



**INSTITUT
CARDIOVASCULAIRE
PARIS
SUD**

Acute Coronary Syndrome AMI Intervention State of the art: STEMI management

ANGIOPLASTY SUMMIT-TCTAP 2013

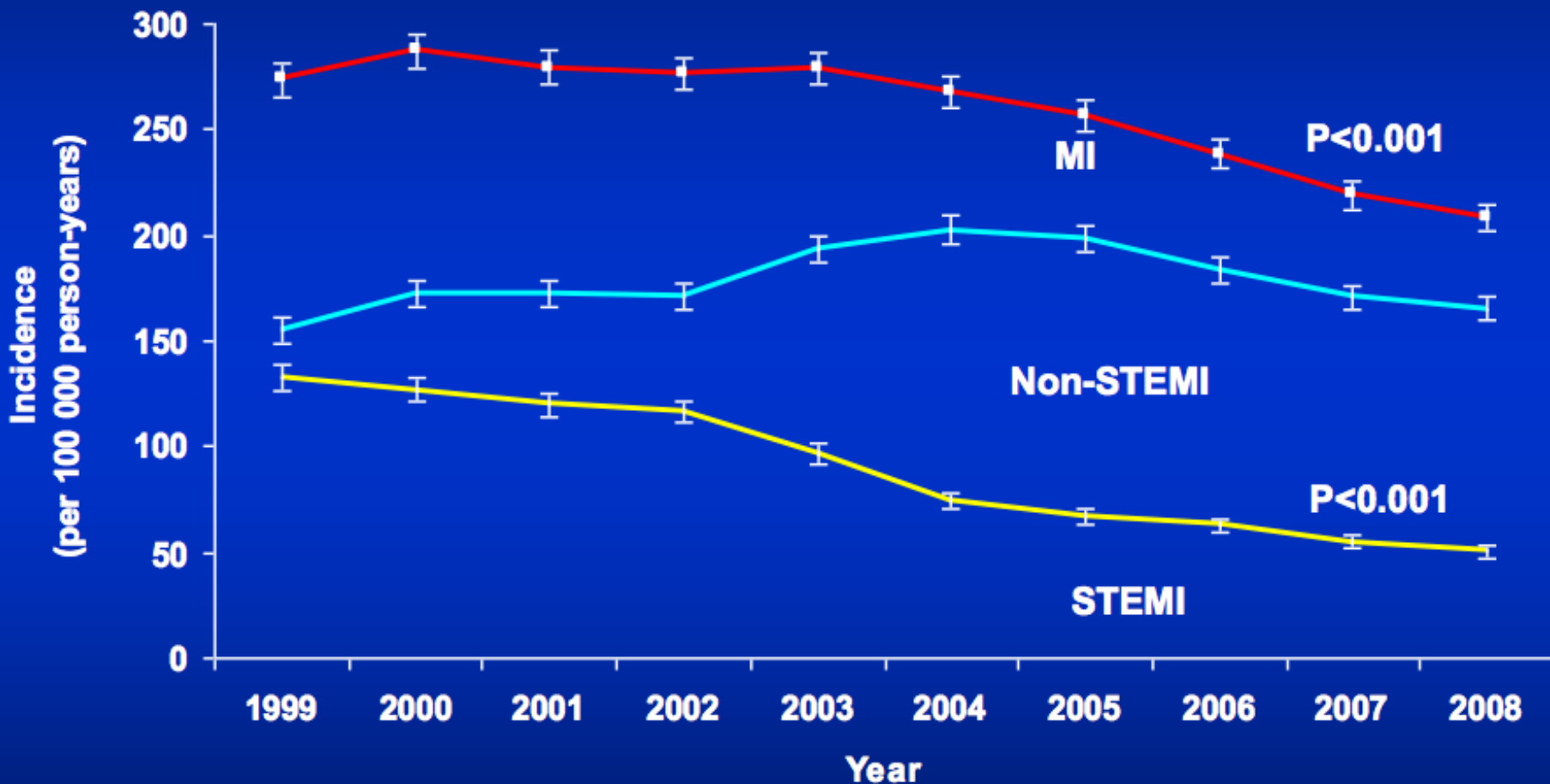
April 23 -26, 2013 – Seoul, Korea

**Marie-Claude MORICE, MD, FESC, FACC Stephen O Connor
Massy, France**

Speaker's name:

I do not have any potential conflict of interest

Incidence of Myocardial Infarction



46,086 hospitalized patients with myocardial infarction over 18,691,131 person-years

STEMI

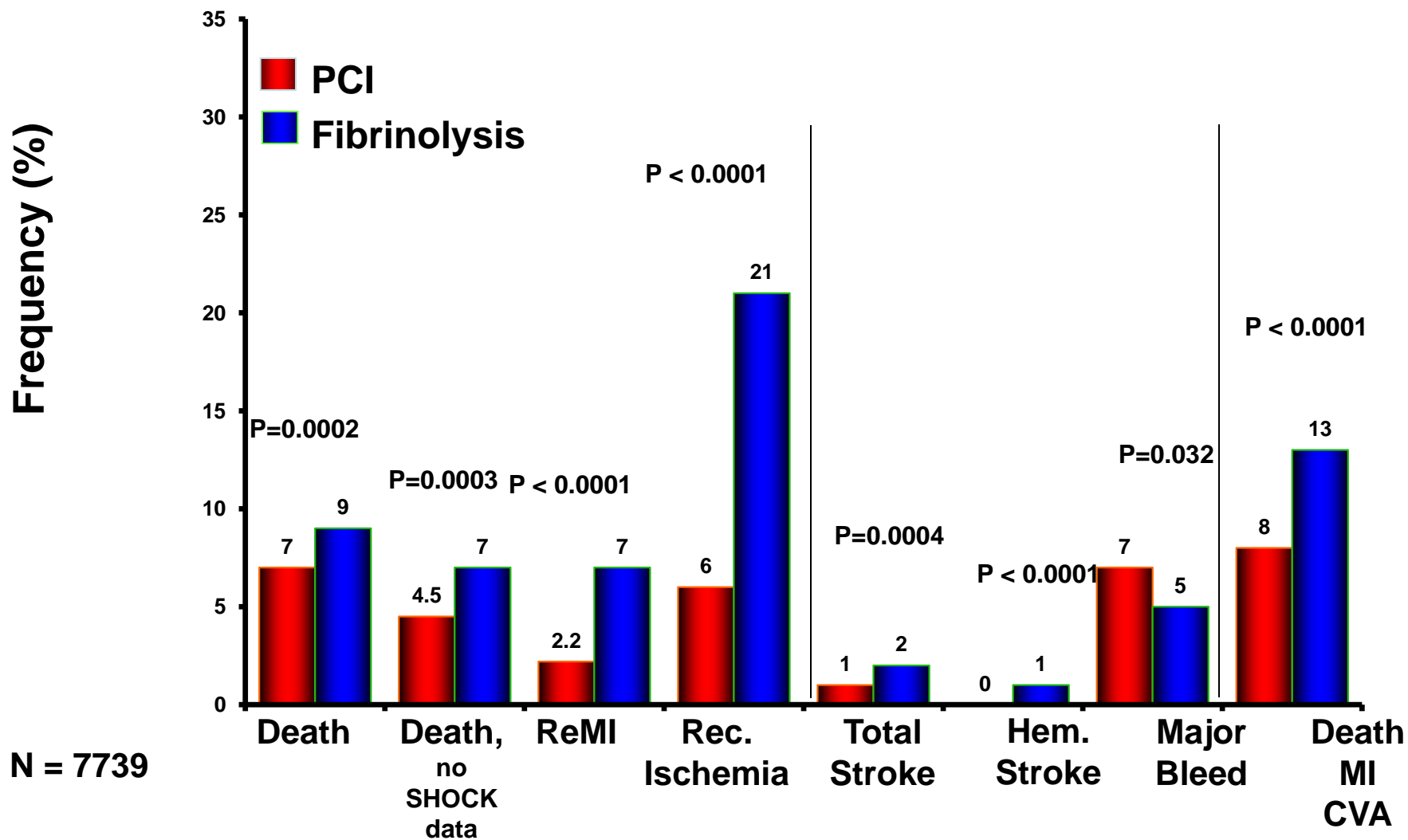
Three Key Areas

- Primary PCI (PPCI) versus Thrombolysis
- The STEMI network
- The PPCI procedure

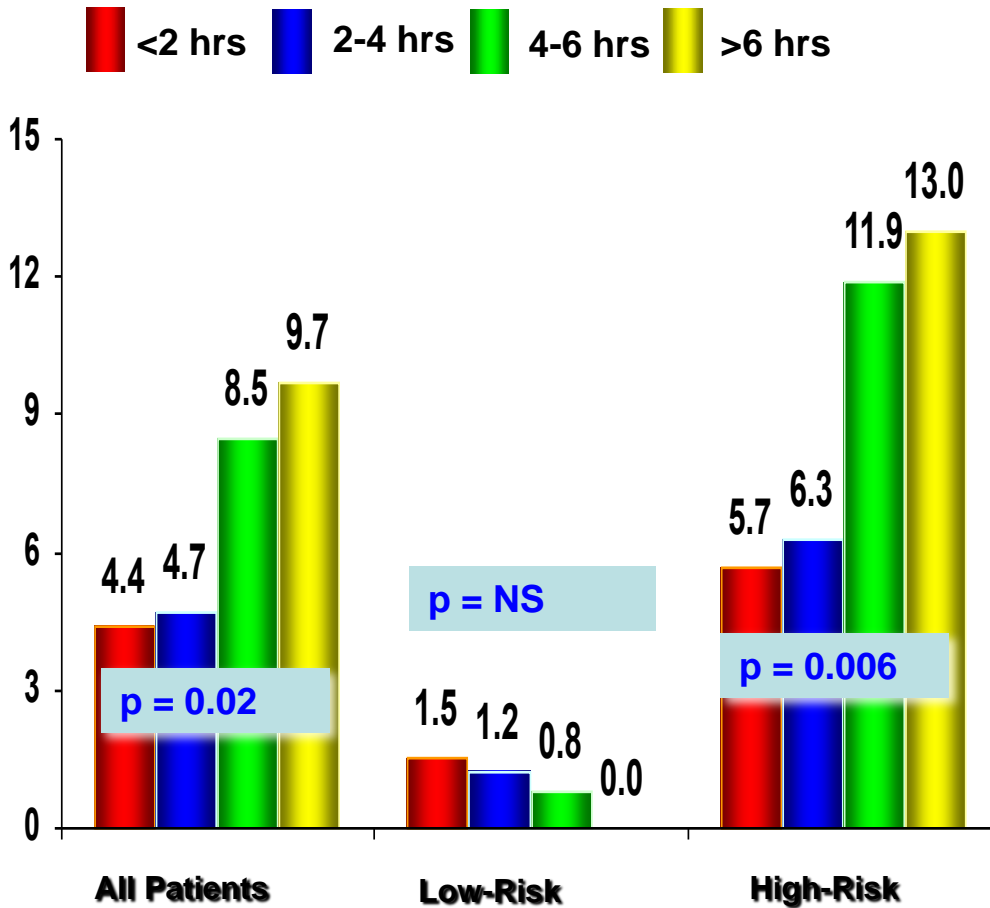
STEMI

- **Primary PCI (PPCI) versus Thrombolysis**
- The STEMI network
- The PPCI procedure

PCI vs Fibrinolysis for STEMI: Short Term Clinical Outcomes

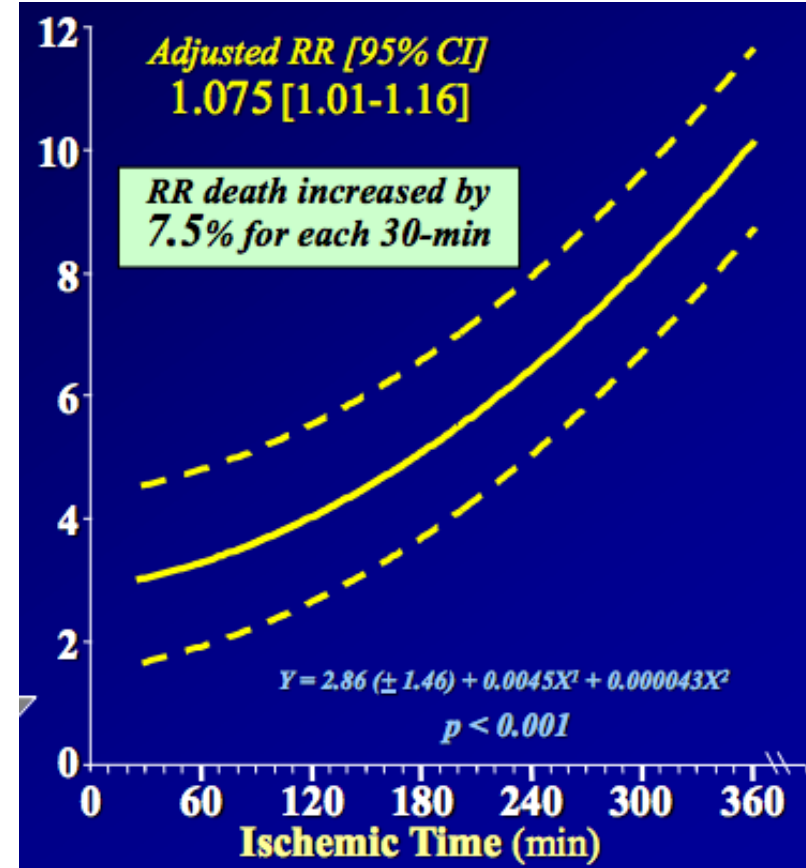


Time from Symptom Onset to Treatment Predicts One-year Mortality with PCI

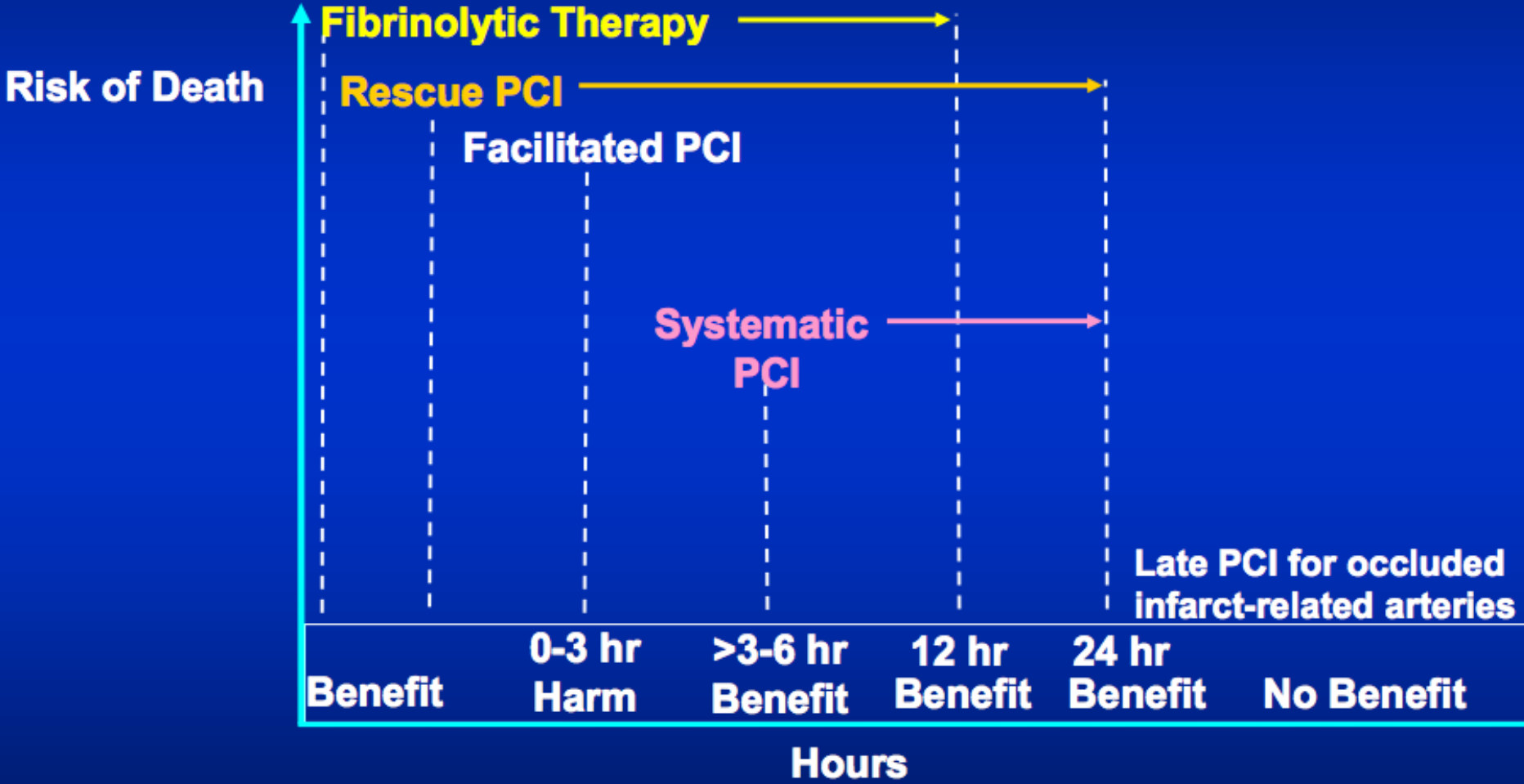


De Luca et al, JACC 2003

n=7739



DeLuca, Suryapranata, Circ 109:1223, 2004



White HD; Circulation 2008

STREAM TRIAL

STEMI <3 hrs from onset symptoms, PPCI <60 min not possible, 2 mm ST-elevation in 2 leads

RANDOMIZATION 1:1 by IVRS, OPEN LABEL

Strategy A: pharmaco-invasive

Strategy B: primary PCI

<75y: full dose

≥75y: ½ dose TNK

no lytic

Aspirin
Clopidogrel:
LD 300 mg + 75 mg QD
Enoxaparin:
30 mg IV + 1 mg/kg SC
Q12h

Aspirin
Clopidogrel:
75 mg QD
Enoxaparin:
0.75 mg/kg SC Q12h

Antiplatelet and
antithrombin treatment
according to local standards

ECG at 90 min: ST resolution ≥ 50%

YES

NO

angio >6 to 24 hrs
PCI/CABG if indicated

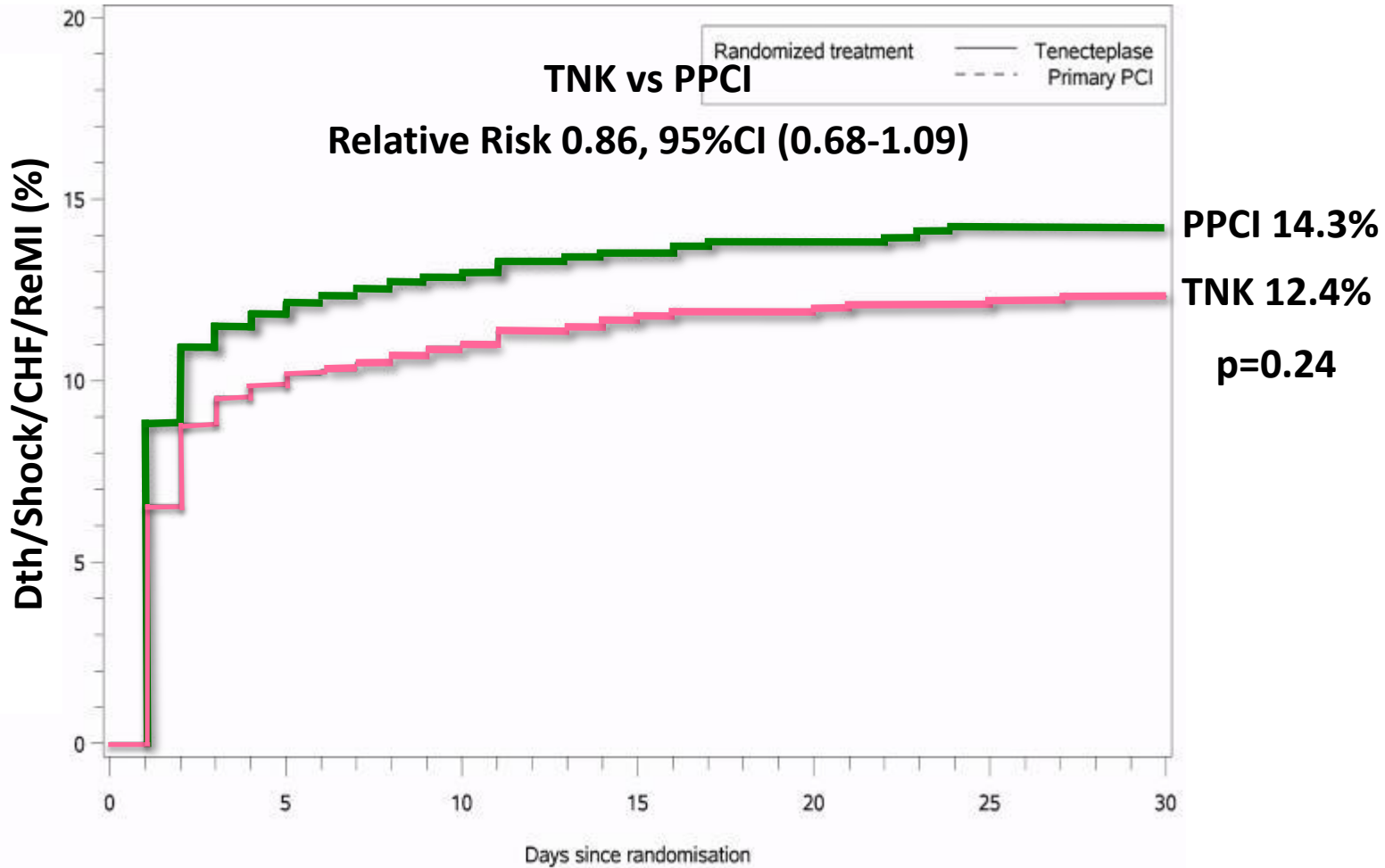
immediate angio +
rescue PCI if indicated

Standard primary PCI

Primary endpoint: composite of all cause death or shock or CHF or reinfarction up to day 30

Armstrong et al NEJM 2013

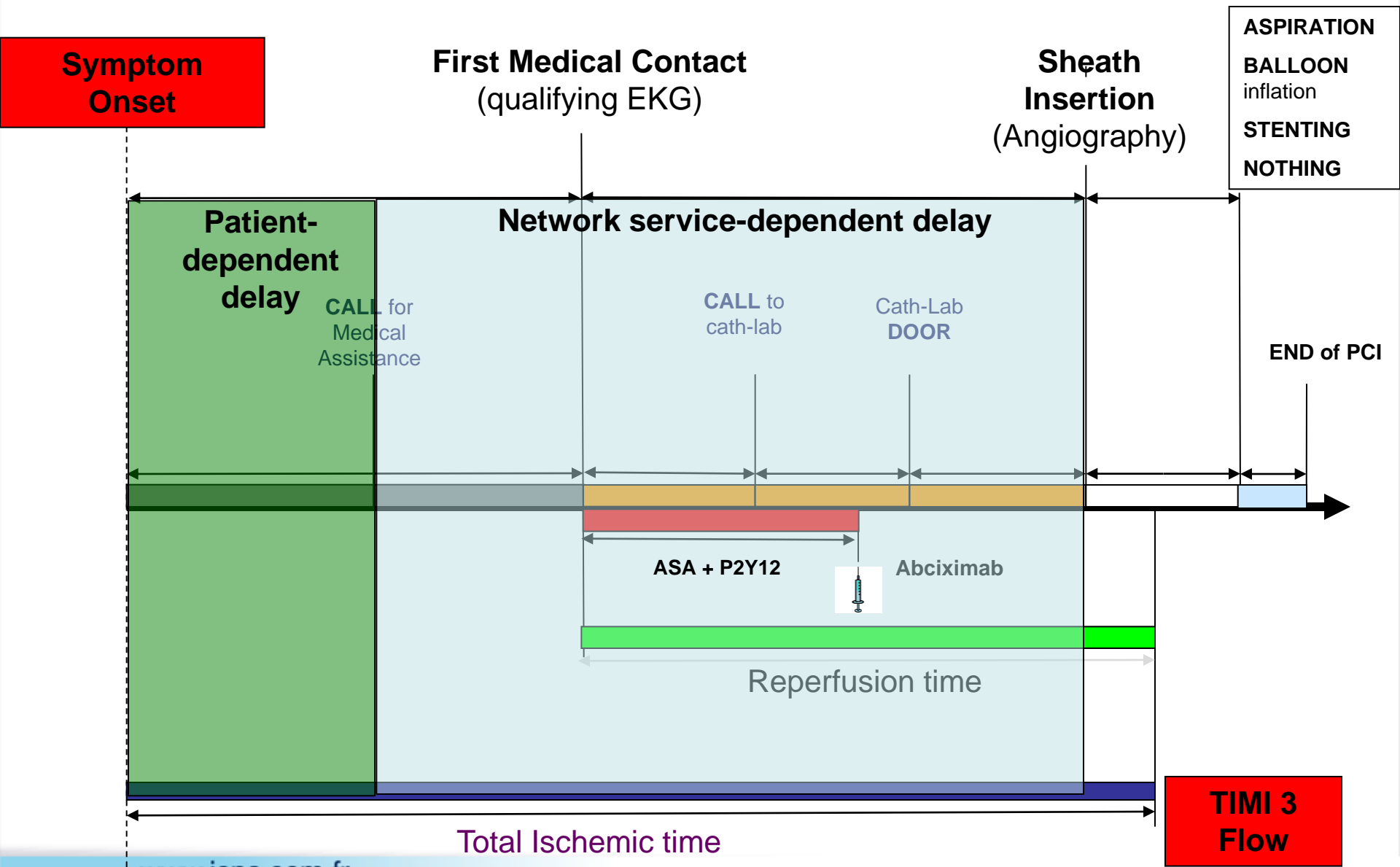
PRIMARY ENDPOINT



| Number at risk | | | | | | | |
|----------------|-----|-----|-----|-----|-----|-----|-----|
| Tenecteplase | 943 | 848 | 837 | 829 | 827 | 825 | 823 |
| Primary PCI | 948 | 836 | 824 | 818 | 815 | 811 | 811 |

STEMI

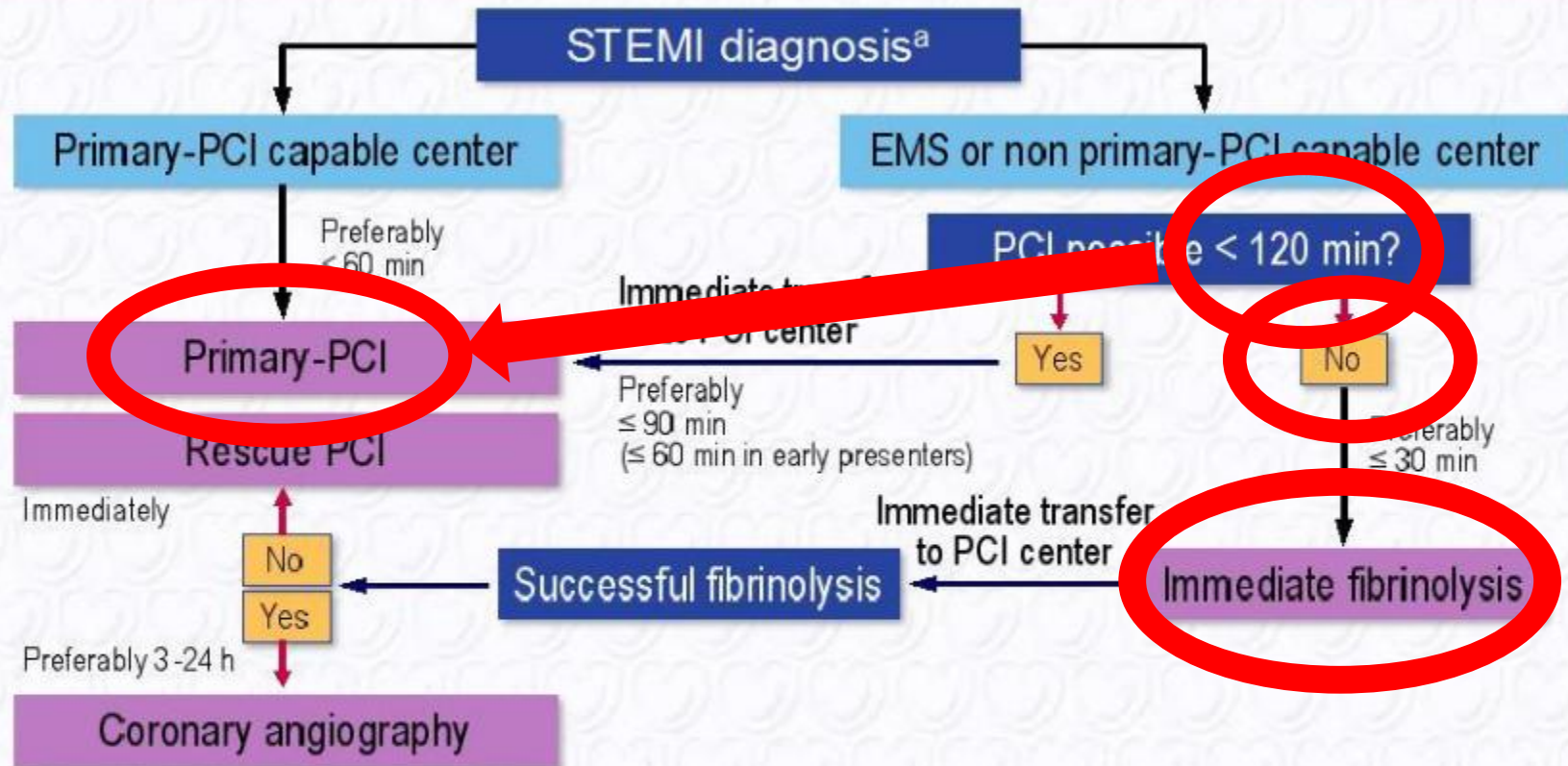
- Primary PCI (PPCI) versus Thrombolysis
- **The STEMI network**
- The PPCI procedure





- ➔ Patient Diagnosis
- ➔ Prehospital Treatment
- ➔ Direct transfer
- ➔ Impact on clinical trials

Prehospital and in-hospital management, and reperfusion strategies within 24 h of FMC



^a The time point the diagnosis is confirmed with patient history and ECG ideally within 10 min from the first medical contact (FMC). All delays are related to FMC (first medical contact).

Cath = catheterization laboratory; EMS = emergency medical system; FMC = first medical contact; PCI = percutaneous coronary intervention; STEMI = ST-segment elevation myocardial infarction.

European Heart Journal (2012) 33, 2569–2619

doi:10.1093/eurheartj/ehs215

Armstrong et al NEJM 2013

Volume is important

2003; 27965 patients in 67 centres; 24% STEMI, 17% NSTEMI

NSTEMI

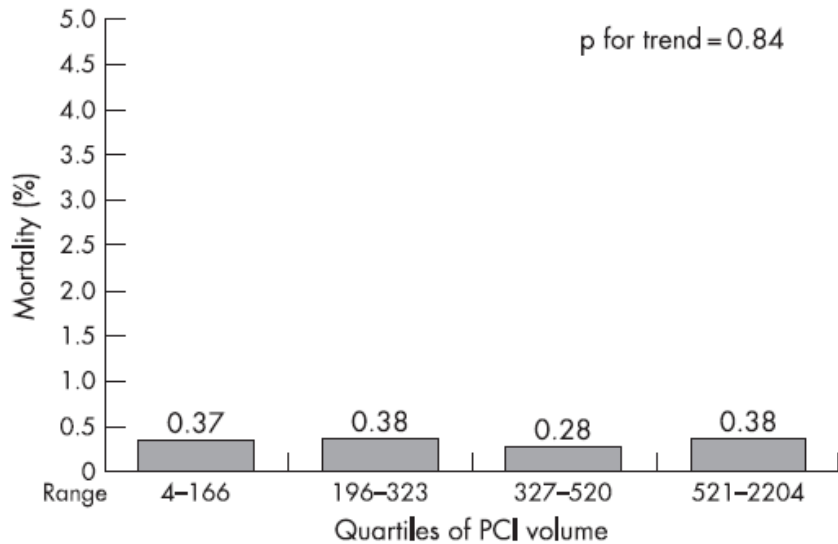


Figure 3 Hospital mortality after PCI according to quartiles of hospital PCI volume in patients without an acute myocardial infarction.

No MI

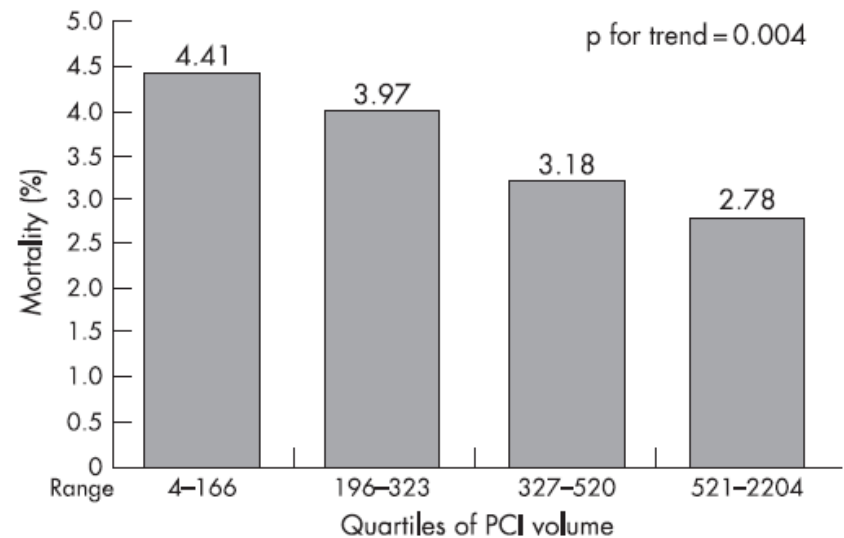


Figure 4 Hospital mortality after PCI according to quartiles of hospital PCI volume in STEMI or NSTEMI patients.

NSTEMI and STEMI

STEMI

- Primary PCI (PPCI) versus Thrombolysis
- The STEMI network
- **The PPCI procedure**

The PPCI procedure

- Adjunctive pharmacotherapy
- Thrombus management
- Access site selection
- Reduction in bleeding complications
- Stent choice
- Strategies for multivessel management
- Myocardial preservation

Adjunctive Pharmacotherapy: What are the options?

72 possibilities!!!!

Antithrombotic treatments

Unfractionated Heparin

Enoxaparin
Same treatment for all?
Fondaparinux

Bivalirudin

Oral Treatments

Clopidogrel

Prasugrel

Ticagrelor
Individualized
treatment?

IV Agents

Abciximab

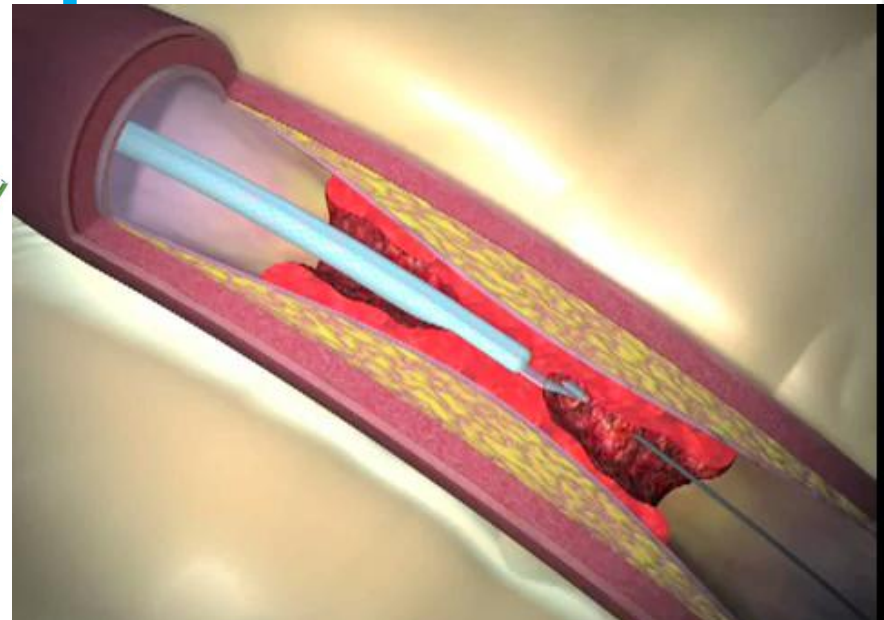
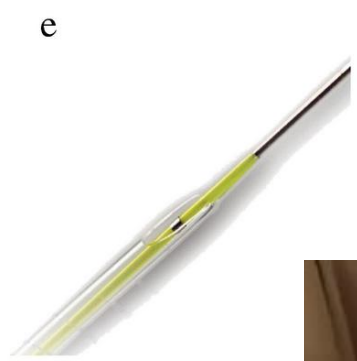
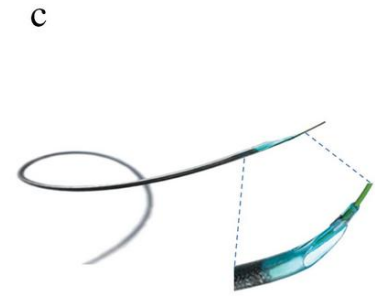
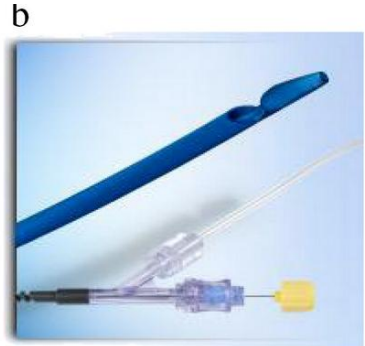
Tirofiban/Eptifibatide

None

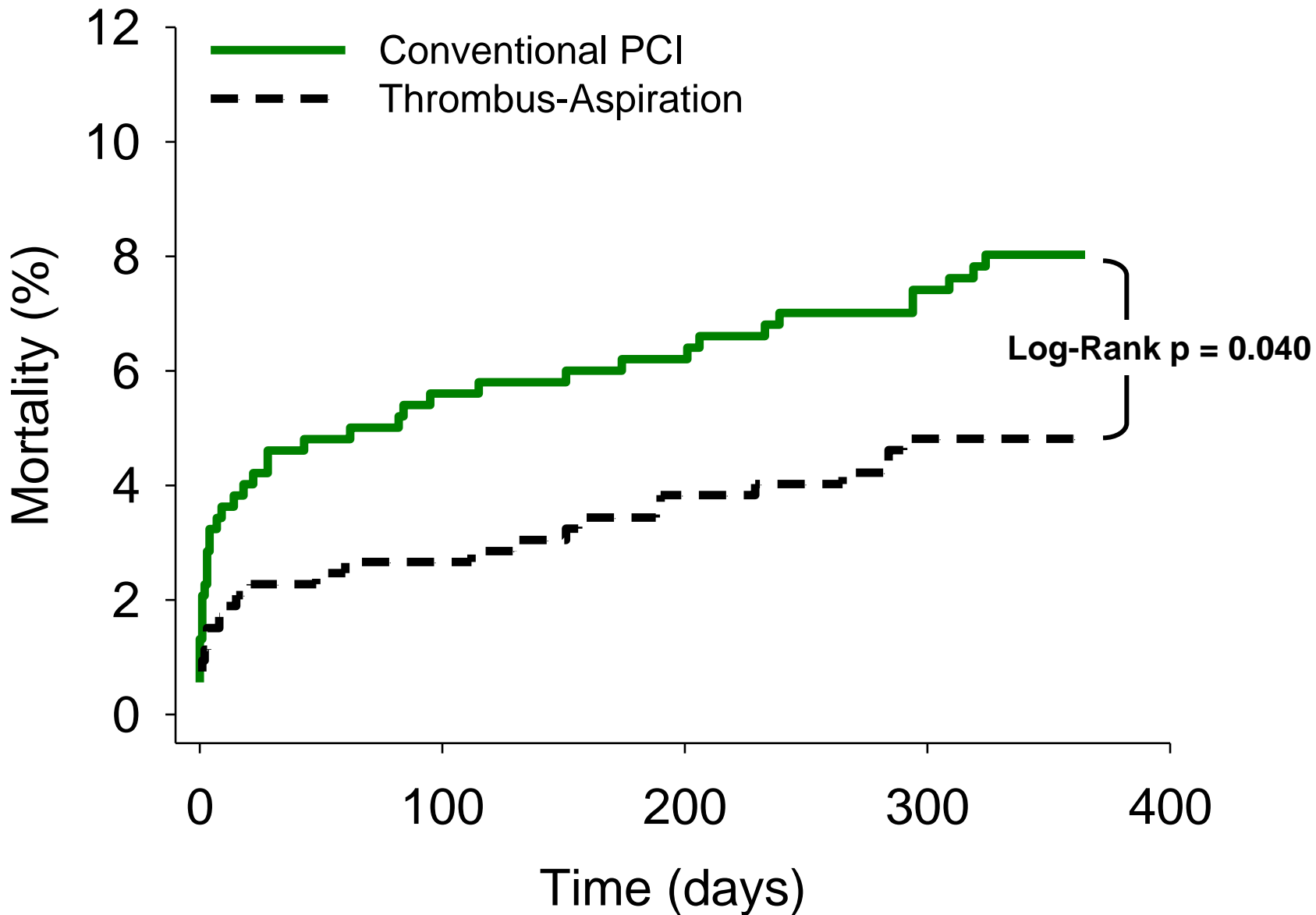
Up stream

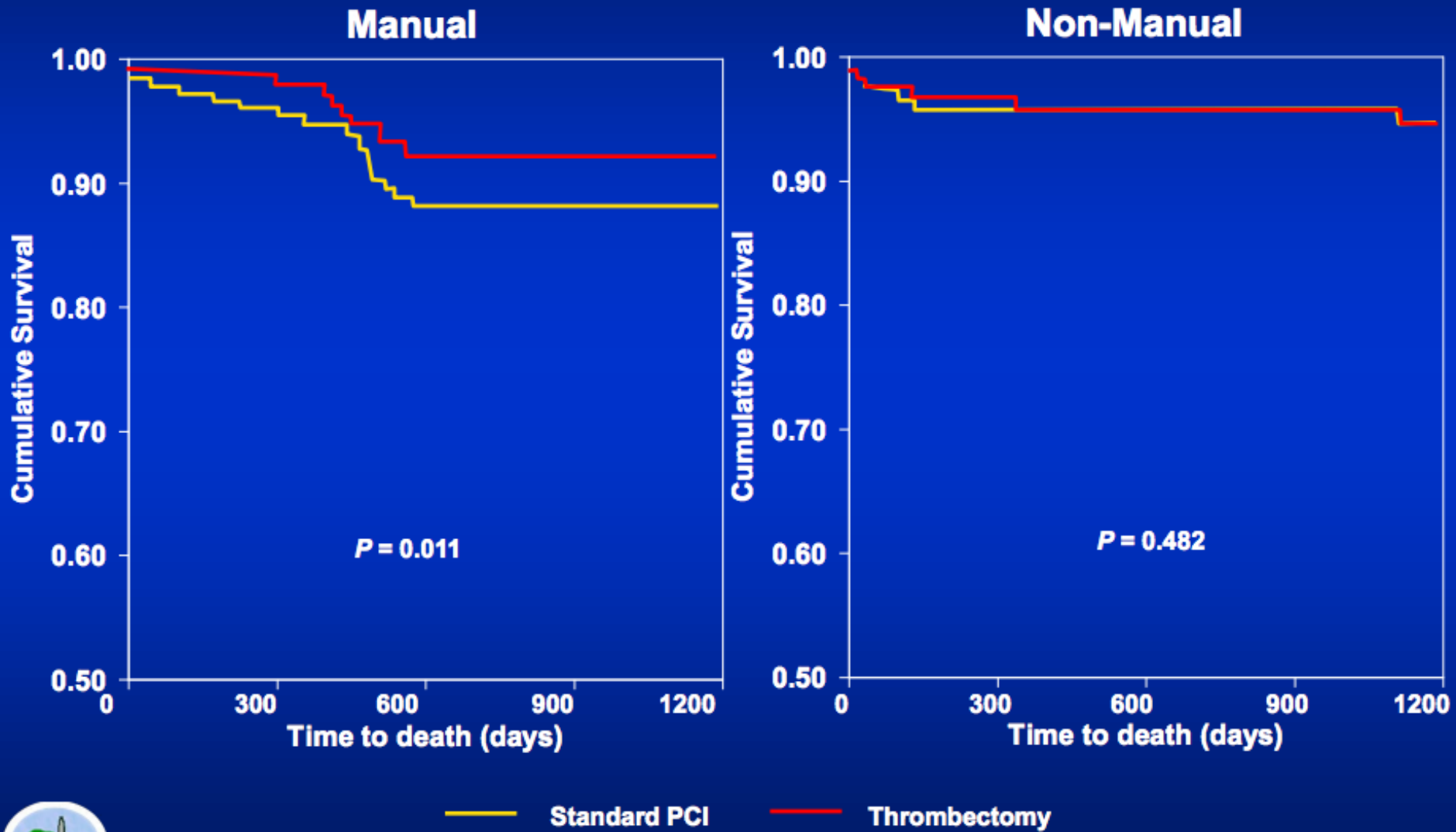
In the Cath Lab

Thrombus Aspiration



TAPAS trial: Mortality at 1 year

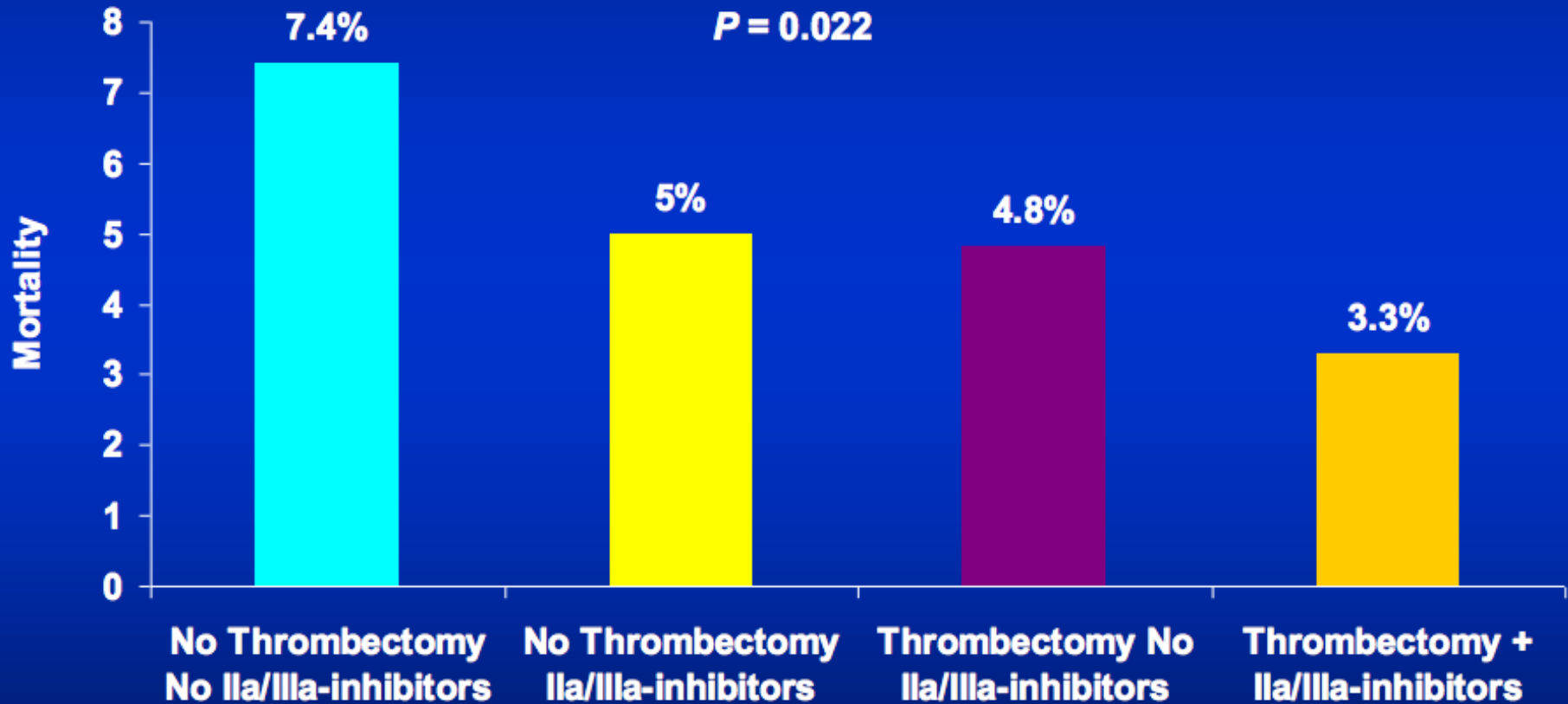




Time to death (days)

Burzotta et al, EHJ 2009

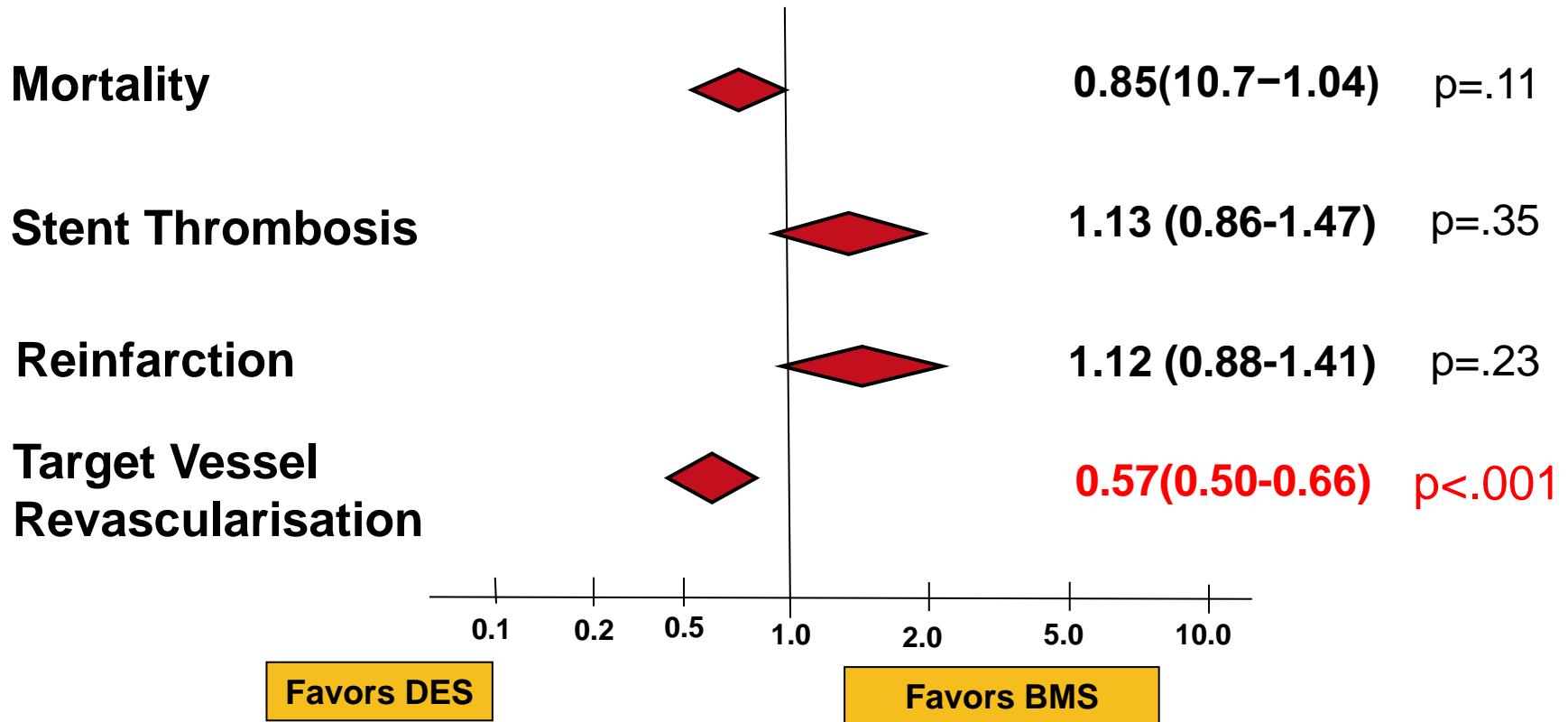
Interaction with GIIb/IIIa inhibitors



DES vs BMS?

- Similar rates of Stent Thrombosis, Reinfarction, Death
- Reduced Target Vessel Revascularisation (TVR), Target Lesion Revascularisation (TLR), late luminal loss and restenosis

Meta-analysis DES vs BMS STEMI



Individual patient data from 11 of 13 trials identified
 n= 6298 (Sirolimus or Paclitaxel)

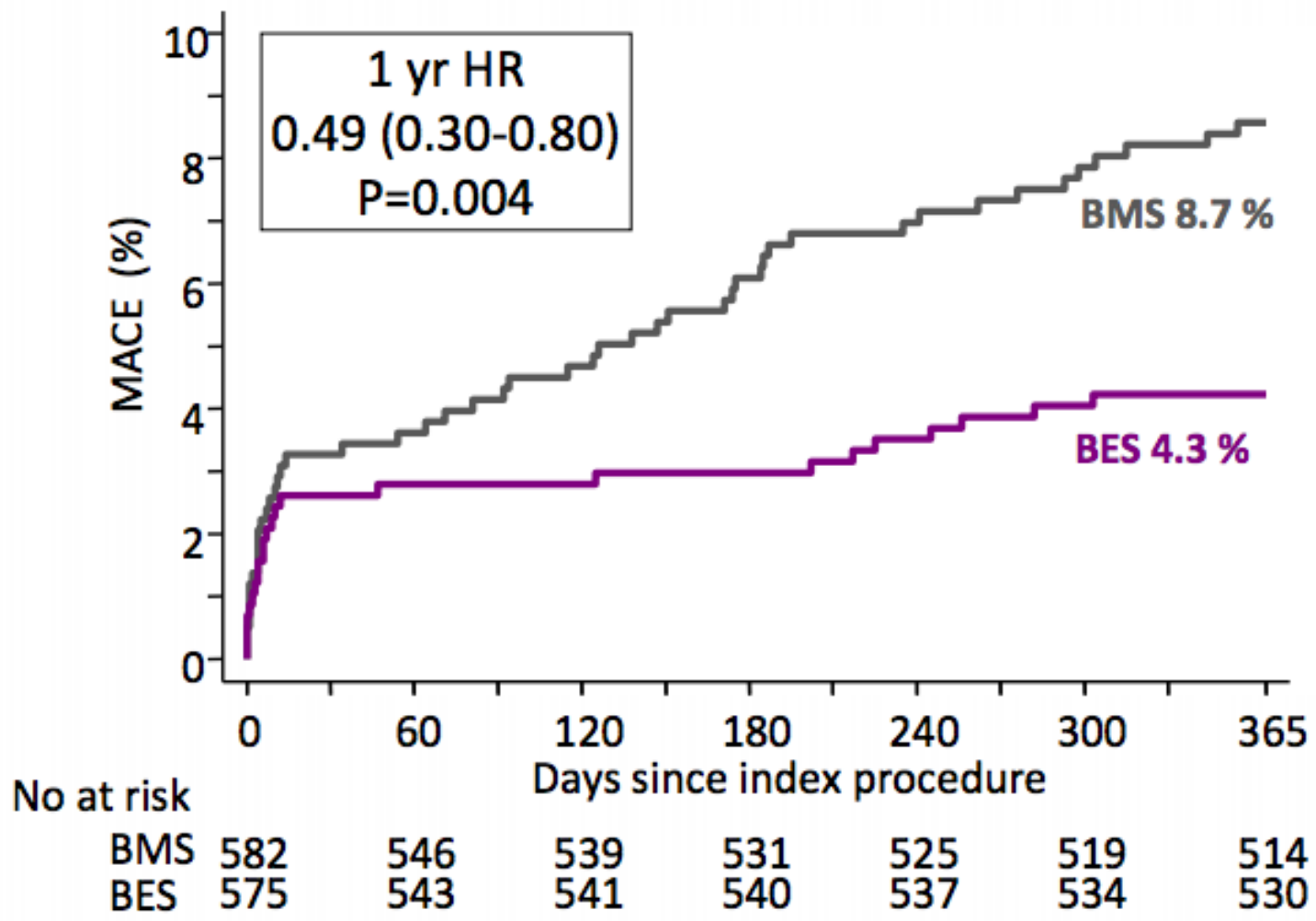
DES vs BMS?

- Similar rates of Stent Thrombosis, Reinfarction, Death
- Reduced Target Vessel Revascularisation (TVR), Target Lesion Revascularisation (TLR), late luminal loss and restenosis
- Longer follow up needed.
- **Performance of newer generation DES is superior, especially in terms of deliverability and safety.**

Biolimus-DES
vs
BMS

COMFORTABLE AMI

Primary Endpoint MACE* @ 1 Year



MACE* = Cardiac death + TVR-MI + ischemic TLR

CLINICAL RESEARCH

Newer
Stents

Self-Expanding Versus Balloon-Expandable Stents in Acute Myocardial Infarction: Results From the APPOSITION II Study

Self-Expanding Stents in ST-Segment Elevation Myocardial Infarction

Robert-Jan van Geuns, MD, PhD,* Corrado Tamburino, MD, PhD,† Jean Fajadet, MD,‡
Mathias Vrolix, MD,§ Bernhard Witzenbichler, MD,|| Eric Eeckhout, MD, PhD,¶
Christian Spaulding, MD, PhD,#** Krzysztof Reczuch, MD, PhD,††‡‡
Alessio La Manna, MD,† René Spaargaren, MD,§§ Héctor M. García-García, MD, PhD,||||
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Stefan Verheye, MD, PhD¶¶

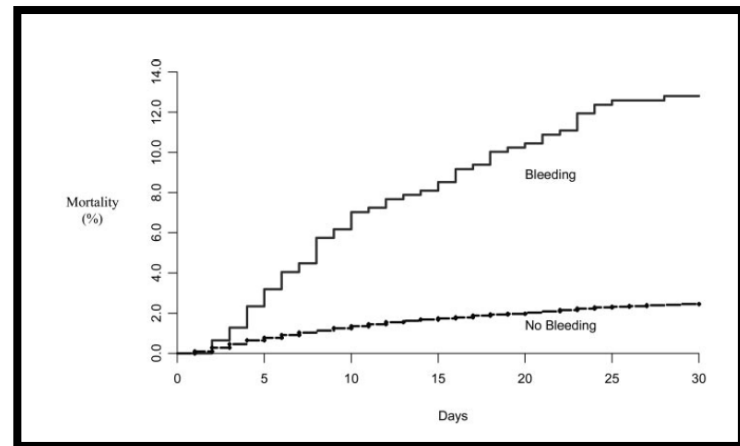
*Rotterdam, the Netherlands; Catania, Italy; Toulouse and Paris, France; Genk and Antwerp,
Belgium; Berlin, Germany; Lausanne, Switzerland; and Wrocław, Poland*



Access Site Selection: Avoid Bleeding!



**Cardiovascular Mortality
Increased**

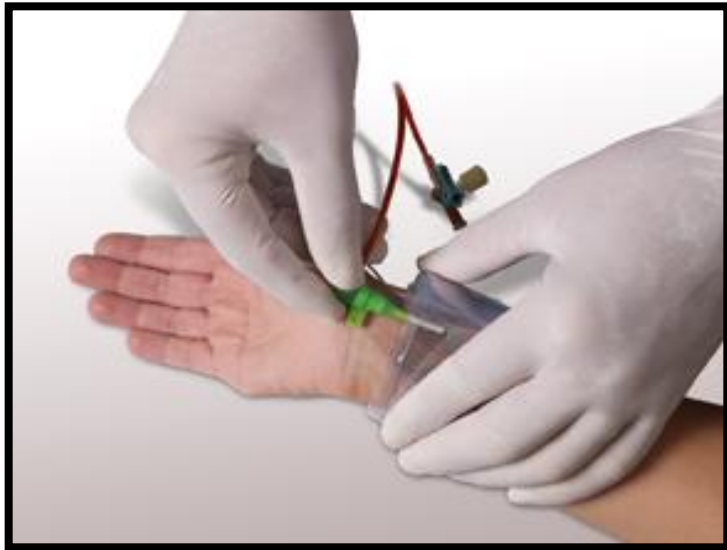


(Circulation. 2006;114:774-782.)

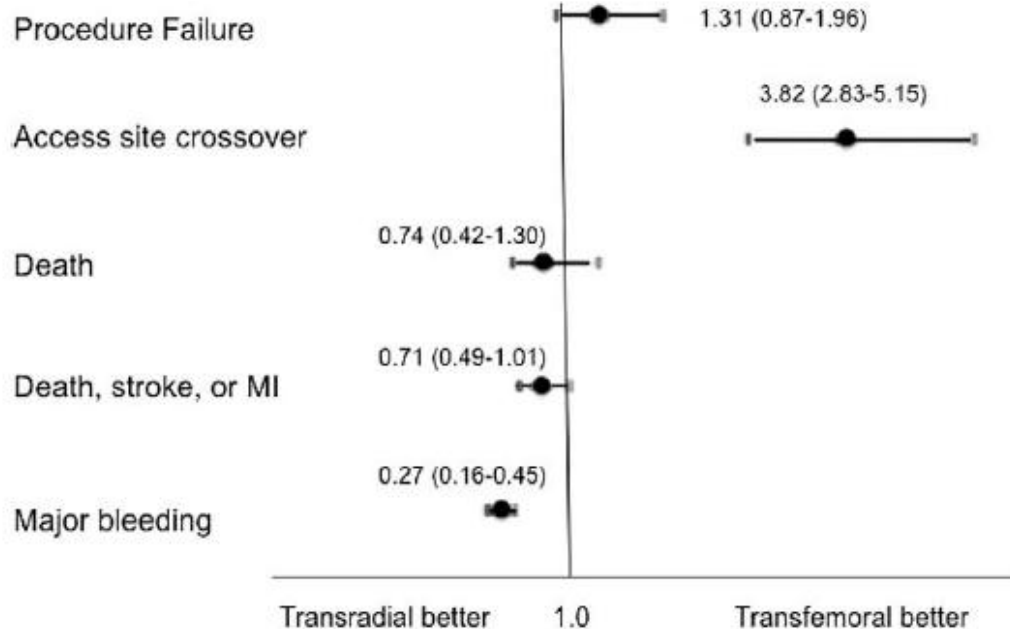


**Increased by antiplatelet
therapies**

Access Site Selection



Radial approach



**Meta-analysis 23 randomised studies
n=7020 patients**

Jolly *et al* AHJ 2009

RIVAL Trial

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Effects of Radial Versus Femoral Artery Access in Patients With Acute Coronary Syndromes With or Without ST-Segment Elevation

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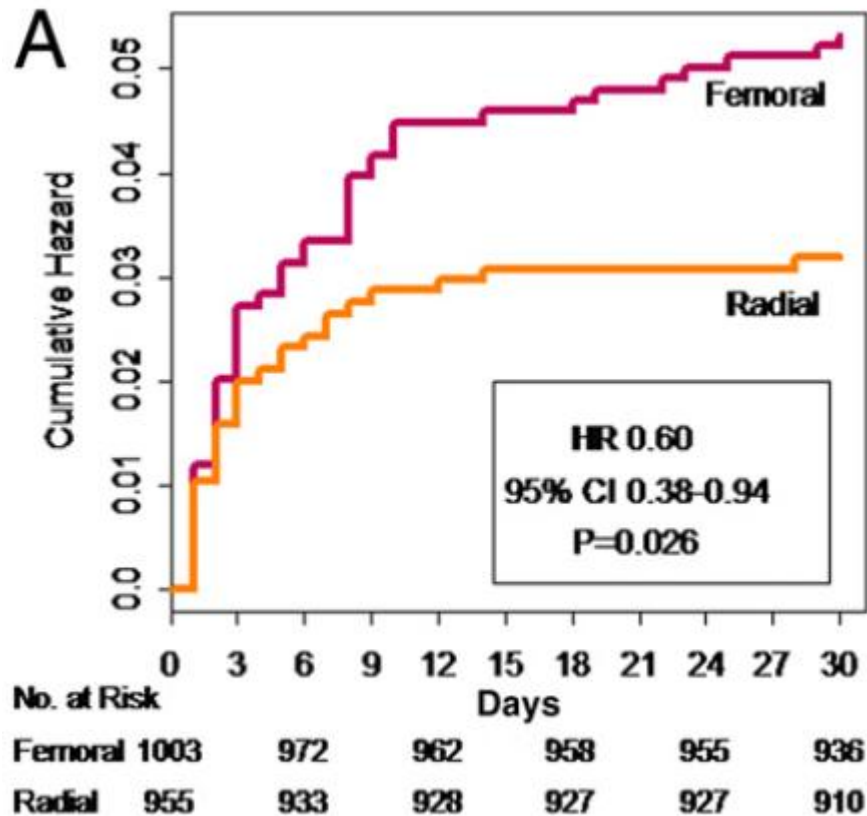
*Hamilton, Toronto, Newmarket, Ontario, Vancouver, British Columbia, Canada; Tampere, Finland;
Durham, North Carolina; Paris, France; Warsaw, Poland; and Valencia, Spain*

n=7021 pts

STEMI n=1958

NSTEMACS n=5063

STEMI Patients



Conclusion STEMI

Areas for future development

- Network delay
- Refining reperfusion strategy
- Better Ischemic and bleeding Risk stratification
- RCT's adjunctive pharmacotherapy, newer devices