Cost Effectiveness

HEART

Primary angioplasty versus thrombolysis for acute ST-elevation myocardial infarction: an economic analysis of the National Infarct Angioplasty Project

Allan J Wailoo, Steve Goodacre, Fiona Sampson, Monica Hernandez, Christian Asseburg, Stephen John Palmer, Mark Sculpher, Keith Abrams, Mark A de Belder and Huon Gray

Heart published online 8 Jun 2009;
doi:10.1136/hrt.2009.167130

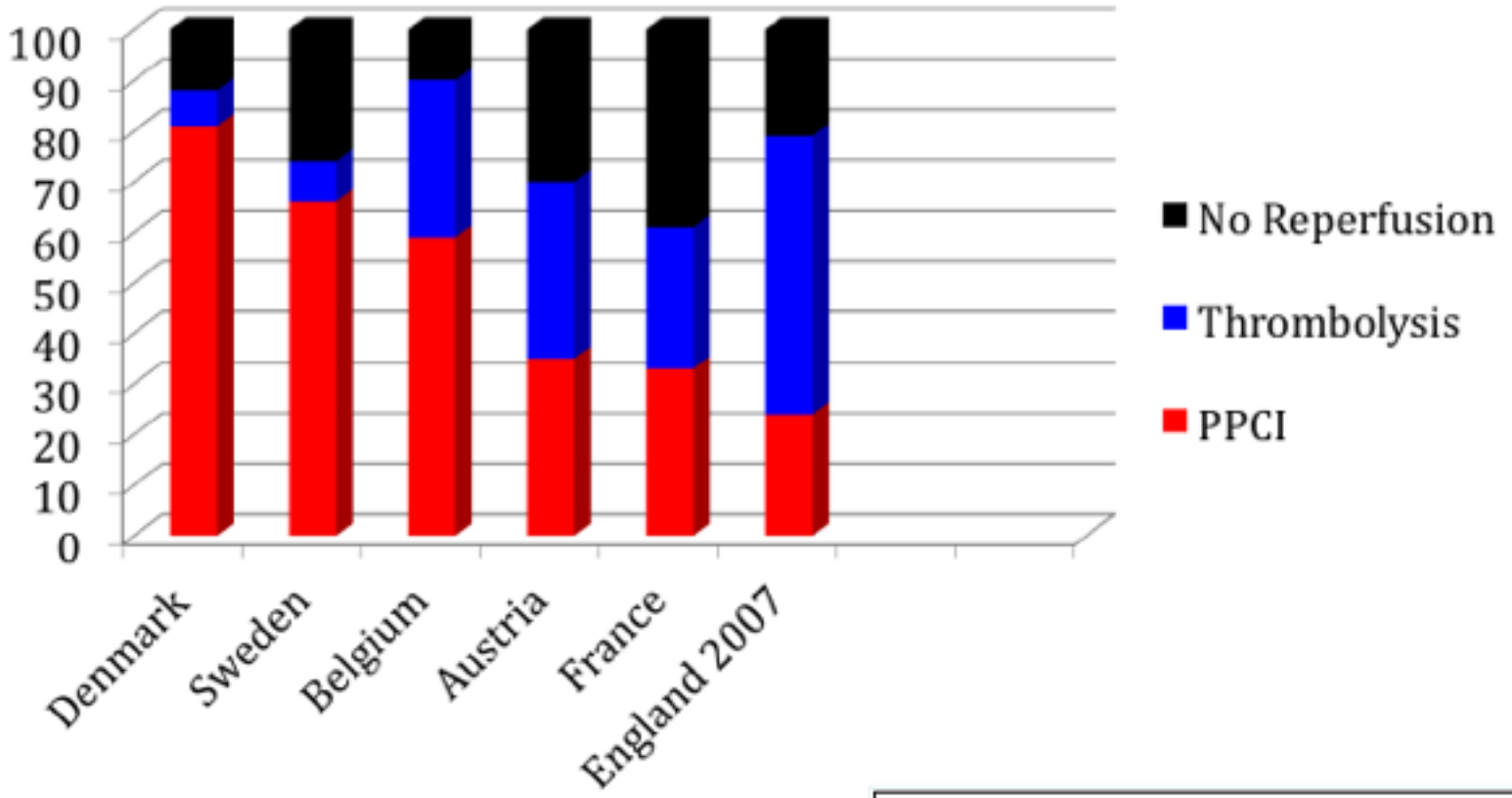
Conclusions: Overall, primary angioplasty based care is highly likely to be cost-effective at an assumed threshold of £20,000 per QALY gained. It is more likely to be cost-effective if patients are admitted directly to the cardiac catheter laboratory than via other hospital departments, or if transferred from another hospital.

Wailoo AJ et al. Heart, Jun 2009; doi:10.1136/hrt.2009.167130

HeartImprovement

NHS Improvement NHS

REPERFUSION TREATMENT FOR STEMI IN EUROPE



Eur Heart J 2010;31:943-957

Door to balloon time difference in primary angioplasty via the radial versus femoral approach and direct culprit vessel PCI versus initial diagnostic angiography

Egred M, Bagnall A, Ahmed J, Zaman A, Purcell I, Edwards R, Keavney B, Spyridopoulos I

Results 2

- The average was 29.9min (median 22min) for the radial approach versus 32.3min (median 24.5min) for femoral approach. The average DTB time for direct IRA PCI approach was 26.9min (median 22min) versus an average of 29.8min (median 24min) for diagnostic angiography before PPCI.

2000s - Primary PCI

- 25 trials
  - pPCI vs. FL
  - N=7,000

- **Every minute counts in the early hours after coronary occlusion…we are always "too late"**

- **Today no clinical benefit has been shown of recanalizing an occluded infarct-related coronary artery > 12 hours after onset of occlusion in stable patients**

Recommendations for PCI in STEMI

Indication	Time from FMC	Class	Level
Primary PCI:			
Is recommended in patients with chest pain/ discomfort < 12 h + persistent ST-segment elevation or non-previously documented left bundle branch block.	As soon as possible and at any rate < 2 h from FMC*	I	A
Should be considered in patients with ongoing chest pain/discomfort > 12 h + persistent ST-segment elevation or previously undocumented left bundle branch block.	As soon as possible	IIa	C
May be considered in patients with history of chest pain/discomfort > 12 h and < 24 h + persistent ST-segment elevation or previously undocumented left bundle branch block.	As soon as possible	IIb	B

* < 90 min if patient presents less than 2 h from symptoms onset and has a large infarct and low bleeding risk.

Angiography in Patients who did NOT undergo Primary PCI

Recommendations	Class	LOE
▪Evidence of failed fibrinolysis or uncertainty about success: immediate	IIa	B
▪Recurrent ischaemia, reocclusion after initial successful fibrinolysis: immediate	I	B
▪Evidence of successful fibrinolysis: within 3 to 24 h after start of fibrinolytic therapy	IIa	A
▪In unstable patients who did not receive reperfusion therapy: immediate	I	C
▪In stable patients who did not receive reperfusion therapy: before discharge	IIb	C

Reperfusion Therapy: Primary PCI

Recommendations	Class	LOE
▪ Preferred reperfusion treatment if performed by an experienced team as soon as possible after FMC	I	A
▪ Time from FMC to balloon should be < 2 h in any case and < 90 min in pts presenting early (< 2 h) with large infarct and low bleeding risk	I	B
▪ Indicated for patients in shock and those with contraindications to fibrinolytic therapy irrespective of time delay	I	B
Rescue PCI		
▪ After failed fibrinolysis in patients with large infarcts if performed within 12 h	IIa	A

Early Mortality Rates in Major STEMI trials: 1986 – 2006/2008 - 2050