XI CONVEGNO NAZIONALE DEGLI UFFICIALI MEDICI E DEL PERSONALE SANITARIO DELLA CROCE ROSSA ITALIANA

Viareggio 04 Ottobre 2014

TRATTAMENTO DELL'INFARTO MIOCARDICO ACUTO POSSIBILITA' E CRITICITA'

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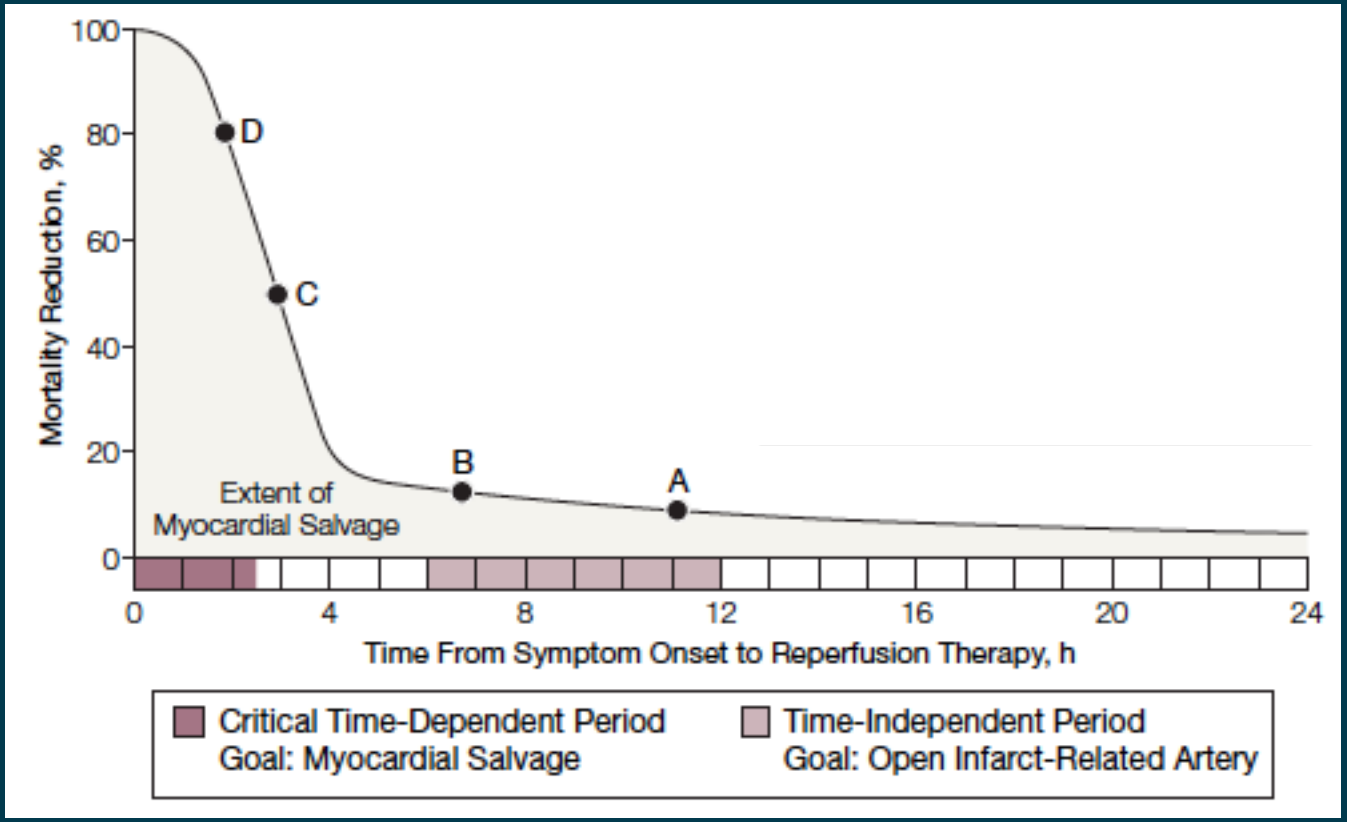
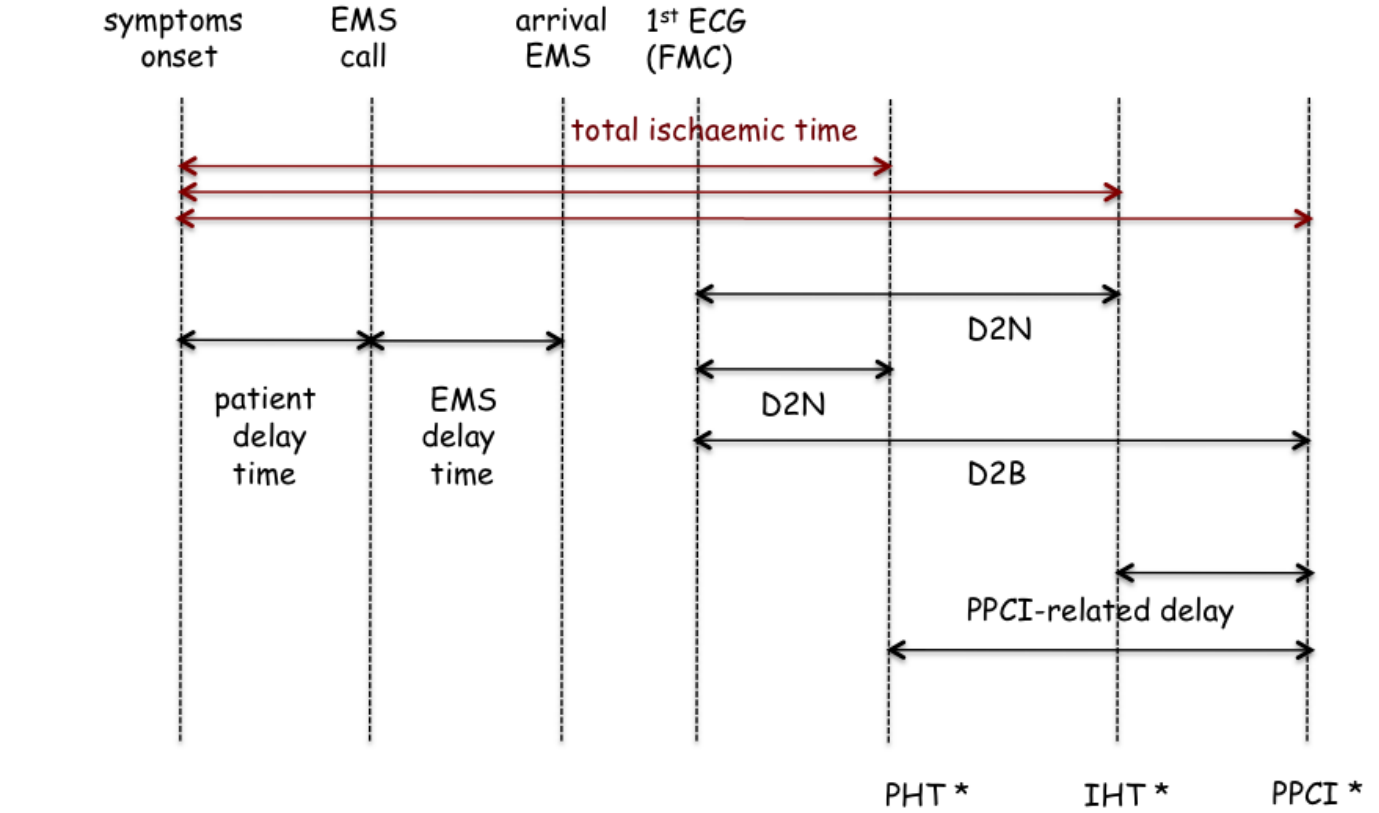
Assistente Reparto U.T.I.C.
POLICLINICO MILITARE DI ROMA

Duration of symptoms, reperfusion and mortality



Gersh B. JAMA 2005

Delays in STEMI treatment



* after delivery of reperfusion therapy, a "reperfusion therapy to coronary recanalization" time should be considered

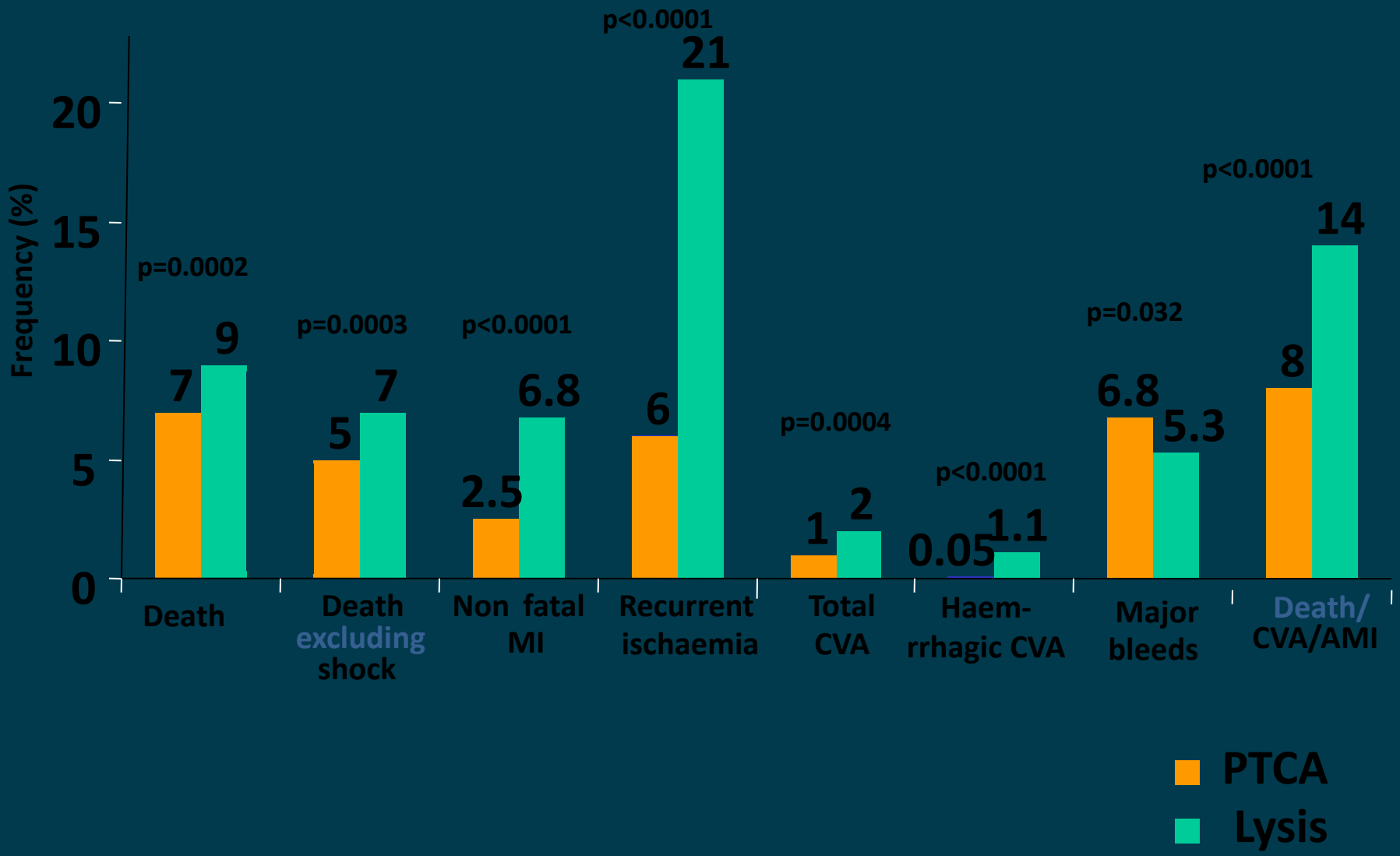
Tubaro M, J Acute Card Care 2011

GISSI

	SK (≤ 12 hrs)	control	OR	95% CI
21 days mortality (%)	10.7	13.0	0.81	0.72-0.95
21 days mortality according to time from symptoms' onset: < 3 hrs 3-6 hrs 6-9 hrs 9-12 hrs			 0.74 0.80 0.87 1.19	
1 year mortality (%)	17.2	19.0	0.90	0.84-0.97

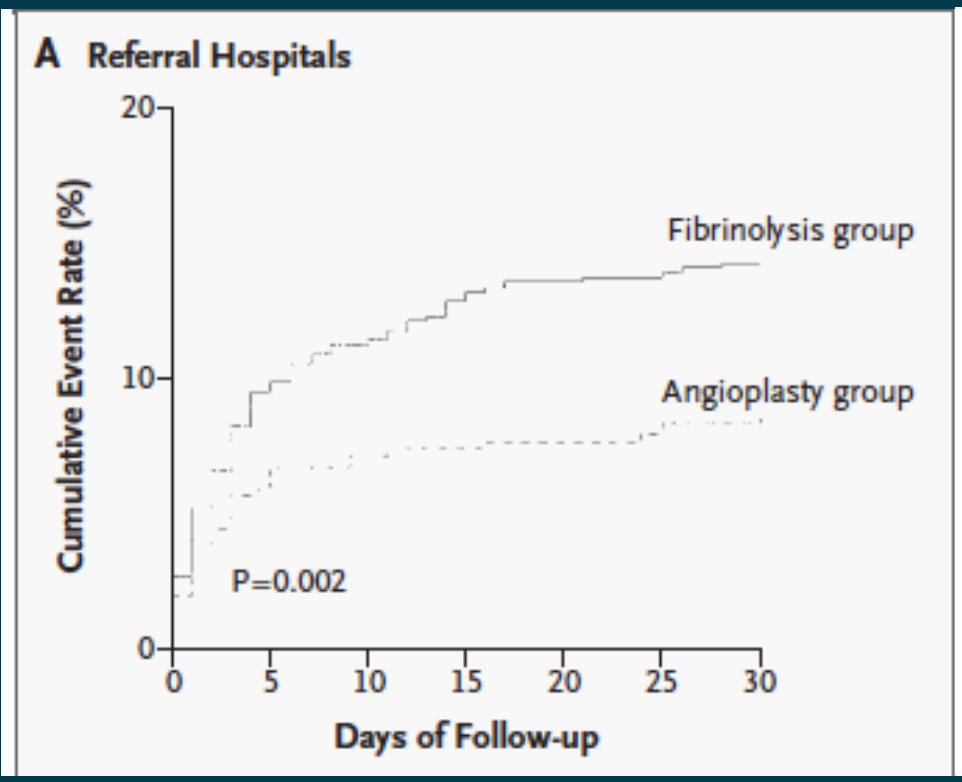
GISSI, Lancet 1984;i:397

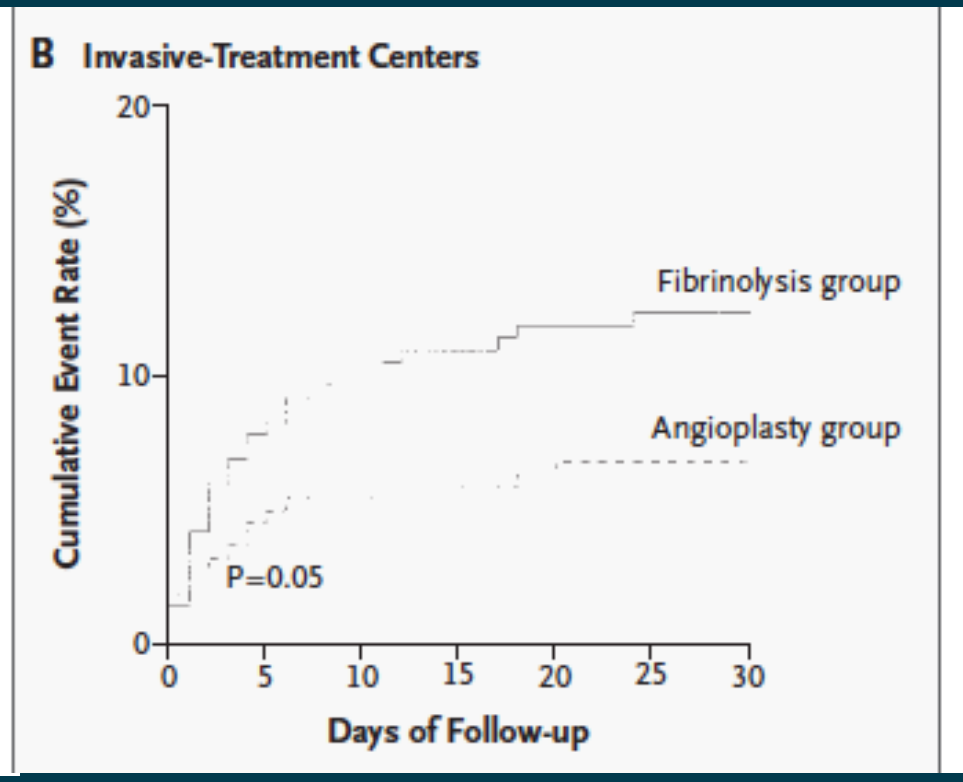
primary PCI vs. thrombolytic therapy
- short term outcomes -



Keeley EC, et al. Lancet 2003;361:13–20

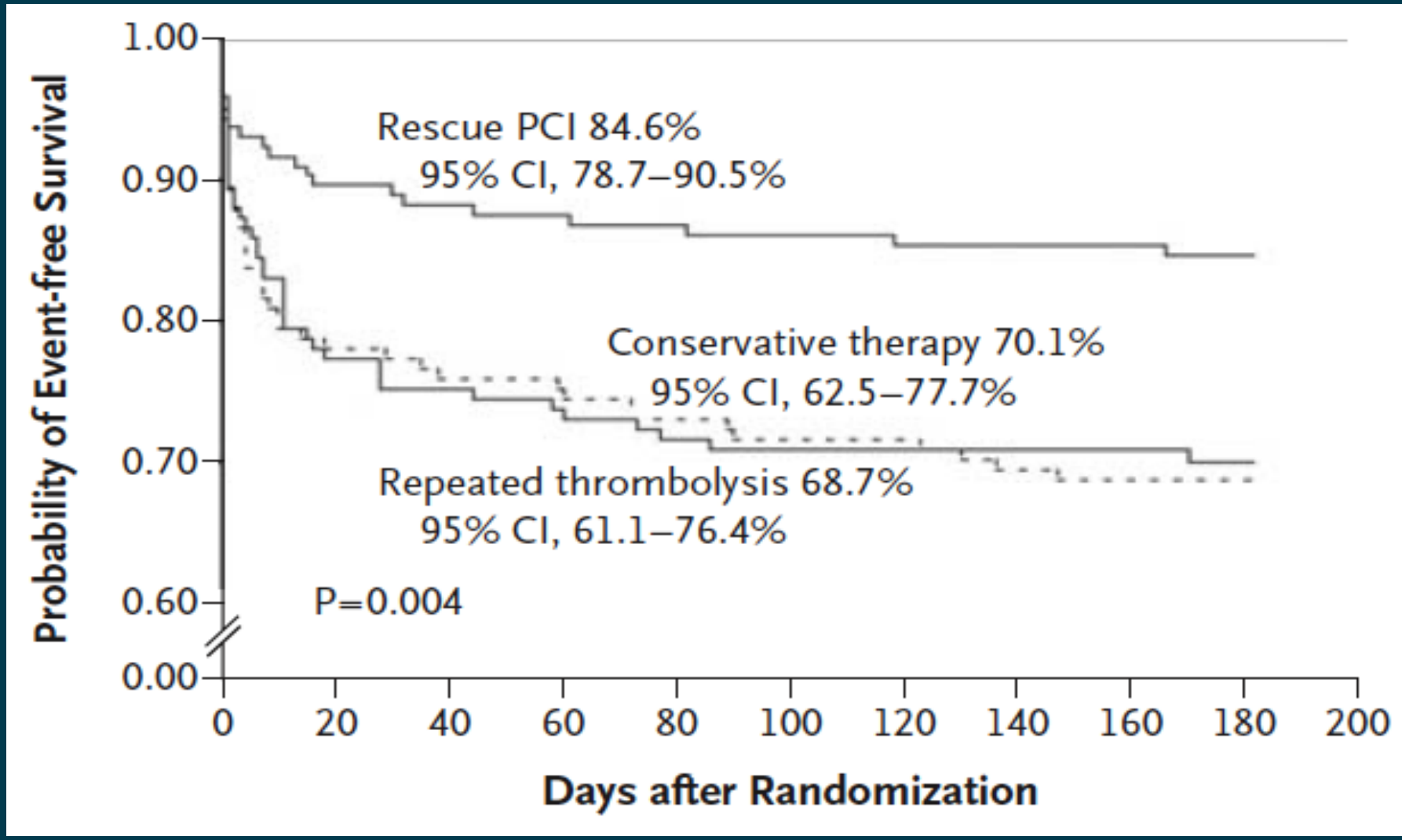
DANAMI -2





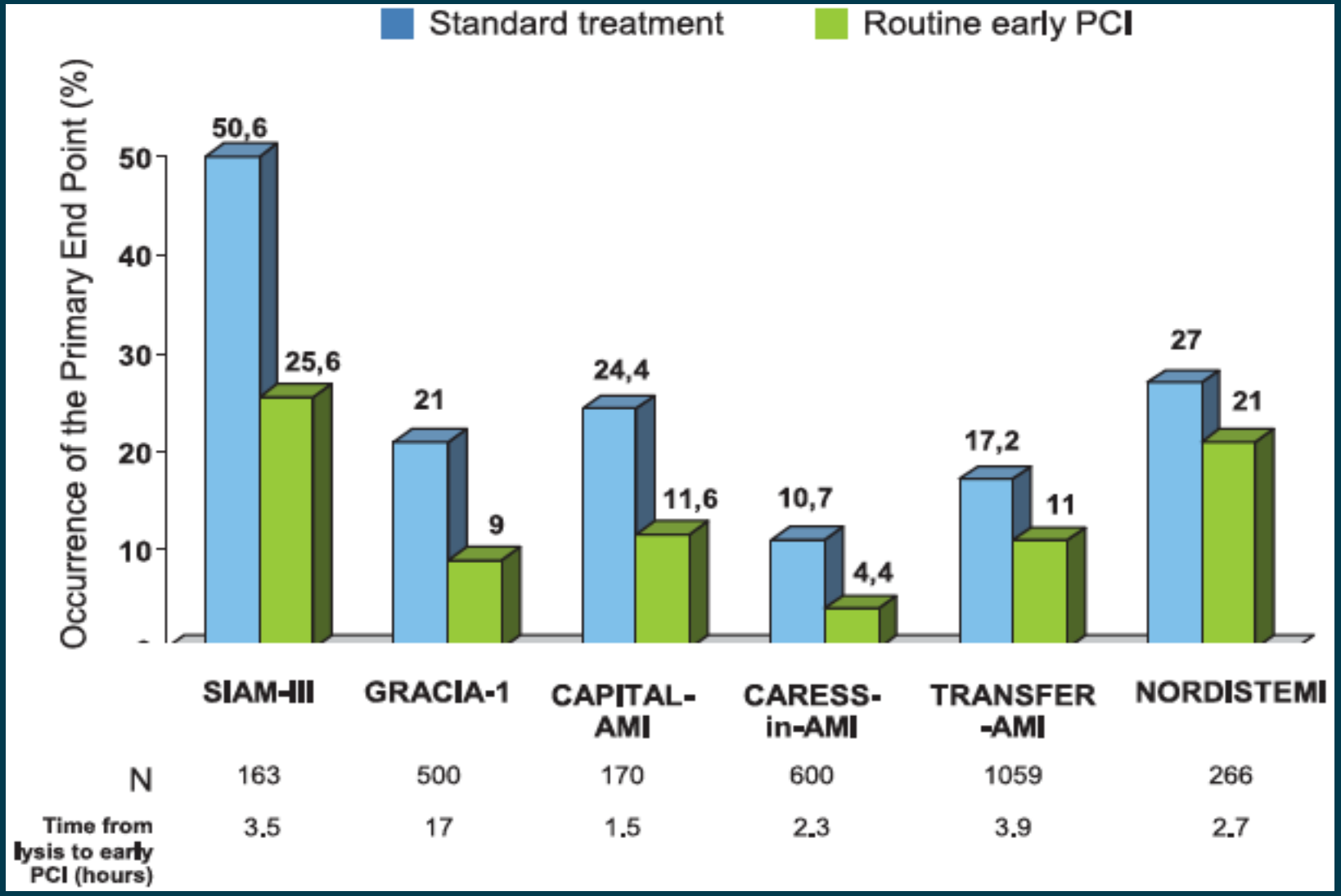
Andersen HR. N Engl J Med 2003;349:733.

REACT: rescue PCI in STEMI



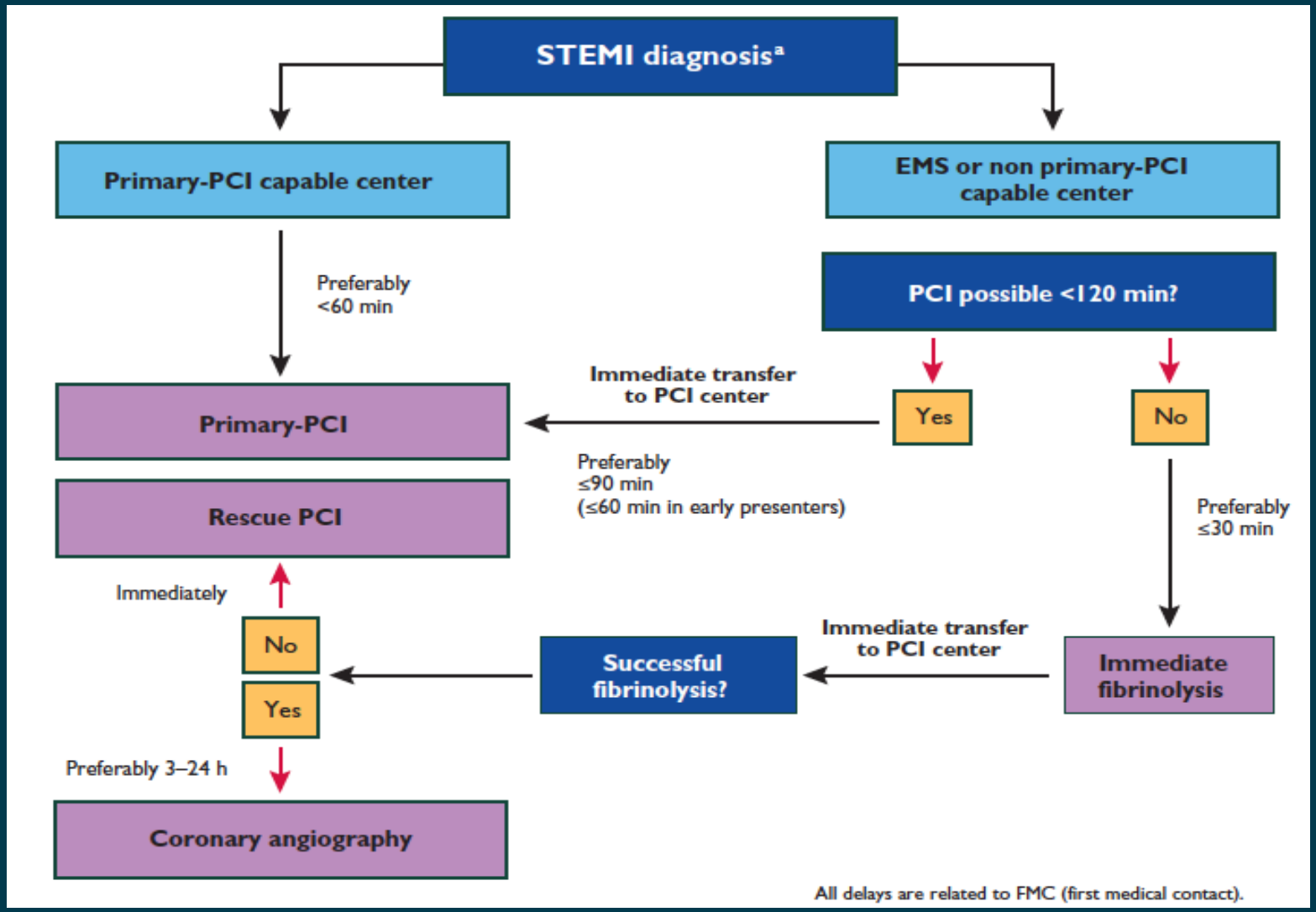
Gershlick AH. N Engl J Med 2005;353:2758.

STEMI: routine early PCI after thrombolysis



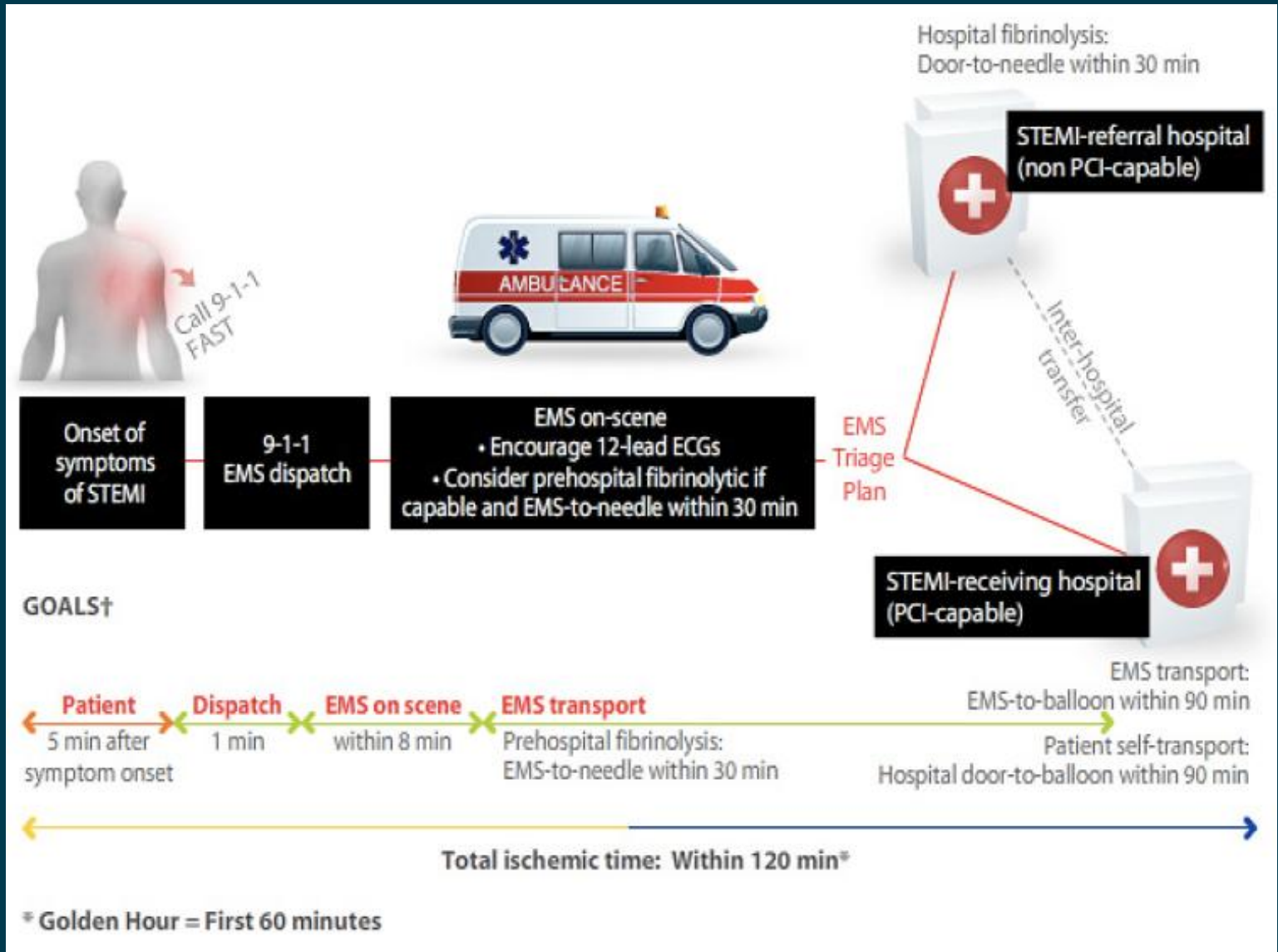
Halvorsen S. Thromb Haemost 2011

ESC 2012 STEMI guidelines

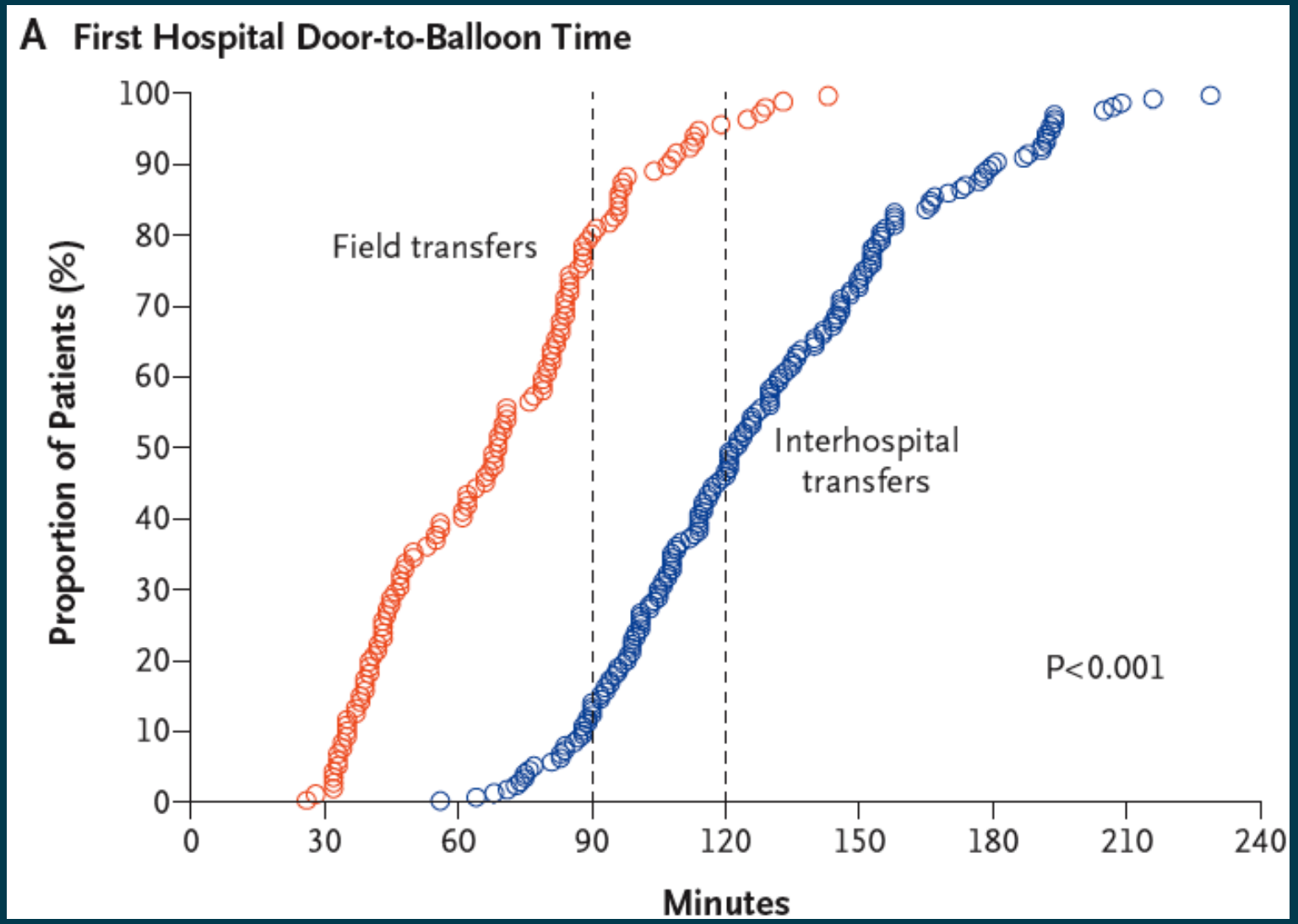


Steg PG. Eur Heart J 2012

EMS in STEMI

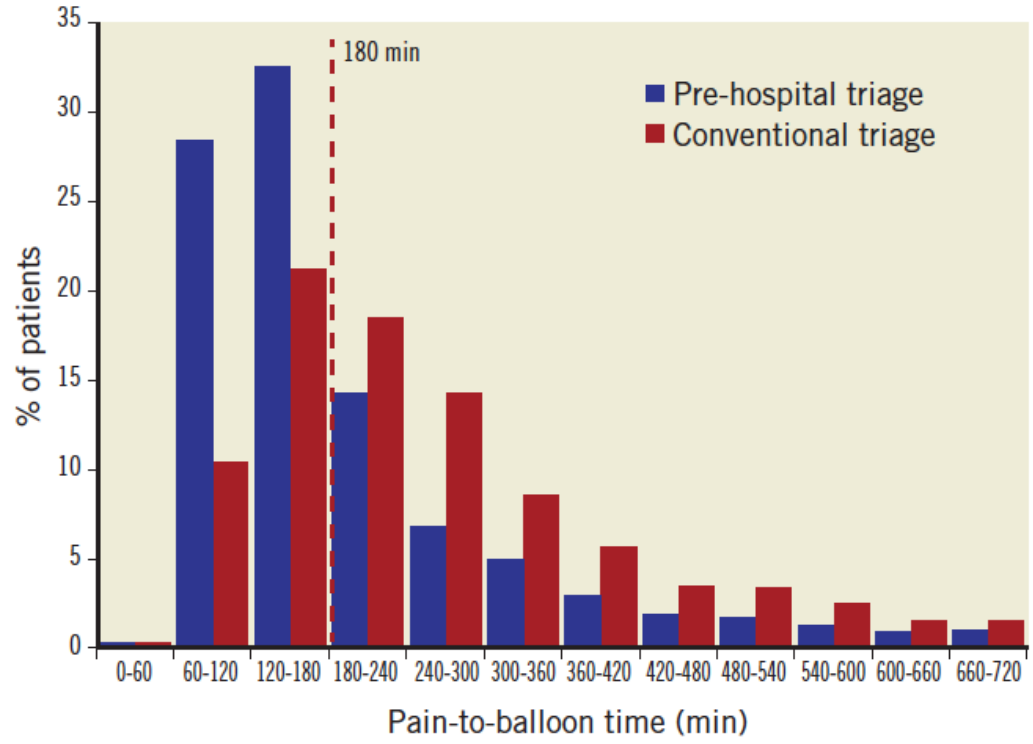

Hospital fibrinolysis:
Door-to-needle within 30 min
STEMI-referral hospital
(non PCI-capable)
Call 9-1-1
FAST
AMBULANCE
Inter-hospital
transfer
Onset of
symptoms
of STEMI
9-1-1
EMS dispatch
EMS on-scene
• Encourage 12-lead ECGs
• Consider prehospital fibrinolytic if
capable and EMS-to-needle within 30 min
EMS
Triage
Plan
STEMI-receiving hospital
(PCI-capable)
GOALS†
Patient
5 min after
symptom onset
Dispatch
1 min
EMS on scene
within 8 min
EMS transport
Prehospital fibrinolysis:
EMS-to-needle within 30 min
EMS transport:
EMS-to-balloon within 90 min
Patient self-transport:
Hospital door-to-balloon within 90 min
Total ischemic time: Within 120 min*
* Golden Hour = First 60 minutes

STEMI: direct vs. indirect transfer



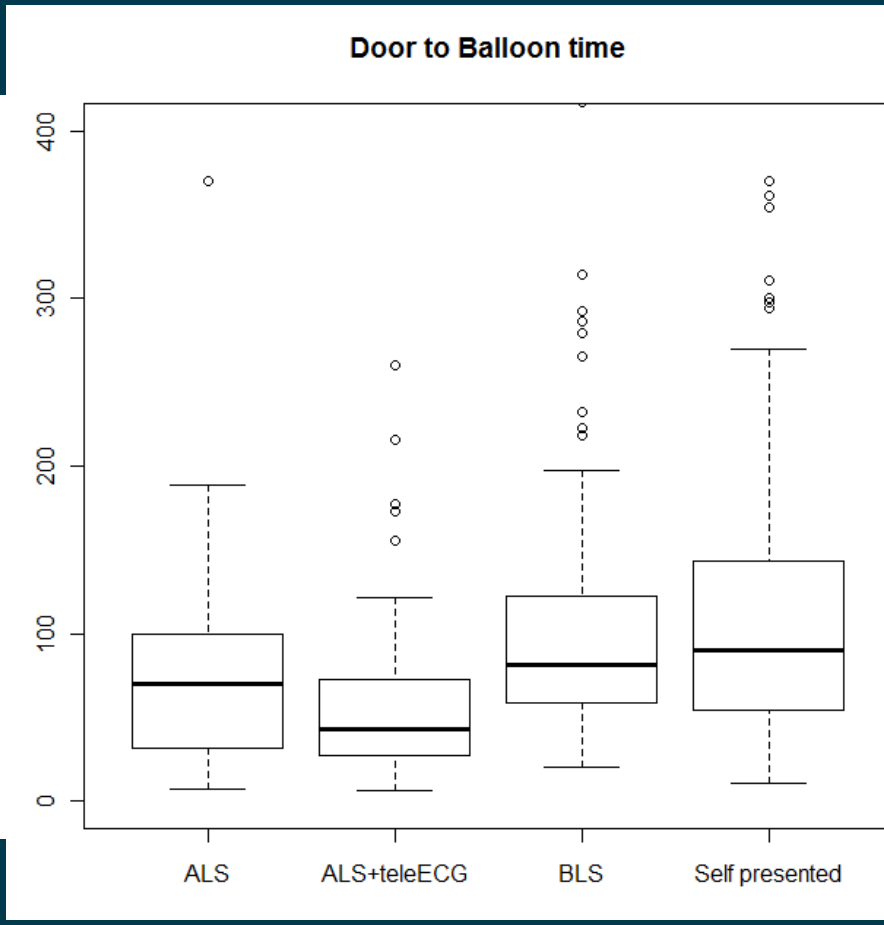
pre-hospital ECG

rete Bologna



Ortolani P, Eurointervention 2011;7:449

MOMI survey



Grieco N, EHJ ACC in press

transfer for PPCI: door-in to door-out (DIDO) times

1034 hosp, 13776 pts,
median (IQR) DIDO time = 64 (43-104) min

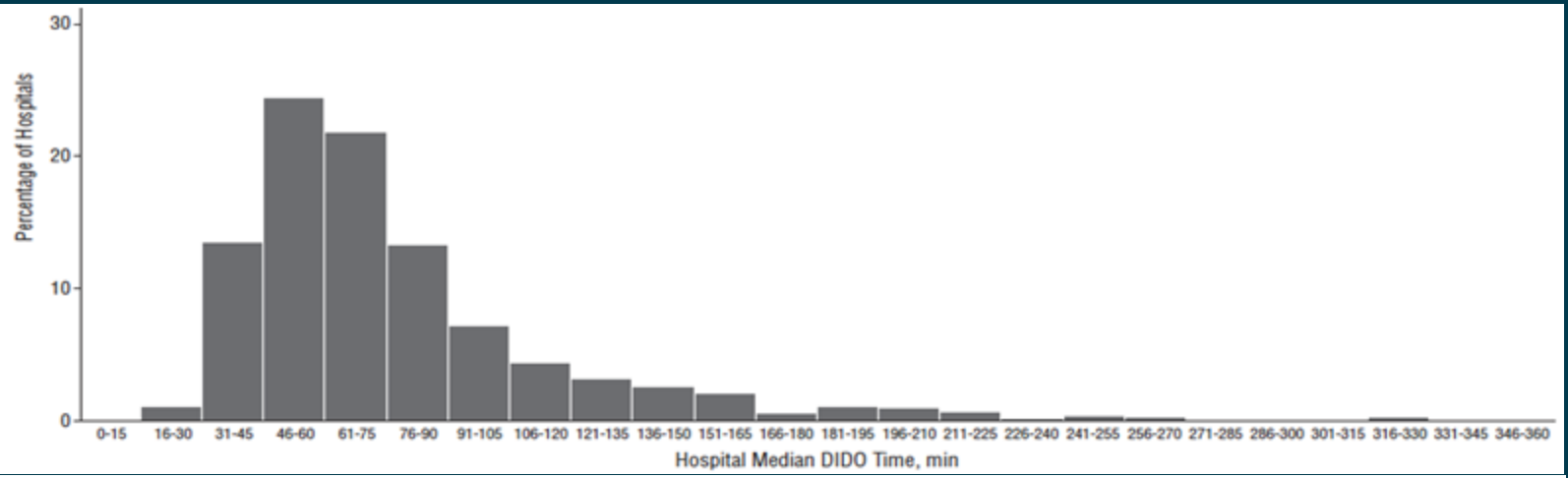
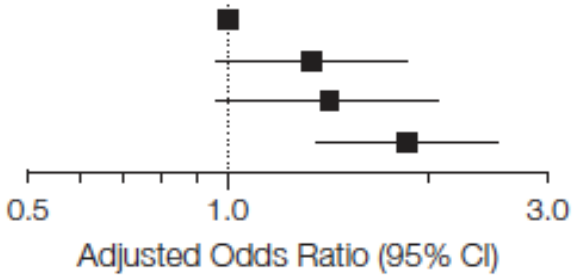


Figure 3. Association of DIDO Time With In-Hospital Mortality

DIDO Time, min	Mortality, No. of Patients/Total (%)	Adjusted Odds Ratio (95% CI)
≤30	43/1600 (2.7)	1.0 (Reference)
31-60	192/4841 (4.0)	1.34 (0.96-1.86)
61-90	146/3013 (4.9)	1.41 (0.96-2.06)
>90	430/5176 (8.3)	1.86 (1.36-2.54)



Herrin J, Arch Intern Med 2011;171:1879

Wang TY, JAMA 2011;305:2540

bypass emergency room

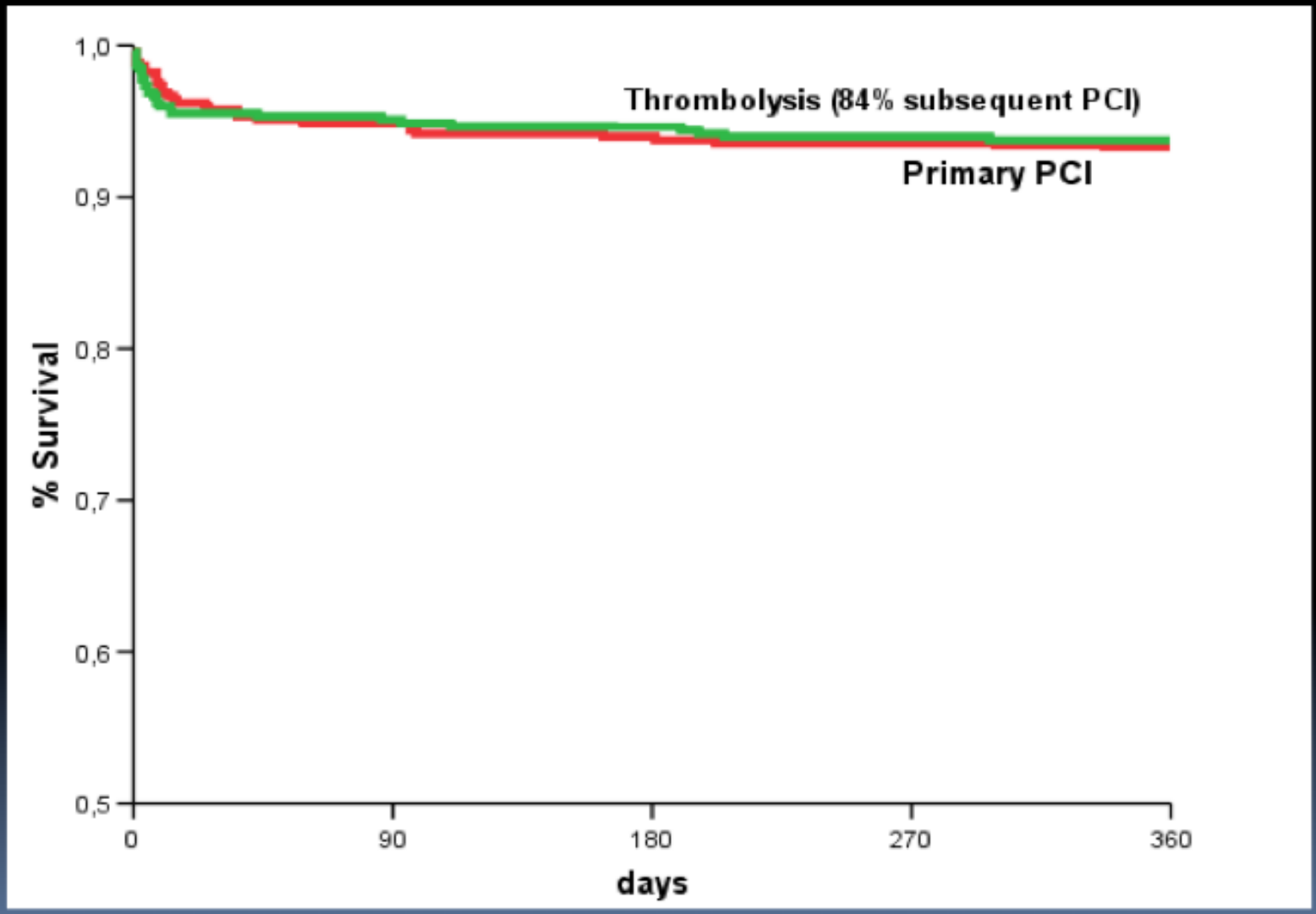
USIC 2000 Registry

	direct admission to ICCU/cath lab	admission via ER
symptom onset to admission (min)	244 ***	292
symptom onset to thrombolysis (min)	204 **	258
symptom onset to PCI (min)	292 **	402
mortality at 5 days (%)	4.9 *	8.6

admission via ER independently predicts mortality: OR 1.67 (1.01-2.75)

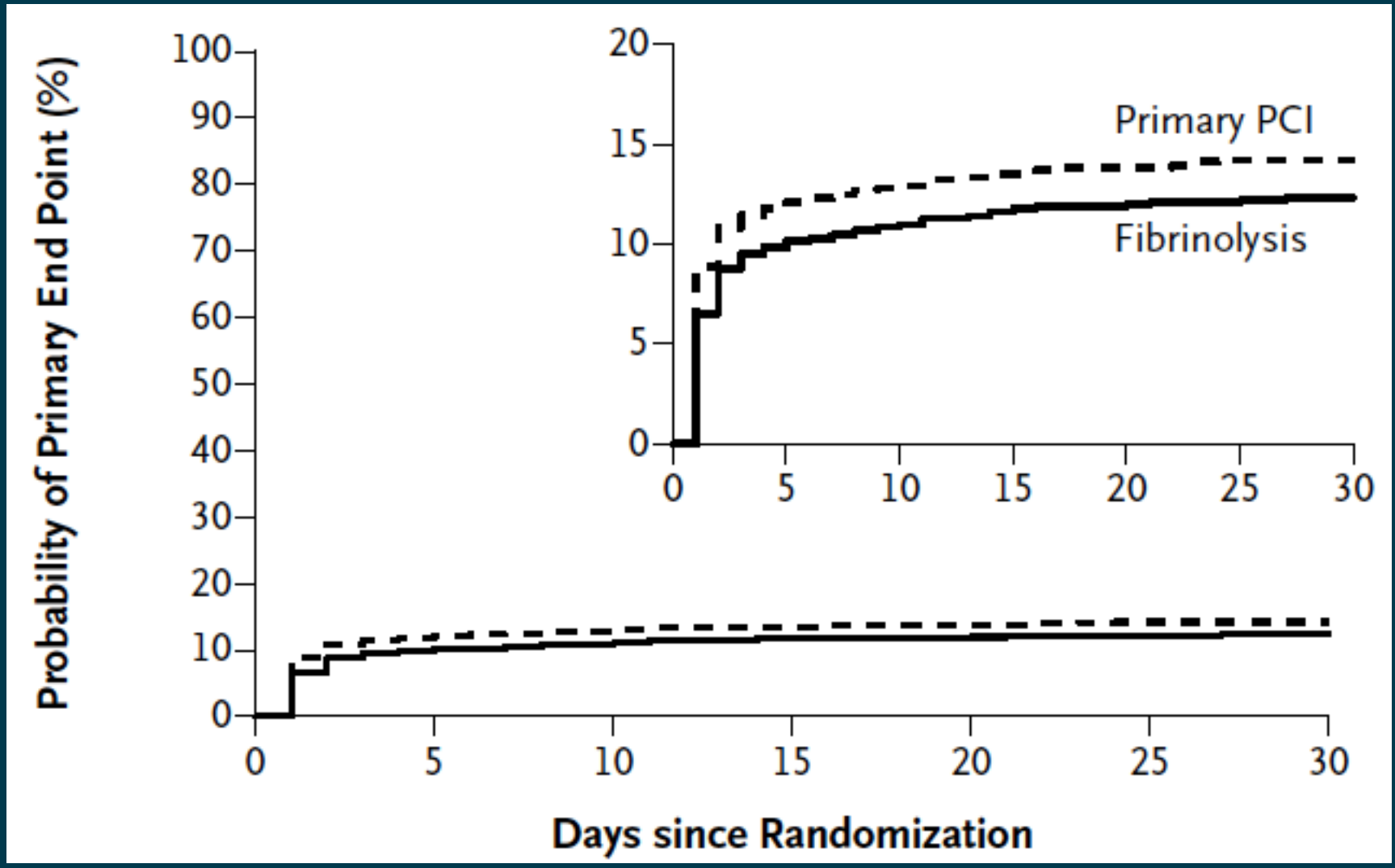
Steg PG, Heart 2006

One-year survival in cohorts matched on the propensity score for getting lysis vs PPCI



Danchin N, Circulation 2008;118:268.

STREAM: fibrinolysis or primary PCI in STEMI

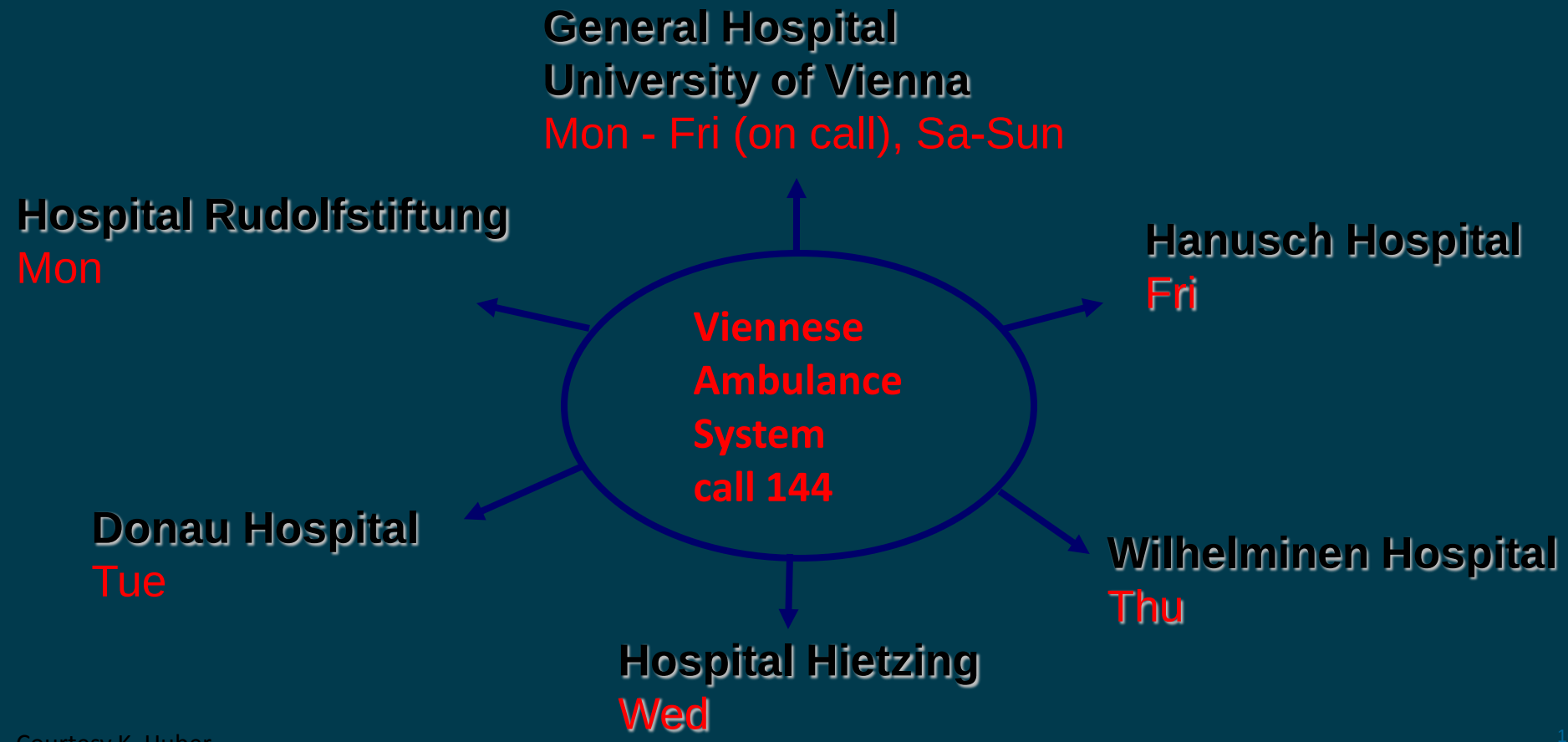


Armstrong PW, N Engl J Med 2012

Local System of Care: The Vienna model

all cath labs active between 7.00 and 16:00 h

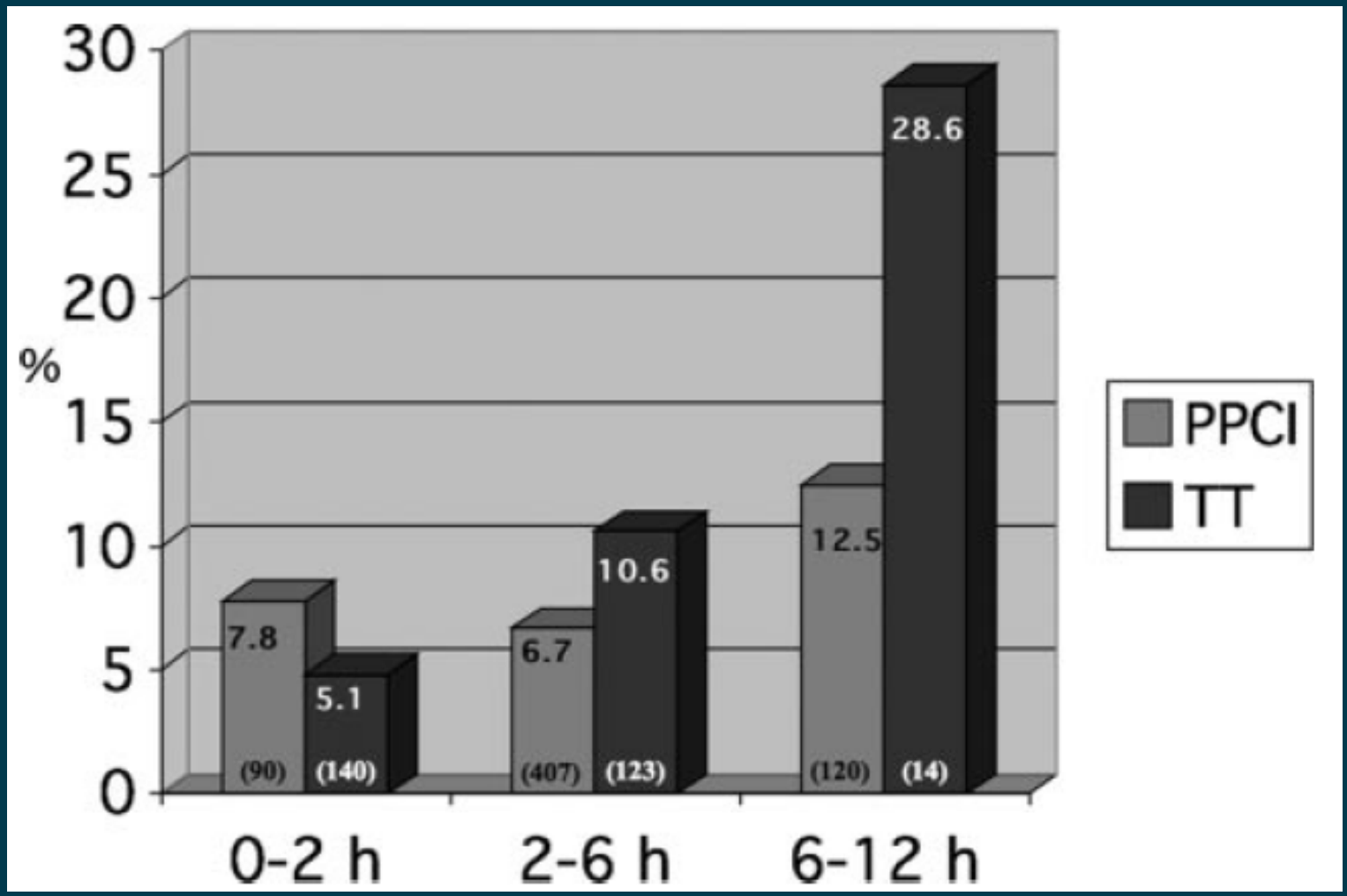
permanent availability of cath labs and teams during non-official catheter times



Courtesy K. Huber

Vienna STEMI Registry

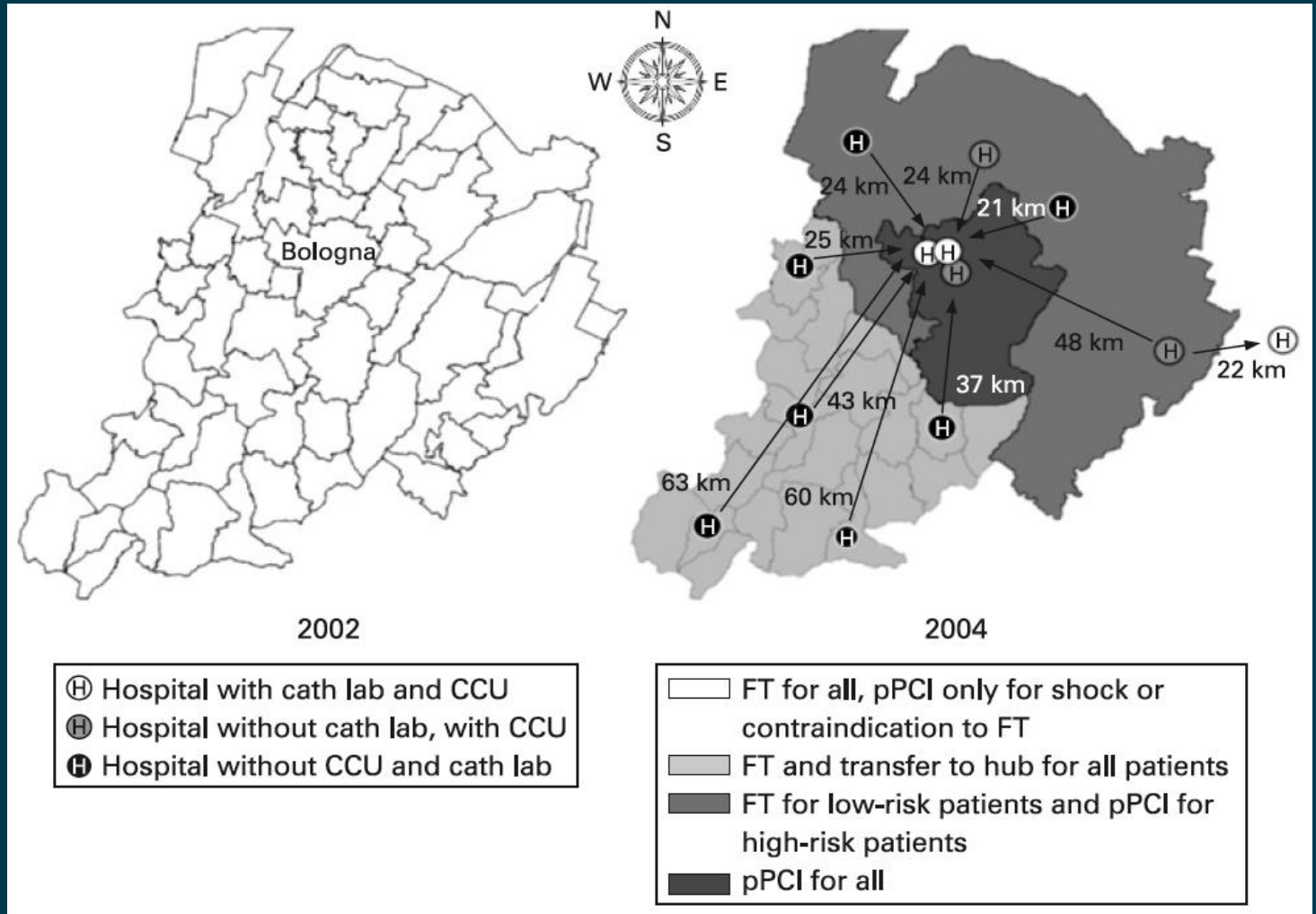
in-hospital mortality



Kalla K. Circulation 2006;113:2398.

Bologna network

- reperfusion therapy: 58.4% ⟶ 76.3 %
- in-hospital mortality: 17.0% ⟶ 12.3 %

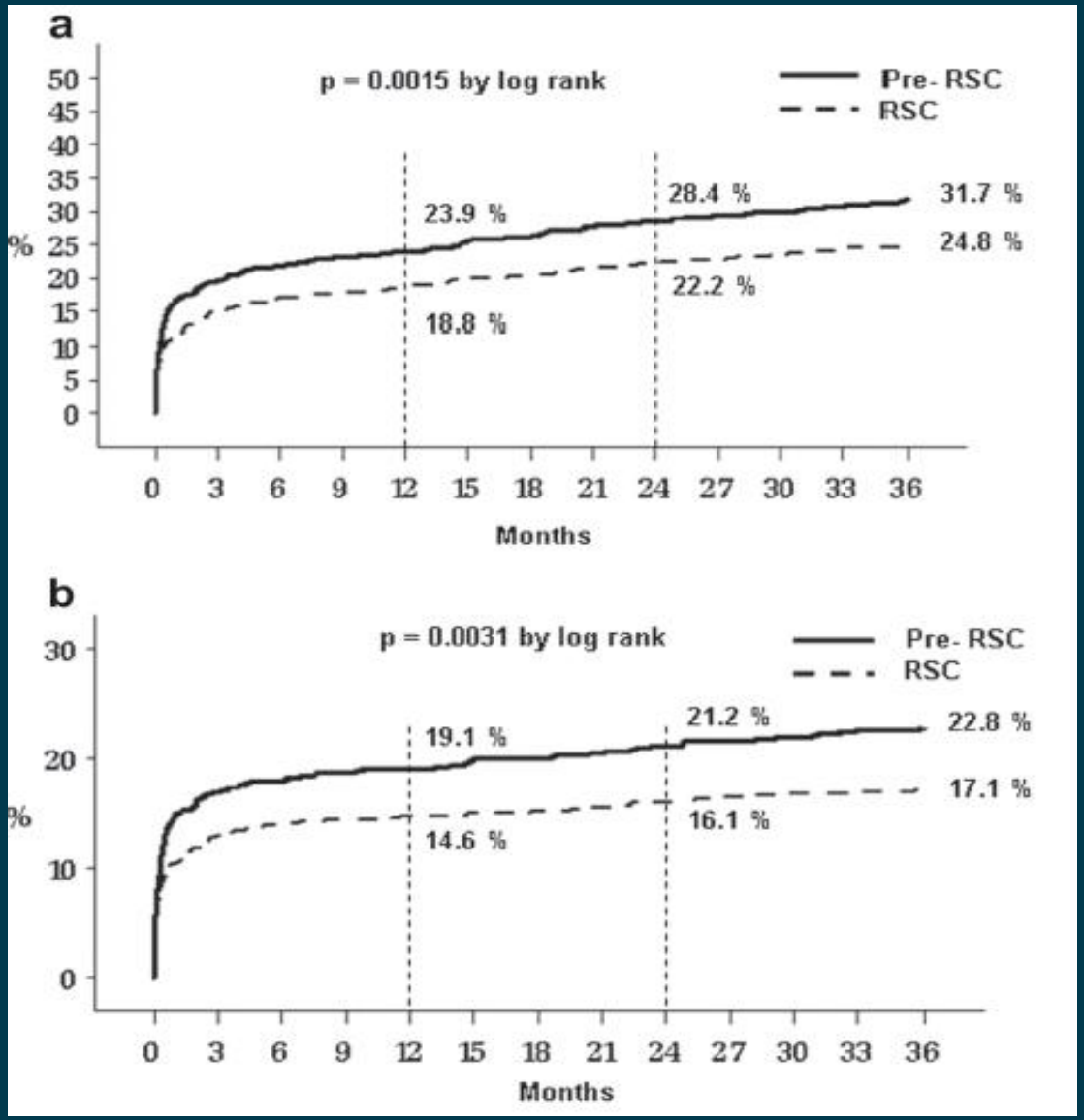


long-term mortality in a regionalized STEMI system of care

Bologna

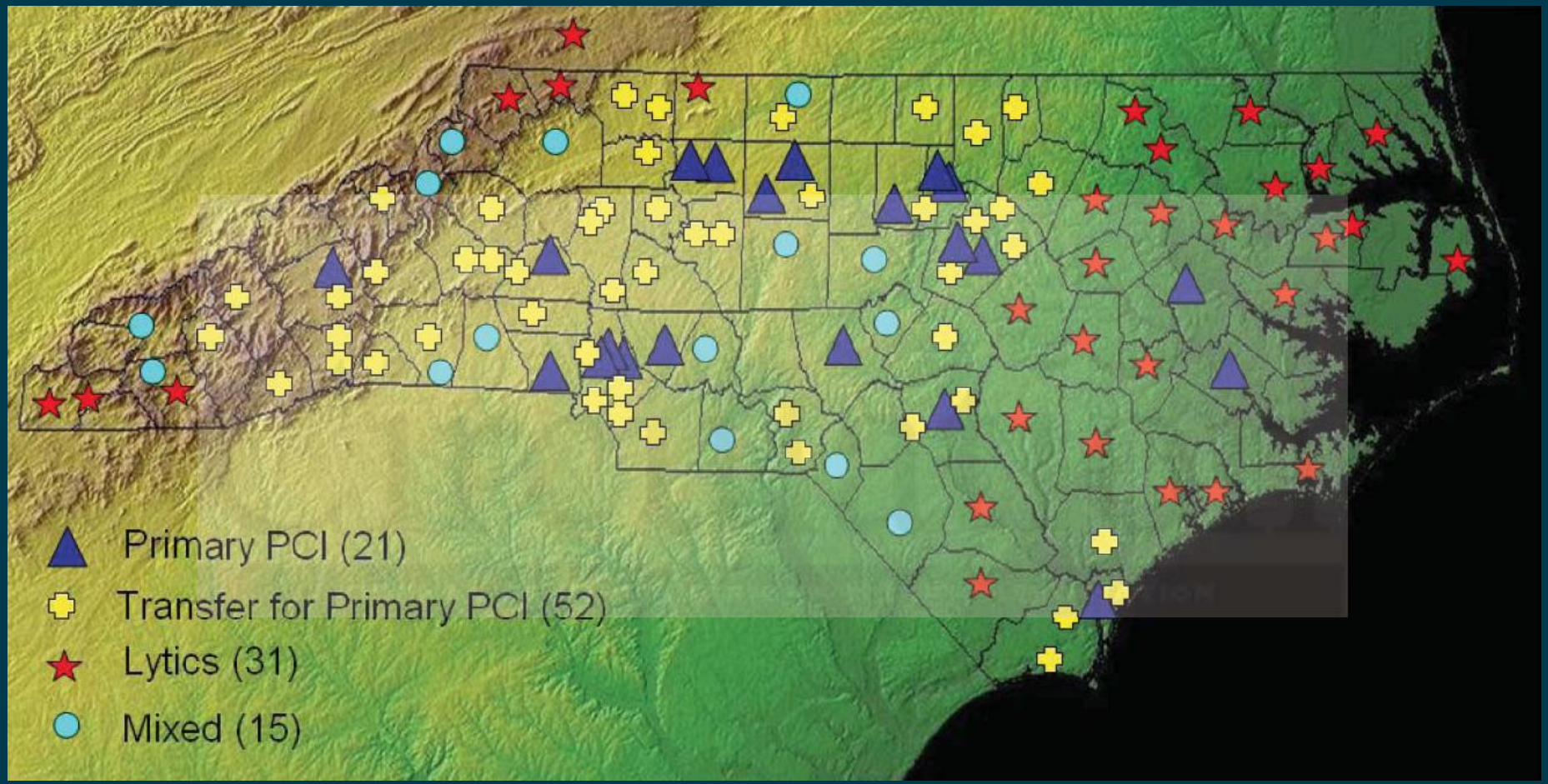
mortality

cardiac mortality



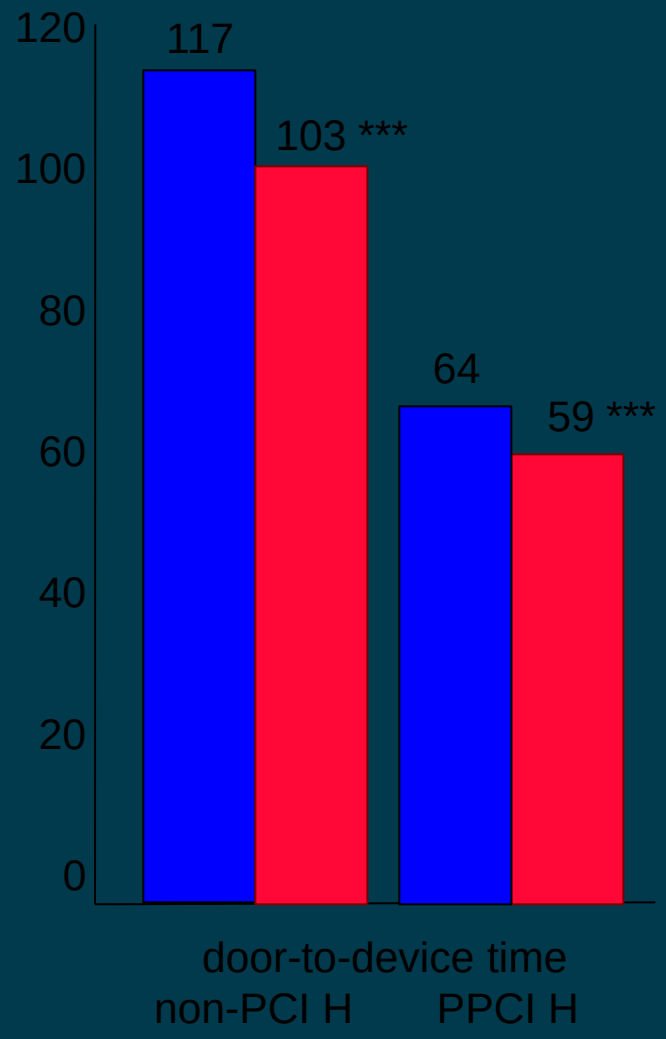
Saia F, Acute Cardiac Care, 2010

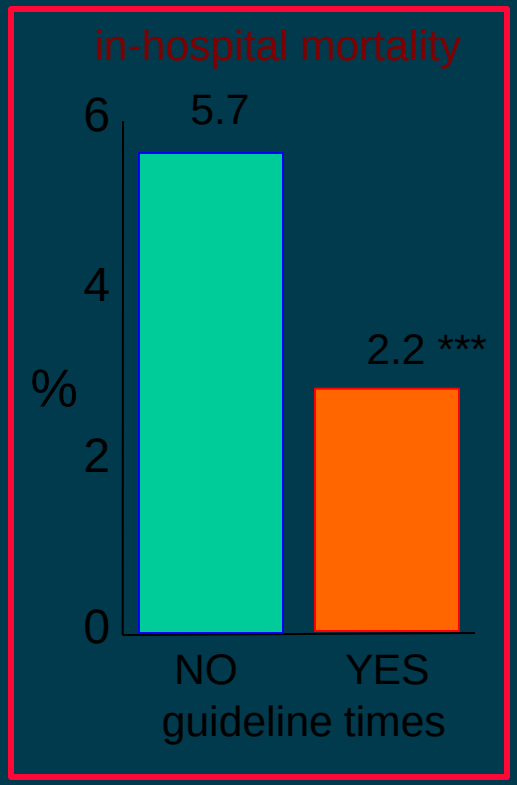
RACE: statewide STEMI system



Jollis JG. Circulation 2012

RACE: statewide STEMI system





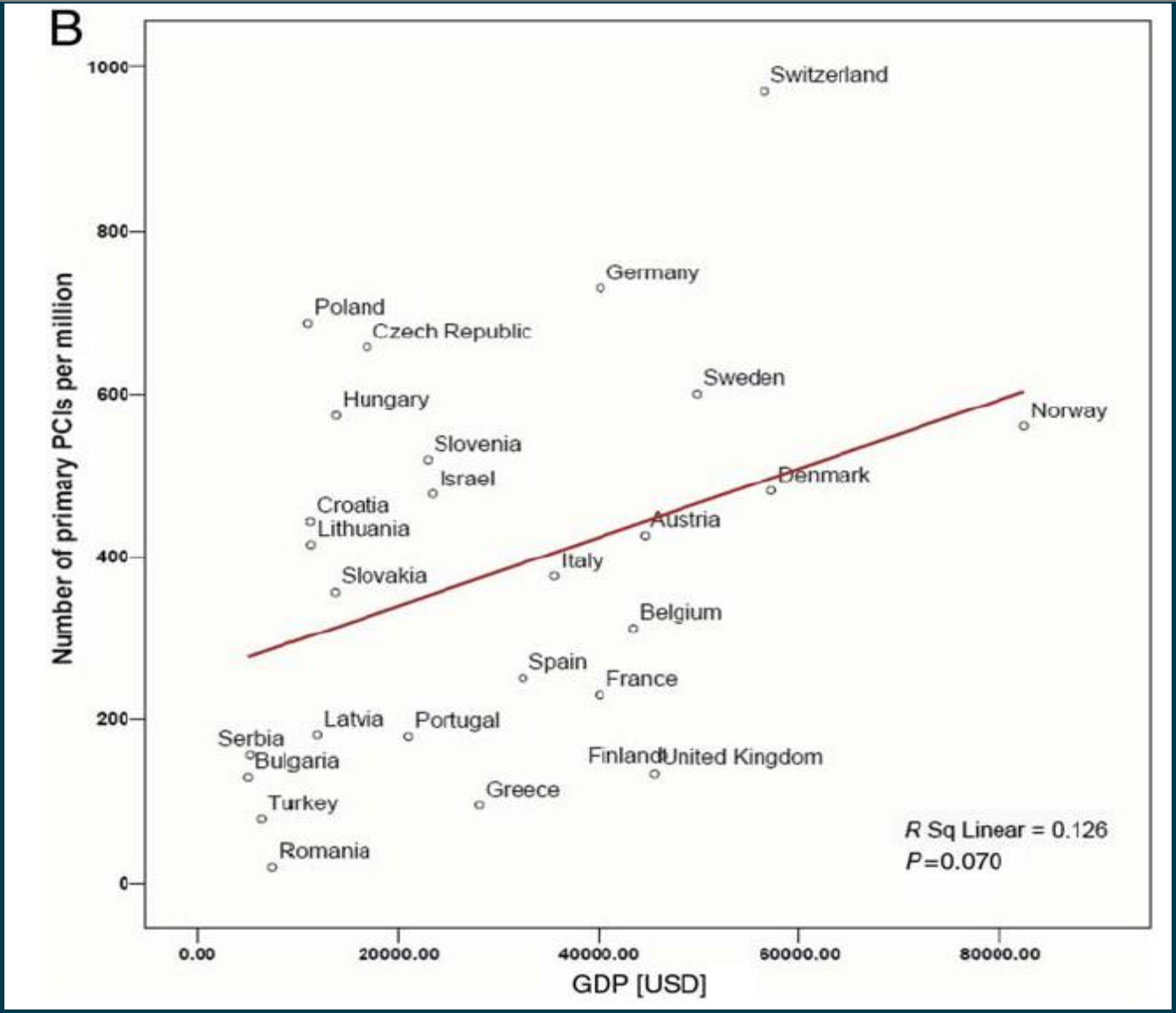
119 hospitals (21 PPCI and 98 non PPCI)

pre-intervention

post-intervention

Jollis JG. Circulation 2012

primary PCI in Europe



Widimski P, EHJ 2010

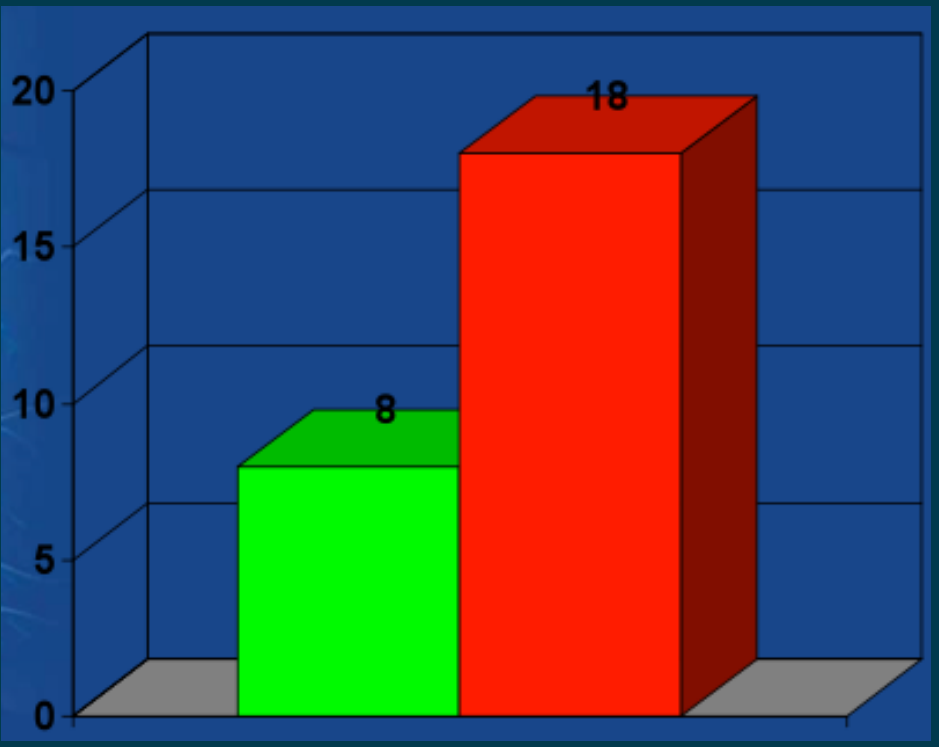
equitable access to care

networking in Czech Republic

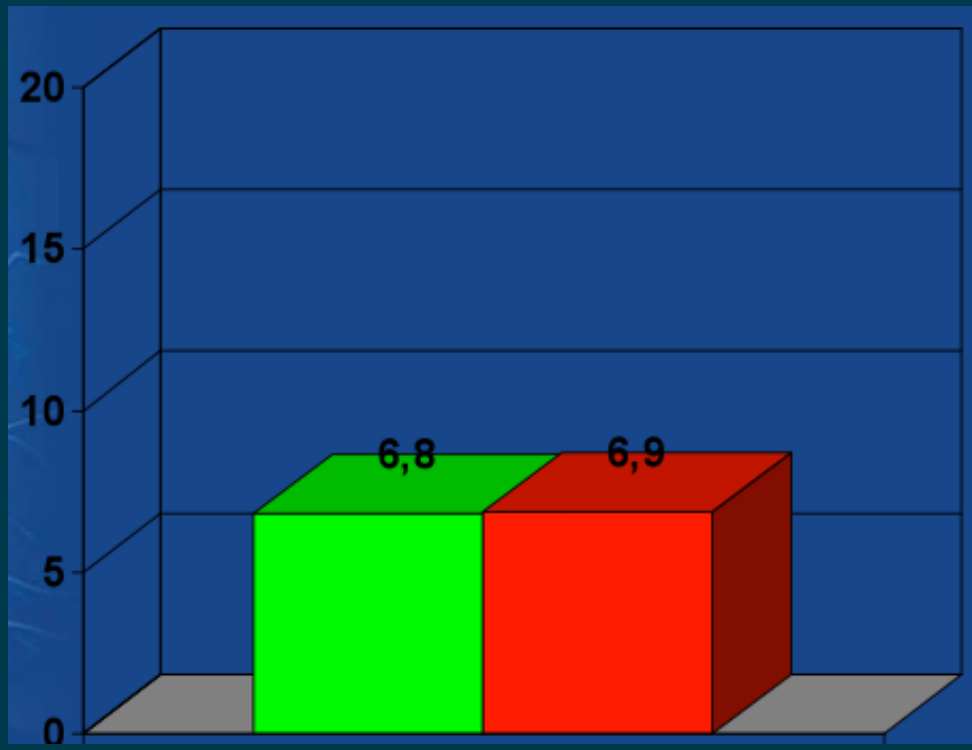
PCI centers

community H (no cath lab)

1997-99

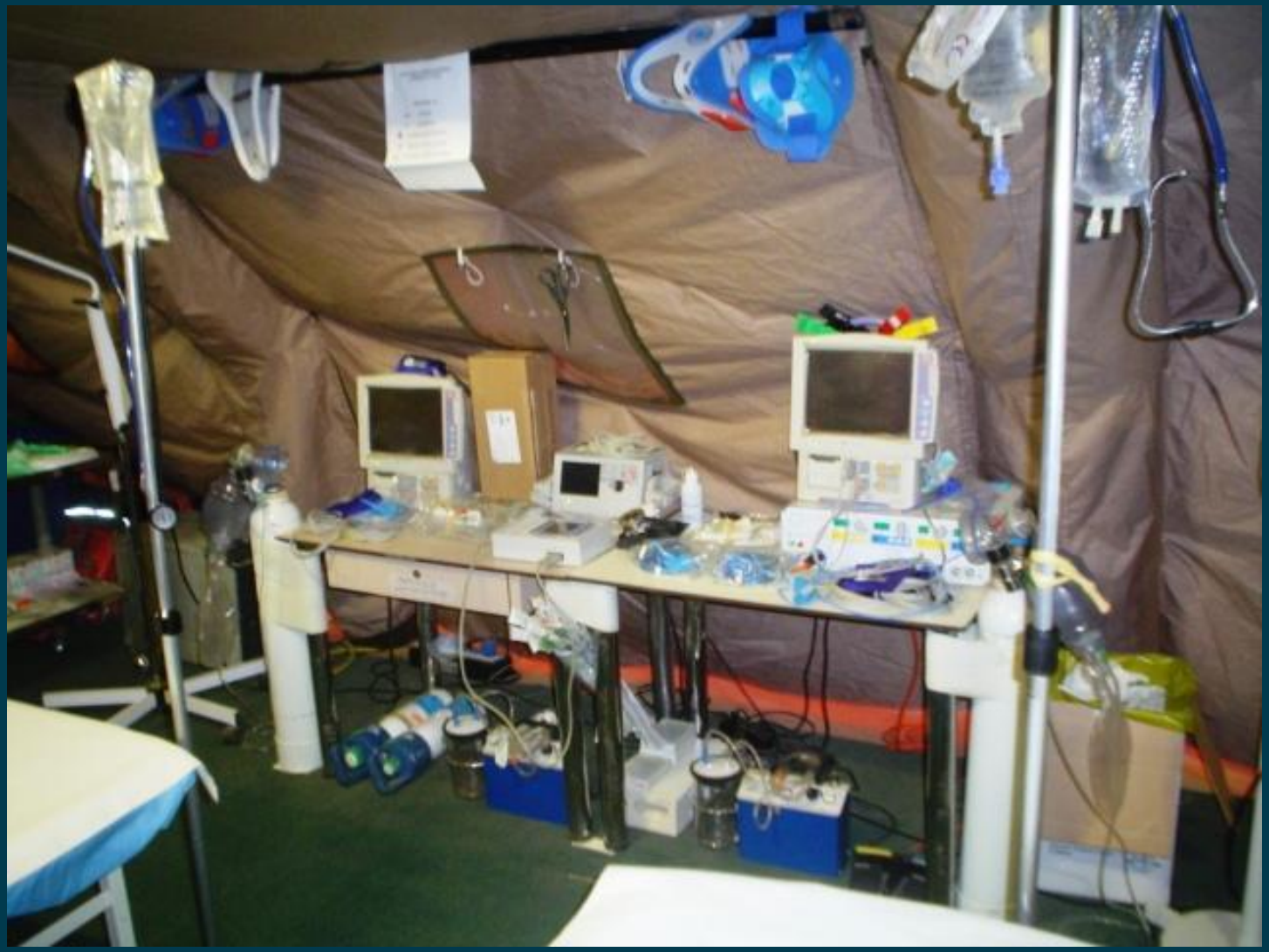


2005



STEMI in-hospital mortality

APPROCCIO CAMPALE ALLE SINDROMI CORONARICHE ACUTE



SINDROME CORONARICA ACUTA IN AMBIENTE CAMPALE

- CARDIOLOGO ?
- ECOCARDIOGRAMMA ?
- PARAMETRI EMODINAMICI INVASIVI ?
- … E LE CONDIZIONI CLIMATICHE ? L'ELICOTTERO PUO' VOLARE ?
- EMODINAMICA ? QUANDO ?

Acute Coronary Syndromes

1 **Symptoms suggestive of ischemia or infarction**

2 **EMS assessment and care and hospital preparation**
-Monitor, support ABCs, be prepared to provide CPR and defibrillation
-Administer aspirin and consider oxygen, nitroglycerin and morphine
-Obtain 12-lead ECG, if ST elevation:
Notify receiving hospital with transmission or interpretation; note time of onset and first medical contact
-Notified hospital should mobilize hospital resources to respond to STEMI
-If considering prehospital fibrinolysis, use fibrinolytic checklist

3 **Concurrent ED assessment (<10 min)**
-Check vital signs; evaluate oxygen saturation
-Establish IV access
-Perform brief, targeted history, physical exam
-Review/complete fibrinolytic checklist; check contraindications
-Obtain initial cardiac marker levels, initial electrolyte and coagulation studies
-Obtain portable chest x-ray (<30 min)

Immediate ED general treatment
-if 02 sat<94%, start **oxygen** at 4L/min, titrate
-**Aspirin** 160 to 325 mg (if not given by EMS)
-**Nitroglycerin** sublingual or spray
-**Morphine** IV if discomfort not relieved by nitroglicerin

4 **Ecg interpretation**

5 ST elevation or new or presumably new LBBB; strongly suspicious for injury
ST-elevation MI (STEMI)

6 -Start adjunctive therapies
-Do not delay reperfusion

7 Times from onset of symptoms < or = 12 hours?

>12 hours

< or = 12 hours

8 **Reperfusion goals**:
Therapy defined by patient and center criteria
-door-to-balloon inflation (PCI) goal of 90 min
-door-to-needle (fibrinolysis) goal of 30 min

9 ST depression or dynamic T-wave inversion; strongly suspicious for ischemia
High-risk unstable angina/non-ST-elevation MI (UA/NSTEMI)

10 **Troponin elevated or high-risk patient**
Consider early invasive strategy if:
-refractory ischemic chest discomfort
-recurrent/persistent ST deviation
-ventricular tachycardia
-haemodynamic instability
-signs of heart failure

11 **Start adjunctive treatment as indicated:**
-Nitroglycerin, Heparin (UFH or LMWH)
-Consider: PO beta-blockers, Clopidogrel, Gp Iib/IIIa inhibitor

12 **Admit to monitored bed, Assess risk status**
Continue ASA, heparin, and other therapies as indicated
-ACE inhibitor (or ARB) and Statin therapy

13 Normal or nondiagnostic changes in ST segment or T wave
Low/intermediate-risk ACS

14 **Consider admission to ED chest pain unit or to appropriate bed and follow:**
-serial cardiac markers (including troponin)
-repeat ECG/continous ST-segment monitoring
-Consider noninvasive diagnostic test

15 **Develops 1 or more:**
-clinical high-risk features
-dynamic ECG changes consistent with ischemia
-troponin elevated

Yes

No

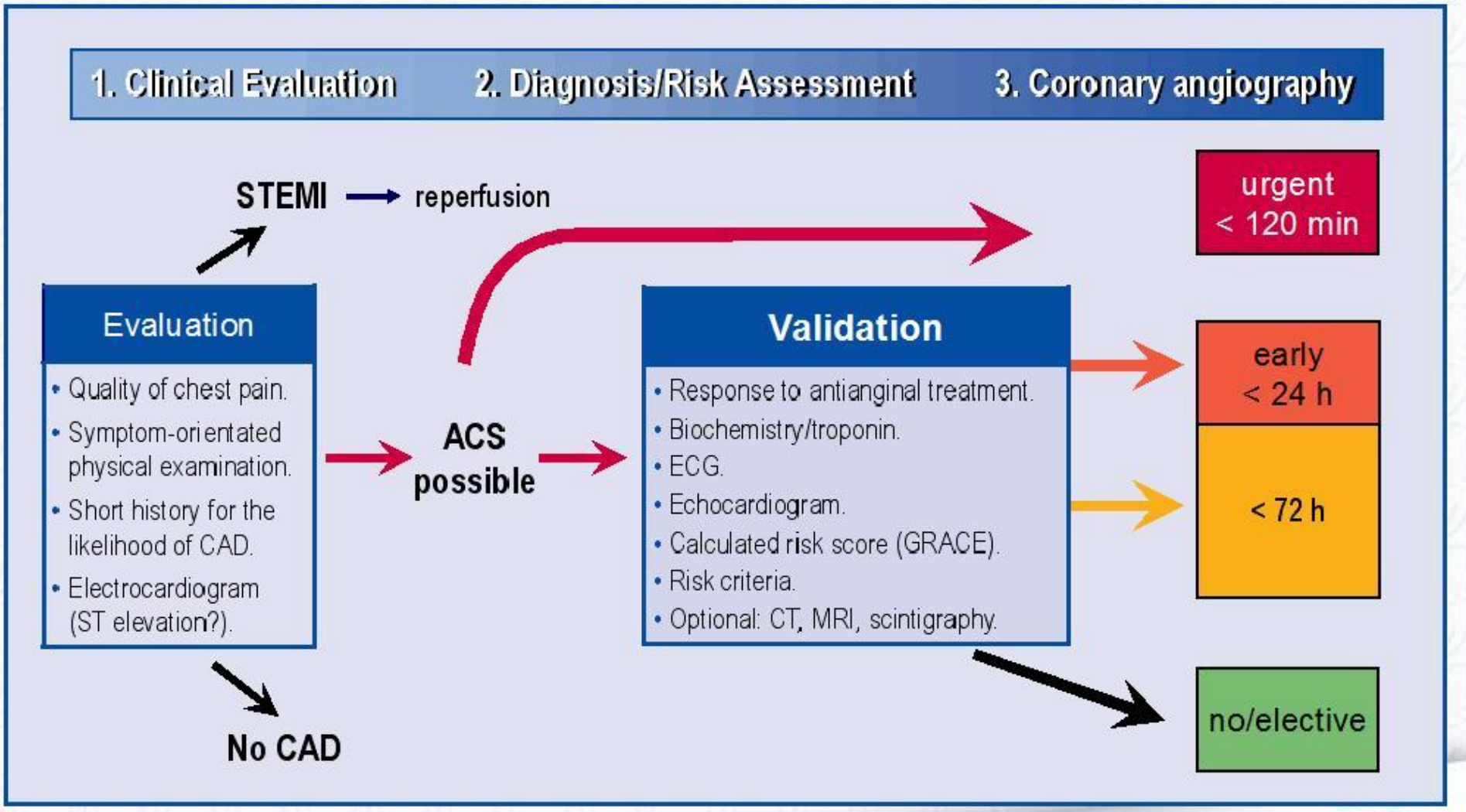
16 **Abnormal diagnostic non-invasive imaging or physiologic testing?**

Yes

No

17 **If no evidence of ischemia or infarction by testing, can discharge with follow-up**

Decision-making algorithm in ACS



www.escardio.org/guidelines

European Heart Journal (2011) 32:2999–3054
doi:10.1093/eurheartj/ehr236

EUROPEAN SOCIETY OF CARDIOLOGY®

Criteria for high risk with indication for invasive management

Primary
• Relevant rise or fall in troponin. • Dynamic ST- or T-wave changes (symptomatic or silent).
Secondary
• Diabetes mellitus. • Renal insufficiency (eGFR < 60 mL/min/1.73 m^2). • Reduced LV function (ejection fraction < 40%). • Early post infarction angina. • Recent PCI. • Prior CABG. • Intermediate to high GRACE risk score.

European Heart Journal (2011) 32:2999–3054
doi:10.1093/eurheartj/ehr236

Recommendations for invasive evaluation and revascularization

Recommendations	Class	Level
An invasive strategy (within 72 h after first presentation) is indicated in patients with: • at least one high-risk criterion, • recurrent symptoms.	I	A
Urgent coronary angiography (< 2 h) is recommended in patients at very high ischaemic risk (refractory angina, with associated heart failure, life-threatening ventricular arrhythmias, or haemodynamic instability).	I	C
An **early** invasive strategy (< 24 h) is recommended in patients with a GRACE score > 140 or with at least one primary high-risk criterion.	I	A
Non-invasive documentation of inducible ischaemia is recommended in low-risk patients without recurrent symptoms before deciding for invasive evaluation.	I	A
The revascularization strategy (*ad-hoc* culprit lesion PCI/ multivessel PCI/CABG) should be based on the clinical status as well as the disease severity, i.e. distribution and angiographic lesion characteristics (e.g. SYNTAX score), according to the local 'Heart Team' protocol.	I	C
As there are no safety concerns related to the use of DESs in ACS, DESs are indicated based on an individual basis taking into account baseline characteristics, coronary anatomy, and bleeding risk.	I	A
PCI of non-significant lesions is not recommended.	III	C
Routine invasive evaluation of low-risk patients is not recommended.	III	A

European Heart Journal (2011) 32:2999–3054
doi:10.1093/eurheartj/ehr236

CONCLUSIONI

- IL TRATTAMENTO DELLE SINDROMI CORONARICHE ACUTE IN AMBIENTE CAMPALE NON DIFFERISCE DA QUELLO EFFETTUATO IN UN CENTRO NON DOTATO DI EMODINAMICA
- E' ESSENZIALE USARE TUTTI I MEZZI A NOSTRA DISPOSIZIONE E SOPRATTUTTO FARLO CON PRONTEZZA PER STABILIZZARE QUANTO PRIMA IL SOGGETTO E RENDERE COSI' SICURO IL SUO RIENTRO IN PATRIA PER IL COMPLETAMENTO DELLE CURE
- I RECENTI DATI SULL'EFFICACIA DELLA TROMBOLISI SEGUITA IN UN SECONDO MOMENTO DA PCI (FAST MI) CI TRANQUILLIZZA

Conclusions

pre-hospital

- EMS
- unique emergency telephone number
- teleconsultation
- ECG transmission

ambulance

- 12 lead ECG/defibrillator
- ECG diagnosis or transmission
- BLS-D / ACLS
- thrombolysis and other drugs

networks

- same protocol for participating hospitals and EMS
- prompt data feedback
- regular data review

targets

- < 20 min EMS answer
- < 10 min ECG diagnosis
- < 5 min teleconsultation
- < 120 (< 90) min FMC-balloon
- < 30 min thrombolysis

GRAZIE PER L'ATTENZIONE