Copenhagen Acute Cardiac Care 171010

Primary PCI – Current developments and implementation

SD Kristensen

MD, DMSc, FESC

Department of Cardiology

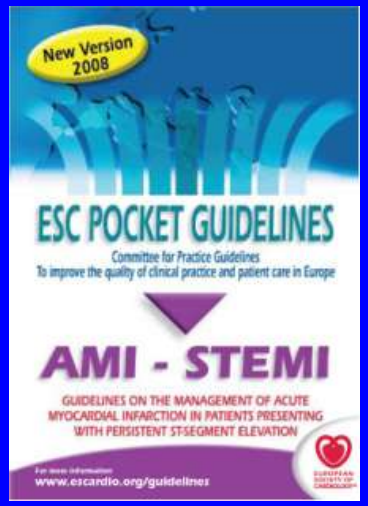
Aarhus University Hospital Skejby

Denmark

Conflicts of interest

- Lecture fees/advisory boards: AstraZeneca, Daiichi-Sankyo, Eli Lilly, The Medicines Company

ESC guidelines on STEMI 2008



PRIMARY PCI: IA

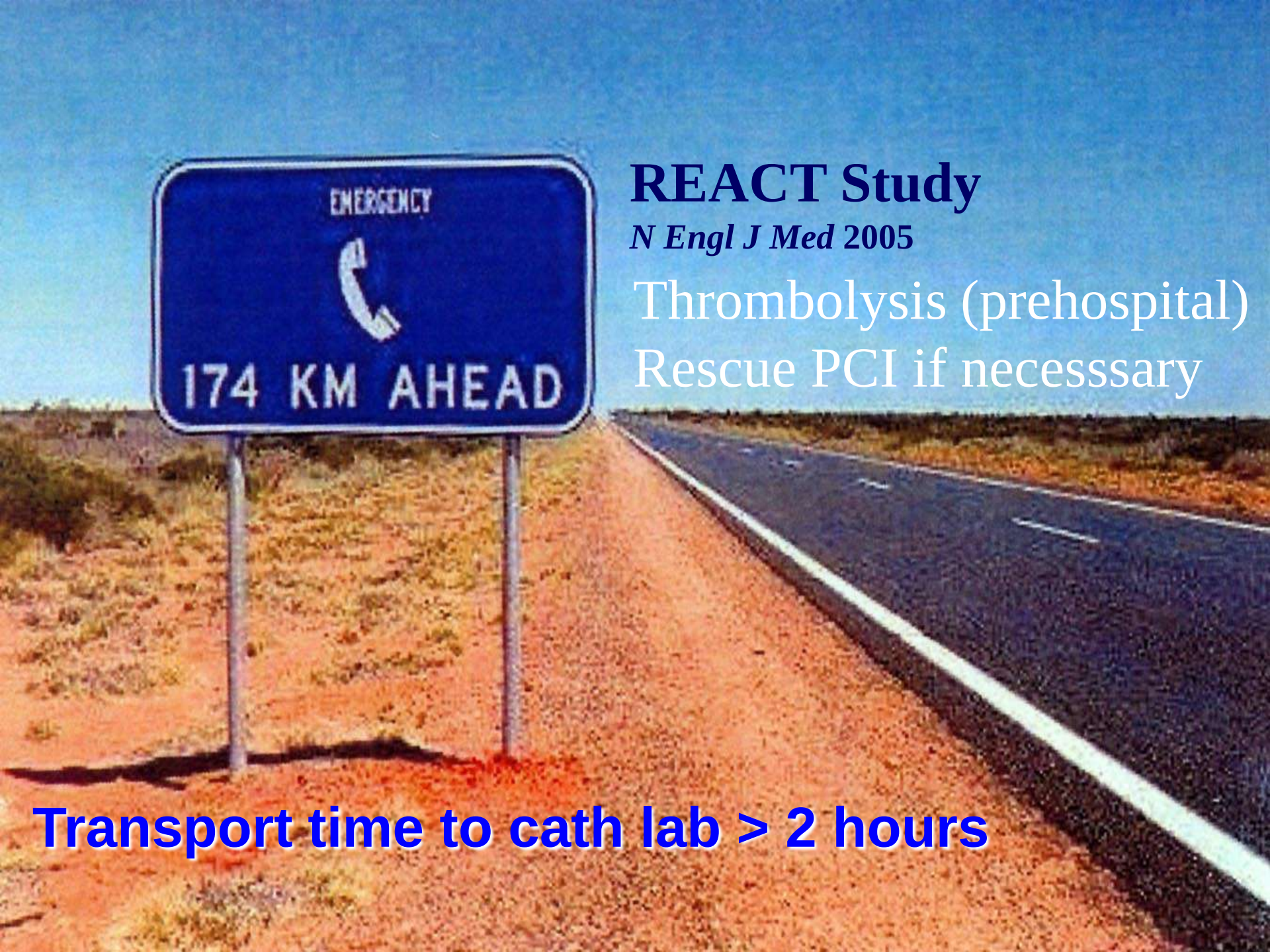
Preferred therapy if performed within 120 minutes

90 minutes for patients presenting within 2-3 hours

Talk overview

- Why 24/7 STEMI centres?
- Can we improve the outcome of primary PCI?
- Logistics – how can we shorten the time to reperfusion?
- Implementation of PPCI in Europe – Stent for life project

Transport time to cath lab > 2 hours



REACT Study

***N Engl J Med* 2005**

Thrombolysis (prehospital)
Rescue PCI if necesssary

Transport time to cath lab > 2 hours

Antiplatelet and Fibrinolytic Treatment: CARESS-in-AMI

ASA 300-500 mg iv

UFH (40 U/kg (max 3000); 7 U/kg/h)

2 x 5 U bolus (30') Reteplase

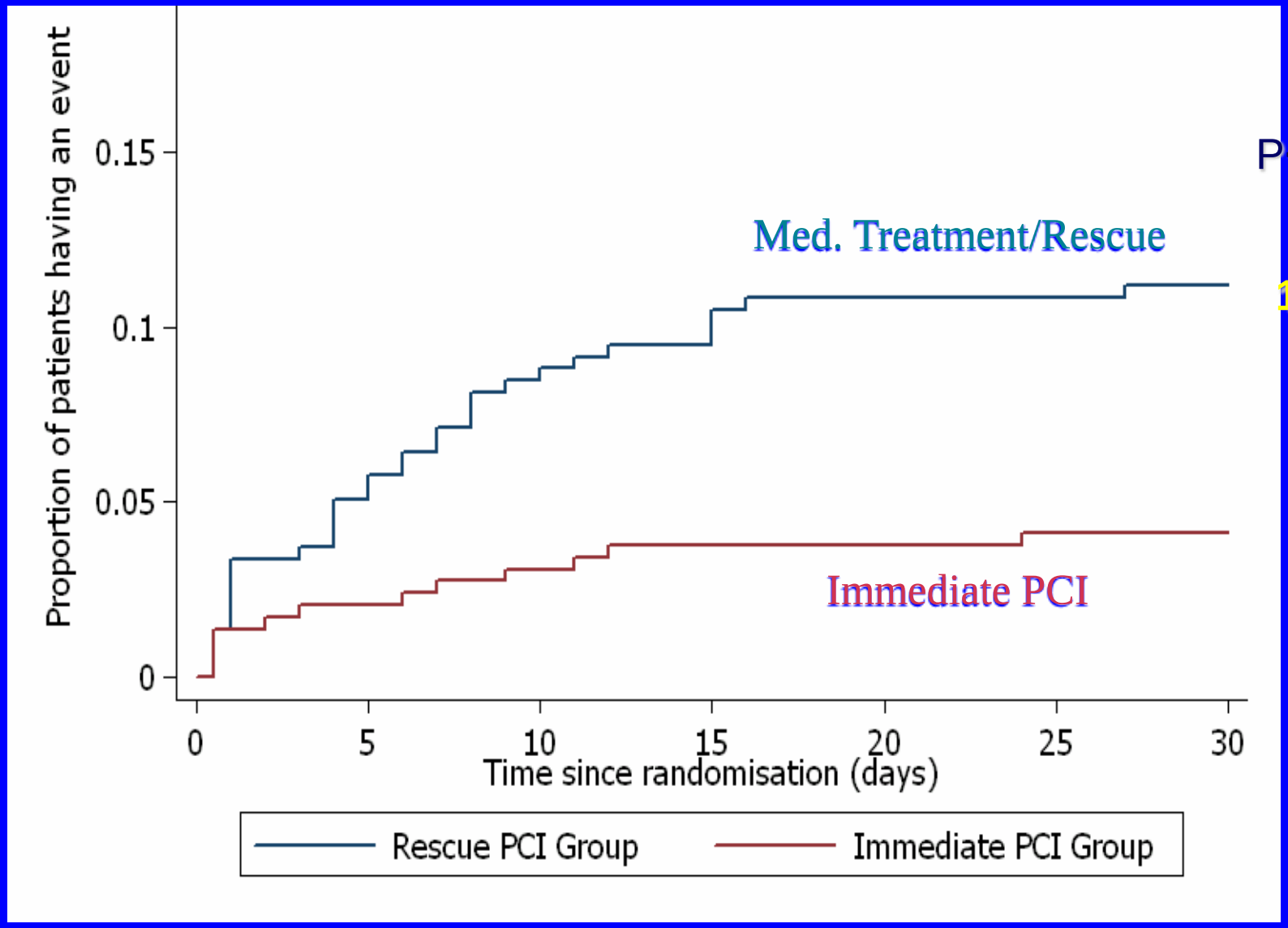
Abciximab 0.25 mg/kg bolus
0.125 μg/kg/min x 12 h

IMMEDIATE PCI n=294

MEDICAL TREATMENT + RESCUE n=298

C Di Mario et al *Lancet 2008*

Comb. Primary EP at 30 days



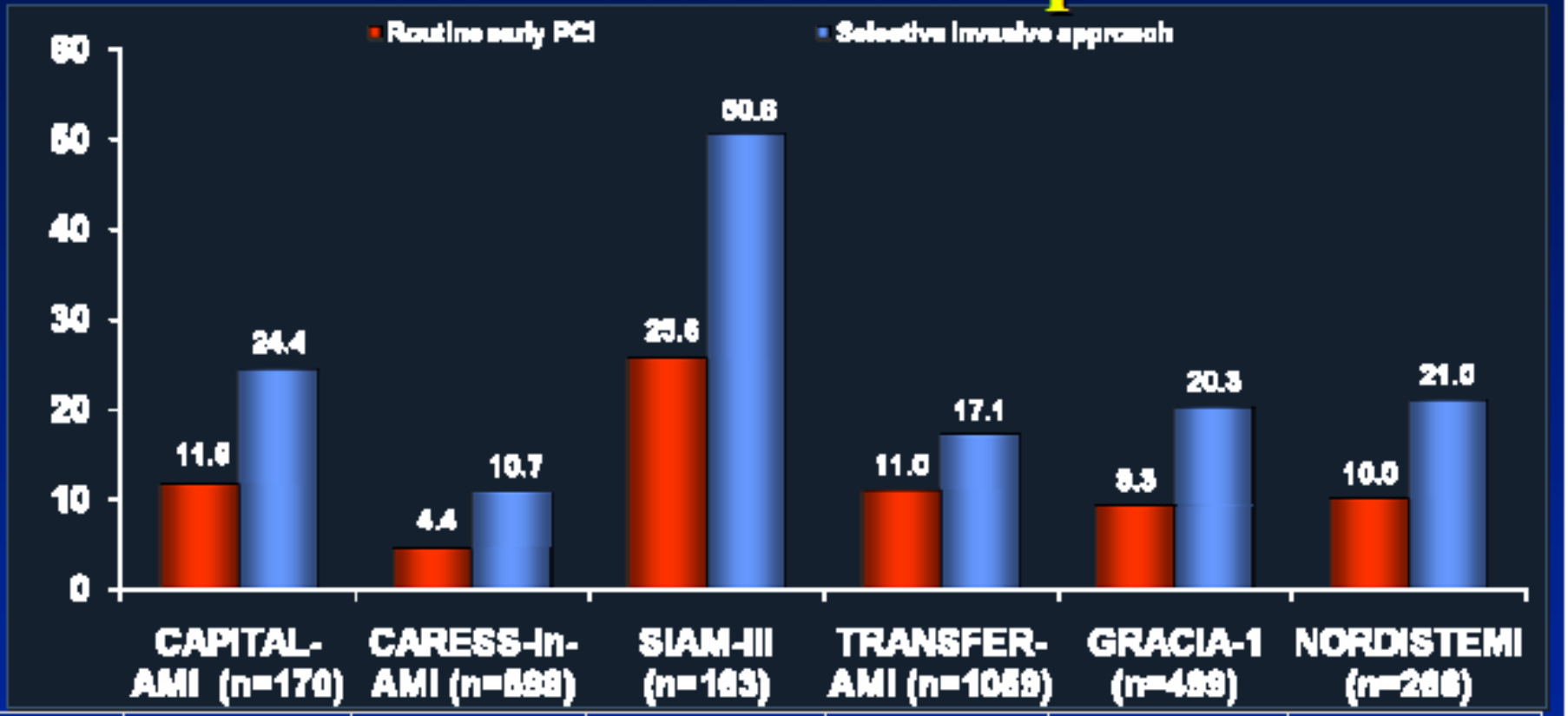
P<0.001

11.1%

4.1%

C Di Mario et al, *Lancet 2008*

Rate of Ischemic Events at the Available Follow-up



Time from Fibrinolysis to Routine Early PCI (hr)	1.6	2.3	3.7	3.9	16.7	2.7

Early presenters

- CAPTIM substudy
- < 3 hours: room for prehospital thrombolysis?

STEMI ambulance patients presenting early, <3 h (n=2500)
Large amount of ischaemic but viable myocardium
and acceptable bleeding risk

STREAM:
Study on a pharmaco-invasive strategy

TNK bolus
Aspirin
Clopidogrel
ENOX (EXTRACT)

Transfer

Immediate PCI only if failed thrombolysis (<50% ST resolution) otherwise angiography 12–24 hours

Aspirin
Clopidogrel
Antithrombotic (left to investigator)

Transfer

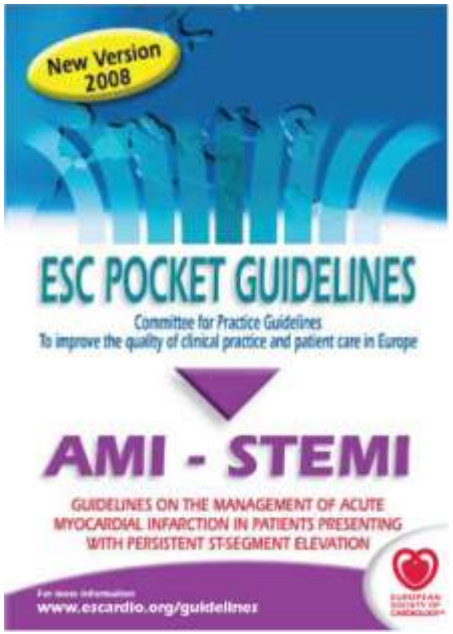
PCI mandatory

Endpoints of interest:
death ,recurrent MI, shock, CHF, stroke

TNK, tenecteplase; ENOX, enoxaparin

Late presenters

- >12 hours ongoing ischaemia (IIaC)
- 12-24 hour (stable) (IIbB)
- >24 hours occluded vessel (IIIB)



Mechanical Reperfusion in Patients With Acute Myocardial Infarction Presenting More Than 12 Hours From Symptom Onset

A Randomized Controlled Trial

- BRAVE-2
- Reduction of infarct size in patients treated with PCI compared to medical therapy.

Schoemig et al JAMA 2005

Symptom duration > 12 hours

European Heart Journal Advance Access published April 8, 2009

European Heart Journal
doi:10.1093/eurheartj/ehp113

CLINICAL RESEARCH

Infarct size and myocardial salvage after primary angioplasty in patients presenting with symptoms for <12 h vs. 12–72 h

Martin Busk[1]*, Anne Kaltoft[1], Søren S. Nielsen[2], Morten Bøttcher[1], Michael Rehling[2], Leif Thuesen[1], Hans E. Bøtker[1], Jens F. Lassen[1], Evald H. Christiansen[1], Lars R. Krusell[1], Henning R. Andersen[1], Torsten T. Nielsen[1], and Steen D. Kristensen[1]

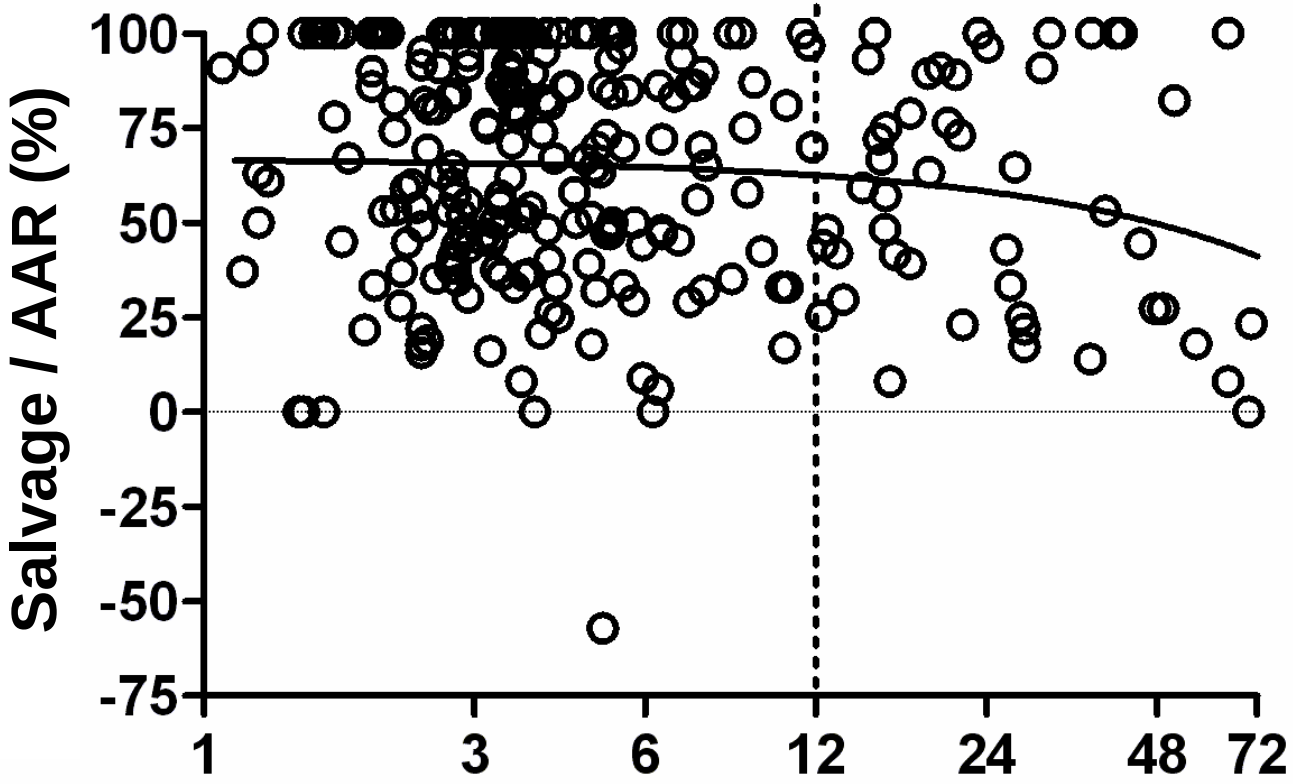
[1]Department of Cardiology, Aarhus University Hospital, Skejby, Brendstrupgaardsvej 100, Aarhus 8200, Denmark; and [2]Department of Nuclear Medicine, Aarhus University Hospital, Skejby, Aarhus, Denmark

Received 8 December 2008; revised 14 January 2009; accepted 4 March 2009

Salvage index

Linear regression:
p=0.02 R^2=0.02

69 % (45-92) | 53 % (27-89) | p=0.06

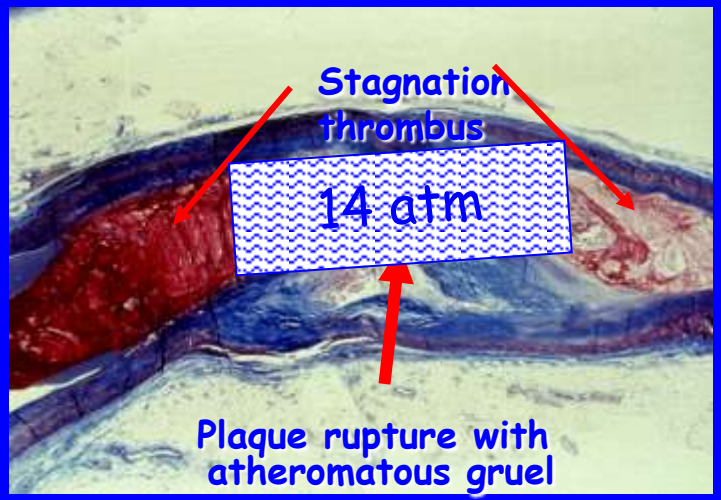


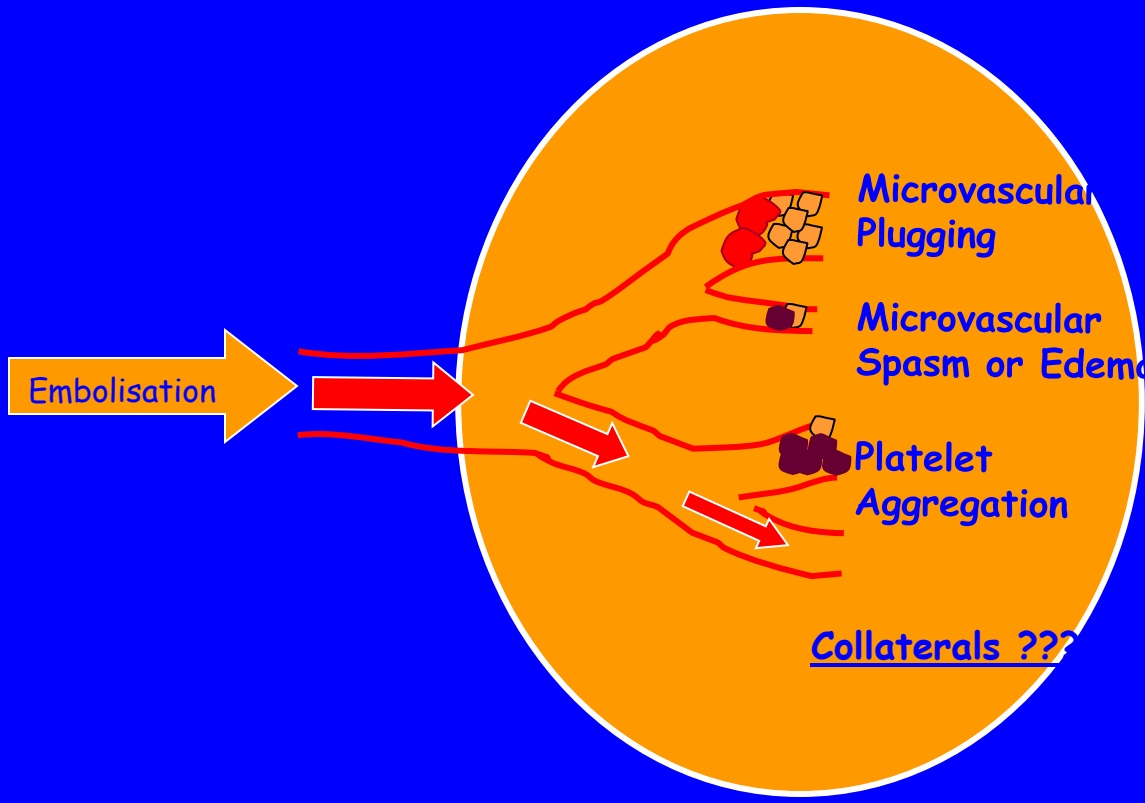
Establish PCI centers with 24/7 service

Talk overview

- Why 24/7 STEMI centres?
- Can we improve the outcome of primary PCI?
- Implementation of PPCI in Europe
- Logistics – how can we shorten the time to reperfusion?

Microvascular Obstruction





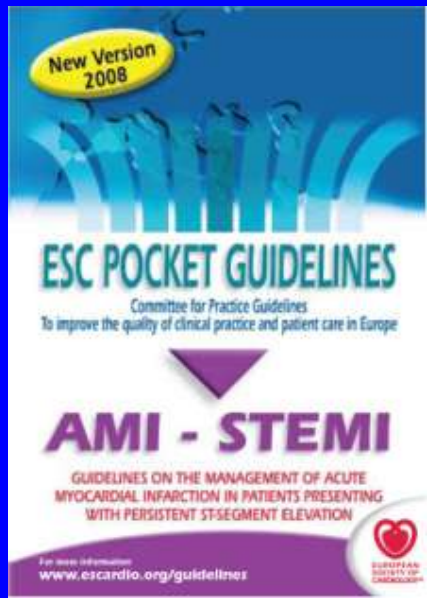
ESC STEMI Guidelines 2008 Adjunctive therapy: primary PCI

- **Aspirin**
  - A bolus of 150–325 mg (chewable) or 250–500 mg IV followed by lifelong therapy IB
- **Clopidogrel**
  - Bolus 300 mg or 600 mg IC
- **Heparin**
  - 100 U/kg (60 U/kg with GpIIb/IIIa) IC

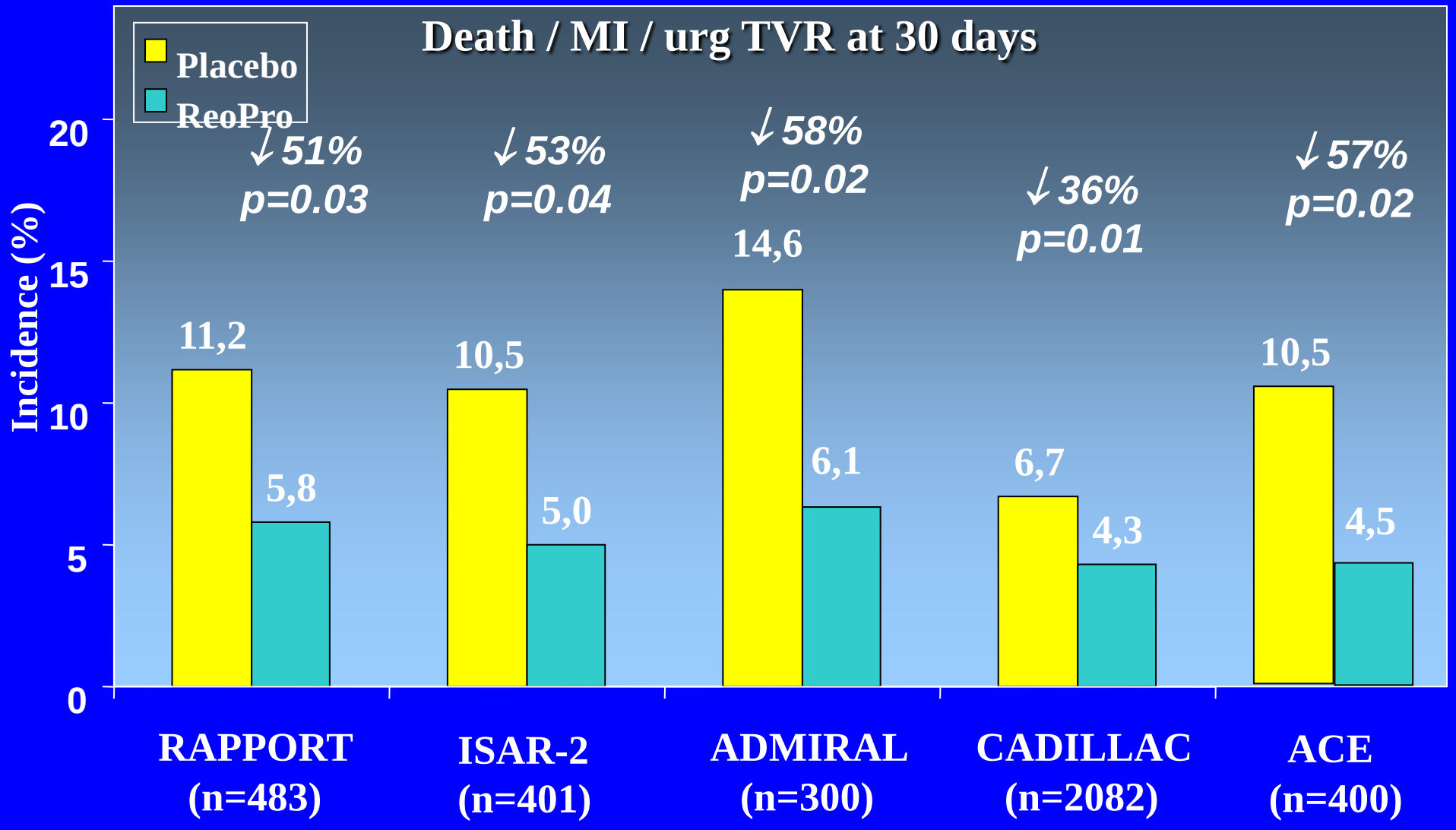
Gp, glycoprotein; STEMI, ST-segment elevation myocardial infarction

ESC STEMI Guidelines 2008

- Abciximab IIa A
- Bivalirudin IIa B
- Thrombus aspiration IIb B



Primary PCI: abciximab in cath lab

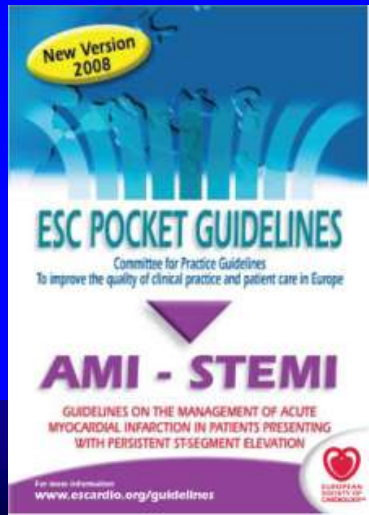


“Facilitated” PCI - still an option
with thrombolytic agents/GP IIb/IIIa ?

Adjunctive therapy: primary PCI

- **Not recommended:**

  Upstream therapy with GPI, fibrinolytics or the combination.



ON-TIME 2

The Lancet 2008; 372: 537-46

Articles

Prehospital initiation of tirofiban in patients with ST-elevation myocardial infarction undergoing primary angioplasty (On-TIME 2): a multicentre, double-blind, randomised controlled trial

*Arnoud W J van't Hof, Jurriën ten Berg, Ton Heestermans, Thorsten Dill, Reinhard C Funck, Wouter van Werkum, Jan-Henk E Dambrink, Harry Suryapranata, Gert van Houwelingen, Jan Paul Ottervanger, Pieter Stella, Evangelos Giannitsis, Christian Hamm, on behalf of the Ongoing Tirofiban In Myocardial infarction Evaluation (On-TIME) 2 study group**

Summary

Background The most effective magnitude and timing of antiplatelet therapy is important in patients with acute

ON-TIME -2

Acute myocardial infarction
diagnosed in ambulance or referral center
ASA + 600 mg Clopidogrel + UFH

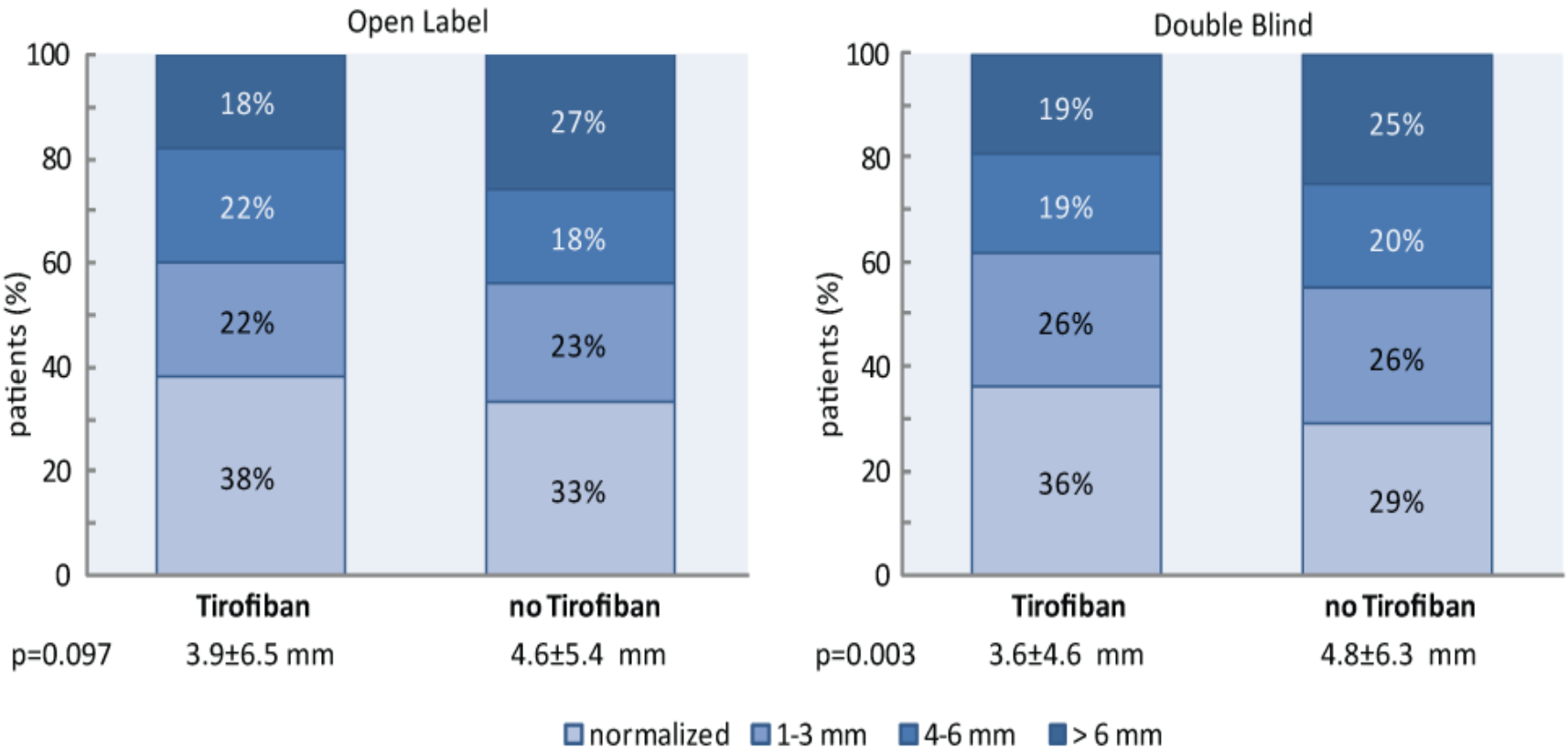
N=984

6/2006-11/2007

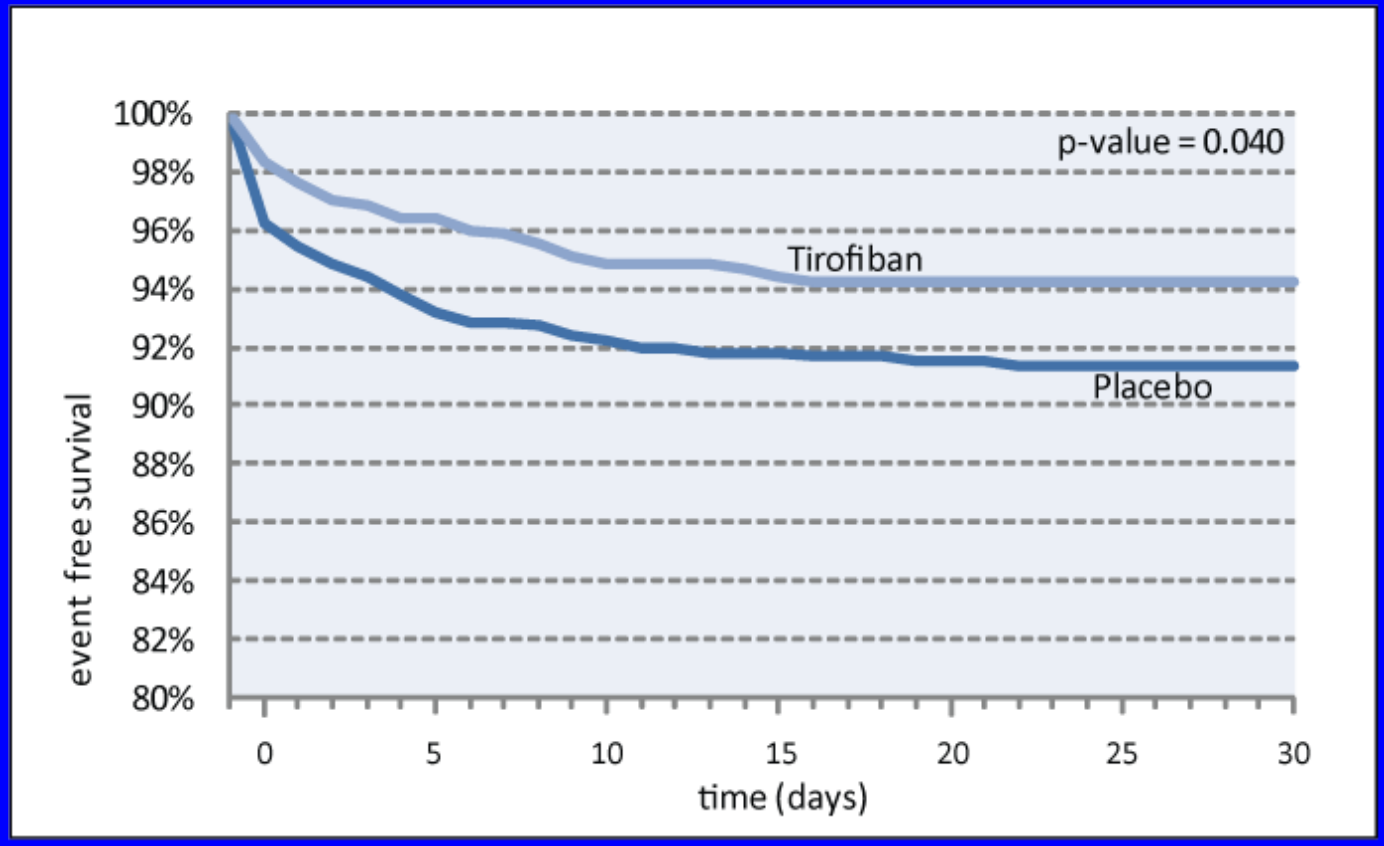
Placebo		Tirofiban *
	Transportation	
Angiogram	PCI center	Angiogram
Tirofiban provisional	PCI	Tirofiban cont'd

Bolus: 25 µg/kg & 0.15 µg/kg/min infusion

Primary endpoint: residual ST Deviation one hour after PCI



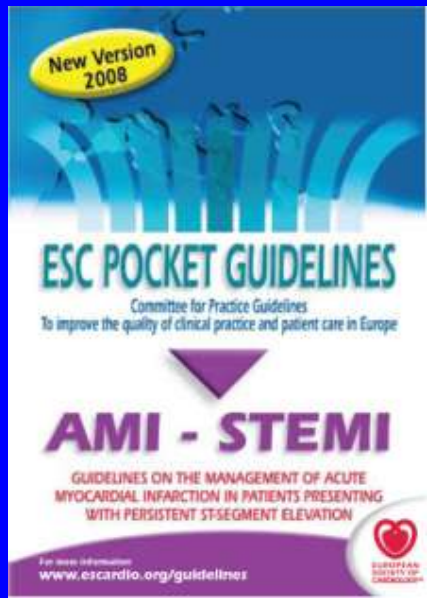
Survival free from Major Adverse Clinical Events



A.W.J. van `t Hof, NL, 975

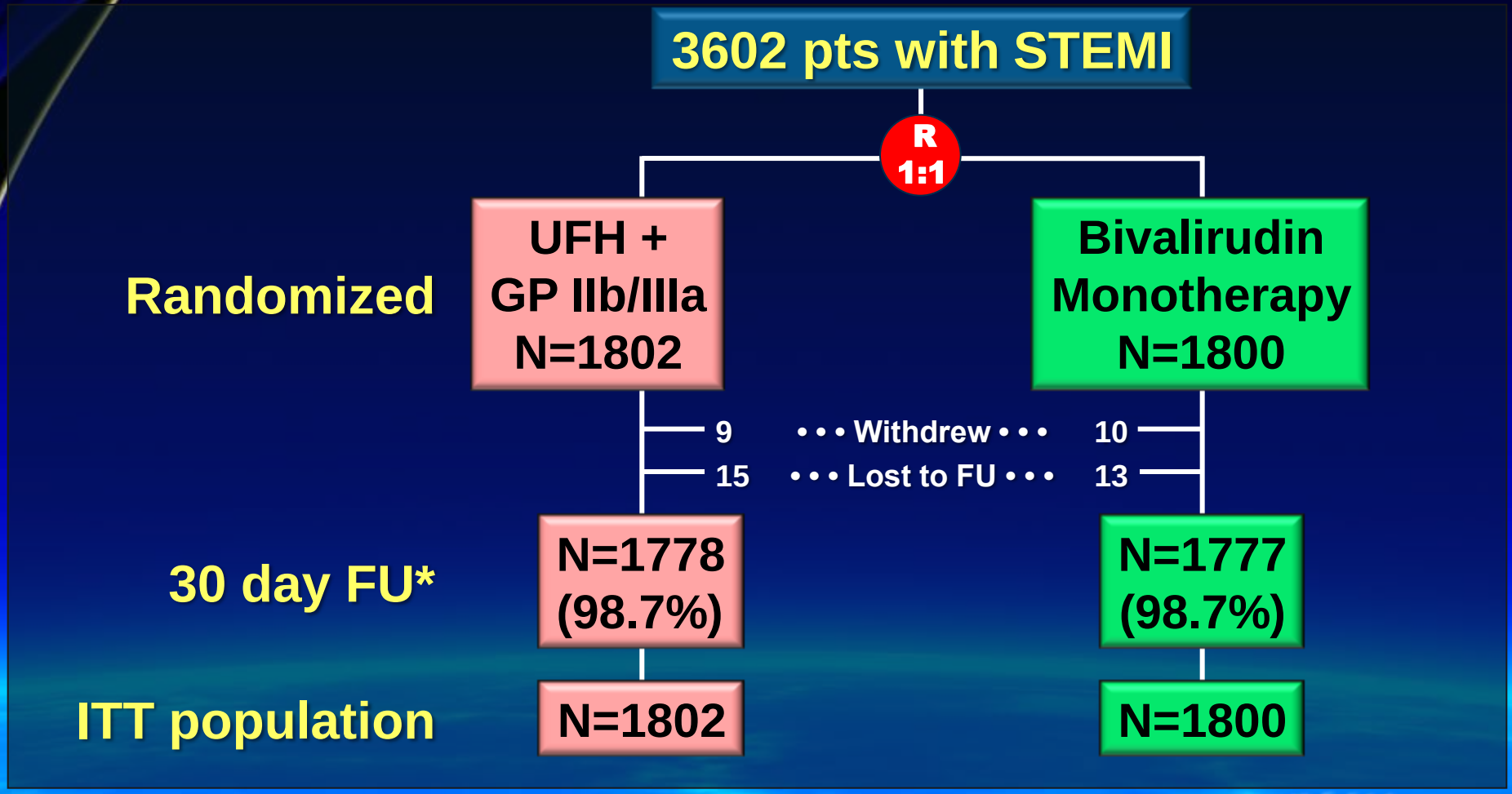
ESC STEMI Guidelines 2008

- Abciximab IIa A
- Bivalirudin IIa B
- Thrombus aspiration IIb B



HORIZONS AMI

Harmonizing Outcomes with Revascularization and Stents in AMI

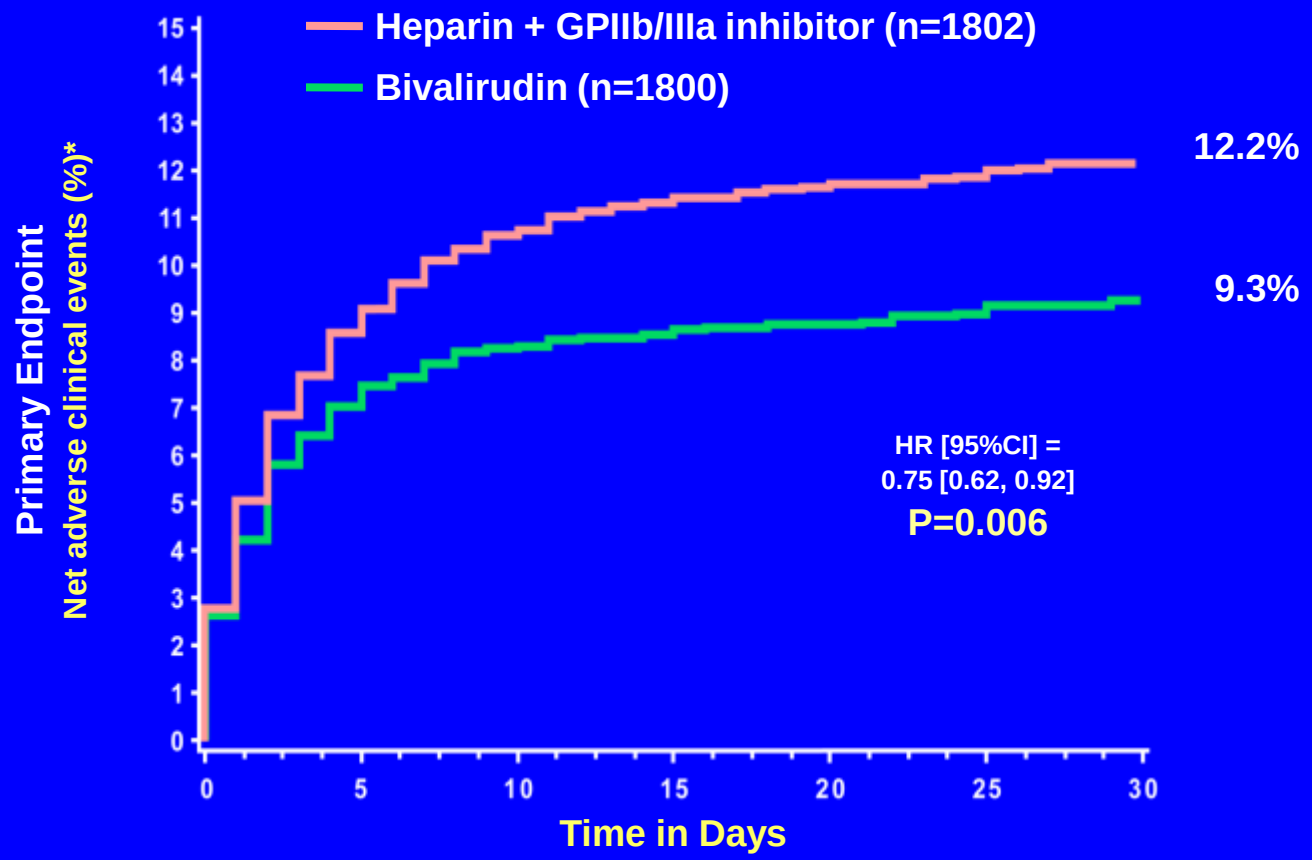


* Range ±7 days

Stone GW et al. NEJM 2008;358:2218-30

HORIZONS AMI

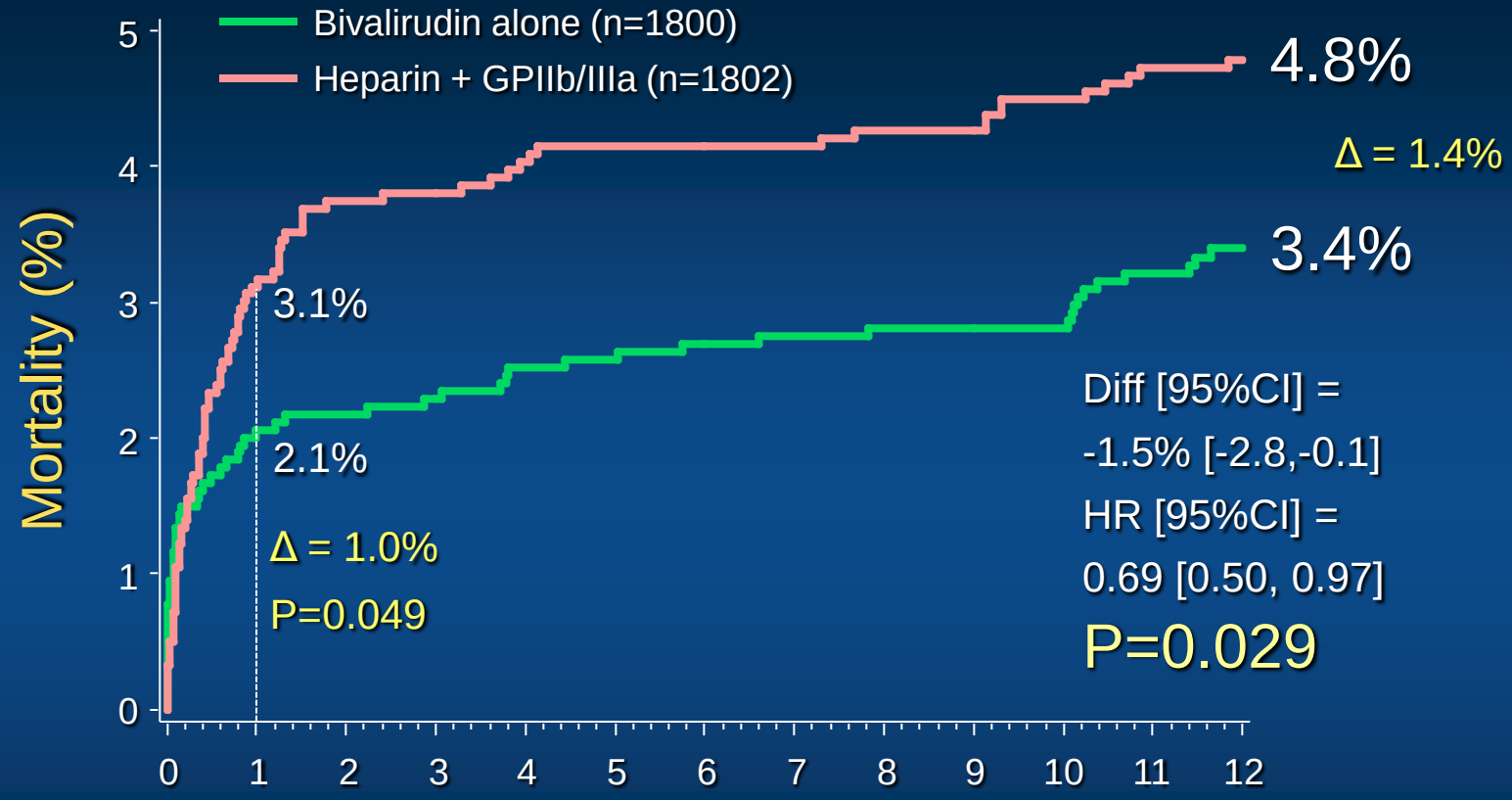
HORIZONS - bivalirudin: 30 Day Net Adverse Clinical Events



*MACE or major bleeding (non CABG)

R. Mehran, US, 977

1-Year All-Cause Mortality



Number at risk

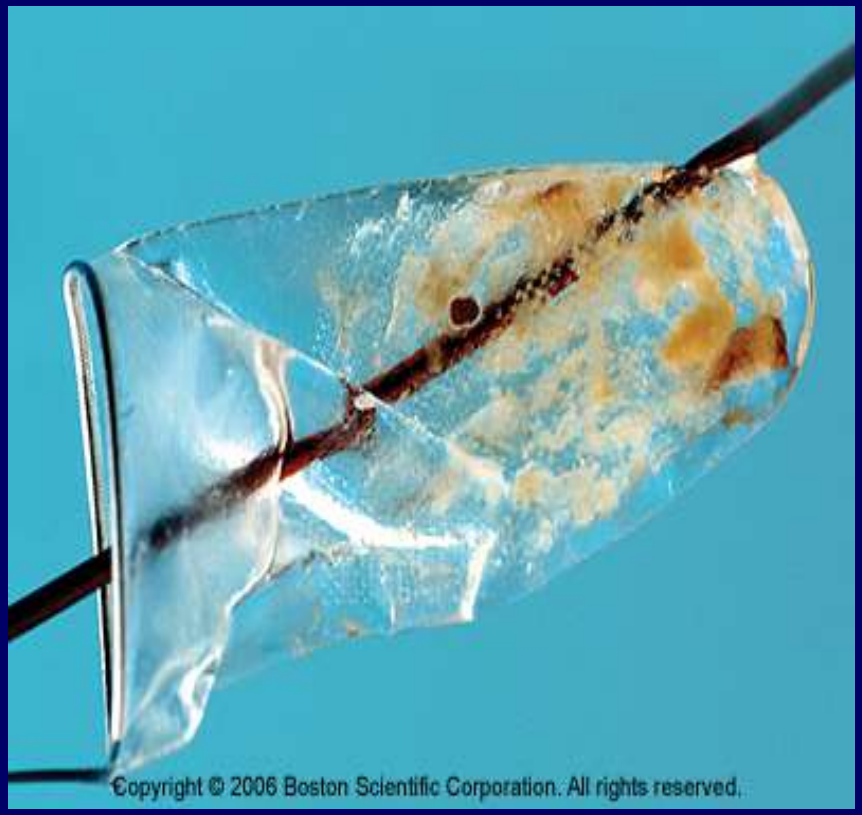
Bivalirudin alone	1800	1705	1684	1669	1520
Heparin+GPIIb/IIIa	1802	1678	1663	1646	1486

Mehran, TCT 2008

Bivalirudin prehospital in STEMI

EUROMAX trial

Distal protection - trombectomy



Interventional procedures – removal of embolic debris

Distal Microcirculatory Protection During Percutaneous Coronary Interventi in Acute ST-Segment Elevation Myocardial Infarction

A Randomized Controlled Trial

Gregg W. Stone, MD
John Webb, MD
David A. Cox, MD

Context ion during percutaneous coronary interv n is common and may result in microcircul h may improve reperfusion suc-

JAMA 2005;293:1063,

EMERALD, n=501

Rand

No effect

Randomized Evaluation of the Effects of Filter-Based Distal Protection on Myocardial Perfusion and Infarct Size After Primary Percutaneous Catheter Intervention in Myocardial Infarction With and Without ST-Segment Elevation

Michael Gick, MD; Nikolaus Jander, MD; Hans-Peter Bestehorn, MD; Rolf-Peter Kie
Miroslaw Ferenc, MD; Klaus Werner, MD; Thomas Comberg, MD; Kristhi
Dietlind Zohlnhöfer, MD; Valerio Bassignana, MD; Heinz Joachim Buettner, M eumann, MD

Background—In acute myocardial in lization of imary percutaneous catheter intervention may curtail microvascul farct region. C ized trial investigated whether distal protection with a filter device can improve microvascular perfusion and uce infarct size after primary percutaneous

PROMISE

Circulation 2005;112,1462

Rand

No effect

Distal Protection Improved Reperfusion and Reduced Left Ventricular Dysfunction in Patients With Acute Myocardial Infarction Who Had Angioscopically Defined Ruptured Plaque

Isamu Mizote, MD; Yasunori Ueda, MD, PhD; Tomohito Ohtani, MD; Masahiko Shimizu, MD; Yasuharu Takeda, MD; Takafumi Oka, MD; Masahiko Tsujimoto, M
Atsushi Hirayama, MD, PhD; Masatsugu Hori, MD, PhD; Kazuhi PhD

Circulation 2004;110:1460

Non-rand

Effect ?

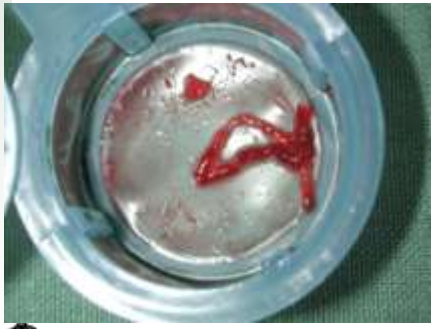
Angioscopic guidance

Summary: Mechanical Devices to Remove Thrombus in AMI (13 RCTs)

	Thrombus aspiration	Thromb-ectomy	Distal protection
8 single center trials (50 – 215 pts) – 6 beneficial			
Beneficial	3	3	
Negative			1
Harmful	1 Kaltoft et al - largest		
5 multicenter trials (100 – 501 pts) – 0 beneficial			
Beneficial		±1	
Negative			3
Harmful		1 AIMI - largest	

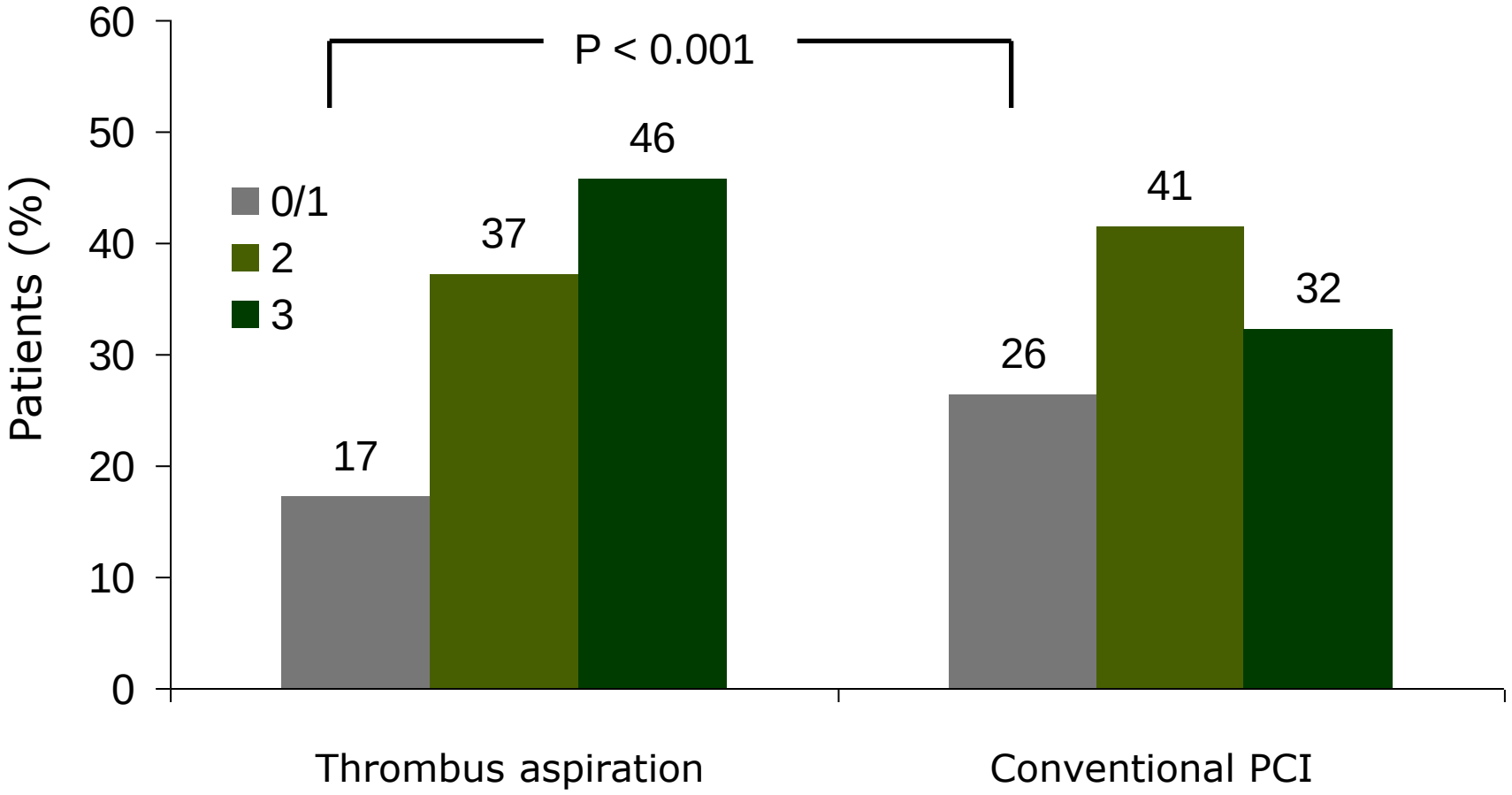
New evidence: Thrombus aspiration

- Thrombus aspiration during primary percutaneous coronary intervention.
- Cardiac death and reinfarction after 1 year in the Thrombus Aspiration during Percutaneous coronary intervention in Acute myocardial infarction Study (TAPAS): a 1-year follow-up study.



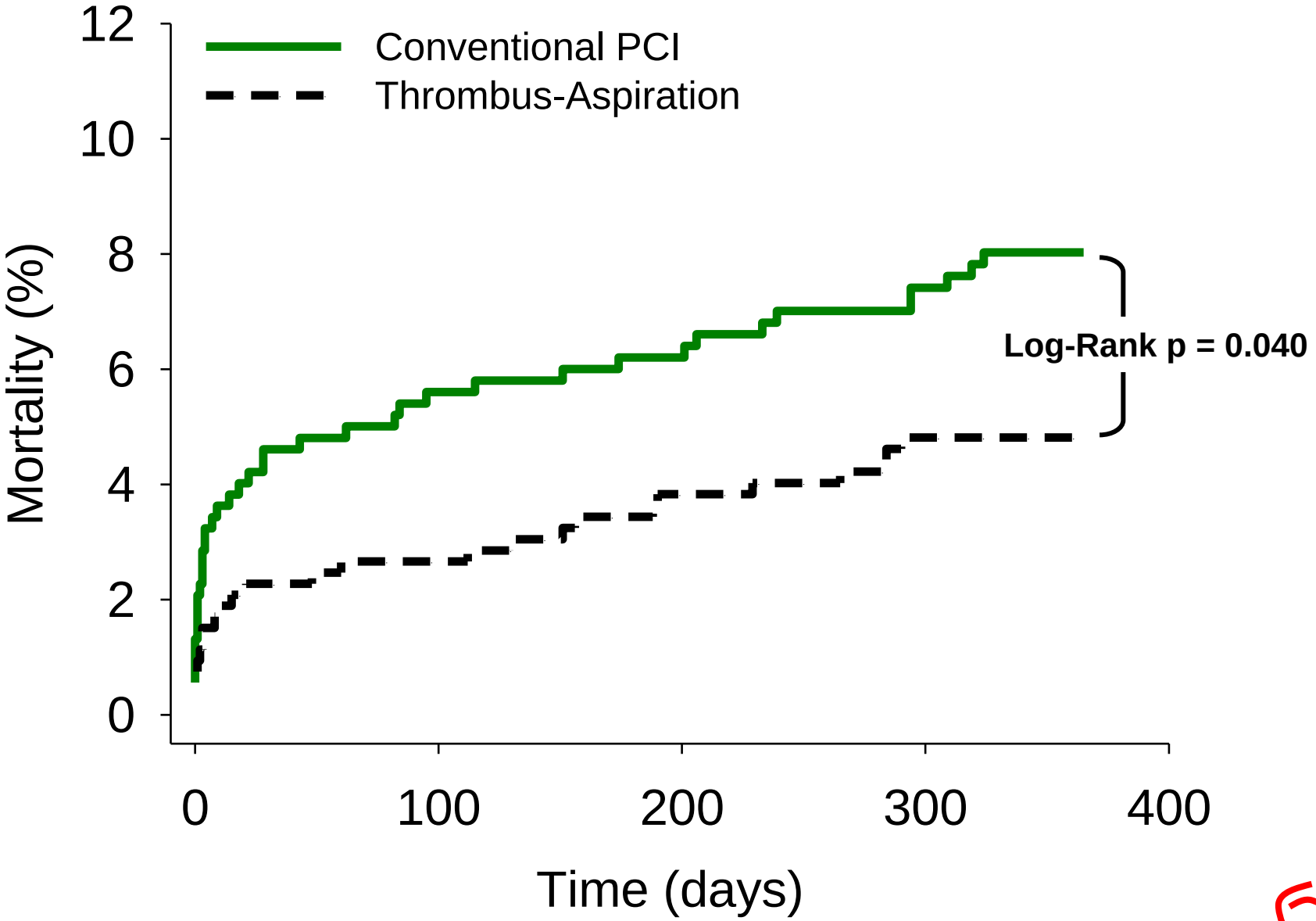
Svilaas T et al, N Engl J Med. 2008;358 :557-67
PJ Vlaar et al, Lancet. 2008;37:1915-20.

TAPAS Primary endpoint: Myocardial blush grade



Svilaas T et al. NEJM 2008;358:557 - FZ 2008-8

Mortality at 1 year



*Unpublished results

Better ADP receptor-antagonist

- Prasugrel (TRITON TIMI 38)
- Ticagrelor (PLATO)

Prasugrel instead of clopidogrel in STEMI for 12 (15) months?

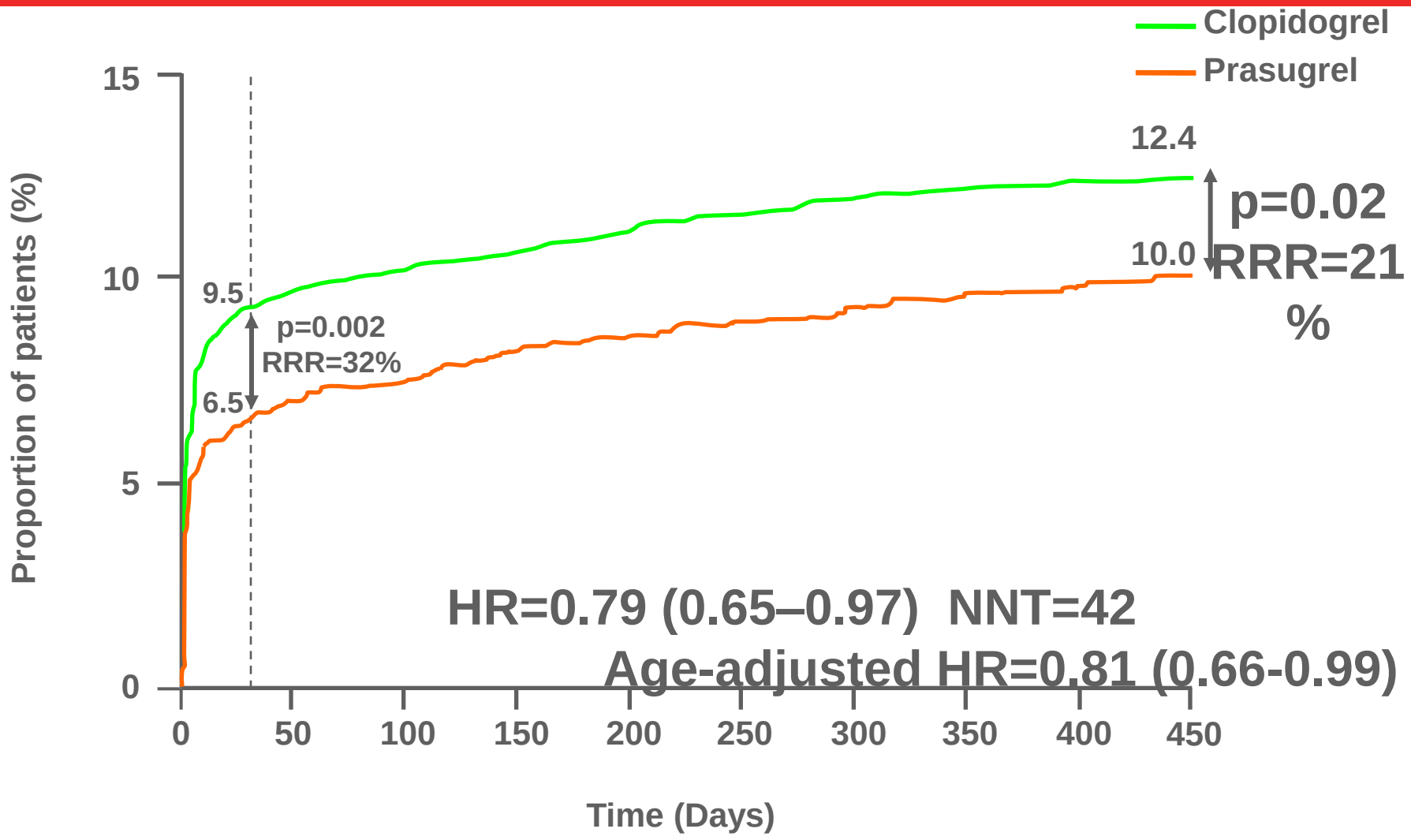
The NEW ENGLAND JOURNAL of MEDICINE

Prasugrel versus Clopidogrel in Patients with Acute Coronary Syndromes

Stephen D. Wiviott, M.D., Eugene Braunwald, M.D., Carolyn H. McCabe, B.S., Gilles Montalescot, M.D., Ph.D., Witold Ruzyllo, M.D., Shmuel Gottlieb, M.D., Franz-Joseph Neumann, M.D., Diego Ardissino, M.D., Stefano De Servi, M.D., Sabina A. Murphy, M.P.H., Jeffrey Riesmeyer, M.D., Govinda Weerakkody, Ph.D., C. Michael Gibson, M.D., and Elliott M. Antman, M.D., for the TRITON–TIMI 38 Investigators*

Wiviott SD *et al. N Engl J Med* 2007;357:2001–2015.

TRITON: STEMI cohort primary EP (CV death, MI and stroke at 15 months)



Montalescot et al. Lancet 2009

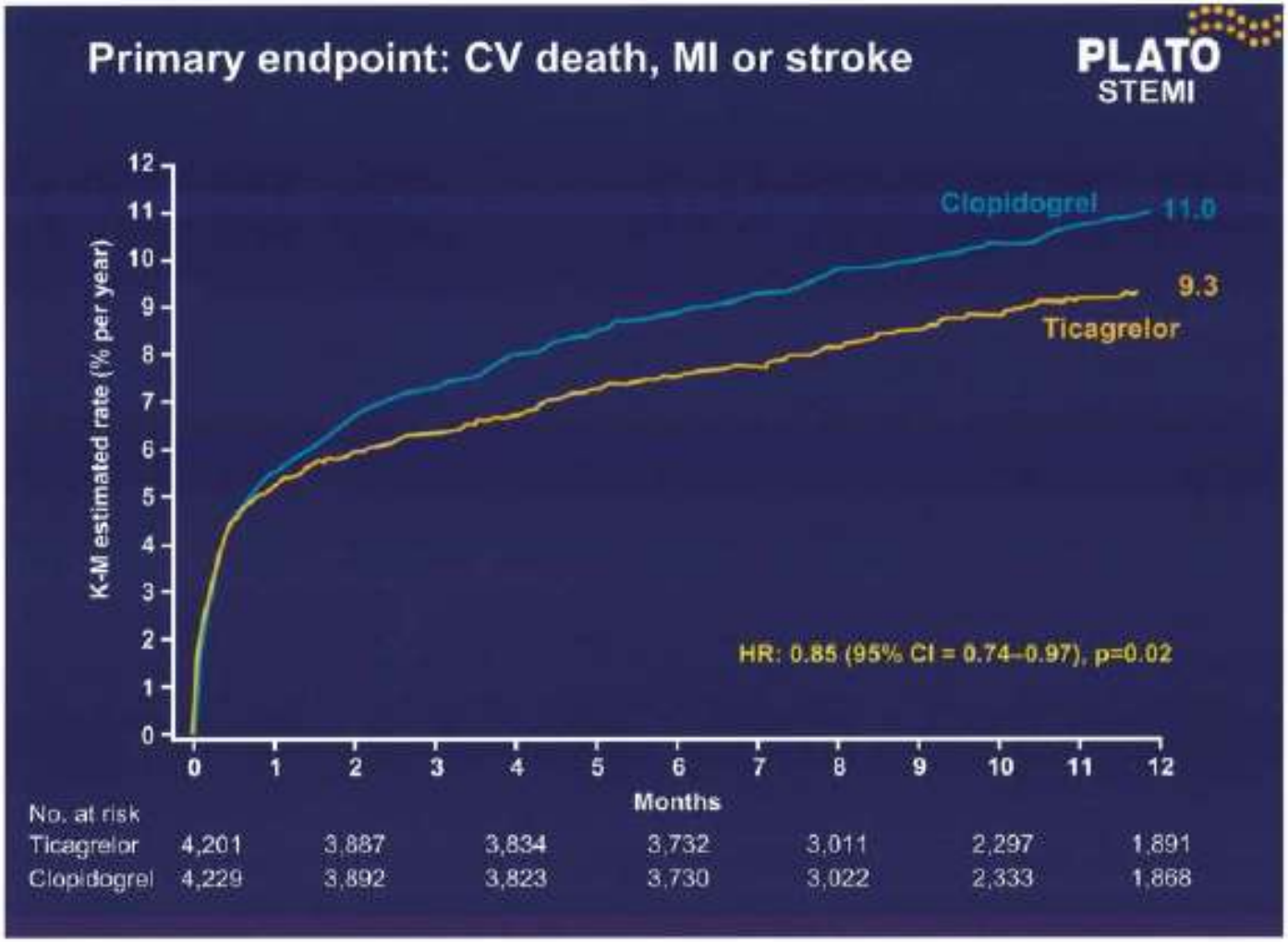
August 30, 2009 at 08.00 CET

The NEW ENGLAND JOURNAL of MEDICINE

Ticagrelor versus Clopidogrel in Patients with Acute Coronary Syndromes

Lars Wallentin, M.D., Ph.D., Richard C. Becker, M.D., Andrzej Budaj, M.D., Ph.D., Christopher P. Cannon, M.D., Håkan Emanuelsson, M.D., Ph.D., Claes Held, M.D., Ph.D., Jay Horrow, M.D., Steen Husted, M.D., D.Sc., Stefan James, M.D., Ph.D., Hugo Katus, M.D., Kenneth W. Mahaffey, M.D., Benjamin M. Scirica, M.D., M.P.H., Allan Skene, Ph.D., Philippe Gabriel Steg, M.D., Robert F. Storey, M.D., D.M., and Robert A. Harrington, M.D., for the PLATO Investigators*

Ticagrelor vs Clopidogrel in STEMI



Should we use drug eluting stents in STEMI?

Four-year events in TYPHOON

End point	Cypher (%)	Bare-metal stent (%)	p
Death	4.0	6.4	0.23
Cardiac death	3.2	4.8	0.37
MI	4.8	4.0	0.83
TLR	7.2	15.2	0.005
TVR	9.6	12.2	0.013

Spaulding C. EuroPCR 2009; May 19-22, 2009; Barcelona, Spain.

Transradial approach for STEMI?

- ACS and STEMI patients are frequently aggressively anti-coagulated with high rates of access site bleeding
- Access site bleeding is an independent predictor of mortality in ACS
- TRA lowers access site bleeding rates

European Heart Journal
doi:10.1093/eurheartj/ehq277

ESC/EACTS GUIDELINES

Guidelines on myocardial revascularization

The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

Developed with the special contribution of the European Association for Percutaneous Cardiovascular Interventions (EAPCI)†

Authors/Task Force Members: William Wijns (Chairperson) (Belgium)*, Philippe Kolh (Chairperson) (Belgium)*, Nicolas Danchin (France), Carlo Di Mario (UK), Volkmar Falk (Switzerland), Thierry Folliguet (France), Scot Garg (The Netherlands), Kurt Huber (Austria), Stefan James (Sweden), Juhani Knuuti (Finland), Jose Lopez-Sendon (Spain), Jean Marco (France), Lorenzo Menicanti (Italy) Miodrag Ostojic (Serbia), Massimo F. Piepoli (Italy), Charles Pirlet (Belgium), Jose L. Pomar (Spain), Nicolaus Reifart (Germany), Flavio L. Ribichini (Italy), Martin J. Schalij (The Netherlands), Paul Sergeant (Belgium), Patrick W. Serruys (The Netherlands), Sigmund Silber (Germany), Miguel Sousa Uva (Portugal), David Taggart (UK)

STEMI Management

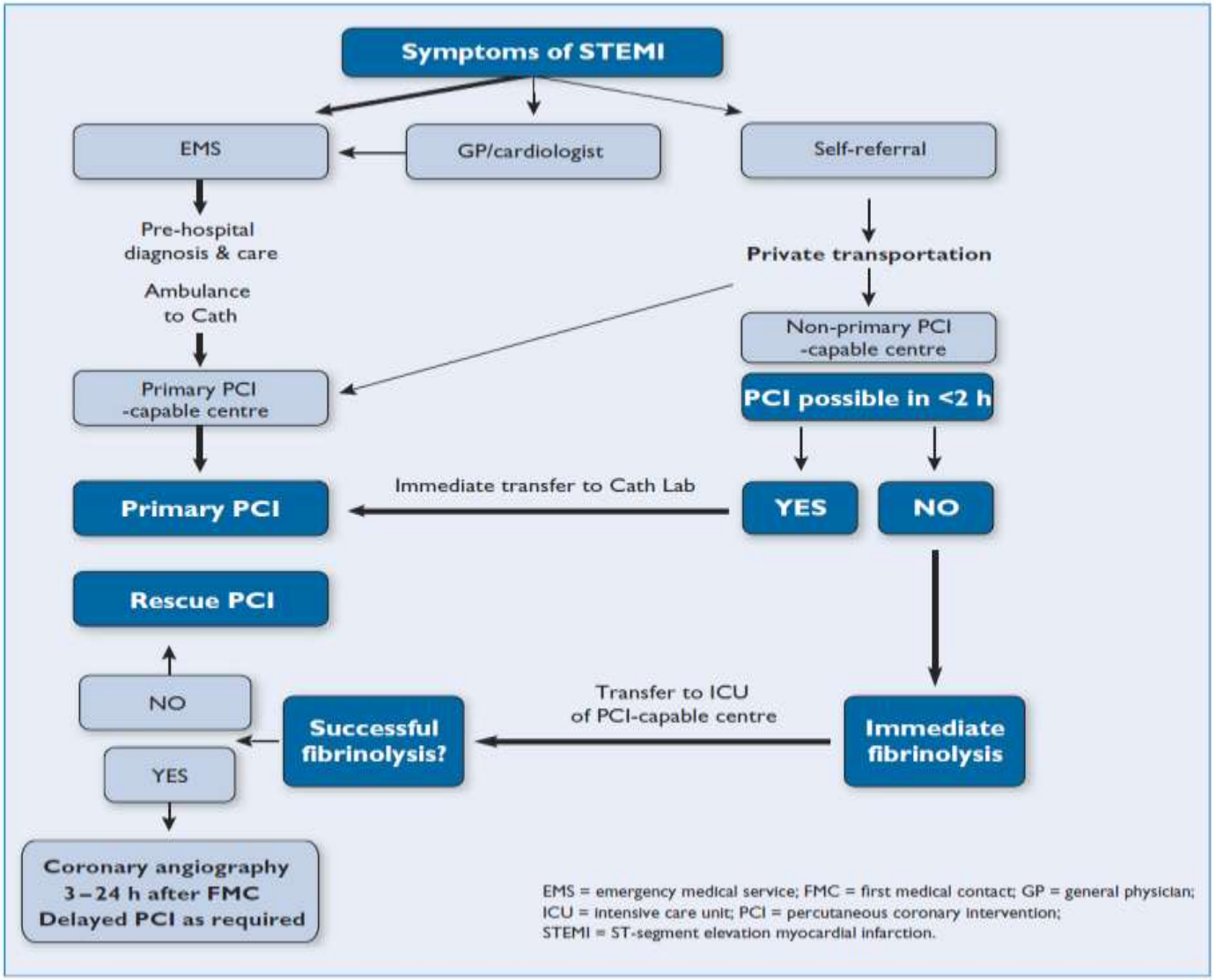
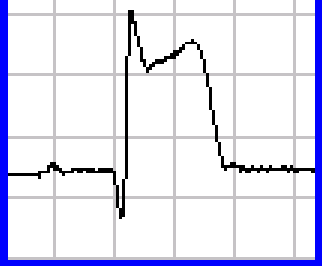


Table 36 Antithrombotic treatment options in myocardial revascularization

STEMI				
Antiplatelet therapy				
	ASA	I	B	55, 94
	Clopidogrel[f] (with 600 mg loading dose as soon as possible)	I	C	—
	Prasugrel[d]	I	B	246, 252
	Ticagrelor[d]	I	B	248, 253
	+ GPIIb–IIIa antagonists (in patients with evidence of high intracoronary thrombus burden)			
	Abciximab	IIa	A	55, 94
	Eptifibatide	IIa	B	259, 260
	Tirofiban	IIb	B	55, 94
	Upstream GPIIb–IIIa antagonists	III	B	86
Anticoagulation				
	Bivalirudin (monotherapy)	I	B	255
	UFH	I	C	—
	Fondaparinux	III	B	256

STEMI



Fibrinolysis

Primary PCI

Earlier treatment => improved prognosis

Boersma E et al, Lancet 1996; 348:771-5
De Luca G et al, Circulation 2004; 109:1223-5

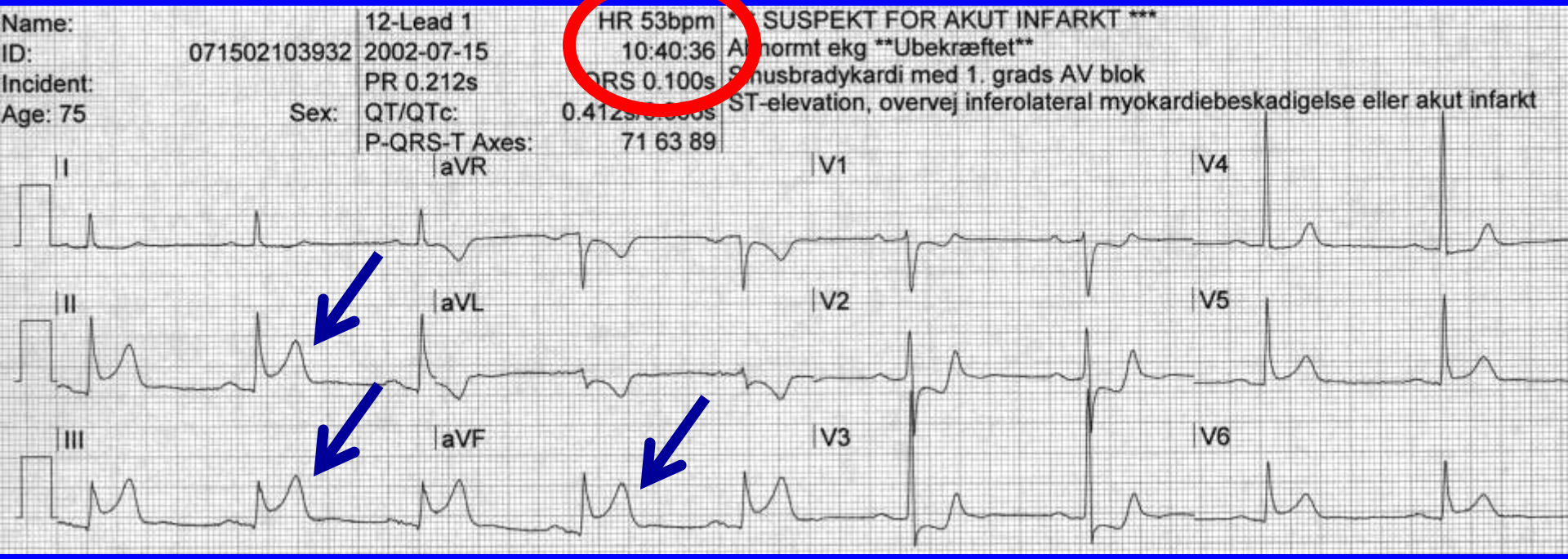
ACUTE STEMI: early diagnosis

Immediate ECG – paramedics or doctors in the ambulance

- Telemedicine
- Prehospital thrombolysis
- Transferral for primary PCI

Example:

Pre-hospital ECG from a 56 year old male with chest pain



Transmission of A 12-lead ECG To hospital.

Call

Phone contact from hospital to patient and paramedic in the ambulance.

Organizational aspects: primary PCI

- Algoritms for transfer
- Training of ambulance staff
- Number of Centers
- Volume of PCI-centers
- Train more operators - a lot of night work

Operator based view on risk in P-PCI of STEMI

Operator based view on risk in P-PCI of STEMI

TRAINING

Operator based view on risk in P-PCI of STEMI

TRAINING

TEAM

Stent for Life Initiative

Steen D. Kristensen, FESC
Chairman SFL,
Department of Cardiology
Aarhus University Hospital Skejby
Denmark

Stent for Life Initiative
European Executive Board
September 2010 - 2011

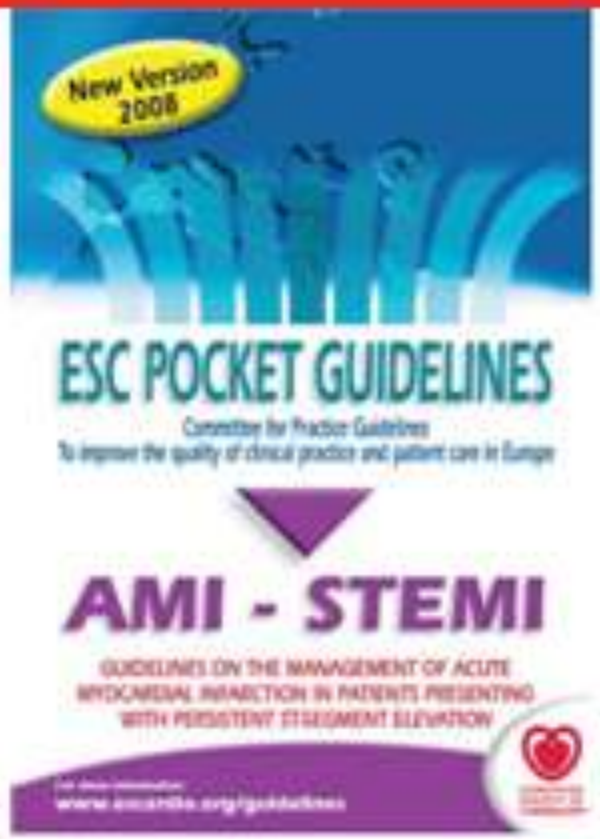
- Steen D. Kristensen/ SFL project co-chairman
- Jean Fajadet /SFL project co-chairman
- Nicolas Danchin
- Carlo Di Mario
- William Wijns
- Petr Widimsky
- Marielle de la Torre (EAPCI Executive Officer)
- Zuzana Kaifoszova (SFL Project Manager, Europe)

Stent for Life
INITIATIVE

To improve the delivery and patient access to the life saving indications of PCI thereby reduce the mortality and morbidity of patients suffering from acute coronary syndromes.

www.stentforlife.com

ESC Guidelines



New ESC Guidelines on 'Revascularization' (2010).

Stent for Life Initiative
Phase I
Situation Mapping & Data Collection

European Heart Journal Advance Access published November 19, 2009

European Heart Journal
doi:10.1093/eurheartj/ehp492

CLINICAL RESEARCH

Reperfusion therapy for ST elevation acute myocardial infarction in Europe: description of the current situation in 30 countries

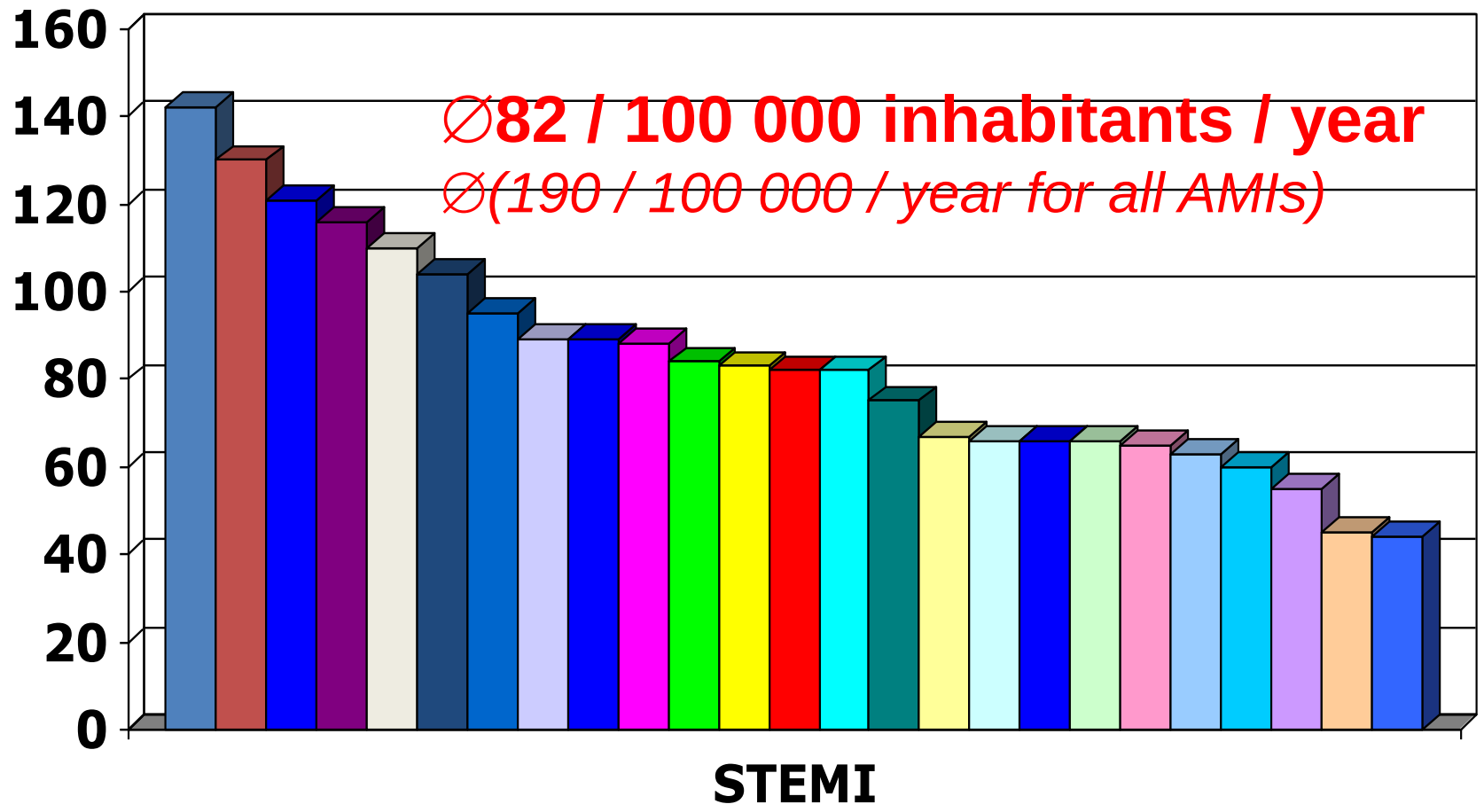
Petr Widimsky*, William Wijns, Jean Fajadet, Mark de Belder, Jiri Knot, Lars Aaberge, George Andrikopoulos, Jose Antonio Baz, Amadeo Betriu, Marc Claeys, Nicholas Danchin, Slaveyko Djambazov, Paul Erne, Juha Hartikainen, Kurt Huber, Petr Kala, Milka Klinčeva, Steen Dalby Kristensen, Peter Ludman, Josephina Mauri Ferre, Bela Merkely, Davor Miličić, Joao Morais, Marko Noč, Grzegorz Opolski, Miodrag Ostojić, Dragana Radovanovič, Stefano De Servi, Ulf Stenestrand, Martin Studenčan, Marco Tubaro, Zorana Vasiljević, Franz Weidinger, Adam Witkowski, and Uwe Zeymer on behalf of the European Association for Percutaneous Cardiovascular Interventions†

Cardiocenter, 3rd Faculty of Medicine, Charles University Prague, Czech Republic

Received 15 March 2009; revised 20 August 2009; accepted 5 October 2009

Annual incidence of hospital admissions for STEMI

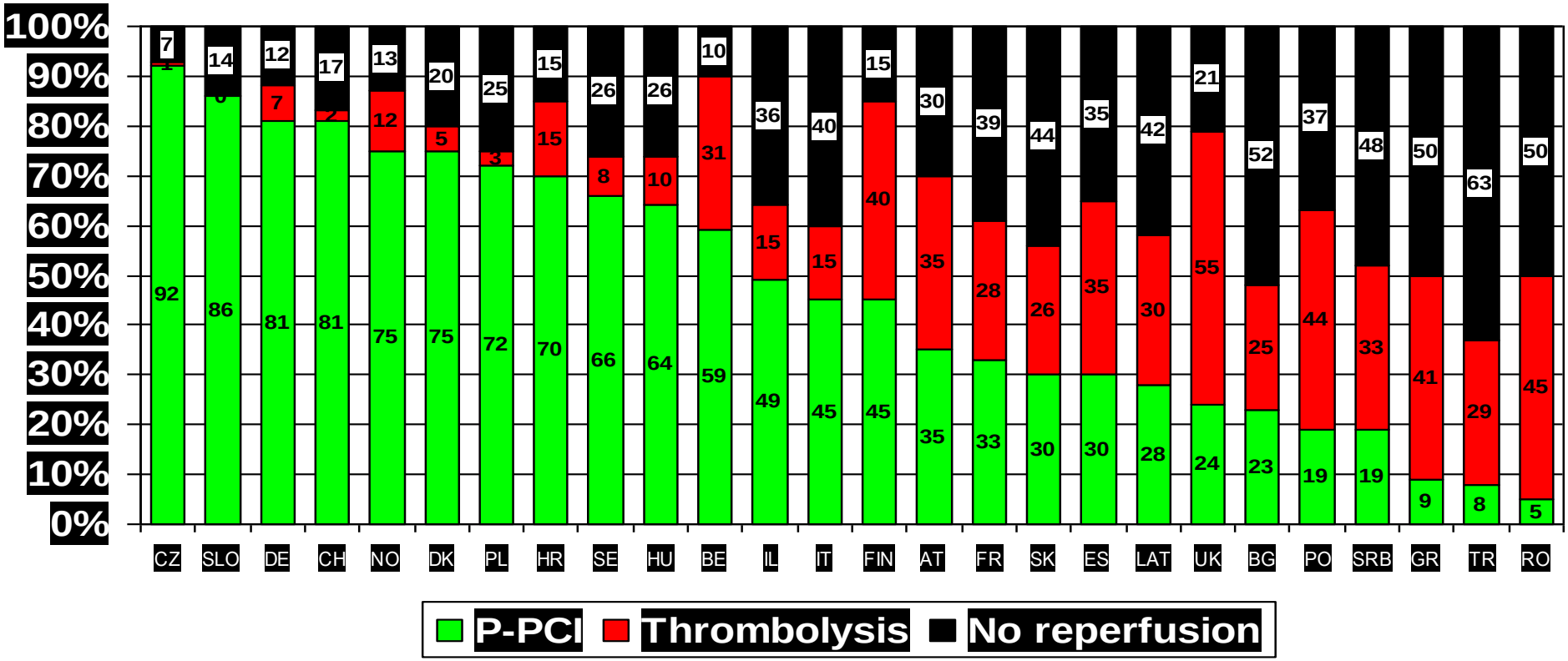
Ref. P.Widimsky, European Heart Journal, doi:10.1093/eurheartj/ehp492



EAPCI

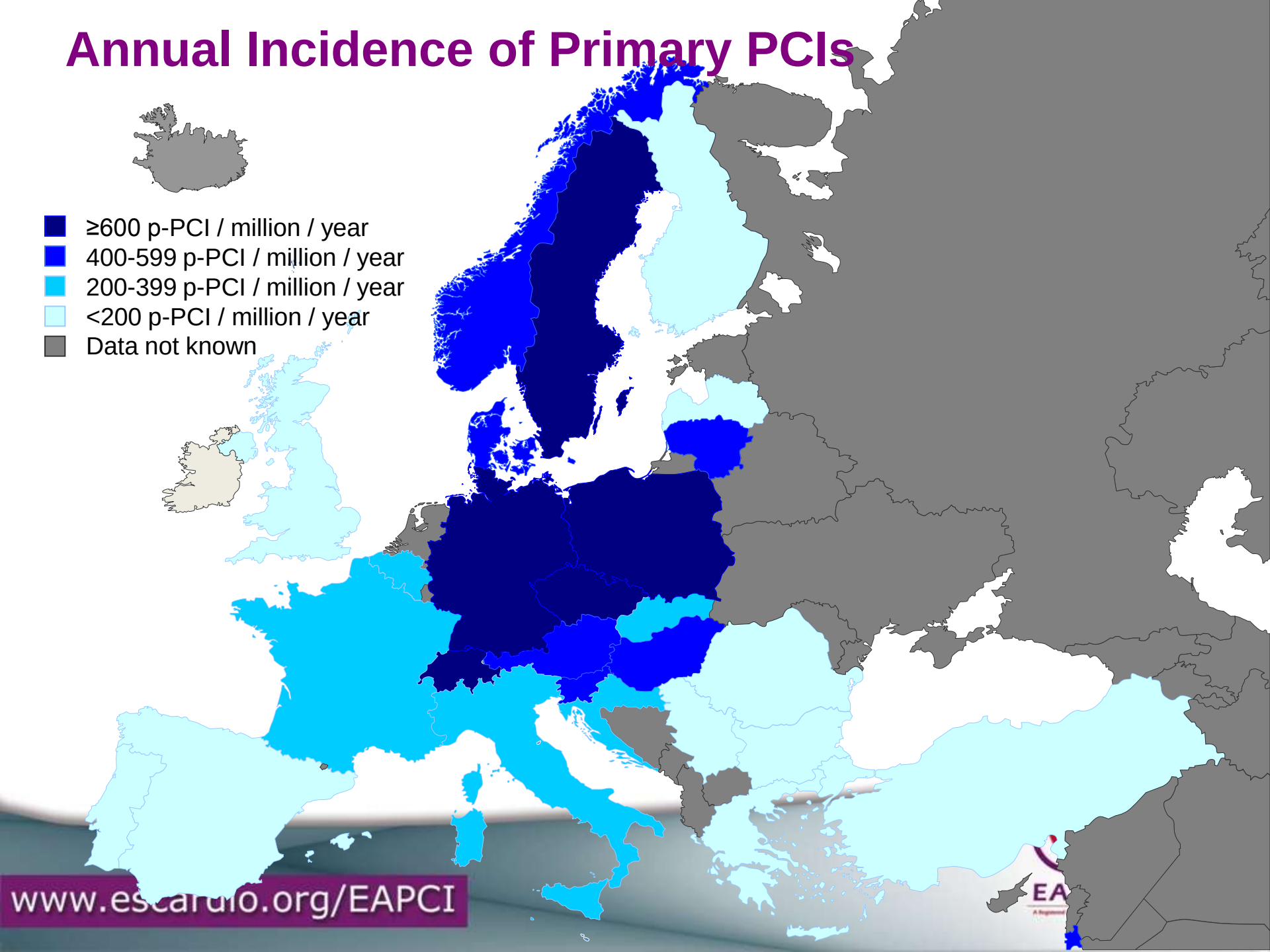
EUROPEAN SOCIETY OF CARDIOLOGY®

Reperfusion Therapies Differ in Countries

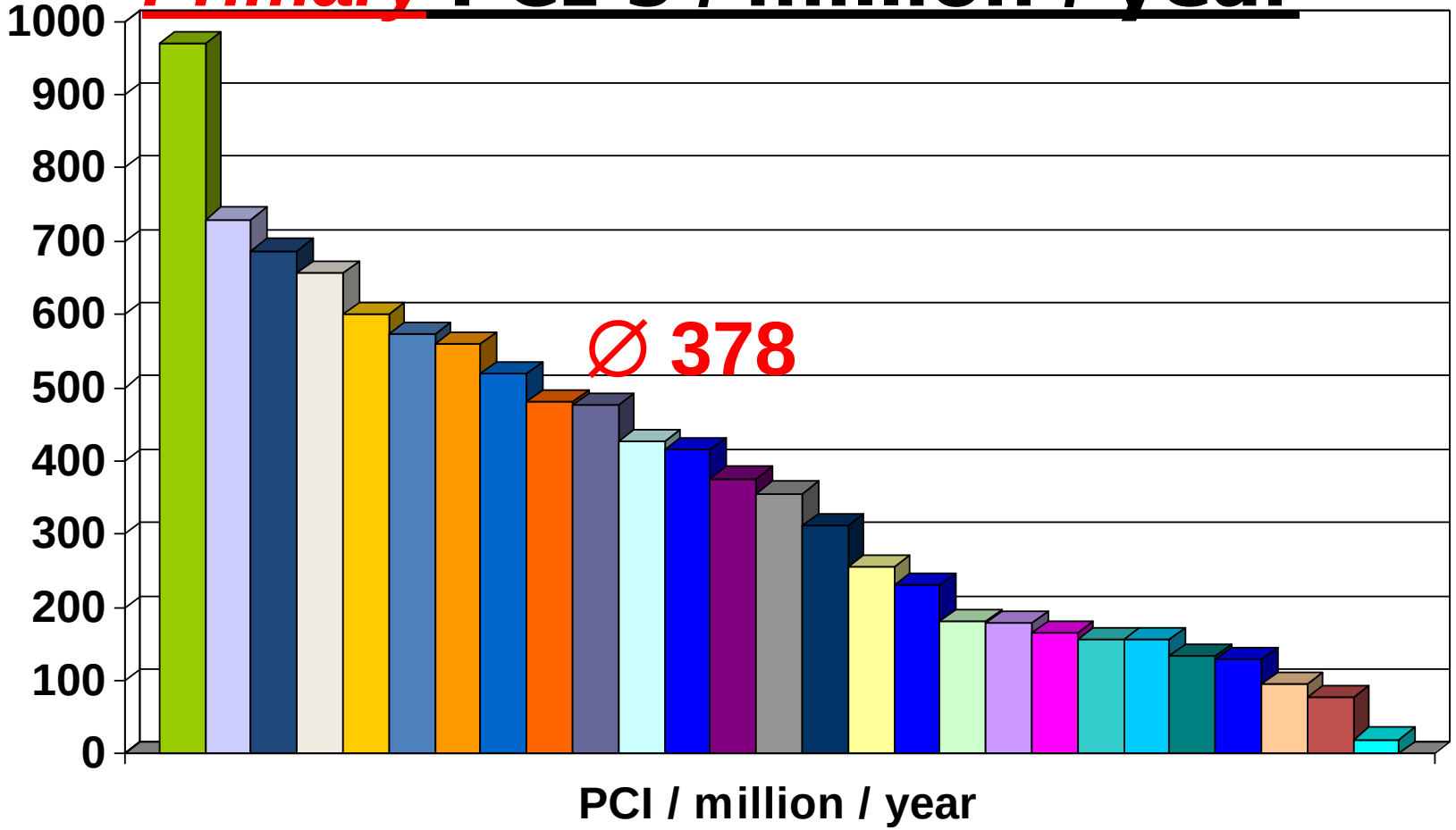


P.Widimsky et al. November 19, 2009. Reperfusion therapy for ST elevation acute myocardial infarction in Europe: description of the current situation in 30 countries. Eur. Heart.J.doi:10.1093/eurheartj/ehp492

Annual Incidence of Primary PCIs



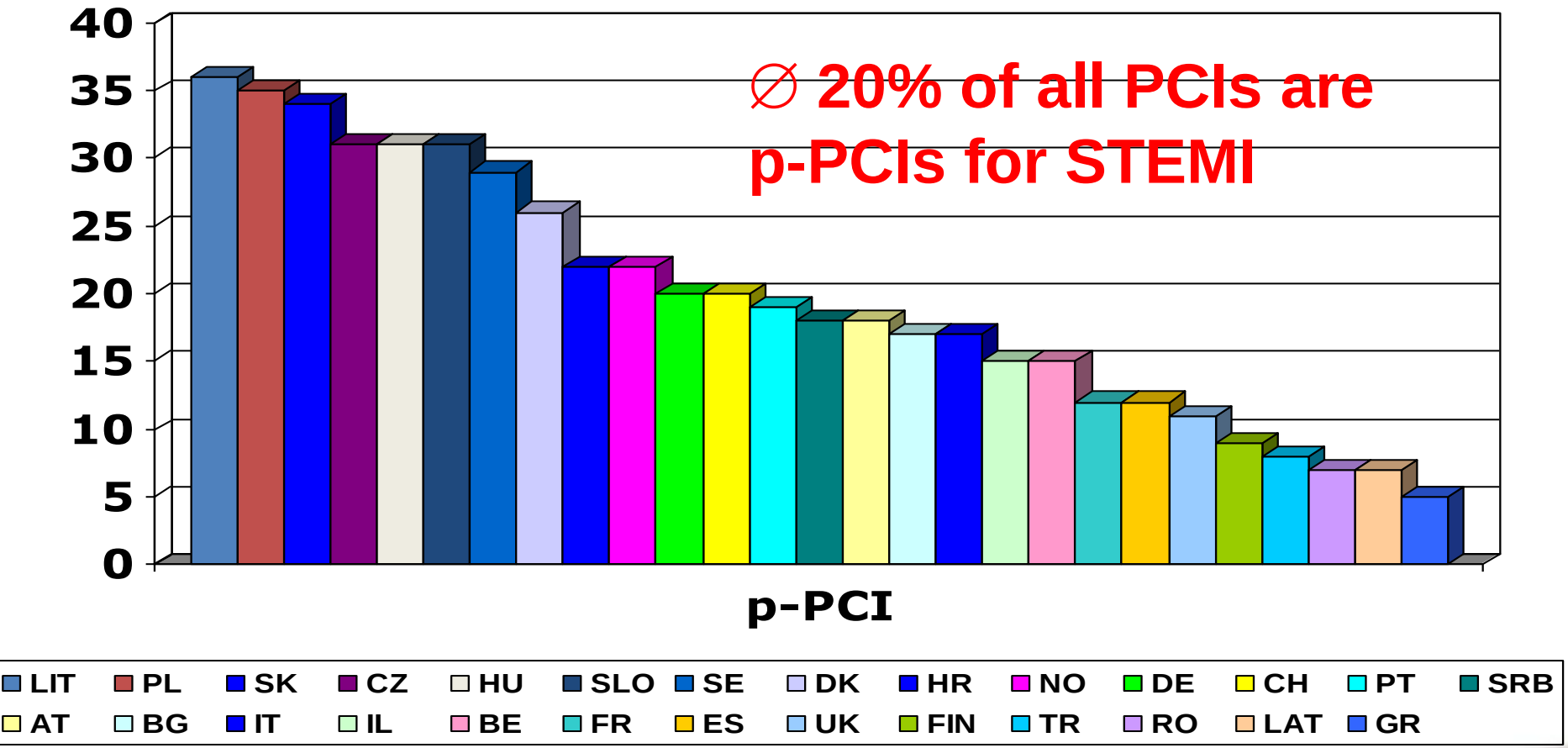
Primary PCI's / million / year



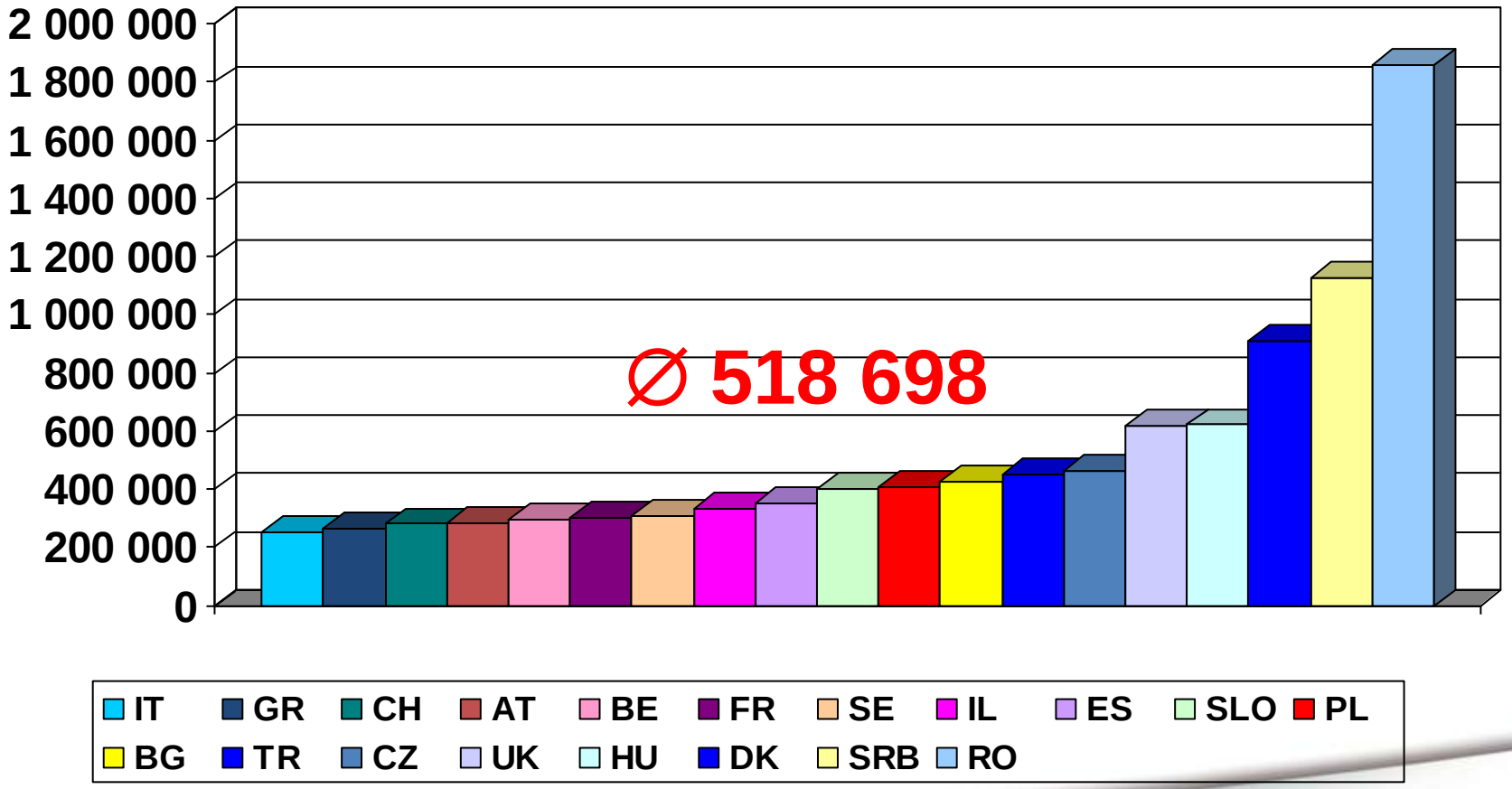
EAPCI

EUROPEAN SOCIETY OF CARDIOLOGY®

% of primary PCIs among all PCIs



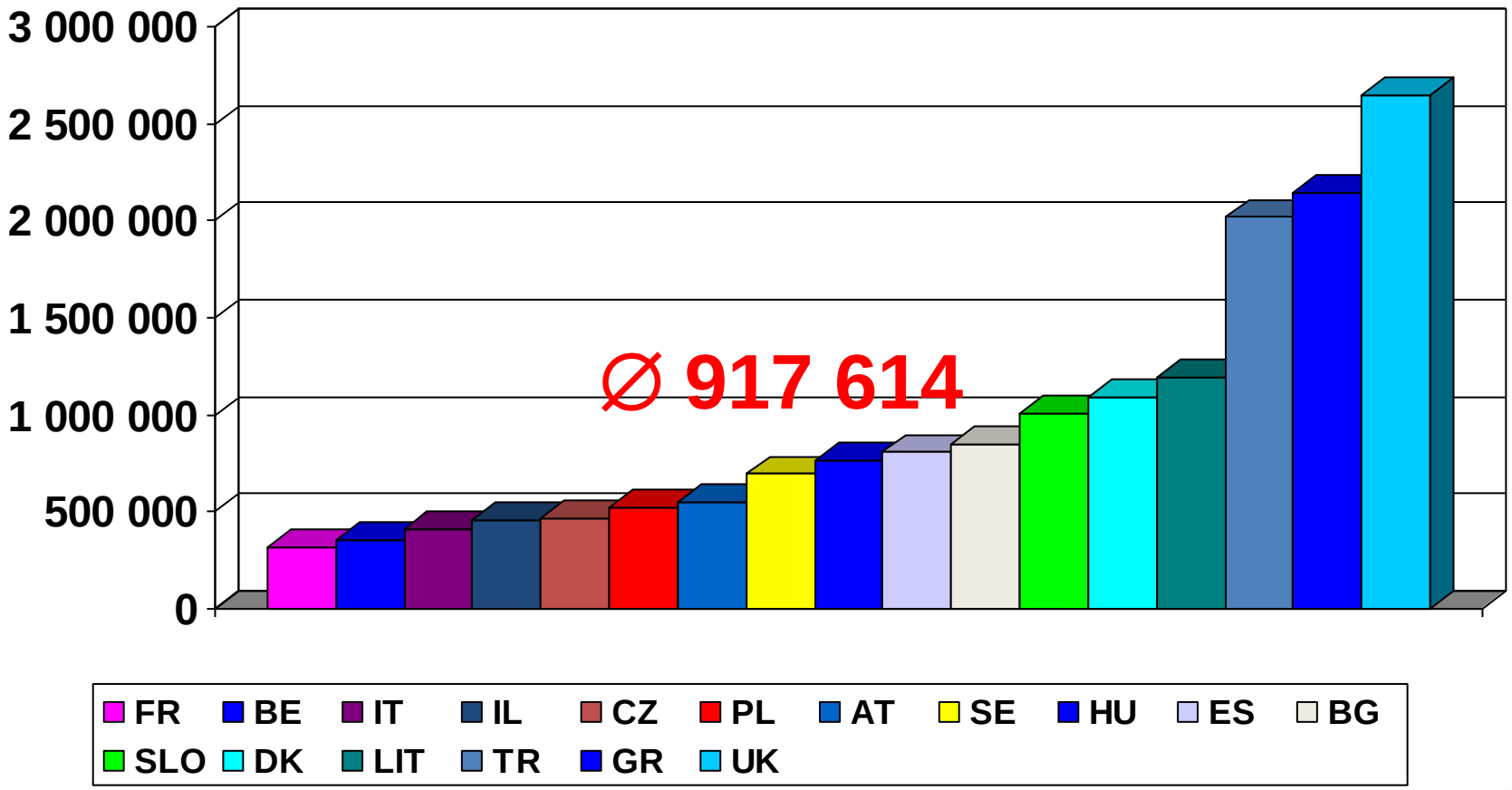
Mean population per one PCI center



EAPCI

EUROPEAN SOCIETY OF CARDIOLOGY®

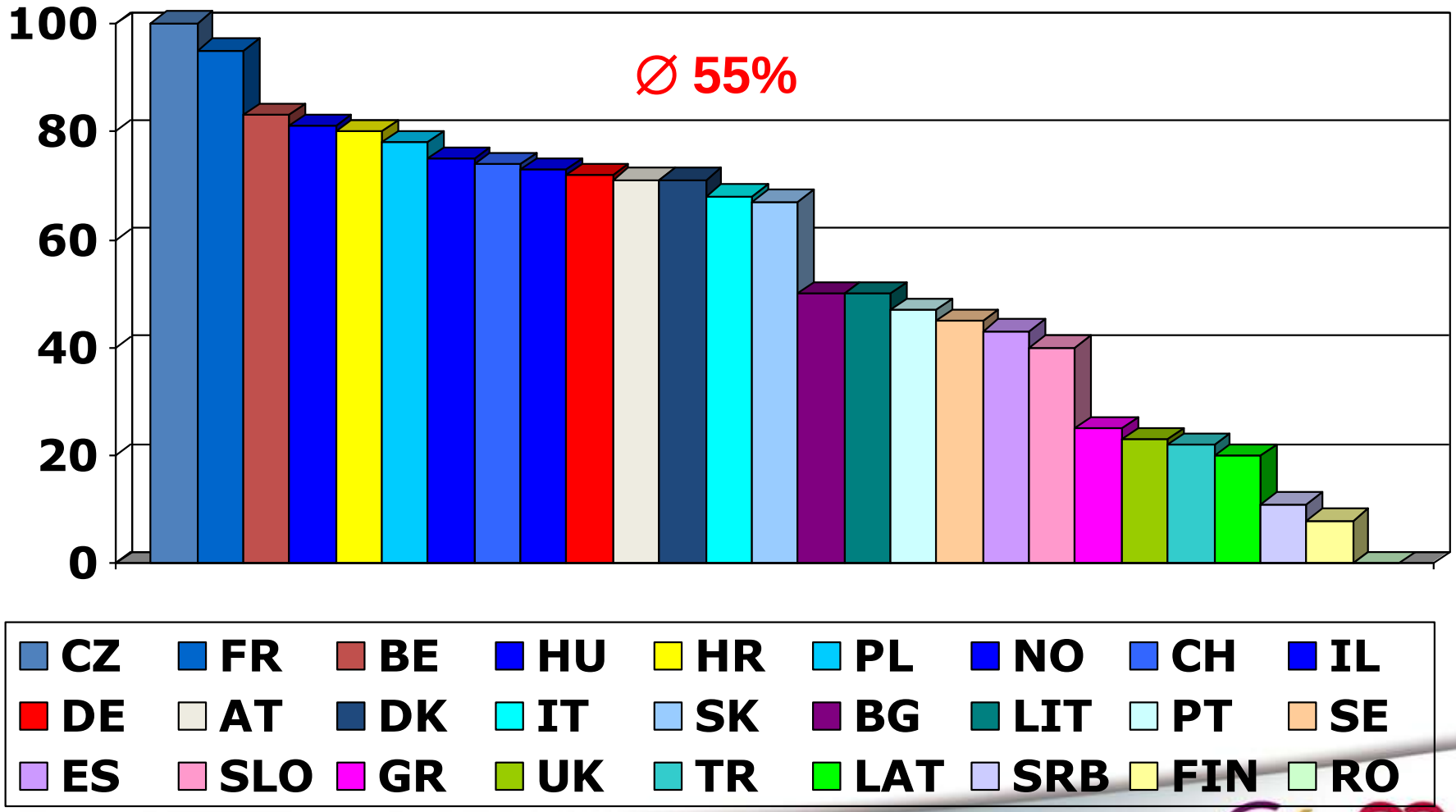
Population per one *primary* PCI (24/7) center



EAPCI

EUROPEAN SOCIETY OF CARDIOLOGY®

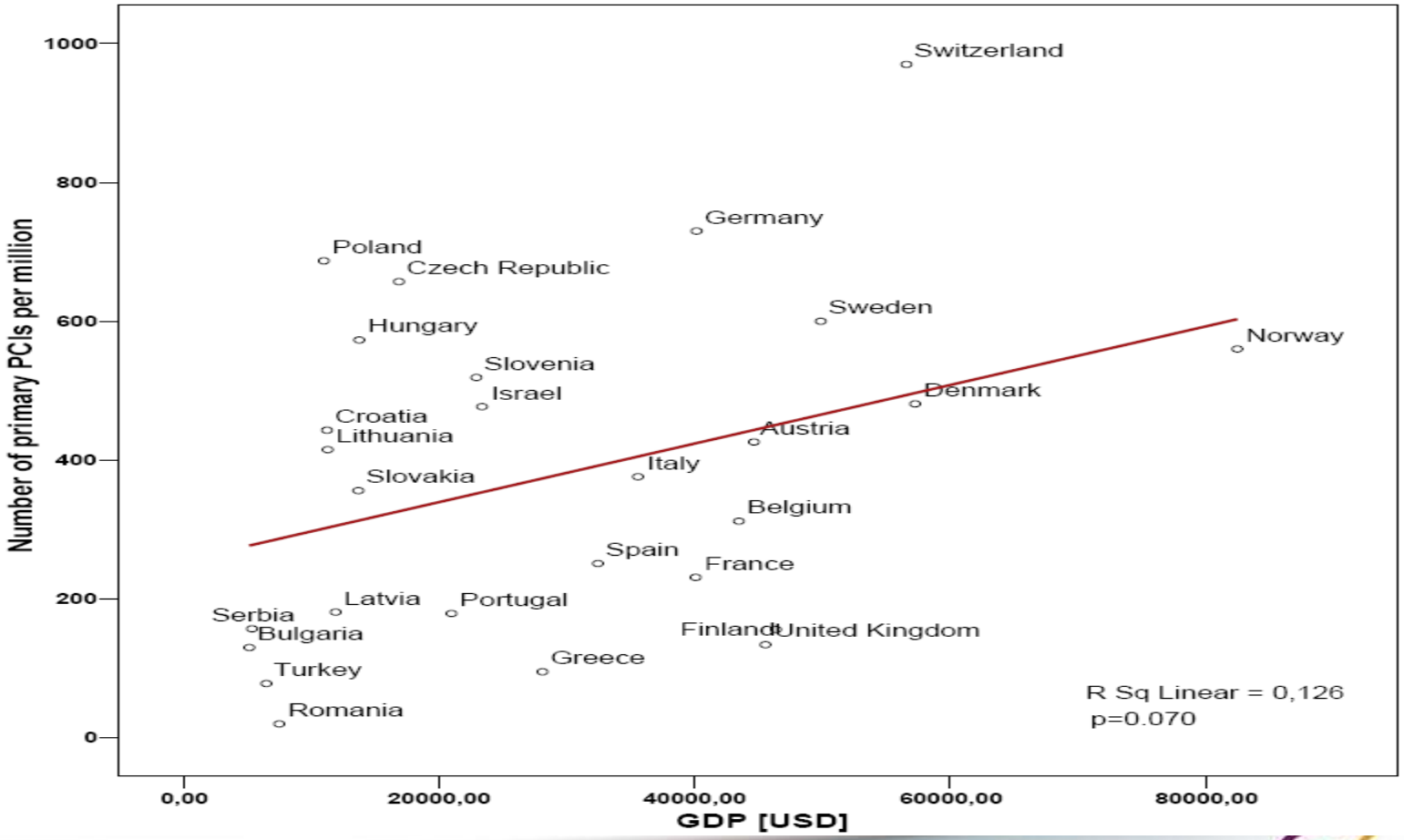
Only 55% of all PCI centers offer non-stop 24/7 p-PCI service



EAPCI

EUROPEAN SOCIETY OF CARDIOLOGY®

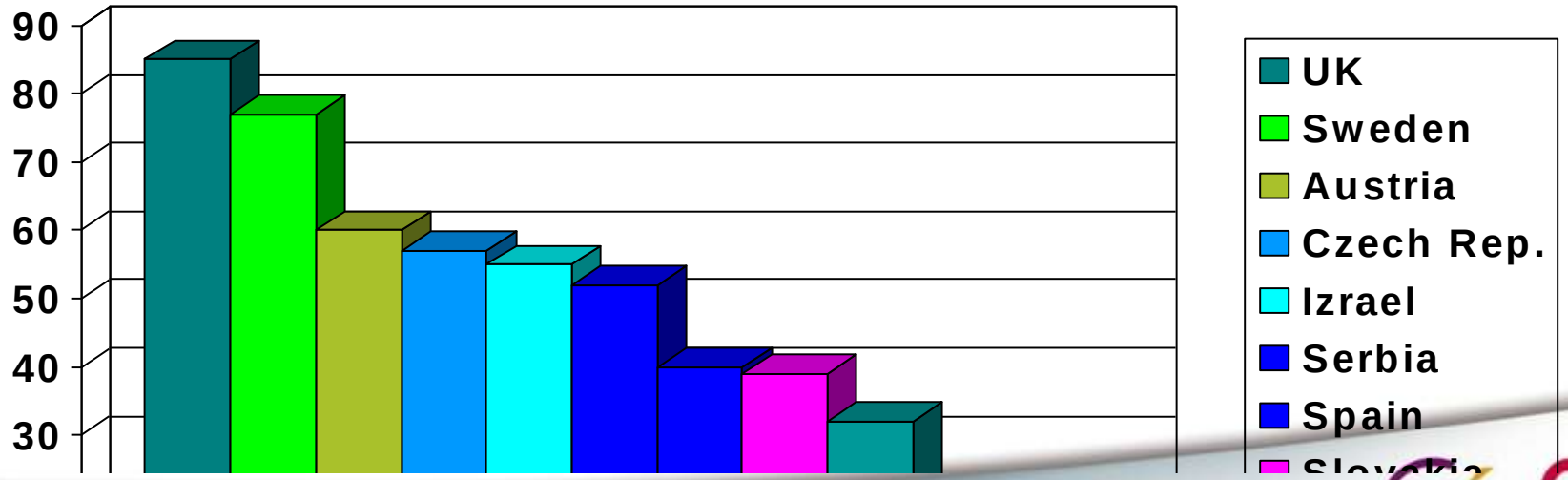
Number of primary PCIs does not correlate to Countries' GDP



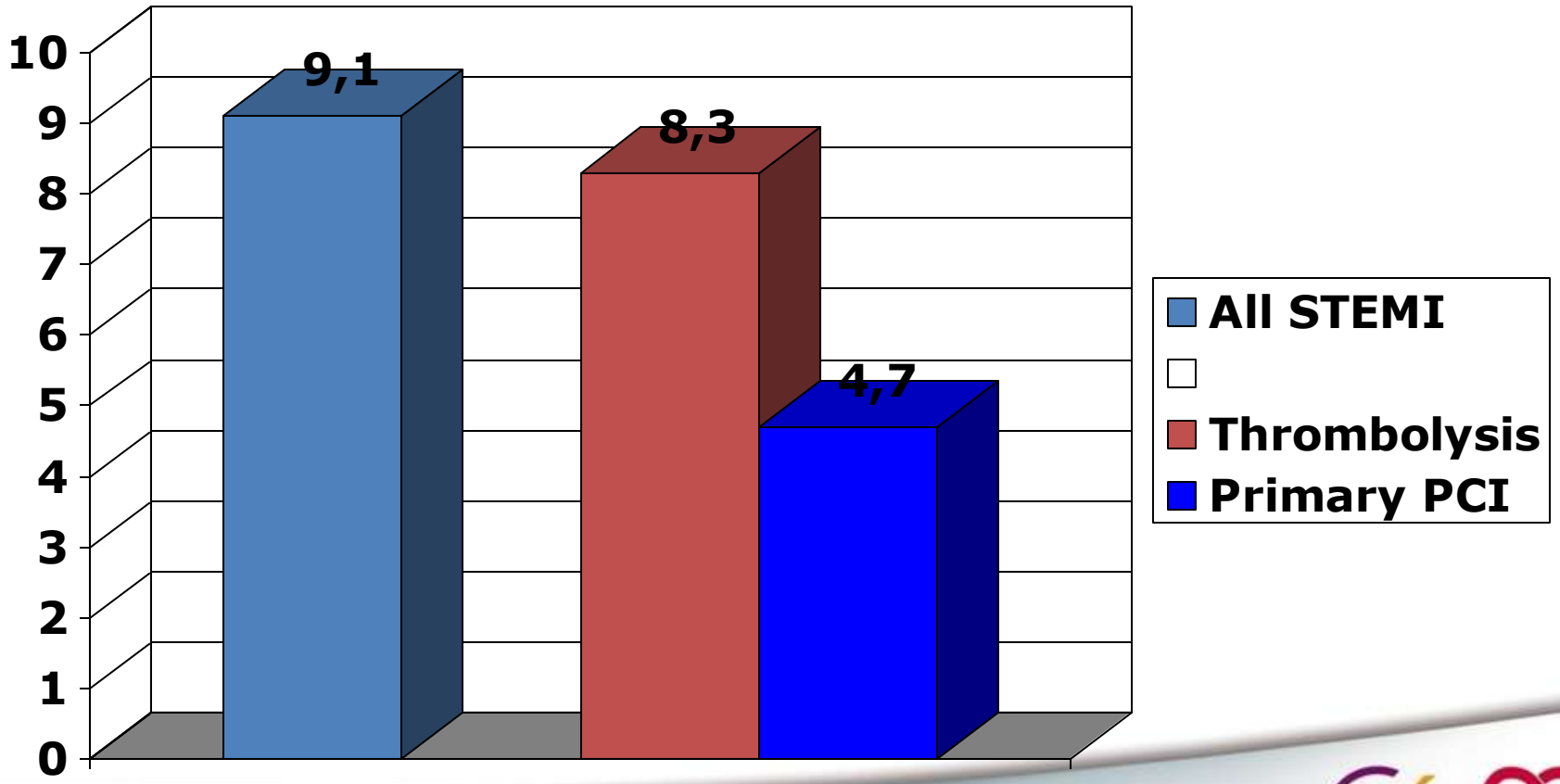
EAPCI

EUROPEAN SOCIETY OF CARDIOLOGY®

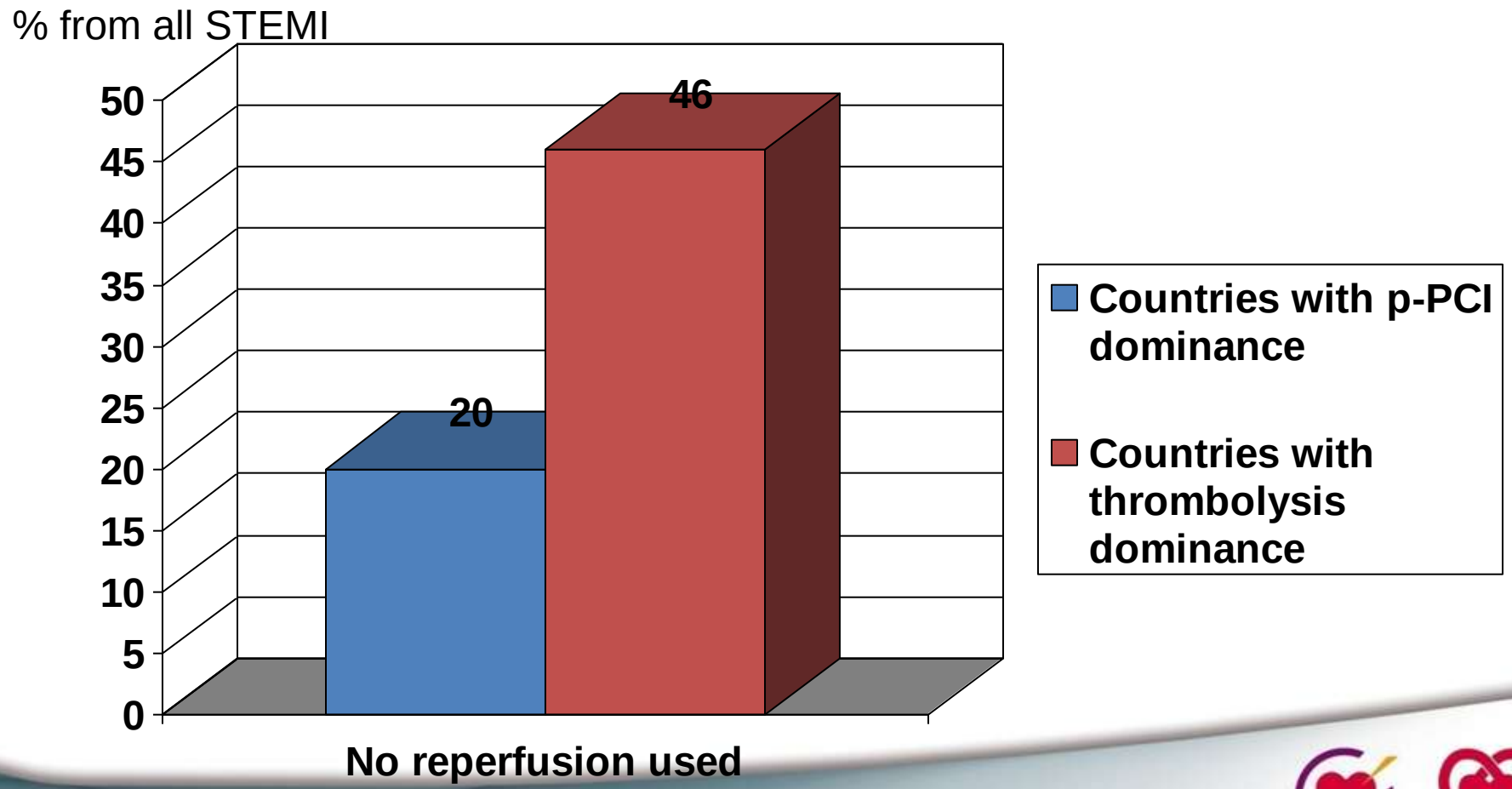
Only 51% STEMI patients arrive to the first hospital by EMS



STEMI Mortality per Treatment



Nationwide „thrombolytic strategy“ for STEMI results in 46% untreated patients



Reperfusion Strategy Paradox

More patients receive reperfusion treatment in countries with low use of thrombolysis and high use of p-PCI

Summary

- Most North, West and Central European countries use p-PCI for the majority of their STEMI patients.
- The lack of organised p-PCI networks is associated with fewer patients overall receiving some form of reperfusion therapy.

Stent for Life Initiative Objectives

1. Define regions/countries with an unmet medical need in the optimal treatment of ACS.

2. Implement an action program to increase patient access to primary PCI where indicated:

- ✓ *To increase the use of primary PCI to more than 70% among all ST segment elevation myocardial infarction patients,*
- ✓ *To achieve primary PCI rates of more than 600 per one million inhabitants per year,*
- ✓ *To offer 24/7 service for primary PCI procedures at all invasive facilities to cover the country STEMI population need.*

Stent for Life Intiative
Phase II
Learning the experience from the best practice countries

EAPCI
A Registered Branch of the ESC

EUROPEAN SOCIETY OF CARDIOLOGY®

EuroIntervention

EuroIntervention 2009;5:299-309

How to set up an effective national primary angioplasty network: lessons learned from five European countries

Jiri Knot[1]*, MD; Petr Widimsky[1], MD, DrSc, FESC; William Wijns[2], MD, PhD, FESC; Ulf Stenestrand[3], MD, PhD; Steen Dalby Kristensen[4], MD, PhD, FESC; Arnoud van' t Hof[5], MD, PhD; Franz Weidinger[6], MD, PhD, FESC; Magnus Janzon[3], MD, PhD; Bjarne Linde Nörgaard[7], MD, PhD; Jacob Thorsted Soerensen[4], MD; Henri van de Wetering[8], MA, ANP; Kristian Thygesen[9], MD, DMSc, FESC; Per-Adolf Bergsten[10], MD; Christofer Digerfeldt[11], MD; Adriaan Potgieter[12], MD; Nadav Tomer[13], BSc, MBA; Jean Fajadet[14], MD, PhD, FESC on behalf of the "Stent for Life" Initiative#

1. Cardiocenter, Department of Cardiology, 3rd Faculty of Medicine Charles University and University Hospital Kralovske Vinohrady, Prague, Czech Republic; 2. Cardiovascular Center Aalst, Aalst, Belgium; 3. Department of Cardiology, University Hospital, Linköping, Sweden; 4. Department of Cardiology, Aarhus University Hospital Skejby, Århus, Denmark; 5. Department of Cardiology, Isala Klinieken, locatie Wezenlanden, Zwolle, The Netherlands; 6. Department of Medicine II, Hospital Rudolfstiftung, Vienna, Austria; 7. Department of Cardiology, Vejle Hospital, Vejle, Denmark; 8. Department of Cardiology, Isala Klinieken and Regionale Ambulance Voorziening IJsselland, Zwolle, The Netherlands; 9. Department of Medicine and Cardiology, Aarhus University Hospitál, Aarhus C, Denmark; 10. Medical Officer EMS, Östergötland, Linköping, Sweden; 11. Department of Internal Medicine, Vrinnevi Hospital, Norrköping, Sweden; 12. Abbott Vascular, Brussels, Belgium; 13. Cordis EMEA, Johnson & Johnson, Waterloo Belgium; 14. Department of Cardiology, Clinique Pasteur, Toulouse, France

 # "Stent for Life" Initiative is a project jointly organised by the European Association of Percutaneous Cardiovascular Interventions (EAPCI) and EuroPCR, supported by EUCOMED and the ESC Working Group on Acute Cardiac Care. Project Steering Committee: Petr Widimsky, Jean Fajadet, Adriaan Potgieter, Nadav Tomer, William Wijns and Nicolas Danchin.

The authors have no conflict of interest to declare.

How Can We Improve
Networks and Infrastructure

- Regional network (***EMS, non-PCI hospitals and PCI centers)*** should cover an area with a ***population around 0,5 million*** (cca 0,3 – 1 million).

- Respect the right of local hospitals to take care for the patients after primary PCI is completed and the patient is stabilized (***tertiary transport to the local hospital*** nearest to patient's home).

- ***All PCI centers should provide non-stop (24/7) services for primary PCI***. PCI hospitals, which are not able to provide non-stop (24/7) primary PCI services, should not be part of the network.

J.Knot:How to set up an effective national primary angioplasty network: lessons learned from five European countries (EuroIntervention, August 2009).

How Can We Improve
Emergency Medical Services (EMS)

- EMS staff ***training*** is more important that the EMS staff ***structure (***trained nurses suitable for the triage and transport of AMI patients)
- EMS ambulances: ***equipped*** by resuscitation facilities and by a portable 12-leads ECG.
- ***ECG teletransmission*** (to the PCI center) can be left on the local decision, is not mandatory.
- ***Road transport is preferred*** (air transport takes usually more time).
- ***Helicopter transport*** is generally faster in mountainous, islandic or very scarcely populated regions.

J.Knot:How to set up an effective national primary angioplasty network: lessons learned from five European countries (EuroIntervention, August 2009).

How Can We Improve
Transport & Time Delays

Primary transport should ***bypass the nearest non-PCI hospital and the Emergency Room or Intensive Care Unit of the PCI center***.

- Immediately diagnostic ECG call to cathlab and start transfer. The ECG – cathlab time <90 minutes can be achieved in vast majority of patients.

- Admission to Emergency Room (or ICU) in the PCI center delays reperfusion by at least 20-40 minutes.

- Admission to non-PCI hospital followed by the „***secondary transport***" to PCI center delays reperfusion by at least 30-60 minutes.

J.Knot:How to set up an effective national primary angioplasty network: lessons learned from five European countries(EuroIntervention, August 2009).

What can we learn from the best practice countries ?

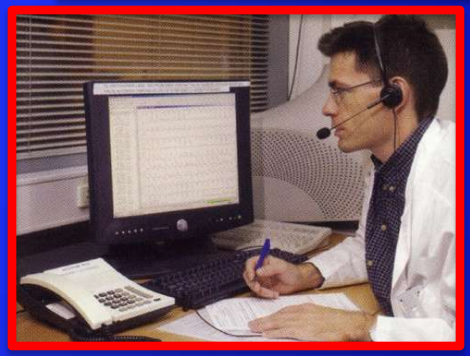
- Involvement of all stakeholders is necessary (professional societies, government, patients)
- Building 24/7 PPCI network to cover STEMI population is needed
- Launch transportation protocol; bypass the nearest hospital without cath lab
- Data collection/registry to analyze progress
- Education campaign to cardiologists, EMS, patients.

Segmentation

Registration

Segmentation

Implementation of PPCI




theeverywheregirl.com

Stent for Life Intiative
Phase III
Implementation in Countries

EAPCI
A Registered Branch of the ESC

EUROPEAN SOCIETY OF CARDIOLOGY®

Stent for Life Initiative
Declaration Signature Ceremony
EAPCI General Assembly at ESC 2009

- Turkey (78 p-PCI / mil. / yr.)
- Greece (95 p-PCI / mil. / yr.)
- Bulgaria (130 p-PCI / mil. / yr.)
- Serbia (157 p-PCI / mil. / yr.)
- Spain (165 p-PCI / mil. / yr.)
- France (231 p-PCI / mil. / yr.)

Declaration Signature Ceremony
EAPCI General Assembly at ESC
September 2010

- Egypt
- Italy (415 p-PCI / mil./ yr.)
- Romania (20 p-PCI / mil./ yr.)

SFL Implementation in Countries Objectives

- Finalize the national SFL structure.
- Develop local action plan and secure SFL budget.
- Hire a local project coordinator.
- Write, present (at the national cardiology congress) and publish (in the national cardiology journal) a „country mapping manuscript" (analyzing the AMI treatment and proposing solutions).
- Review country action plan with SFL Steering Committee.
- Present country progress at EuroPCR & ESC Congress
- Involve the public and media; education program.

How to improve current practice? Example from Spain:"Codi infart" Network in Catalunya

Ricard Tresserras, EuroPCR. Paris, May 25th 2010

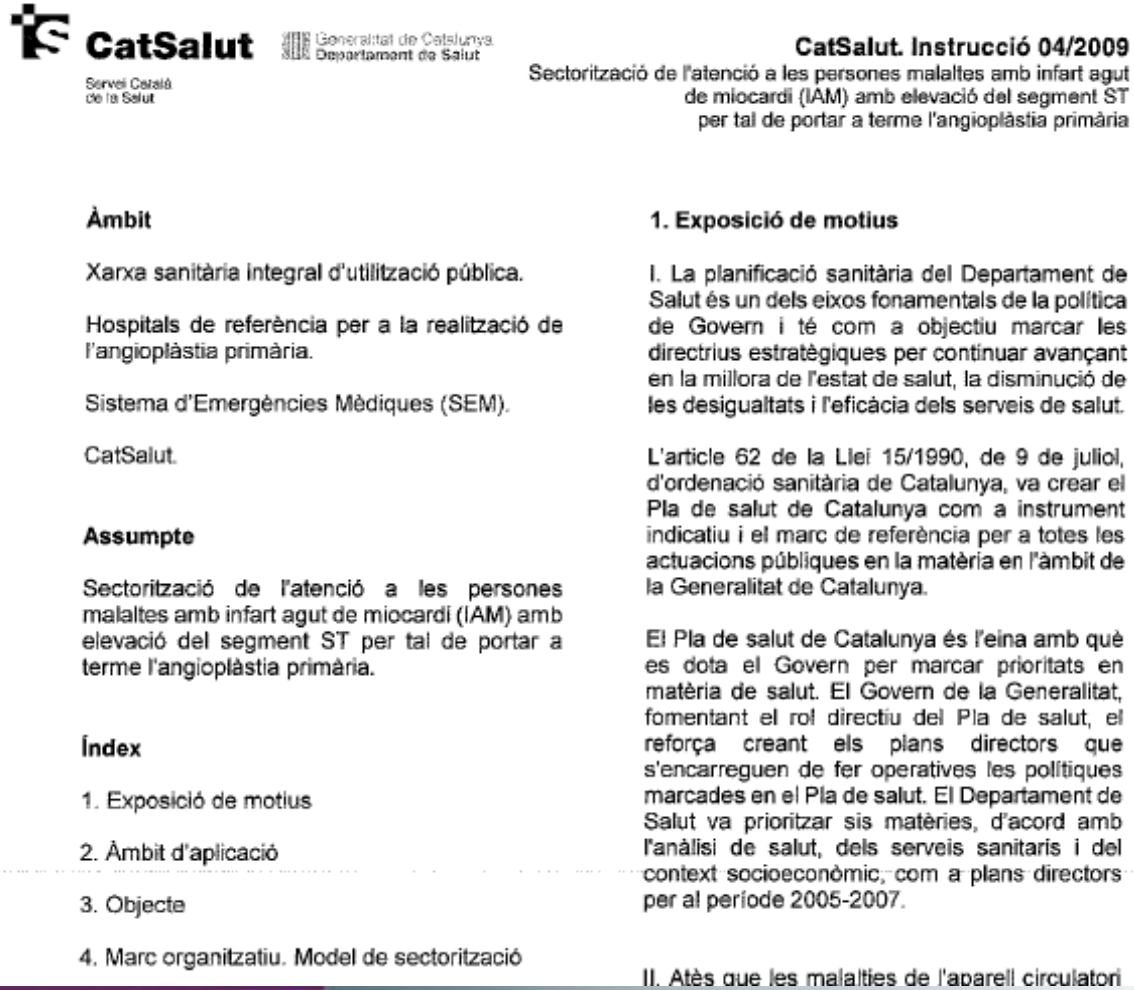
SOCIETAT CATALANA DE CARDIOLOGIA

CatSalut Servei Català de la Salut

Generalitat de Catalunya Departament de Salut

sem 061 emergències mèdiques

1. "Codi infart" Network in Catalunya Secure government agreement



CatSalut
Servei Català de la Salut

Generalitat de Catalunya
Departament de Salut

CatSalut. Instrucció 04/2009
Sectorització de l'atenció a les persones malaltes amb infart agut de miocardi (IAM) amb elevació del segment ST per tal de portar a terme l'angioplàstia primària

Àmbit

Xarxa sanitària integral d'utilització pública.

Hospitals de referència per a la realització de l'angioplàstia primària.

Sistema d'Emergències Mèdiques (SEM).

CatSalut.

Assumpte

Sectorització de l'atenció a les persones malaltes amb infart agut de miocardi (IAM) amb elevació del segment ST per tal de portar a terme l'angioplàstia primària.

Índex

1. Exposició de motius
2. Àmbit d'aplicació
3. Objecte
4. Marc organitzatiu. Model de sectorització

1. Exposició de motius

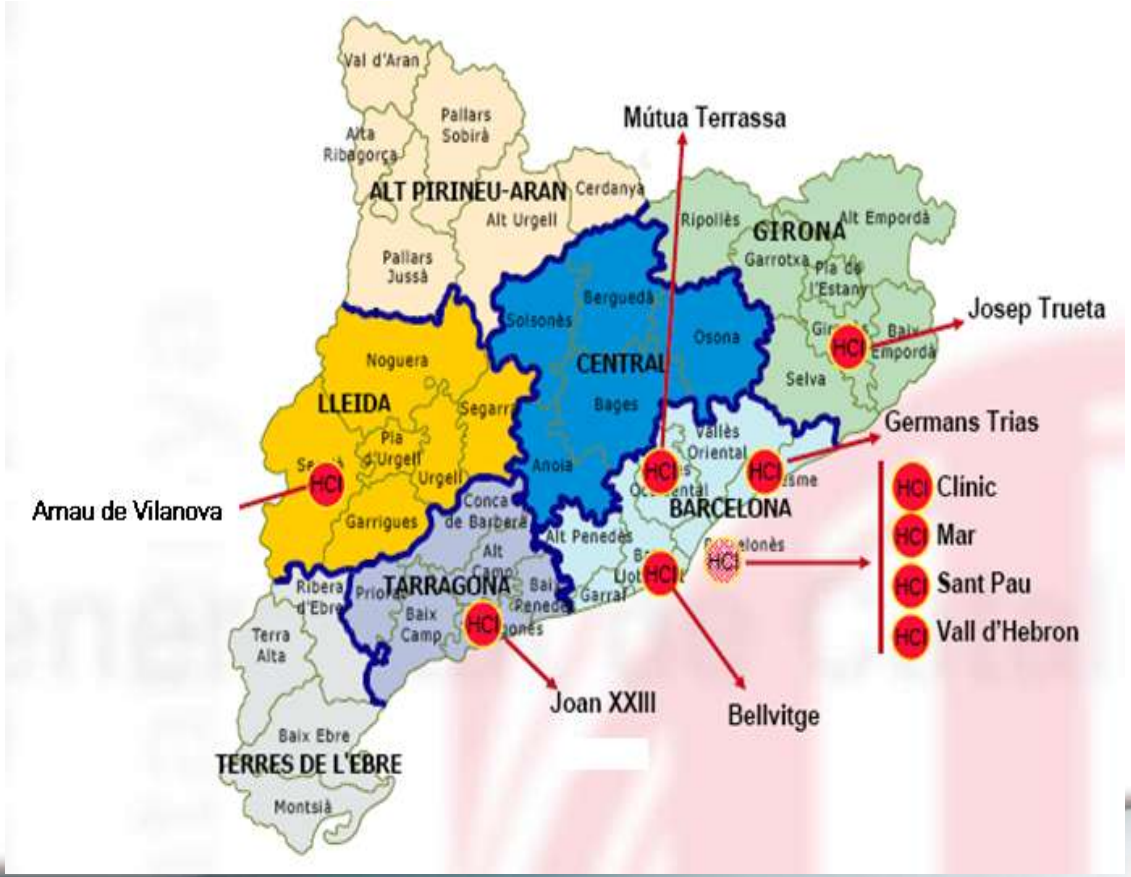
I. La planificació sanitària del Departament de Salut és un dels eixos fonamentals de la política de Govern i té com a objectiu marcar les directrius estratègiques per continuar avançant en la millora de l'estat de salut, la disminució de les desigualtats i l'eficàcia dels serveis de salut.

L'article 62 de la Llei 15/1990, de 9 de juliol, d'ordenació sanitària de Catalunya, va crear el Pla de salut de Catalunya com a instrument indicatiu i el marc de referència per a totes les actuacions públiques en la matèria en l'àmbit de la Generalitat de Catalunya.

El Pla de salut de Catalunya és l'eina amb què es dota el Govern per marcar prioritats en matèria de salut. El Govern de la Generalitat, fomentant el rol directiu del Pla de salut, el reforça creant els plans directors que s'encarreguen de fer operatives les polítiques marcades en el Pla de salut. El Departament de Salut va prioritzar sis matèries, d'acord amb l'anàlisi de salut, dels serveis sanitaris i del context socioeconòmic, com a plans directors per al període 2005-2007.

II. Atès que les malalties de l'aparell circulatori

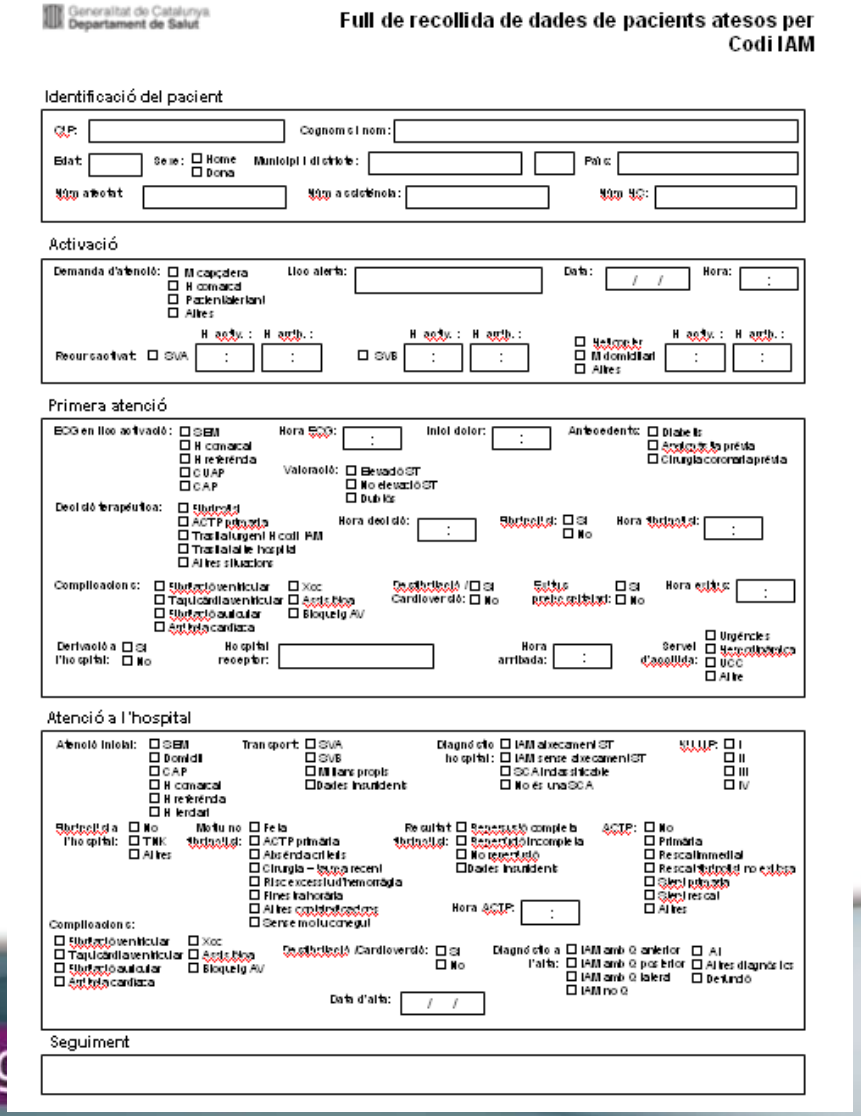
2. "Codi infart" Network in Catalunya
Set regional PPCI network with 24/7 services to cover the population need



3. “Codi infart” Network in Catalunya

Gather data - AMIEST Registry

Monitor and evaluate quality and progress



Generalitat de Catalunya
Departament de Salut

Full de recollida de dades de pacients atesos per Codi IAM

Identificació del pacient

CIP: Cognoms i nom:

Edat: Sexe: ☐ Home ☐ Dona Municipi i districte: País:

Núm afectat: Núm autoclau: Núm HC:

Activació

Demanda d'atenció: ☐ Mi capçalera ☐ H comarcal ☐ Pacient/familiar/ami ☐ Altres Lloc alerta: Data: / / Hora: :

Recurs activat: ☐ SVA H activ.: : H arrib.: : ☐ SVB H activ.: : H arrib.: : ☐ Helicòpter ☐ Mi domiciliari ☐ Altres H activ.: : H arrib.: :

Primera atenció

ECG en lloc activació: ☐ SEM ☐ H comarcal ☐ H referència ☐ C UAP ☐ CAP Hora ECG: : Inici dolor: : Antecedents: ☐ Diabetis ☐ Angioplàstia prèvia ☐ Cirurgia coronària prèvia

Valoració: ☐ Elevació ST ☐ No elevació ST ☐ Dubtes

Decisió terapèutica: ☐ Fibrinolisi ☐ ACTP primària ☐ Trasllat urgent H coll. PIM ☐ Trasllat a altre hospital ☐ Altres situacions Hora decisió: : Fibrinolisi: ☐ Sí ☐ No Hora fibrinolisi: :

Complicacions: ☐ Disfunció ventricular ☐ Taquicàrdia ventricular ☐ Disfunció auricular ☐ Arítmia cardíaca ☐ Xoc ☐ Angina ☐ Bloqueig AV Desfibril·lació / Cardioversió: ☐ Sí ☐ No Èxitus preshospitalari: ☐ Sí ☐ No Hora exitus: :

Derivació a l'hospital: ☐ Sí ☐ No Hospital receptor: Hora arribada: : Servei d'acollida: ☐ Urgències ☐ Hemodinàmica ☐ UCC ☐ Altre

Atenció a l'hospital

Atenció inicial: ☐ SEM ☐ Domicili ☐ CAP ☐ H comarcal ☐ H referència ☐ H terciari Transport: ☐ SVA ☐ SVB ☐ Mitjans propis ☐ Dades insuficient Diagnòstic hospital: ☐ IAM amb elevació ST ☐ IAM sense elevació ST ☐ SCA indeterminable ☐ No és una SCA KILLIP: ☐ I ☐ II ☐ III ☐ IV

Fibrinolisi a l'hospital: ☐ No ☐ TNK ☐ Altres Motiu no fibrinolisi: ☐ Fet a ☐ ACTP primària ☐ Absència criteris ☐ Cirurgia – ferida recent ☐ Risc excessiu d'hemorràgia ☐ Fines laborals ☐ Altres contraindicacions ☐ Sense motiu conegut Resultat fibrinolisi: ☐ Reperfusió completa ☐ Reperfusió incompleta ☐ No reperfusió ☐ Dades insuficient ACTP: ☐ No ☐ Primària ☐ Rescat immediat ☐ Rescat fibrinolisi no eficaç ☐ Electiva ☐ Electiva rescat ☐ Altres Hora ACTP: :

Complicacions: ☐ Disfunció ventricular ☐ Taquicàrdia ventricular ☐ Disfunció auricular ☐ Arítmia cardíaca ☐ Xoc ☐ Angina ☐ Bloqueig AV Desfibril·lació /Cardioversió: ☐ Sí ☐ No Diagnòstic a l'alta: ☐ IAM amb Q anterior ☐ IAM amb Q posterior ☐ IAM amb Q lateral ☐ IAM no Q ☐ AI ☐ Altres diagnòstics ☐ Desconegut

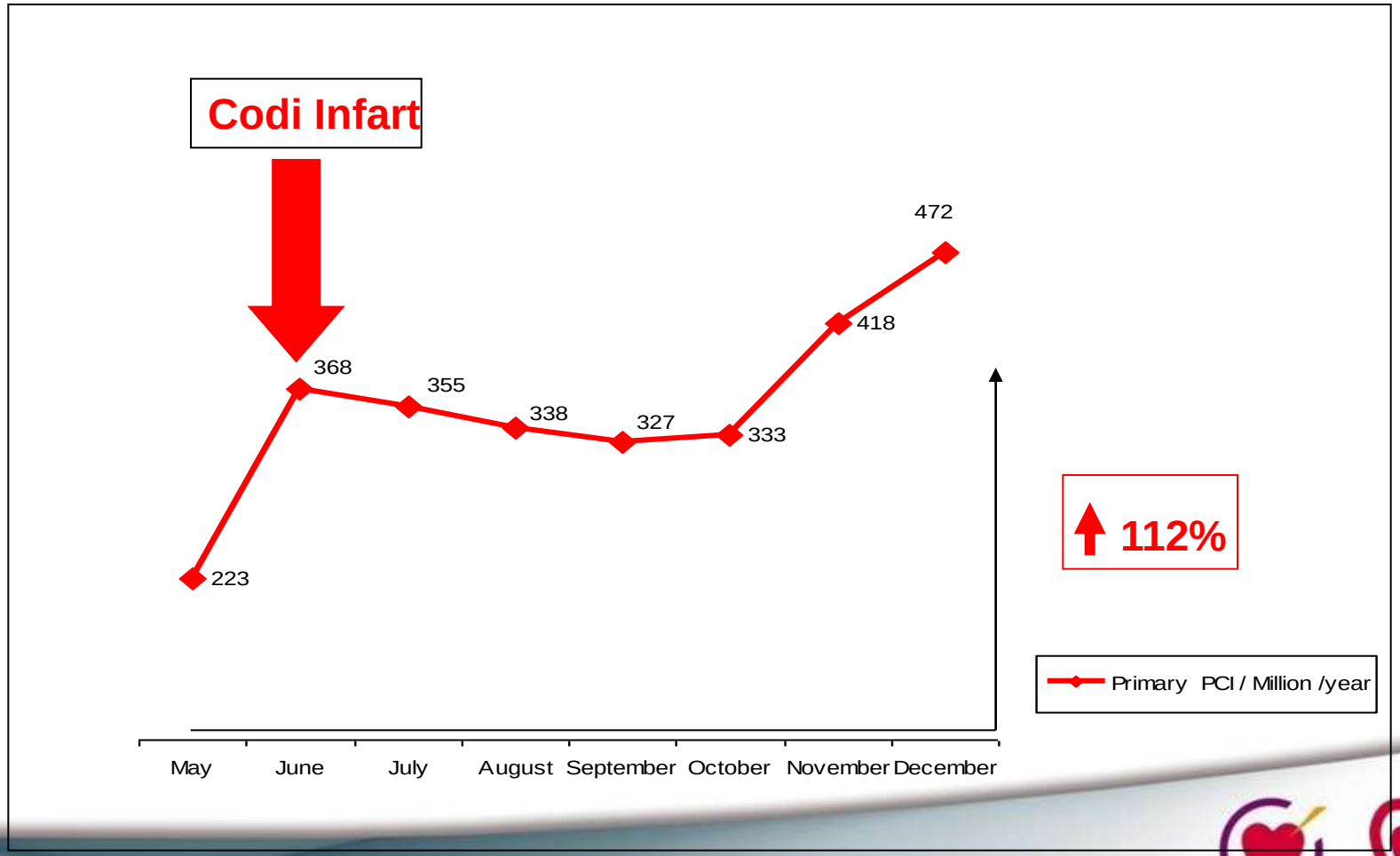
Data d'alta: / /

Seguiment

EAPCI

EUROPEAN SOCIETY OF CARDIOLOGY

Number of PPCI/million inhabitants/year after the Codi Infart implementation Catalunya, Spain

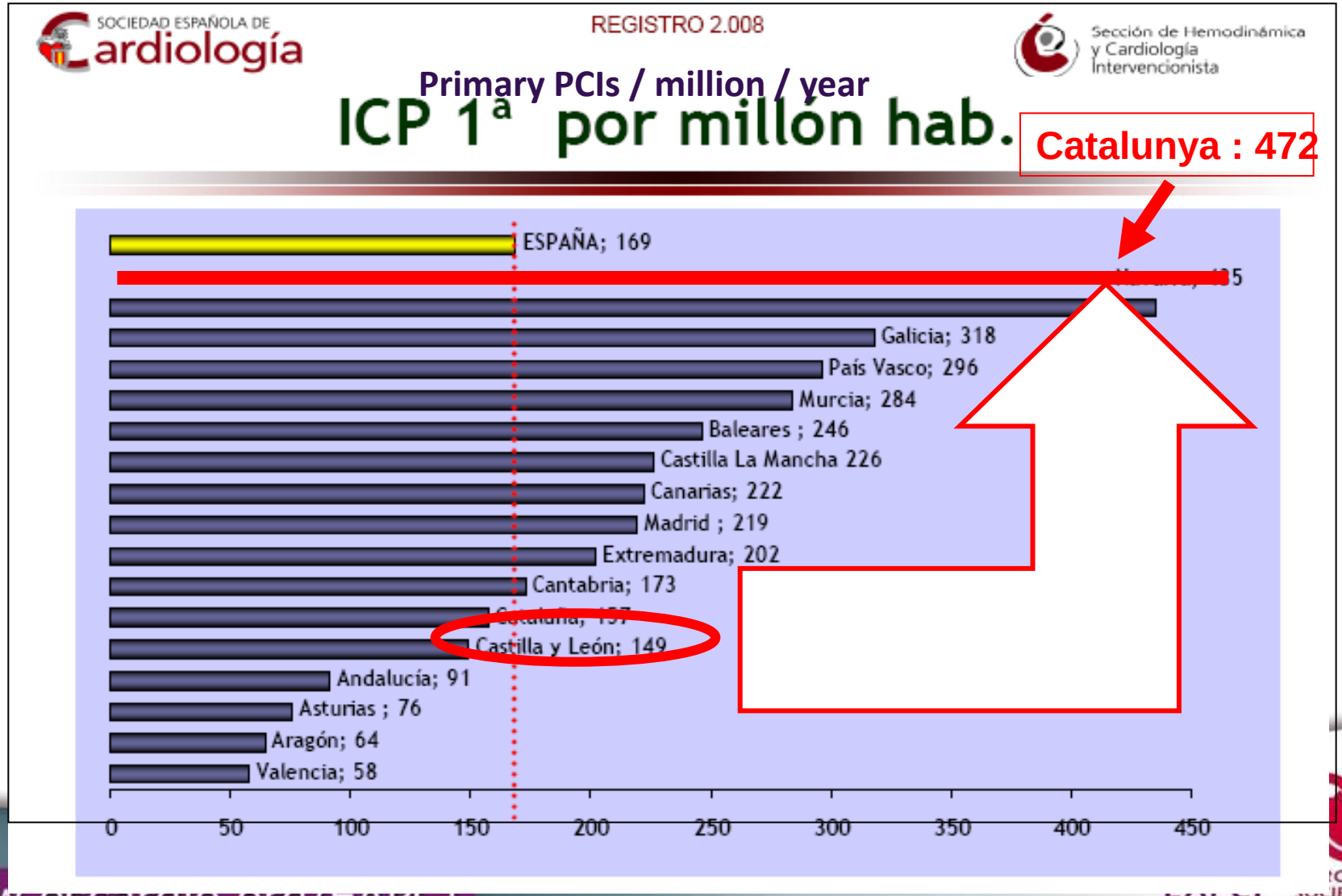


EAPCI

EUROPEAN SOCIETY OF CARDIOLOGY®

Spanish 2009 Survey on PCI

www.hemodinamica.com



SFL Spain
Key developments

- Based on the experience from Progaliam, Baleares, Murcia, Navarra and Catalonia a set of recommendations is under development. EMS geographical transportation protocols set up is key.

- 3 regions were identified for SFL phase I implementation:
  - Andalucía
  - Castilla La Mancha
  - Extremadura.

- Supplement in the Revista Española de Cardiologíais is in preparation.Deadline September 2010.

- Meeting in the Casa del Corazón (Madrid, June 2010) with heads of PCI centers and EMS will be followed by meeting with 17 regional government representatives in October 2010.

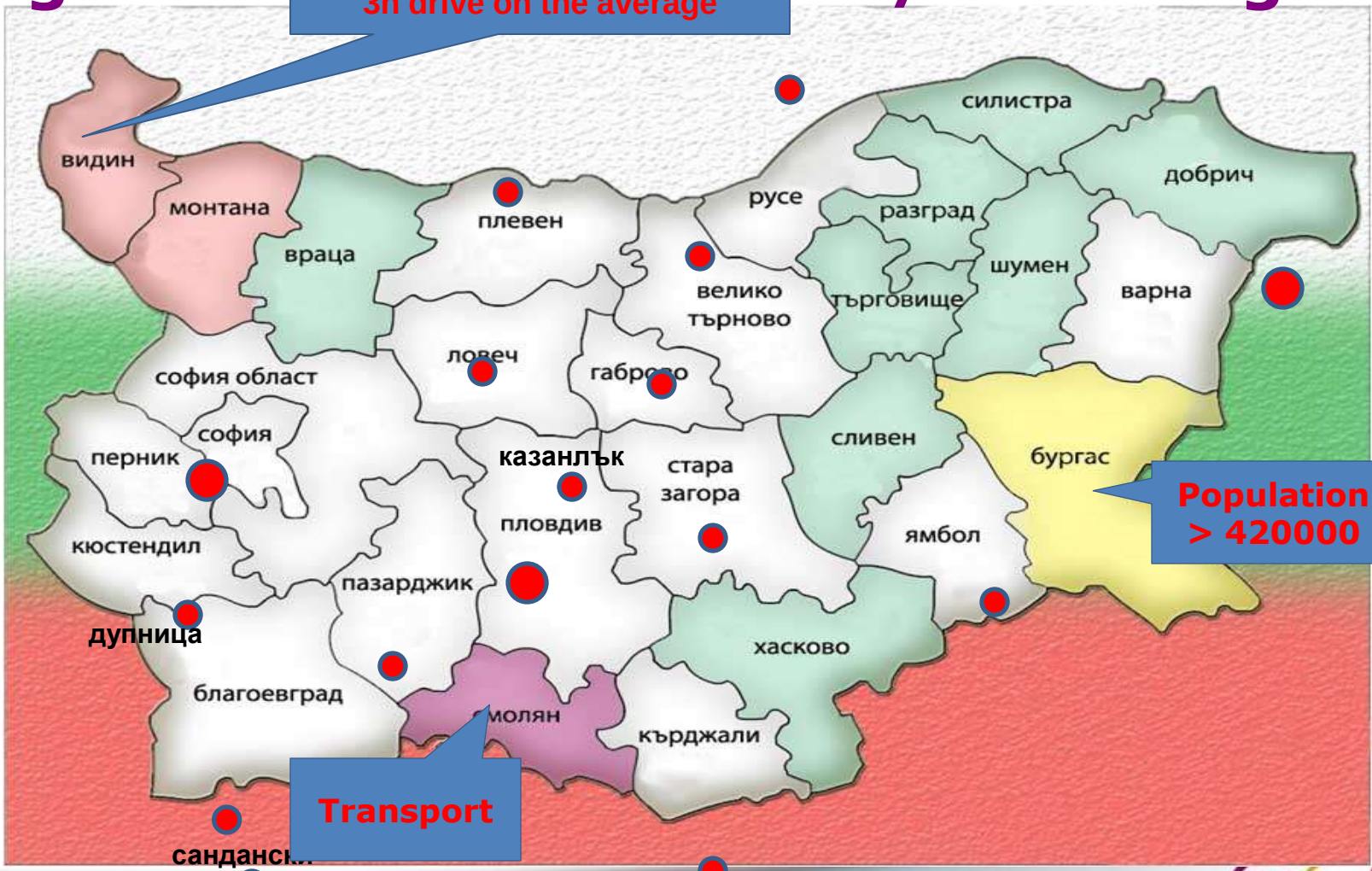
SFL Bulgaria
Key Developments

- PPCI BG map – new Cath Labs only at sites with 24/7 coverage (Ministry of Health)
- Modification of current DRG for STEMI
- Prehospital fibrinolysis only in districts without PCI facilities.
- Reduction of current minimal length of stay at primary hospitals
- New STEMI transportation
- List of SFL hospitals without Cath Labs sent to the EMSs by Ministry of Health

Bulgaria

Population ~ 260000
Distance to Cath Lab 210 км
3h drive on the average

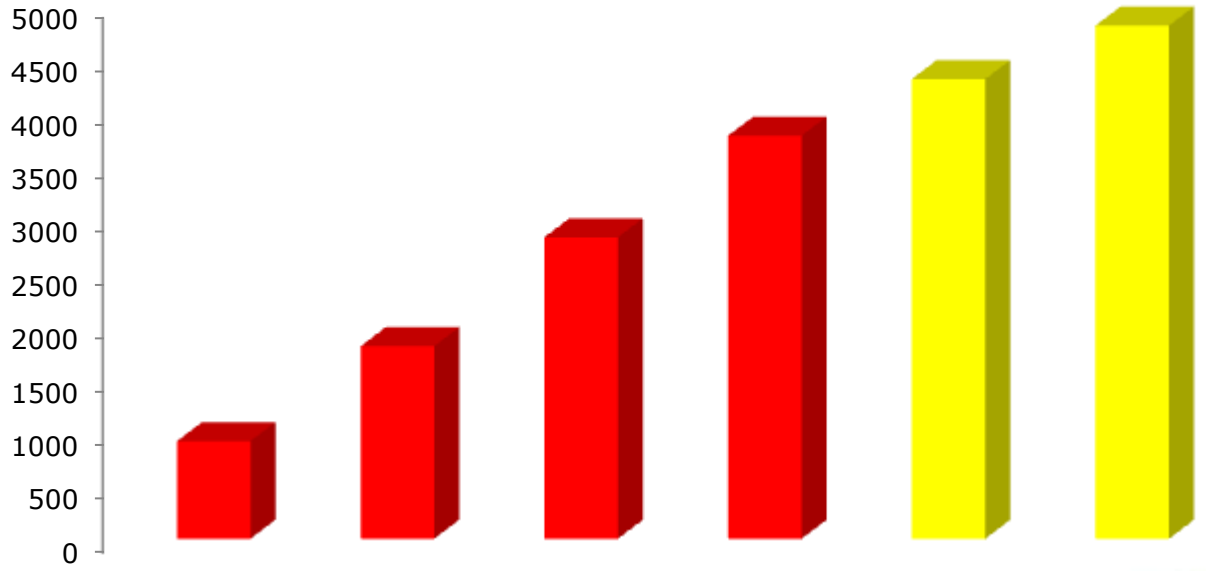
24/7 coverage



EAPCI
EUROPEAN SOCIETY OF CARDIOLOGY®

Bulgaria
No. of PPCI 3 years objectives

Data from the NHIF 2007-2009



SFL France

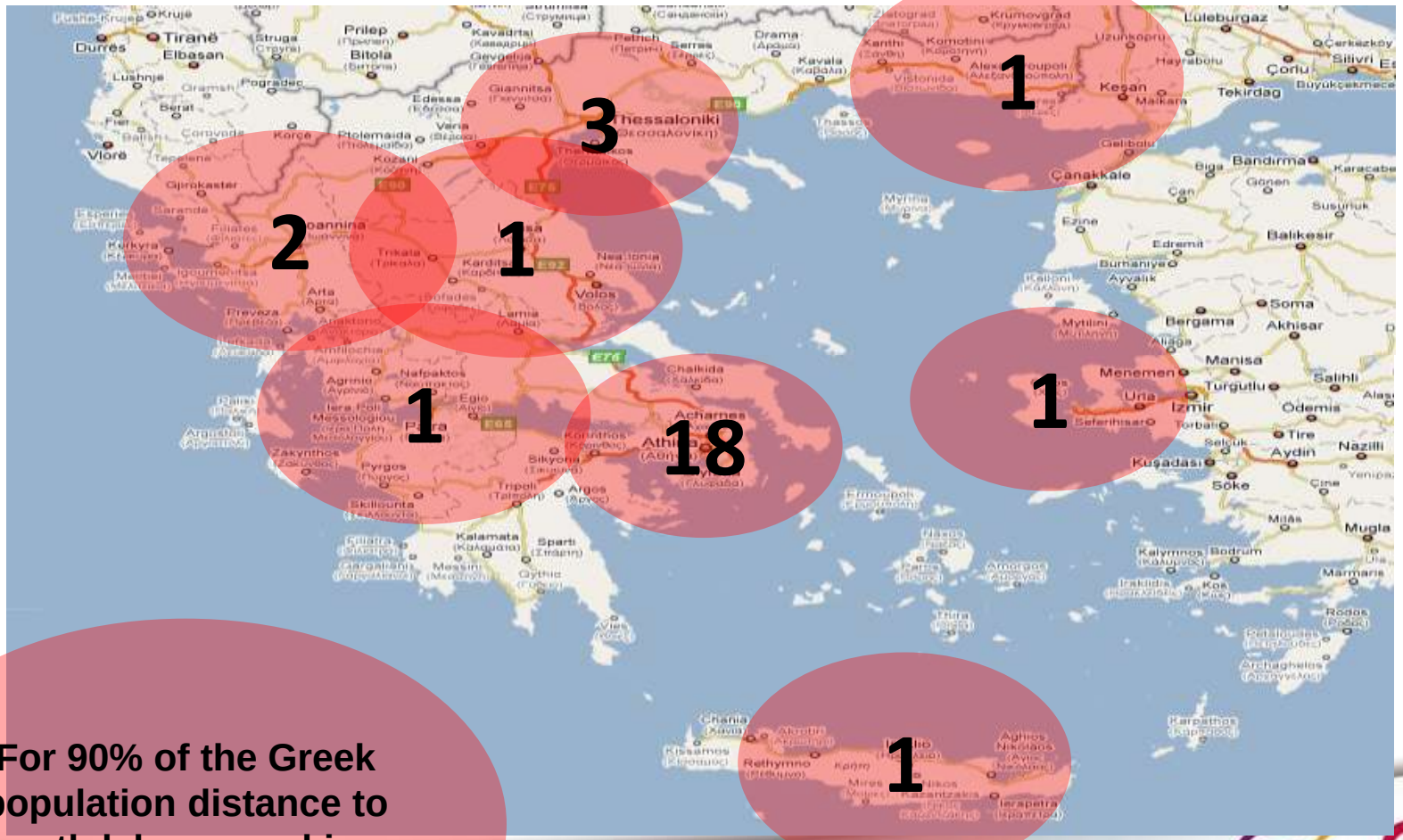
- Five departments were identified as primary SFL pilot centres.
- Prospective 1 month registry will start in Oct/Nov in all centres of each department with ICU. All consecutive AMI patients hospitalized within 48hours after onset will be enrolled.Data analysis will folow in December 2010.
- Action plan will be developed to improve the management of AMI based on the results of the anaysis:
  - Public campaigns
  - Improvement of delay
  - Increase the transfer to PCI centres
- Data reevaluation after action plan implementation in 2011.
  Roll out in other regions based on best practice sharing.

SFL France – pilot regions

EAPCI

EUROPEAN SOCIETY OF CARDIOLOGY®

Greece PPCI country coverage



For 90% of the Greek population distance to cath lab covered in less than 2-3 hours

www.escardio.org/EAPCI

EAPCI

EUROPEAN SOCIETY OF CARDIOLOGY®

SFL Greece
Key Developments

National PPCI/STEMI Registry

- System is already in place but it is not obligatory to fill the data.
- Negotiation with government and insurance company is ongoing for issuing the directive to report all PPCI/STEMI as a base for reimbursement.

Physicians/nurses & technicians remuneration for 24/7 service

Negotiation with Ministry of Health and insurance companies started to reallocate funds to PPCI hospitals.

PPCI Cath Lab standard /Physicians license?

- PPCI cath labs should be equipped with the standard and PPCI specialized materials (i.e. thromboaspiration devices, stents, wires etc)
- PPCI trained staff (licence?)

SFL Serbia
Key developments

- President Tadic became a SFL Honorary Chairman.

- Action plan for Prevention and Control of Cardiovascular Disease in Serbia until 2020 was developed and has been accepted by the government and published in the Official paper in February 2010. Benchmark: Hungary

  Key focus on:

  - decentralization of the interventional cardiology services
  - patients' education
  - emergency services training/unique phone number

- Project on Equal distribution of ACS and AMI treatment in the territory of Belgrade is in a final stage and will be discussed shortly in a City council.

- Call for SFL implementation in country has been launched. Request for funding submitted.

SFL Serbia –PPCI coverage

Estimated population of Serbia:
7.9 million

ICVD Sremska Kamenica (2)

Clinical Center Zvezdara (1)

Clinical Center of Serbia (2+1)

Clinical Center Zemun (1)

Clinical Center Bezanijska Kosa (1+1)

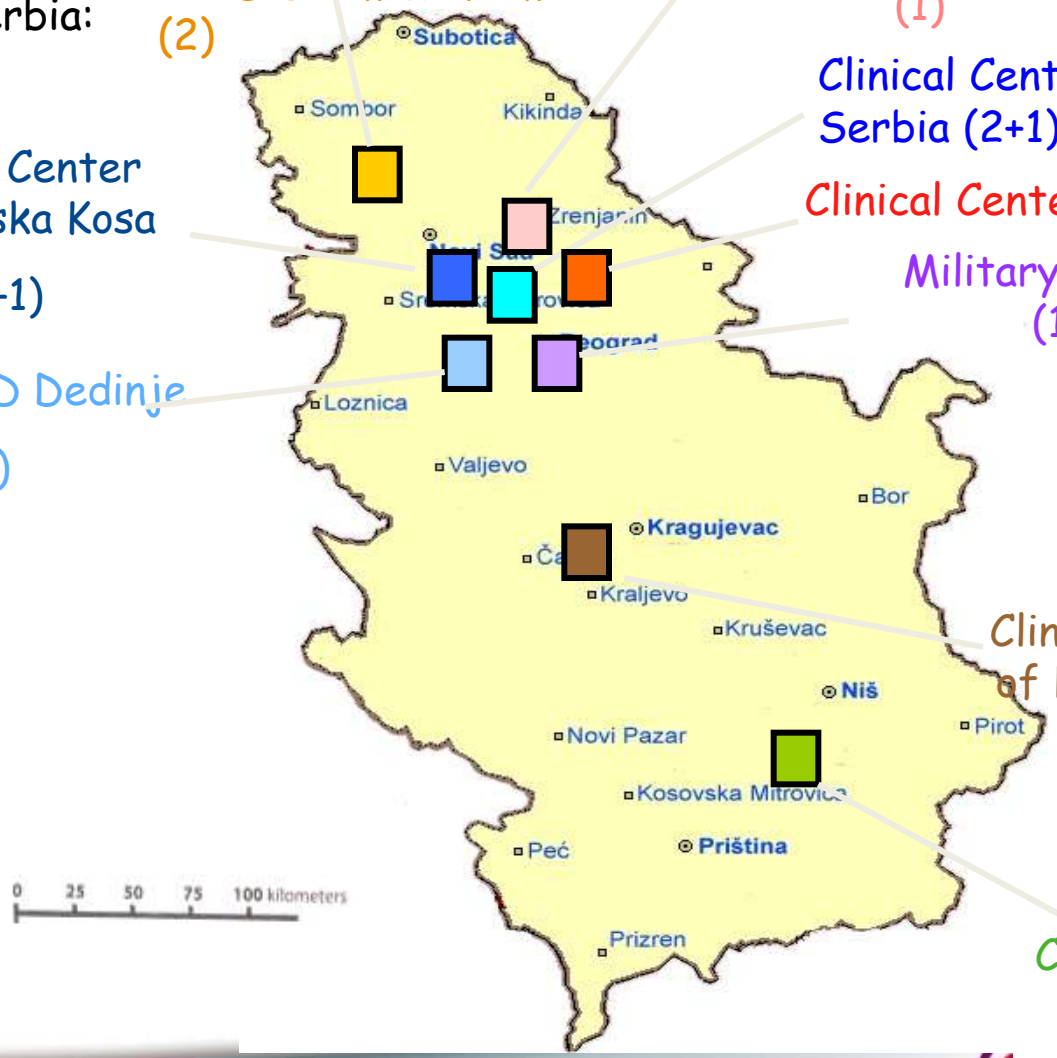
Military Academy (1+1)

ICVD Dedinje (2+1)

Clinical Center of Kragujevac (1)

Clinical Center of Nis (2)

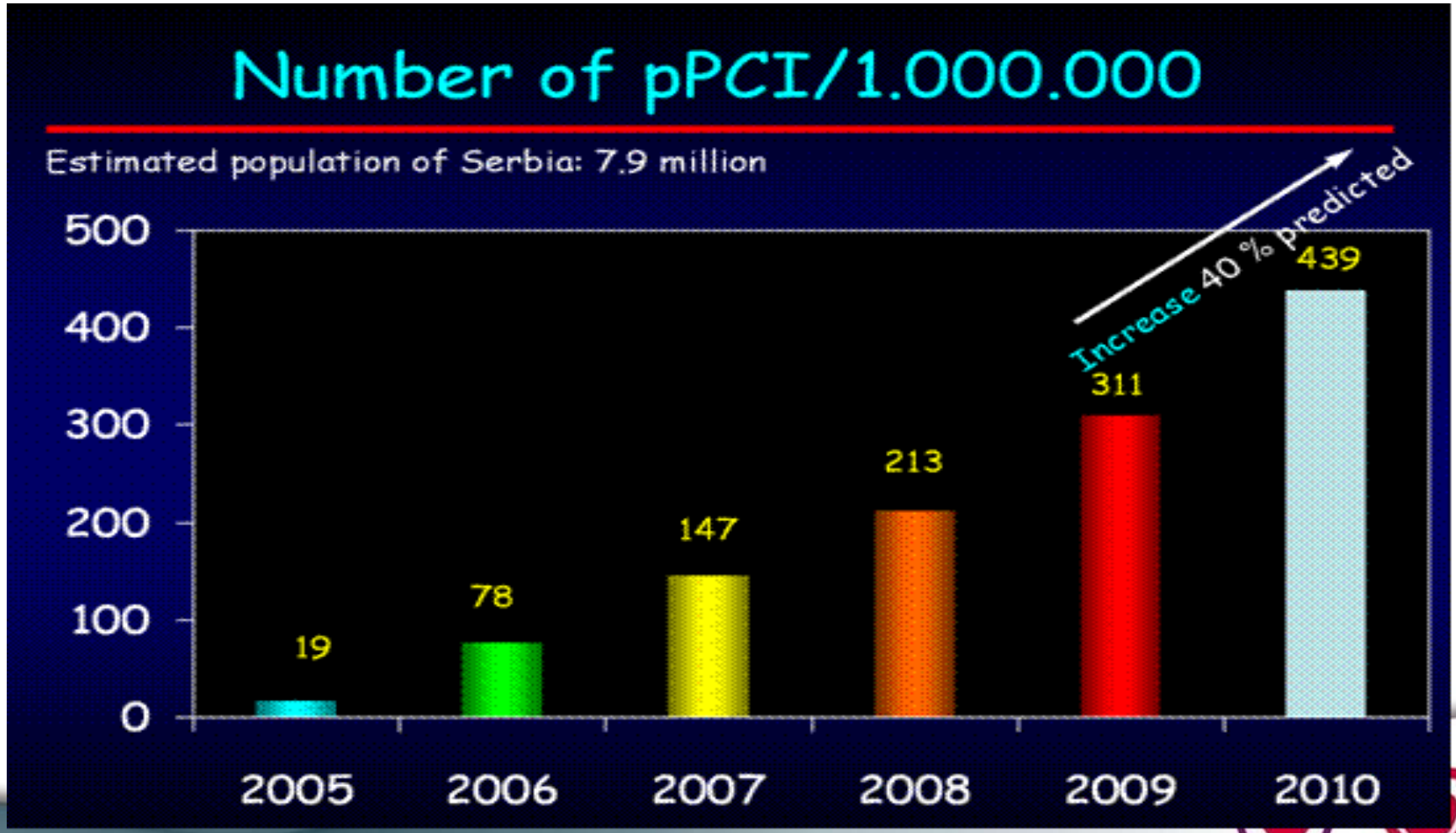
Number of Cath Labs: 17



EAPCI

EUROPEAN SOCIETY OF CARDIOLOGY

SFL Serbia
Increasing number of PPCI



SFL Turkey: key Developments

- SFL Country Champion appointed as Ministry of Health advisor.
- 18 pilot cities were chosen; total 36 PCI centers started perform PPCI as part of SFL; each city has at least two PCI centers with 24/7 PPCI service.
- 112 Ambulance brings the STEMI patient directly to the PPCI centers bypassing the hospital w/o PPCI facilities.
- Education of ambulance and emergency doctors started locally by local experienced cardiologists.
- Cardiology Simulation Center has been established in Istanbul and course for ACS started on a monthly basis (acredited by UEMS).

SFL Turkey
Pilot cities

EAPCI
EUROPEAN SOCIETY OF CARDIOLOGY®

SFL Initiative
3 years perspective

- Country tools "How to set up an effective PPCI network" will be developed and should serve for other countries as a best practice manual.

- Educational campaign will be launched in 2011 in all SFL countries to increase ACS disease awareness among public.

- European Survey will be launched in 2011 and results will be presented at EuroPCR 2012.

SFL Initiative
3 years perspective

- Country tools "How to set up an effective PPCI network" will be developed and should serve for other countries as a best practice manual.
- Educational campaign will be launched in 2011 in all SFL countries to increase ACS disease awareness among public.
- European Survey will be launched in 2011 and results will be presented at EuroPCR 2012.

Thank you very much!