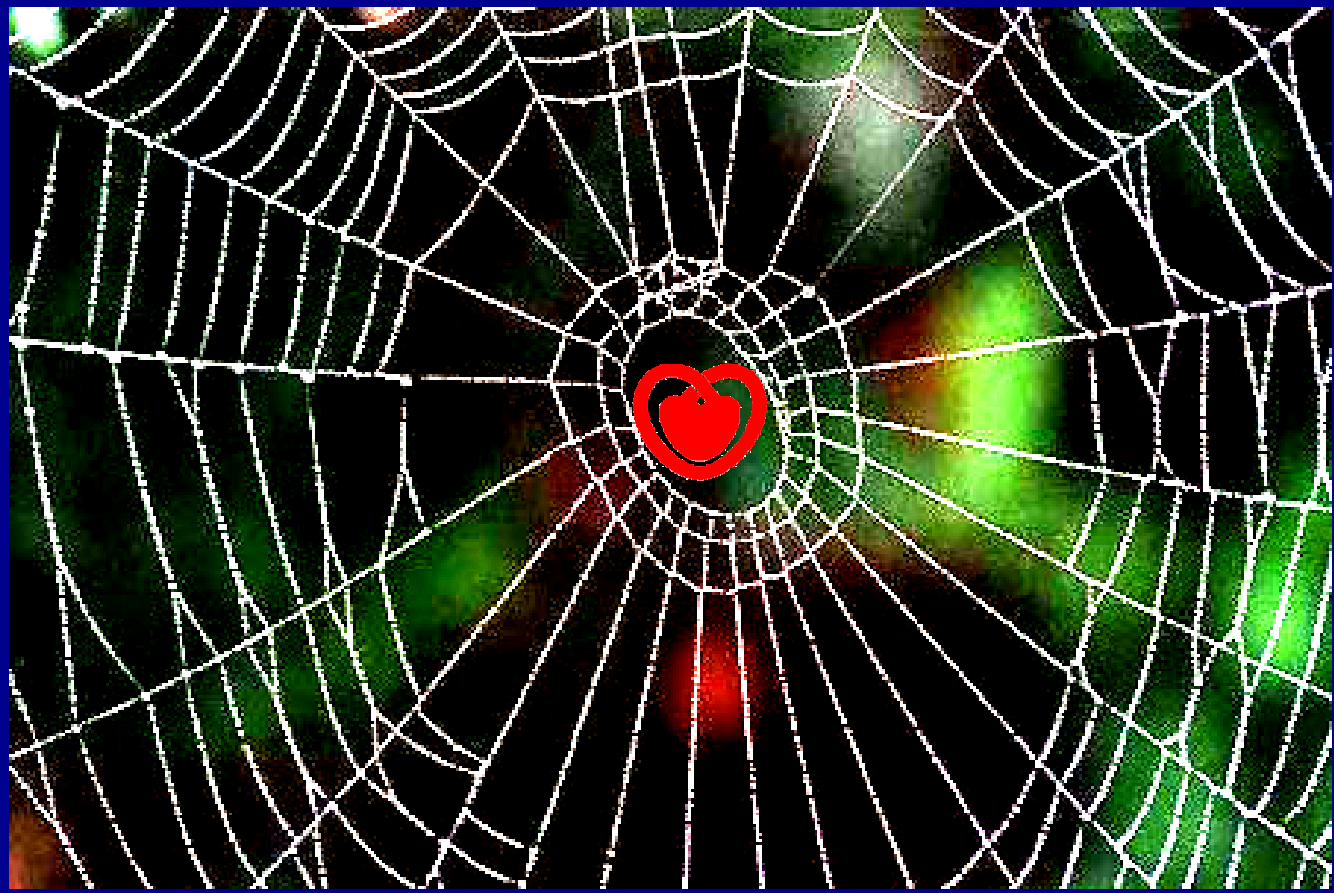
Establishing infarct networks



A. Elsässer, Kerckhoff Heart Center, Bad Nauheim, Germany

Establishing infarct networks

Aim

- to reduce time-to-treatment interval
- to optimize the patient´s outcome

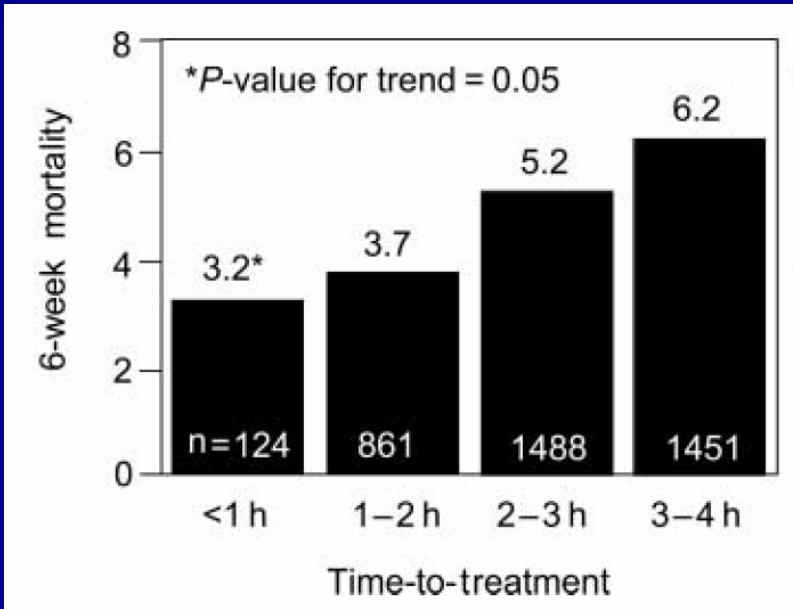
Establishing infarct networks

Components

Establishing infarct networks

Rationale

Thrombolysis



Huber et al. Eur H J 2005, 26:2063-2074

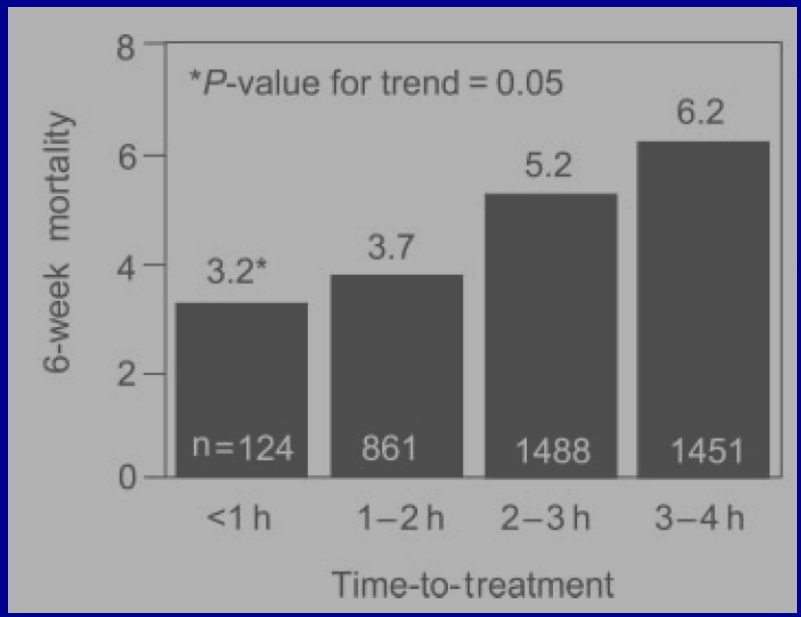
1 hour earlier treatment:

10 lives saved per 1000 patients treated

Establishing infarct networks

Rationale

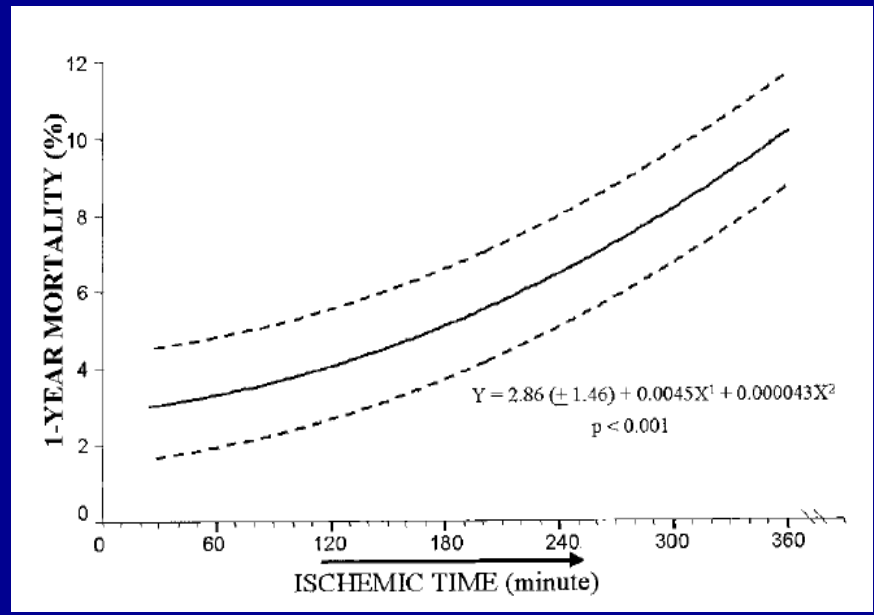
Thrombolysis



Huber et al. Eur H J 2005, 26:2063-2074

1 hour faster treatment:
10 lives saved per 1000 patients treated

Primary angioplasty



De Luca et al. Circulation 2004, 109:1223-1225

Increase of 1-year mortality by 7.5% for each 30 minutes

Establishing infarct networks

Time of ischemia

Total time of ischaemia consists of:

(1) Patient delay

(2) Medical response delay

(3) Delay in initiation of therapy

(4) Delay before therapy becomes effective

Establishing infarct networks

Time of ischemia

Which factors can be influenced?

(1) Patient delay
yes ☐ no ☐

(2) Medical response delay
yes ☐ no ☐

(3) Delay in initiation of therapy
yes ☐ no ☐

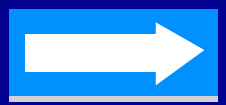
(4) Delay before therapy becomes effective
yes ☐ no ☐

Establishing infarct networks

Patient delay

Problem:

Majority of time loss is the period between onset of symptoms and alert of the medical care system



Aim:

Increase in public awareness

Establishing infarct networks

Patient delay

Problem:

Majority of time loss is the period between onset of s
care syst

Aim:

Increase

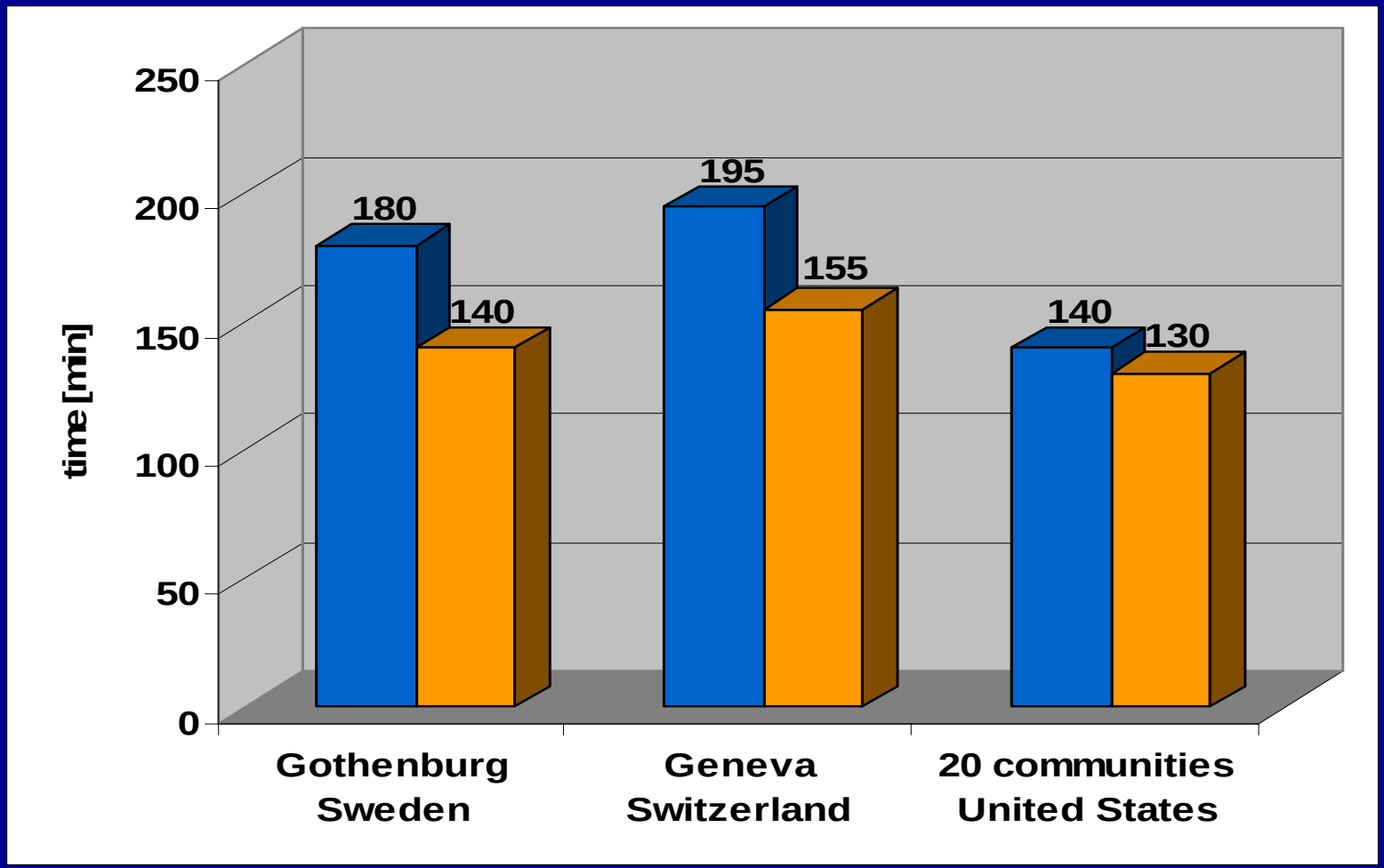
Possible solution:

education programmes
with 2 major topics:

➔ **symptom recognition**
➔ **awareness to react fast**

Establishing infarct networks

Patient delay



Establishing infarct networks

Patient delay

Conditions for successful public campaign:

- ➔ easy, clear, and short message
- ➔ high recognition
- ➔ published by TV, radio, and newspapers
- ➔ propagated by health organizations
- ➔ appearance at least once a week
- ➔ campaign duration 12-18 months

Establishing infarct networks

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Establishing infarct networks

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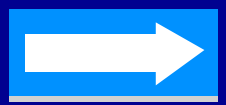
Establishing infarct networks

Medical response delay

Problem:

Time needed for the ambulances to reach the patient, for initial diagnosis, and for transportation to the hospital



Aim:

Optimizing the prehospital management

Establishing infarct networks

Medical response delay

Problem:

Time needed for the ambulances to reach the

tran

Aim:

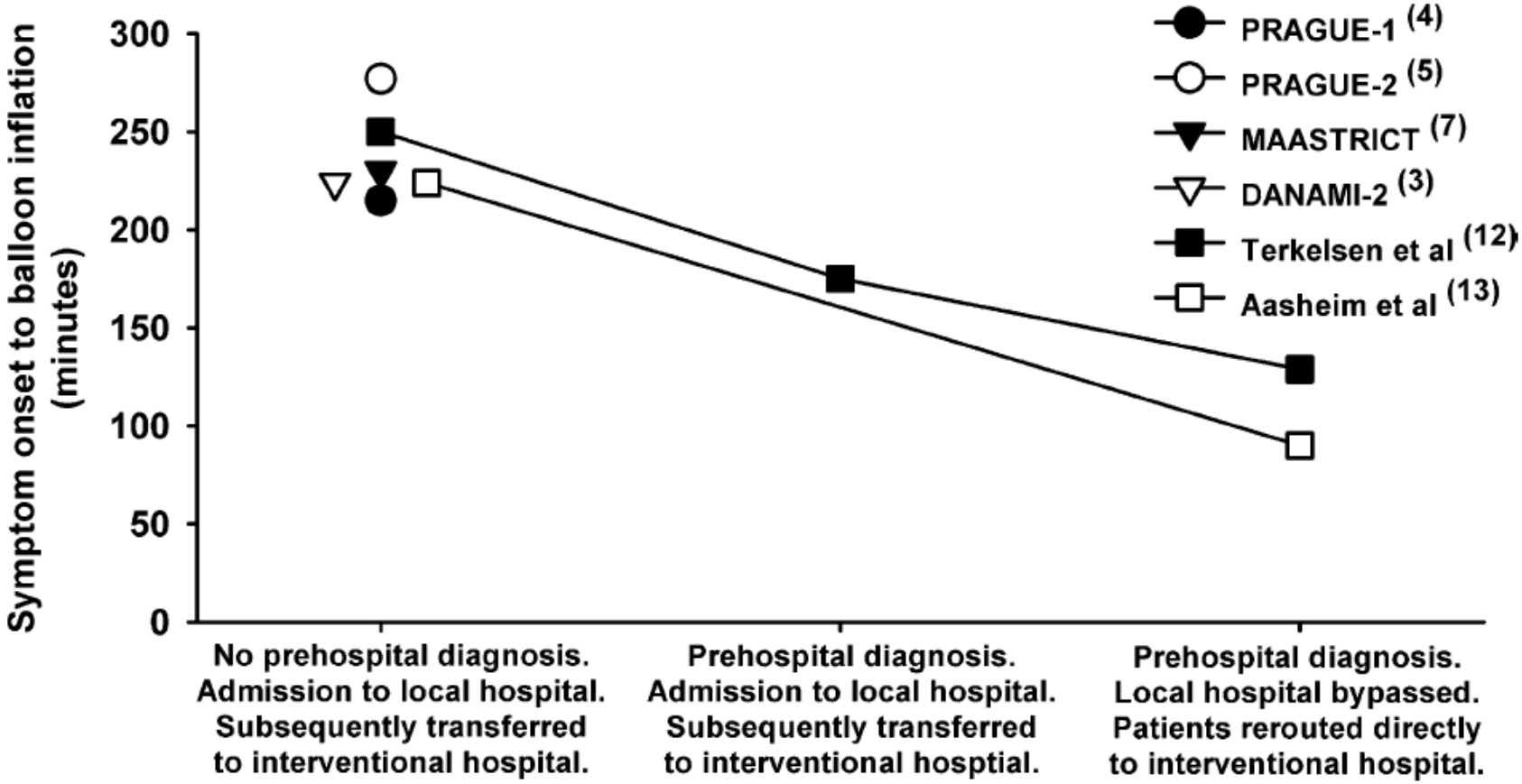
Opt

Possible solution:

- ➔ transport by ambulance/helicopter
- ➔ education of ambulance staff in
  - ➔ basic and advanced cardiac life support
  - ➔ recording and reading an ECG
  - ➔ prehospital triage
  - ➔ initiating relevant adjunctive medication
- ➔ transmission of ECG to cardiologist
- ➔ physician in the ambulance crew

Establishing infarct networks

Medical response delay



Terkelsen et al. J Electrocardiology 2005, 38:187-192

Establishing infarct networks

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Establishing infarct networks

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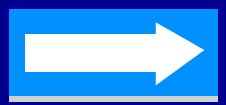
Establishing infarct networks

Delay in initiation of therapy

Problem:

Time loss by admission procedures in the hospital



Aim:

Improvement of in-hospital procedures

Reducing door-to-intervention time

Establishing infarct networks

Delay in initiation of therapy

Problem:

Time loss by admission procedures in the hos

Aim:

Imp

Rec

Possible solution:

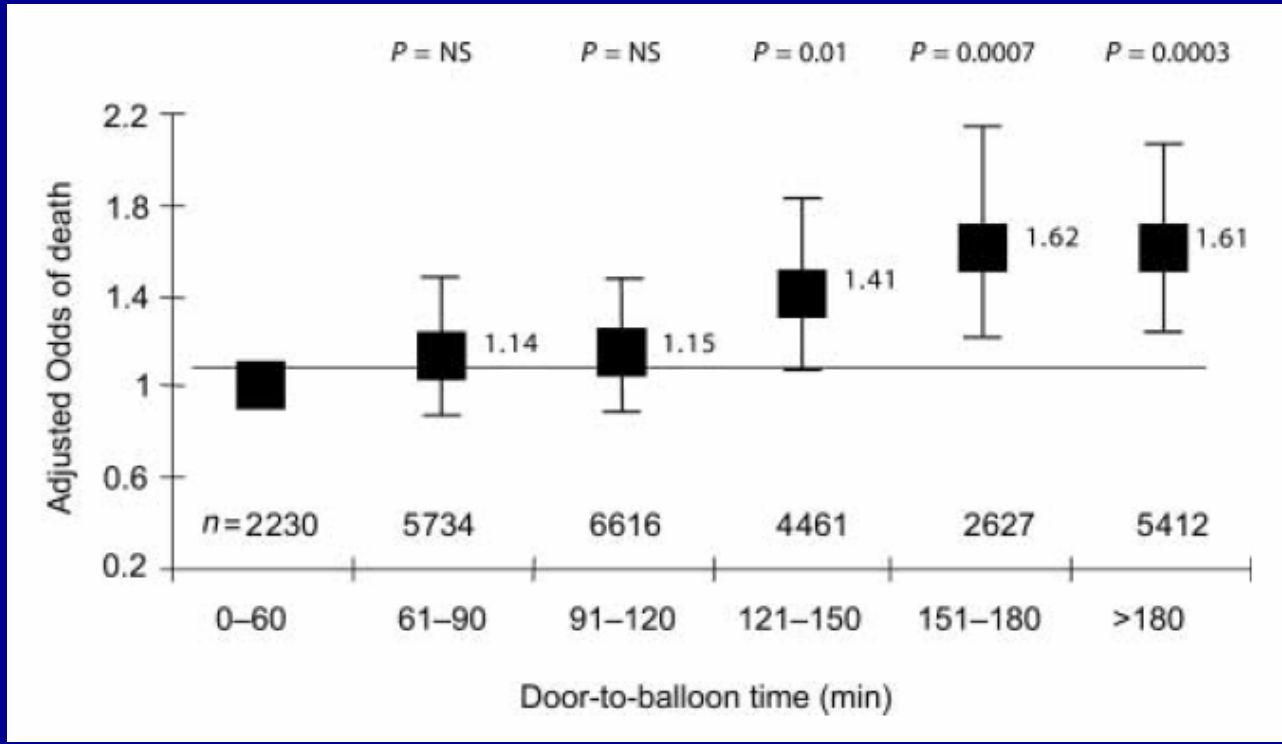
➔ **clear treatment pathways**

- ➔ **patients with STEMI: direct admission to the cath-lab for primary PCI or the emergency room for thrombolysis**
- ➔ **patients with suspected myocardial infarction: direct admission to the CCU**

➔ **Education and training of nursing staff and doctors**

Establishing infarct networks

Delay in initiation of therapy



Huber et al. Eur Heart J 2005, 26:2063-2074

European Heart Journal (2003) 24, 28–66

ELSEVIER

EUROPEAN SOCIETY OF CARDIOLOGY

Task Force Report

Management of acute myocardial infarction in patients presenting with ST-segment elevation

Primary PCI: 90min

Thrombolysis: 30min

Establishing infarct network

Time of ischemia

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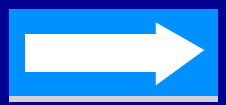
Establishing infarct networks

Therapy effectiveness

Problem:

Different vessel patency rate after thrombolysis or primary PCI



Aim:

High degree of TIMI-3 flow after reperfusion therapy

Establishing infarct networks

Therapy effectiveness

Problem:

Different vessel patency rate after thrombolysis or primary PCI

Aim:

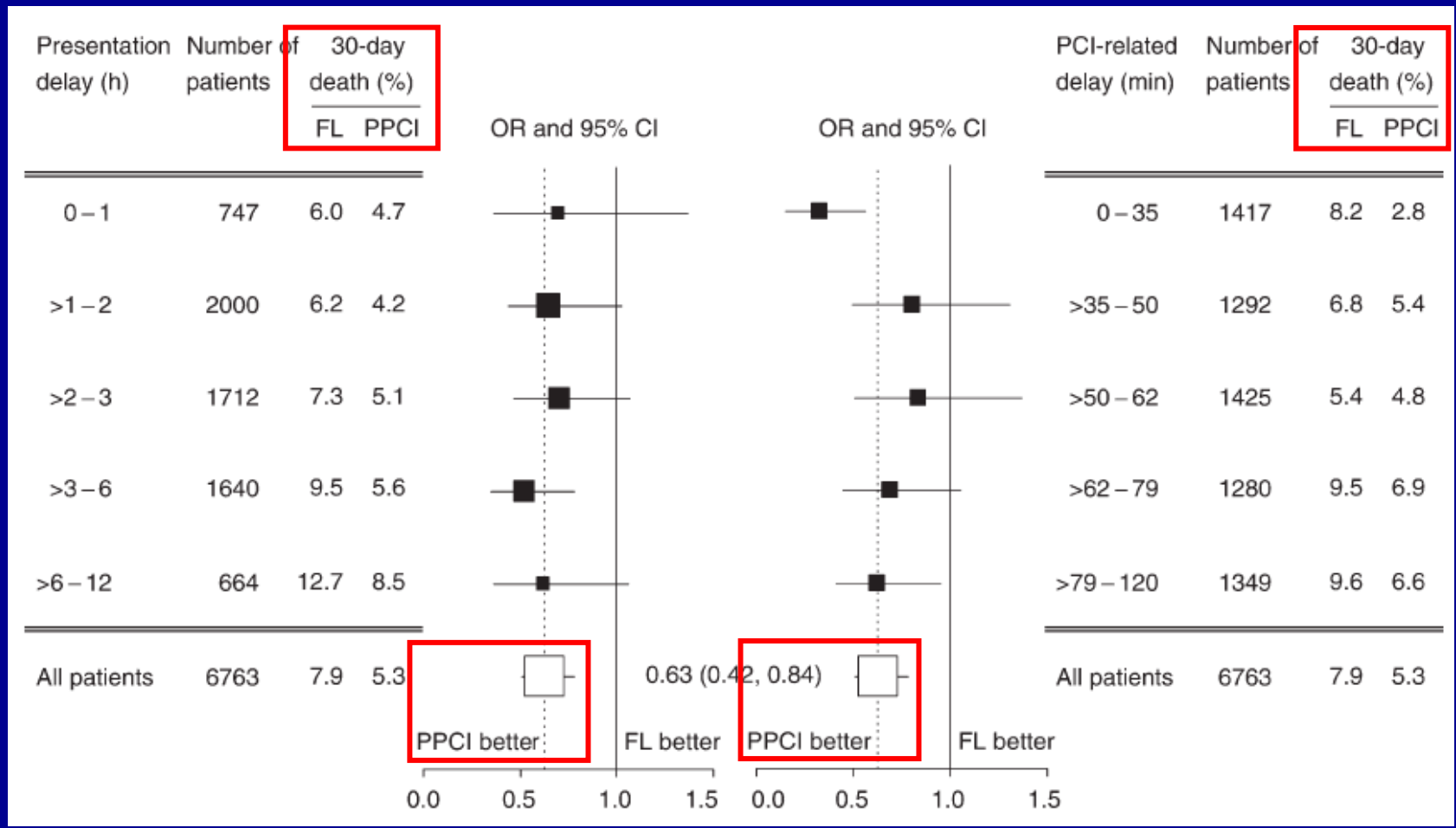
High de
reperfu

Possible solution:

- ➔ **Preference of primary PCI**
- ➔ **Facilitated PCI after thrombolysis**

Establishing infarct networks

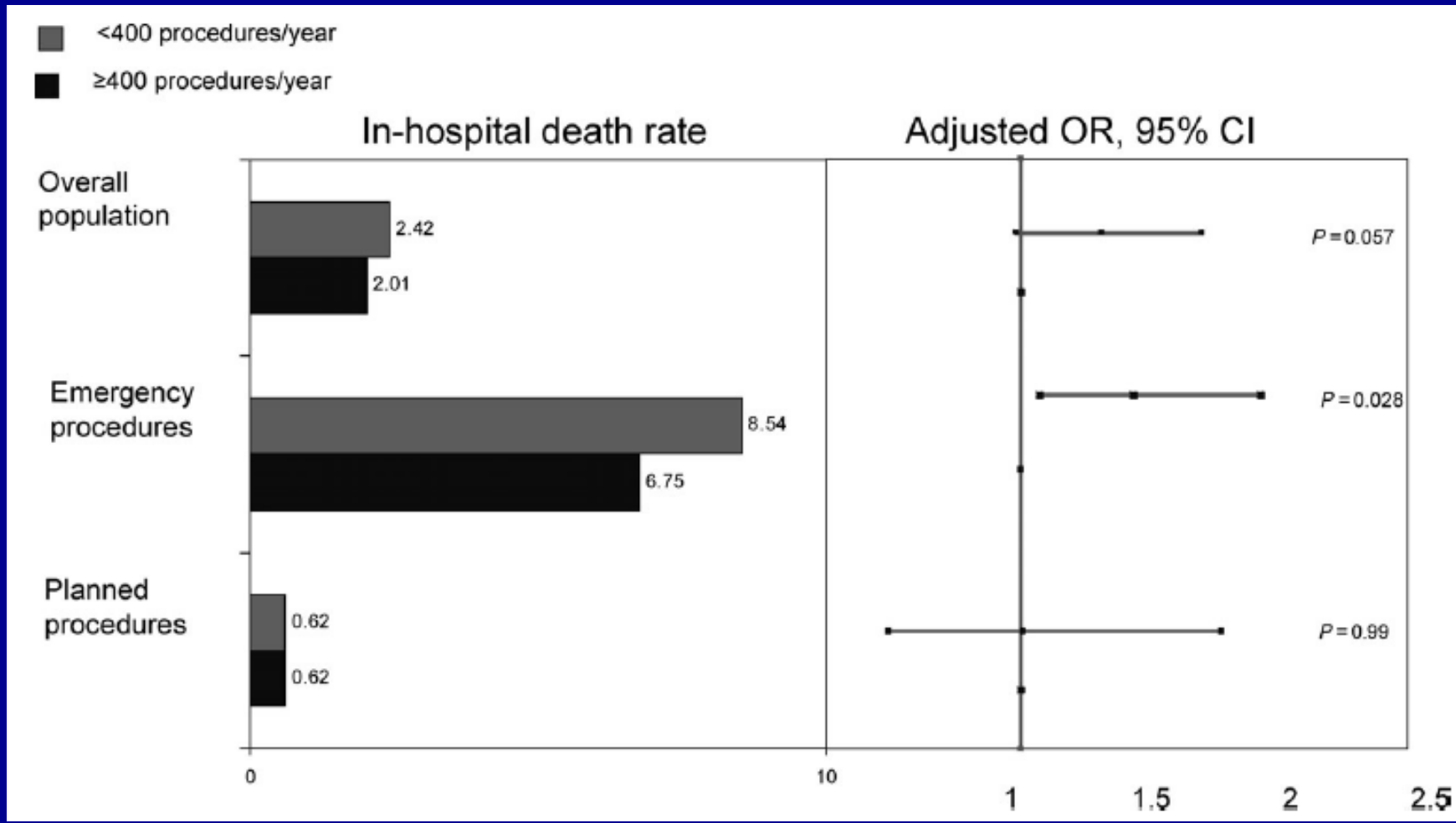
Therapy effectiveness



Boersma et al. Eur Heart J 2006, 27:779-788

Establishing infarct networks

Therapy effectiveness



Spaulding et al. EHJ 2006, 27: 1054-1060

Establishing infarct network

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Establishing infarct network

Acute onset of symptoms
duration more than 20 minutes

<10min

Information of an emergency service

-ambulance crew reaches patient
-recording and reading 12-leads ECG within 10min
-announcement at cath lab by phone
-transport of patient to hospital with PCI facility

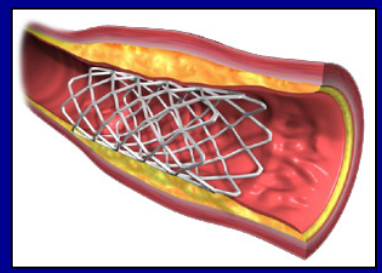
Establishing infarct network

<120min

admission to cath lab

<30min

PCI with successful reperfusion
(TIMI-3 flow)



Establishing infarct network

Summary

Four major factors are important for the implementation of infarct networks:

- The patient delay can effectively be reduced by taking measures to increase public awareness of heart attacks.
- The medical response delay can be minimized by an adequate pre-hospital diagnosis avoiding unnecessary admissions to non-interventional hospitals.
- The delay in initiation of therapy can be reduced by having clear intra-hospital treatment pathways resulting in a short door-to-balloon time.
- The therapy effectiveness depends on the therapy strategy with better results for primary PCI than for thrombolysis and on the access to high-volume PCI centers.