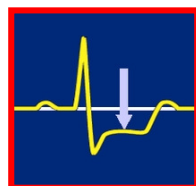


IX Congresso Nazionale SIMEU

Torino 6-8 Novembre 2014



NSTEMI



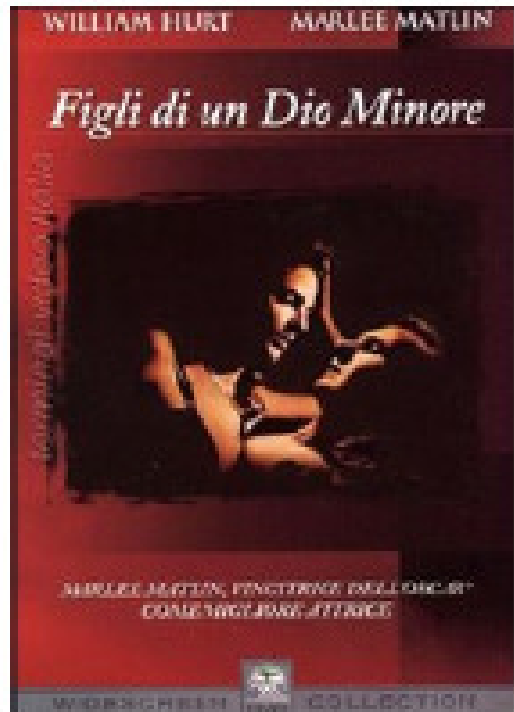
Quando l'angioplastica ?

G. Fradella

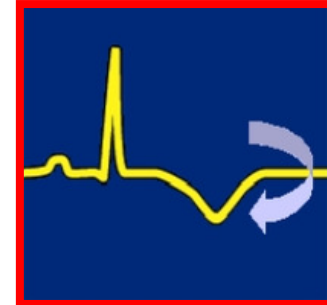
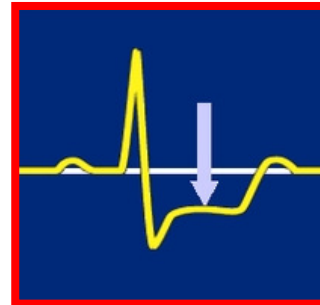
Cardiologia Generale 1 AOU Careggi - Firenze

Sindromi Coronariche Acute

Classificazione



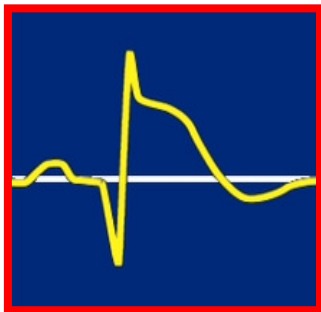
NSTEMI



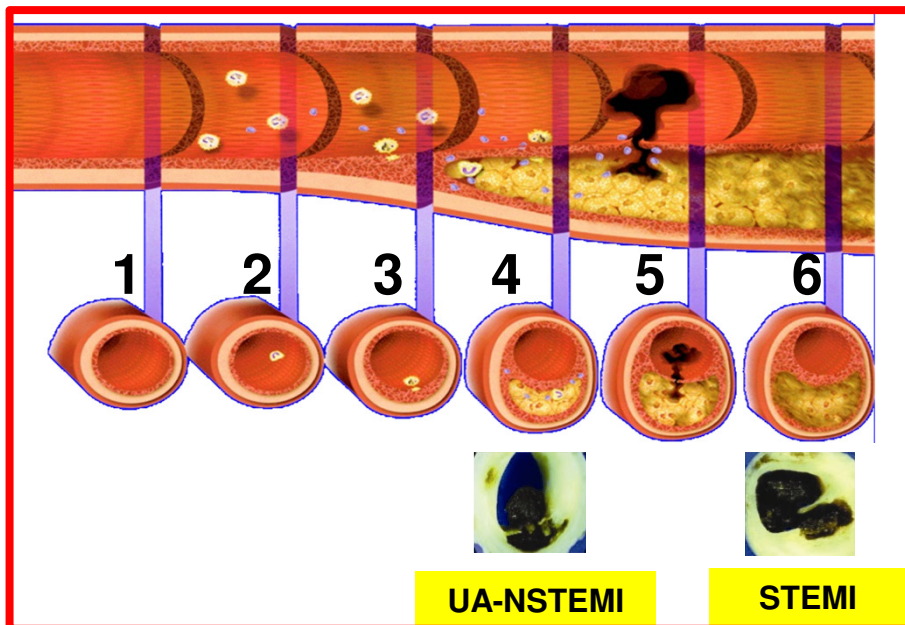
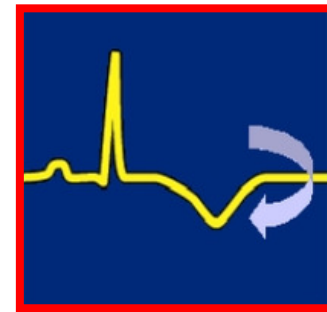
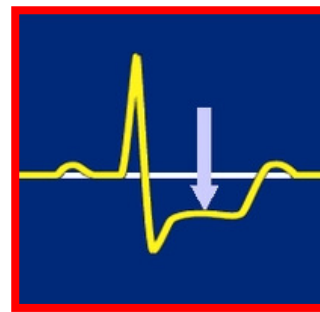
Sindromi Coronariche Acute

Fisiopatologia

STEMI



NSTEMI



- ostruzione non completa
- ostruzione intermittente
- necrosi non transmurale
-

Sindromi Coronariche Acute

Epidemiologia

SCA:

- 111.298 (2002, Ministero della Salute)
- 1400/milione di abitanti per anno (2000, Lombardia)

STEMI:

- circa 600-800 casi/anno/milione di abitanti
(Blitz 1; VENERE, GestIMA)

NSTEMI:

- numero superiore a quello degli STEMI
(Euro Heart Survey ACS 2000-2001)

Sindromi Coronariche Acute

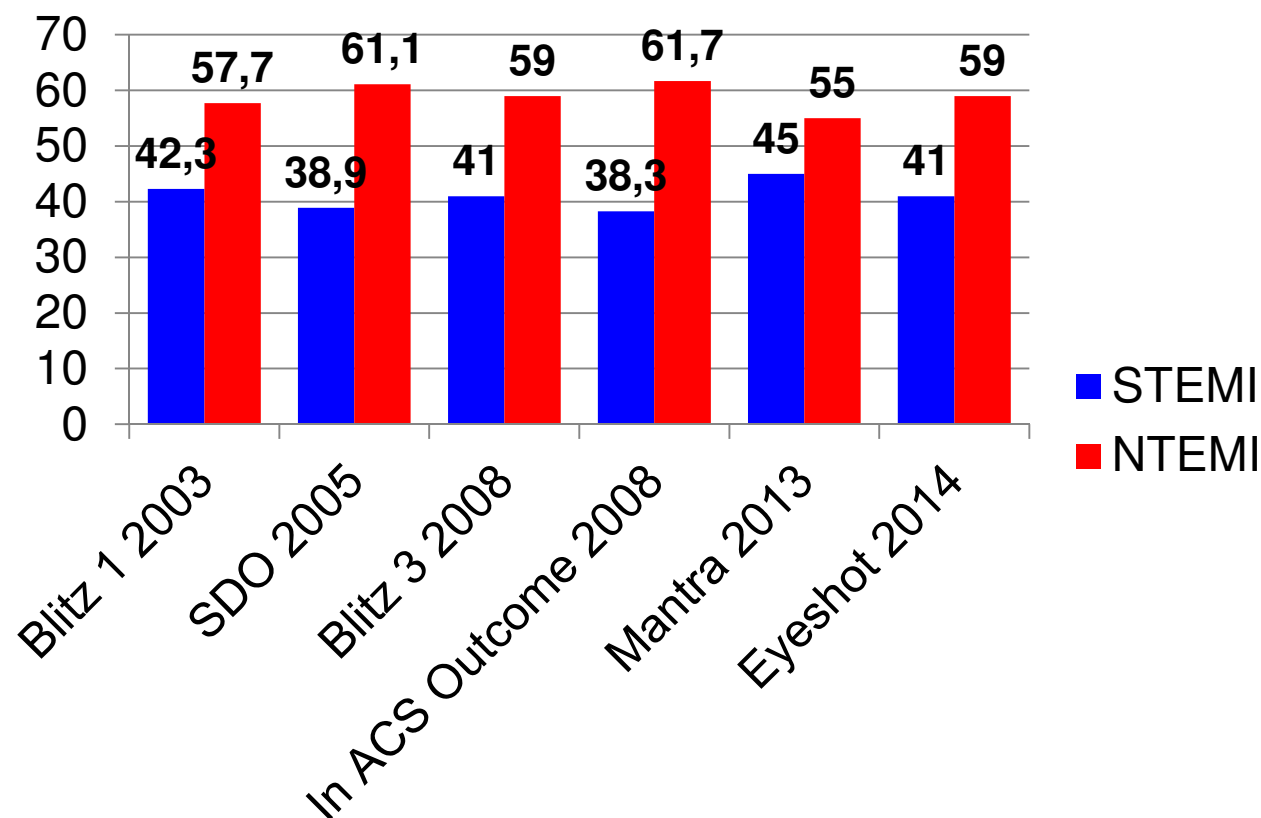
Epidemiologia

NSTE-ACS impatto sugli Ospedali

- 1. 2000-2500 pz/milione ab in Ospedale con NSTE-ACS**
- 2. 1400/1600 coronarografie/milione ab.
(70-80% dei pz ricoverati)**
- 3. 850/950 PTCA/milione ab.
(circa 60% dei pz studiati) (ICTUS trial, CRUSADE Registry)**

Sindromi Coronariche Acute

Epidemiologia



Durata ricovero: 8 gg
Per STEMI e NSTEMI-ACS

¹ Di Chiara A, et al. Eur Heart J 2003

² Perugini E, et al. IHJ 2010

³ Casella G, et al. J Cardiovasc Med 2003

⁴ Rizzello V, et al. EHJ: Acute Cardiovasc Care 2012

⁵ Casella G, et al. EHJ: Acute Cardiovasc Care 2013

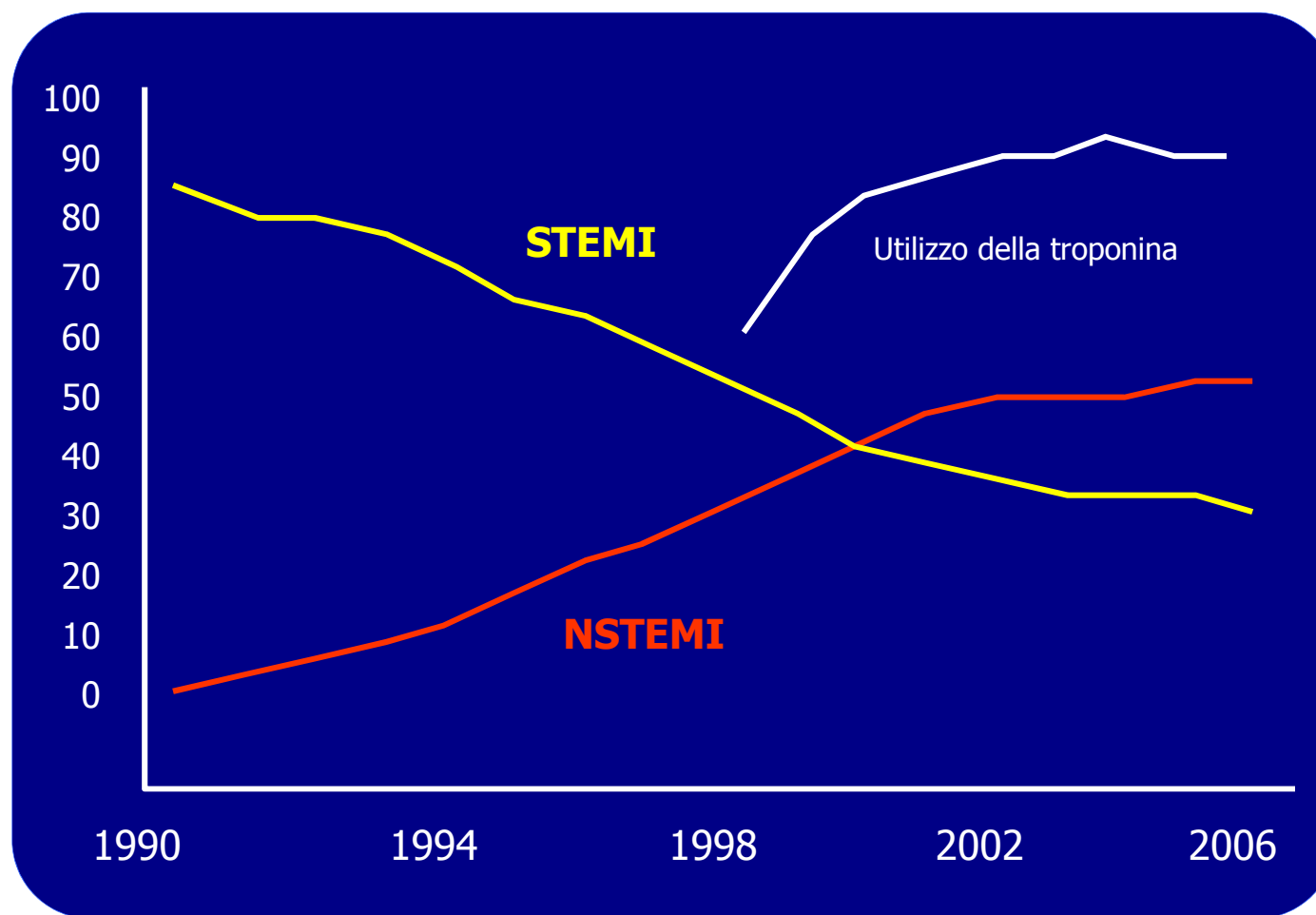
⁶ De Luca L, et al. In press

Sindromi Coronariche Acute

Epidemiologia



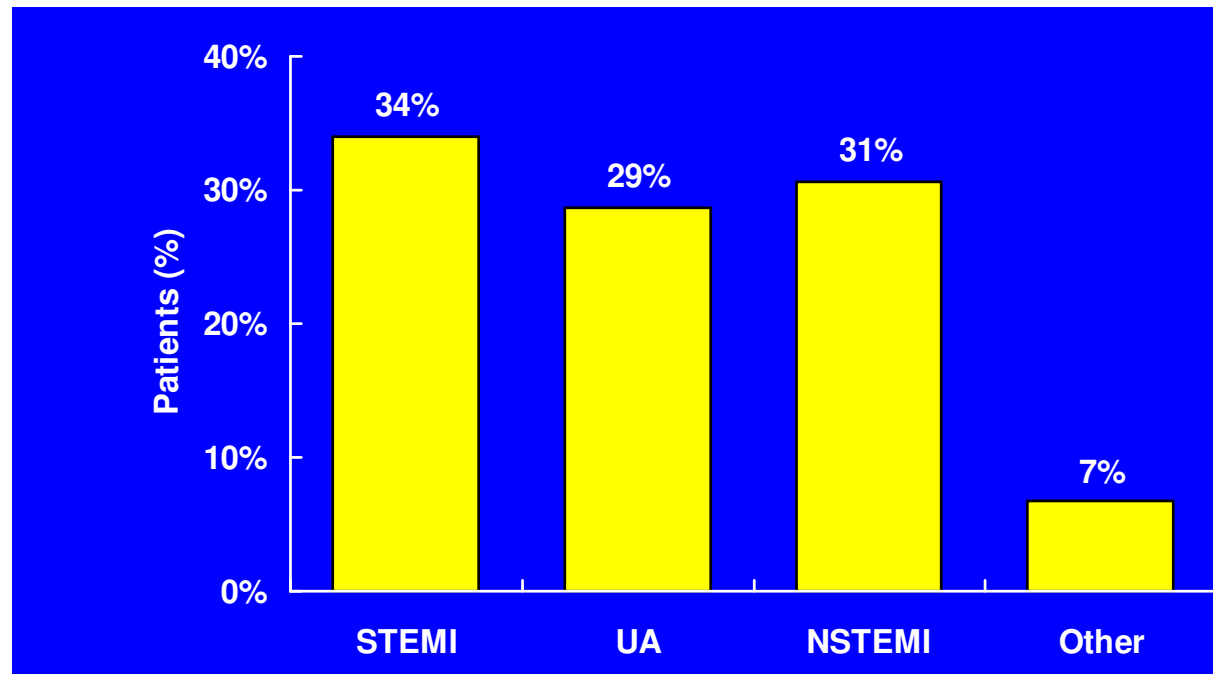
NRMI: prevalenza di STEMI e NSTEMI



Sindromi Coronariche Acute Epidemiologia



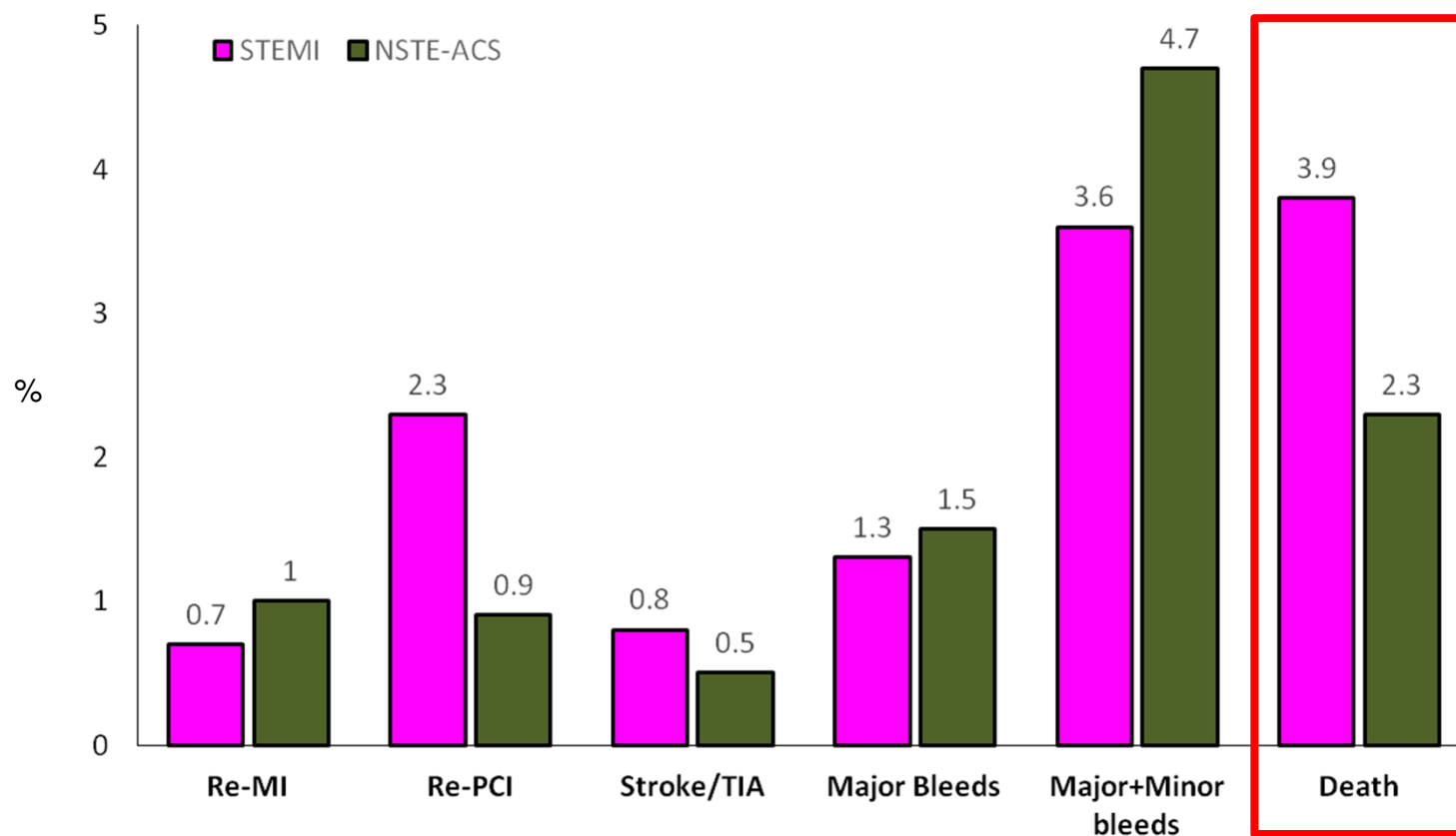
Multinational Site Network (1999-2005)



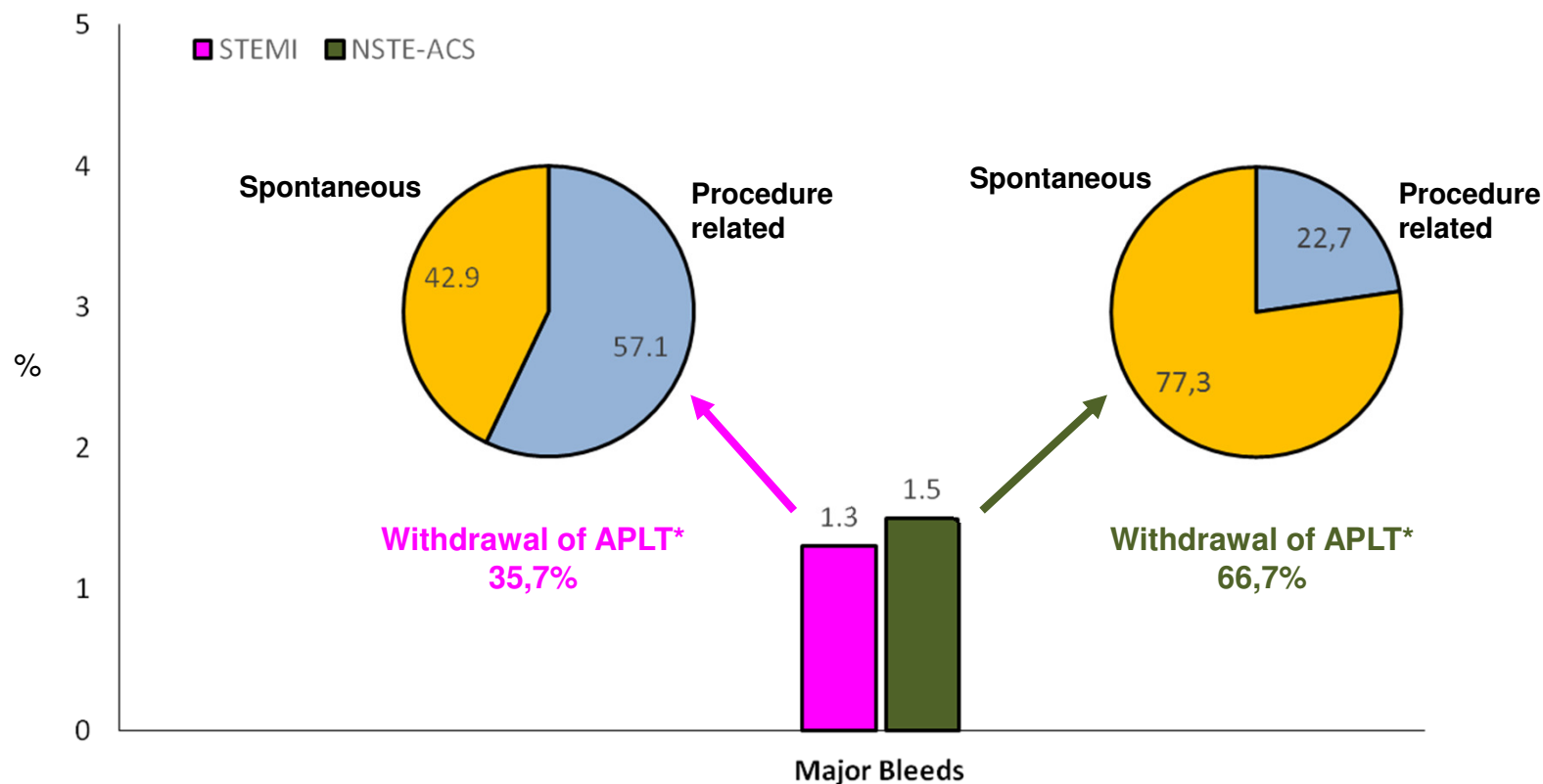
Patients with in-Hospital Clinical Events

Hospital length of stay: 7.9 ± 5.6 days

STEMI 7.6 ± 5.2 days
NSTE-ACS 8.0 ± 5.9 days



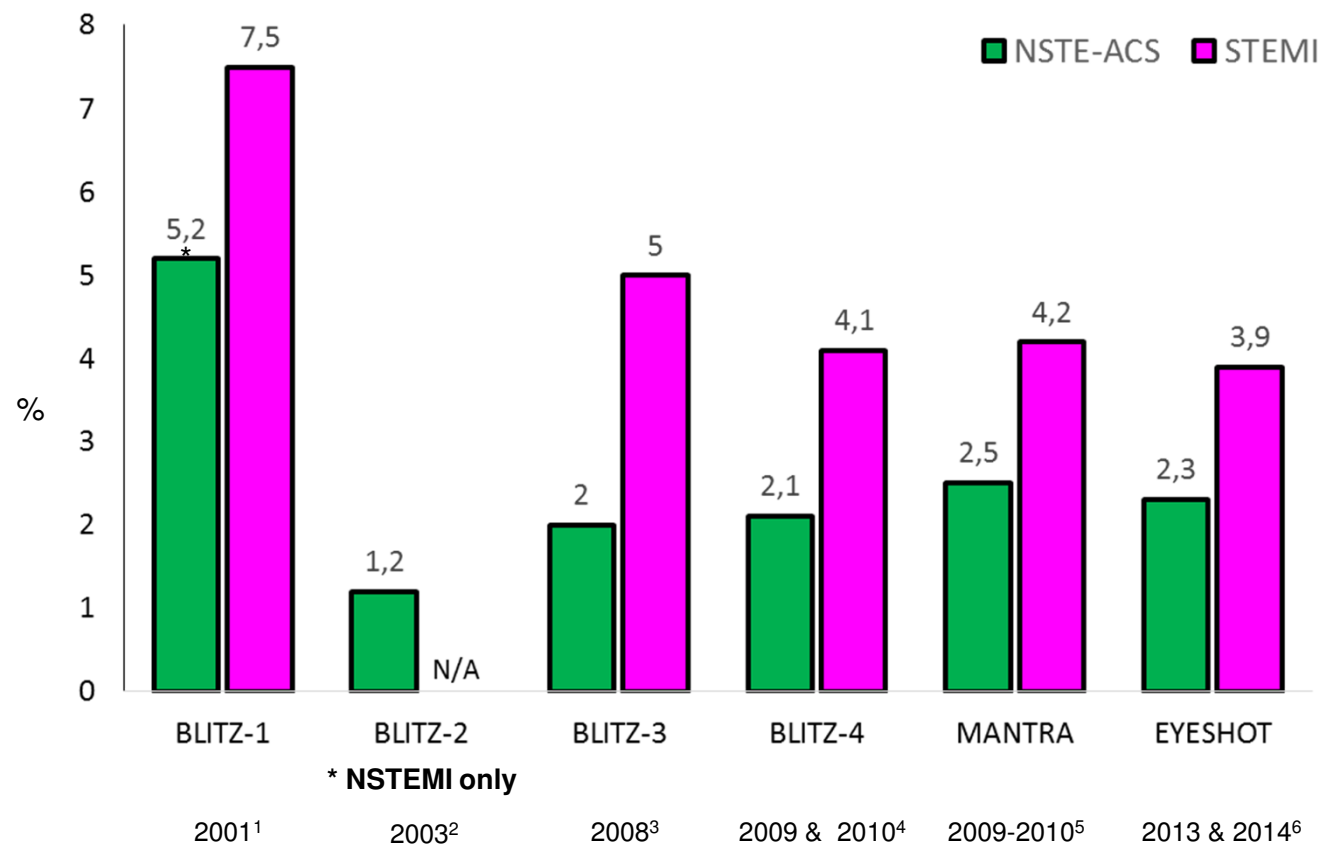
In-Hospital Major Bleeds (38 events)



*at least 1 antiplatelet agent

Sindromi Coronariche Acute

Mortalità



Durata ricovero: 8 gg
Per STEMI e NSTEMI-ACS

¹ Di Chiara A, et al. Eur Heart J 2003

² Di Chiara A, et al. Eur Heart J 2006

³ Casella G, et al. J Cardiovasc Med 2003

⁴ Olivari Z, et al. EHJ: Acute Cardiovasc Care 2012

⁵ Casella G, et al. EHJ: Acute Cardiovasc Care 2013

⁶ De Luca L, et al. In press

Sindromi Coronariche Acute

Mortalità

In ACS Outcome

	STEMI	NSTEMI
pazienti	2313 (38,3%)	3732 (61,7%)
Mortalità a 30 gg	5,8%	3,1%
Mortalità a 1 anno	9,8%	8,6%

NSTE-ACS

1. Sono una manifestazione clinica della SCA che ha un'incidenza incrementale negli ultimi anni in tutti i registri nazionali e internazionali.
2. E' sempre maggiore la quota di pz «complicati» che merita l'assistenza in UTIC
3. Mortalità ad 1 anno quasi simile a quella dello STEMI

Le ultime LG ESC sono del 2011;
le prossime saranno presentate nel 2015.
Ma sono state anticipate dalle LG ESC sulla
rivascolarizzazione e dalle LG AHA/ACC su
NSTE-ACS





EYESHOT Registry



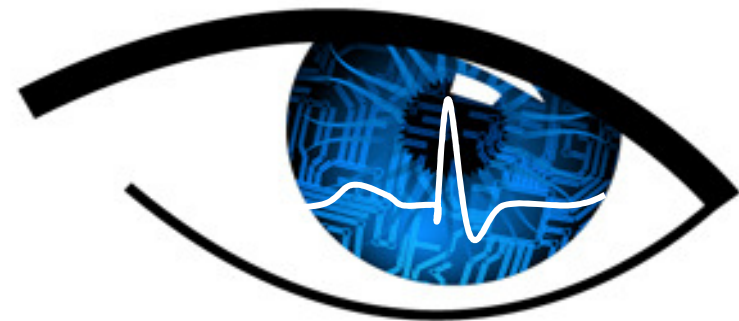
Associazione Nazionale
Medici Cardiologi Ospeda

Fondazione *"per il Tuo cuore"*
Onlus



EYESHOT Steering Committee Members

Leonardo De Luca (Chairman)
Stefano De Servi (Co-Chairman)
Roberto Caporale
Claudio Cavallini
Roberto Ceravolo
Dario Formigli
Sergio Leonardi
Alessandro Lupi
Giuseppe Musumeci
Serena Rakar
Ignazio Maria Smecca



snapshot survey

by Leonardo De Luca
In Press

EYESHOT

(**E**mplo**YE**d antithrombotic therapies in patients with acute coronary **S**yndromes **H**Ospitalized in **i**Talian CCUs)

A **National, prospective, multicenter observational registry** on patients with a diagnosis of ACS consecutively admitted in the Italian Cardiac Care Unit, located in hospitals with and without cardiac cath lab and cardiac surgery, during a period of 3 weeks

- To obtain a **full set of data** on different **antithrombotic therapies** routinely used and undergoing **different therapeutic strategies** (PCI, CABG, conservative strategy)
- To evaluate the **decision making process** in selecting the management **strategies** regarding the use of **antithrombotic therapy** in ACS

EYESHOT

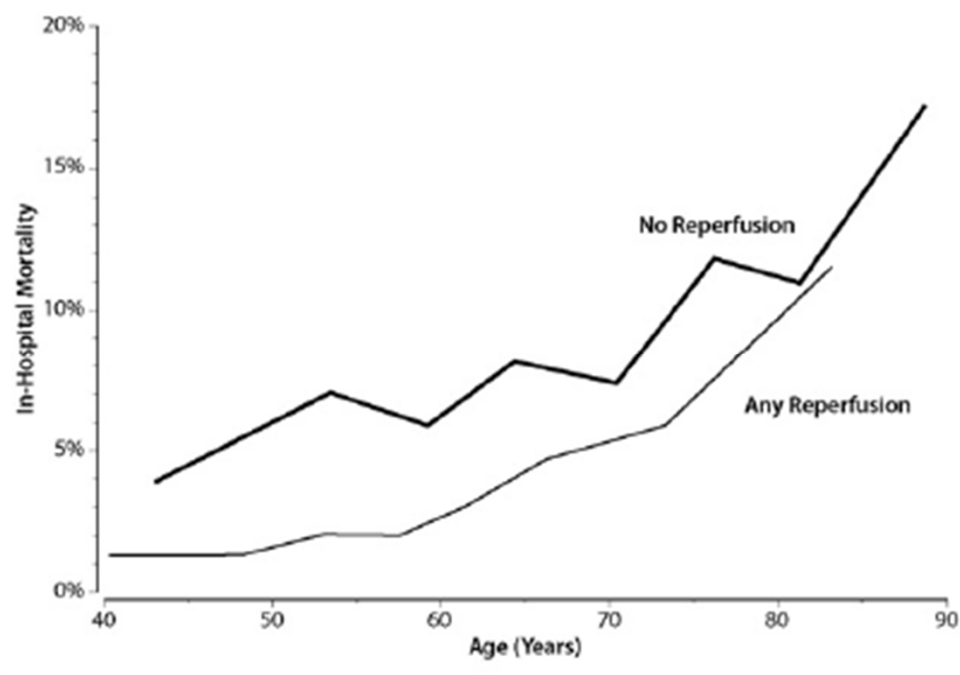
(EmploYEd antithrombotic therapies in patients with
acute coronary Syndromes HOspitalized in ITalian CCUs)

Enrollment Period	N. CCUs	N. Pts Enrolled
2-22/12/2013	160	2057
27/01-16/02 2014	43	528
<i>Total</i>	203	2585 1066 STEMI (41.2%); 1519 NSTEMI: 58.8%)

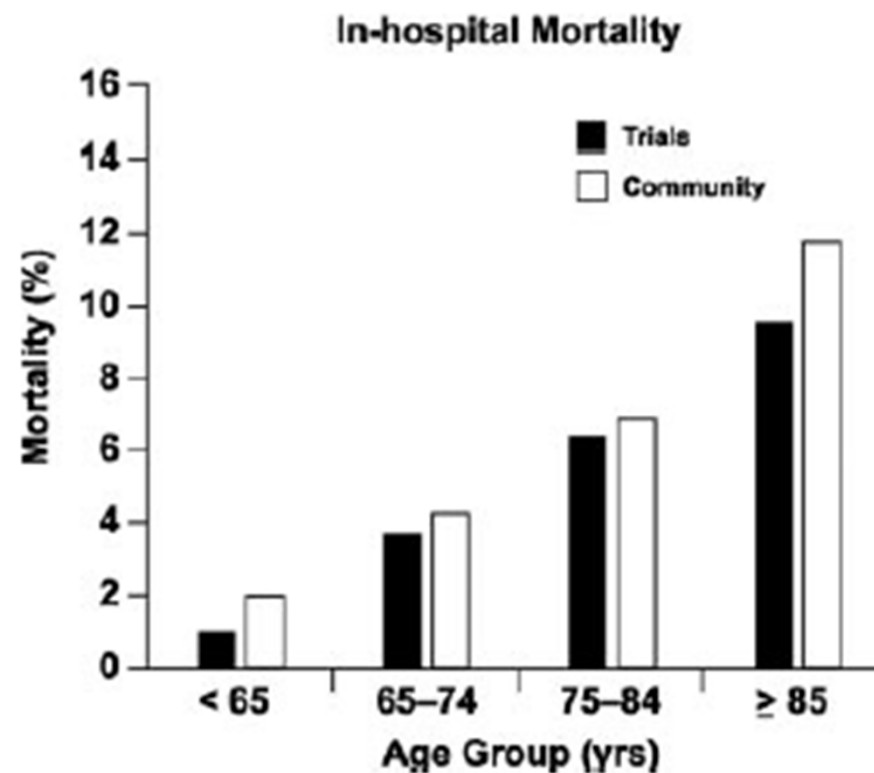
	Overall n= 2585	STEMI n= 1066	NSTE-ACS n= 1519
Age, yrs (mean $\pm$ SD)	69 $\pm$ 13	66 $\pm$ 13	70 $\pm$ 12
$\geq$ 75 yrs old, n (%)	929 (35.9)	308 (28.9)	621 (40.9)
Female, n (%)	796 (30.8)	299 (28.1)	497 (32.7)

ACS: age & in-hospital mortality

ACTION-GWTG STEMI database



VIGOUR *
NRM 2-4, GRACE, CRUSADE



* GUSTO IIb, PARAGON A-B, PURSUIT, GUSTO IV-ACS

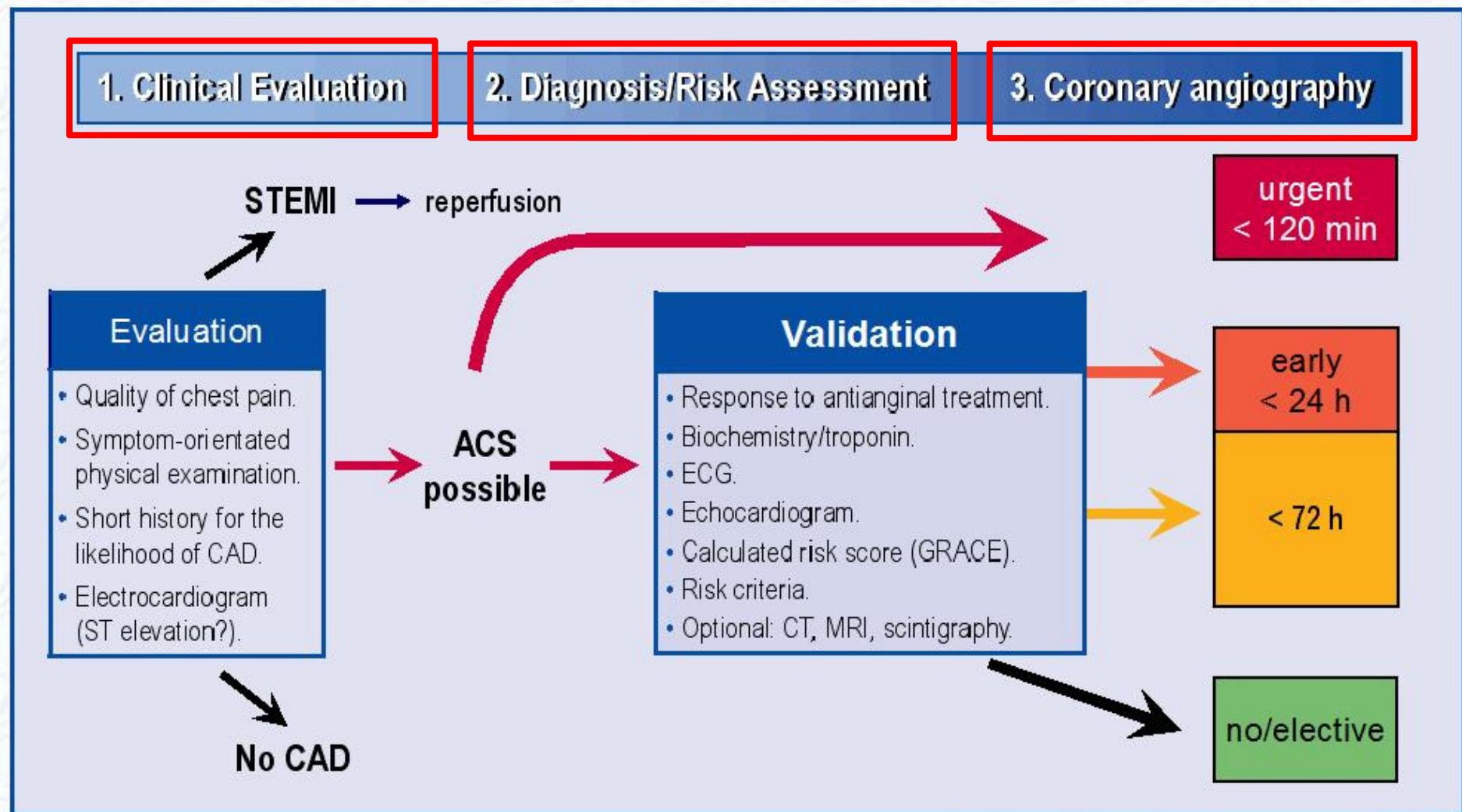
ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation

The Task Force for the management of acute coronary syndromes (ACS) in patients presenting without persistent ST-segment elevation of the European Society of Cardiology (ESC)

Authors/Task Force Members: Christian W. Hamm (Chairperson) (Germany)*, Jean-Pierre Bassand (Co-Chairperson)*, (France), Stefan Agewall (Norway), Jeroen Bax (The Netherlands), Eric Boersma (The Netherlands), Hector Bueno (Spain), Pio Caso (Italy), Dariusz Dudek (Poland), Stephan Gielen (Germany), Kurt Huber (Austria), Magnus Ohman (USA), Mark C. Petrie (UK), Frank Sonntag (Germany), Miguel Sousa Uva (Portugal), Robert F. Storey (UK), William Wijns (Belgium), Doron Zahger (Israel).

ESC Committee for Practice Guidelines: Jeroen J. Bax (Chairperson) (The Netherlands), Angelo Auricchio (Switzerland), Helmut Baumgartner (Germany), Claudio Ceconi (Italy), Veronica Dean (France), Christi Deaton (UK), Robert Fagard (Belgium), Christian Funck-Brentano (France), David Hasdai (Israel), Arno Hoes (The Netherlands), Juhani Knuuti (Finland), Philippe Kolh (Belgium), Theresa McDonagh (UK), Cyril Moulin (France), Don Poldermans (The Netherlands), Bogdan A. Popescu (Romania), Željko Reiner (Croatia), Udo Sechtem (Germany), Per Anton Sirnes (Norway), Adam Torbicki (Poland), Alec Vahanian (France), Stephan Windecker (Switzerland).

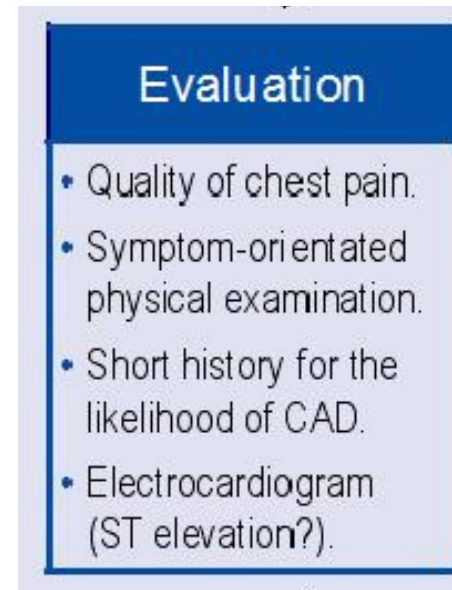
Decision-making algorithm in ACS



Decision making in NSTEMI-ACS

1. Clinical Evaluation

- **Caratteristiche del dolore**
- **E.O. mirato**
- **Anamnesi mirata**
- **ECG**



Decision making in NSTEMI-ACS

2. Risk Assessment

Risk category (tertile)	GRACE risk score	In-hospital death (%)
Low	≤108	<1
Intermediate	109–140	1–3
High	>140	>3
Risk category (tertile)	GRACE risk score	Post-discharge to 6-month death (%)
Low	≤88	<3
Intermediate	89–118	3–8
High	>118	>8

Primary

- Relevant rise or fall in troponin^a
- Dynamic ST- or T-wave changes (symptomatic or silent)

Secondary

- Diabetes mellitus
- Renal insufficiency (eGFR <60 mL/min/1.73 m²)
- Reduced LV function (ejection fraction <40%)
- Early post infarction angina
- Recent PCI
- Prior CABG
- Intermediate to high GRACE risk score (Table 5)

Risk Stratification: GRACE and CRUSADE Score



ACS Risk Model

At Admission (in-hospital/to 6 months)

At Discharge (to 6 months)

Age70-79

HR70-89

SBP140-159

Creat.1.2-1.59

CHF I (no CHF)

☐ Cardiac arrest at admission

☒ ST-segment deviation

☒ Elevated cardiac enzymes/markers

Probability of	Death	Death or MI
In-hospital	5%	20%
To 6 months	13%	35%

SI Units

Reset

Display Score

[Calculator](#) | [Instructions](#) | [GRACE Info](#) | [References](#) | [Disclaimer](#)



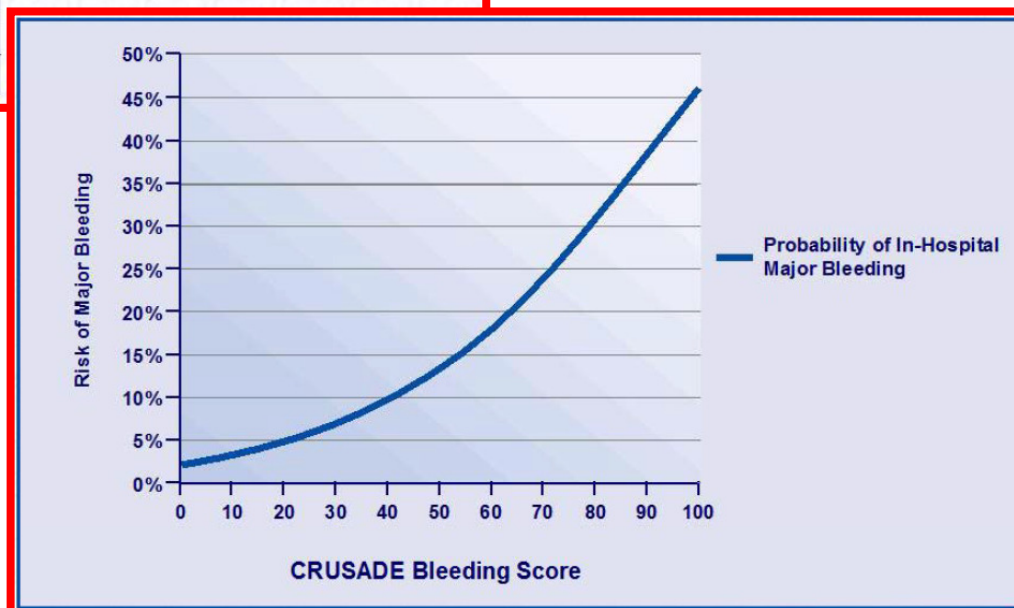
BMJ 2006;333:1091

Risk Stratification: GRACE and CRUSADE Score

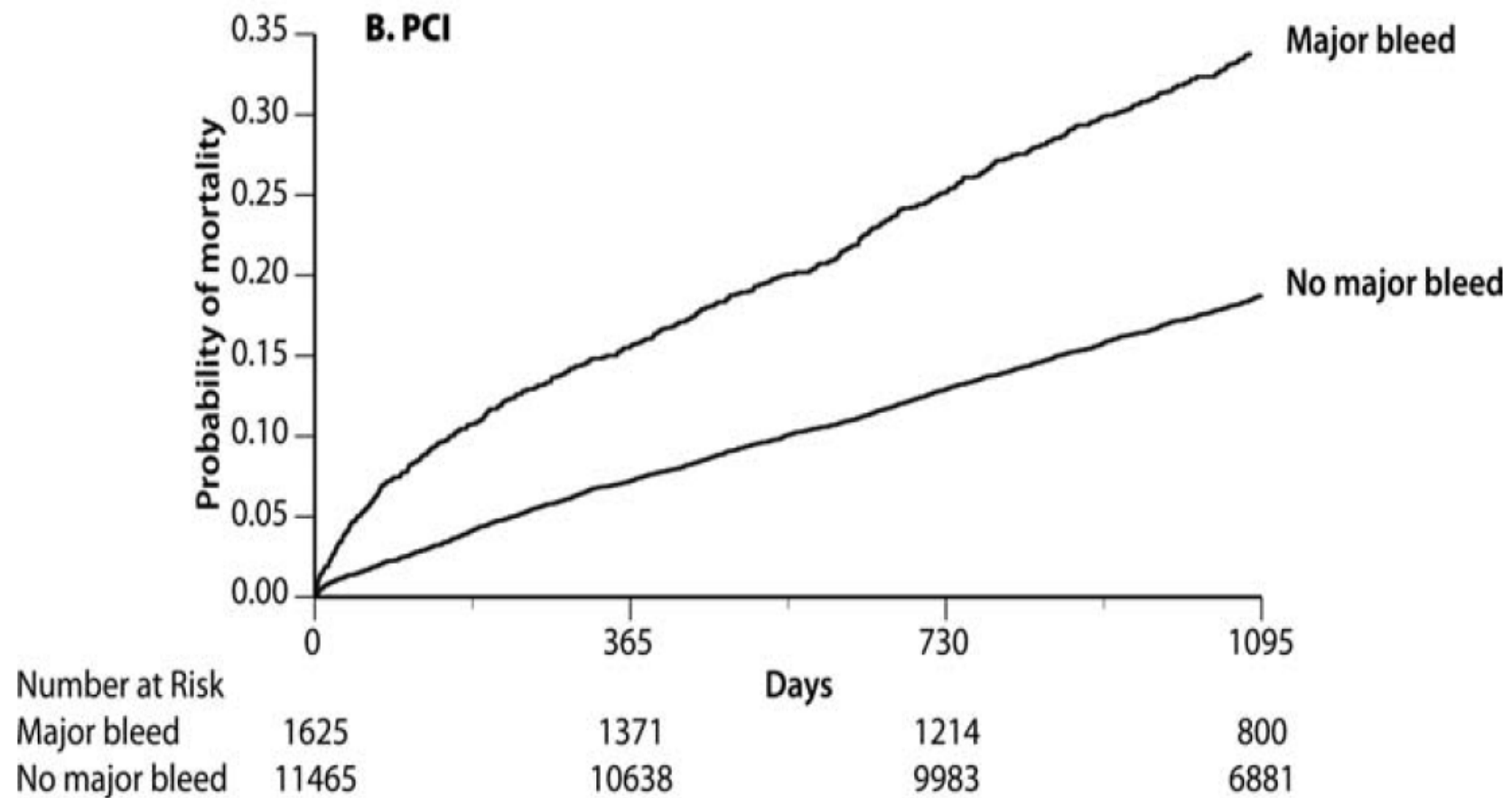
Predictor	Score
Baseline haematocrit, %	
< 31	9
31-33.9	7
34-36.9	3
37-39.9	2
≥ 40	0
Creatinine clearance, mL/min	
≤ 15	39
> 15-30	35
> 30-60	28
> 60-90	17
> 90-120	7
> 120	0

Predictor	Score
Heart rate (b.p.m.)	
≤ 70	0
71-80	1
81-90	3
91-100	6
101-110	8
111-120	10
≥ 121	11
Sex	
Male	0
Female	8
Signs of CHF at presentation	
No	0
Yes	7

Predictor	Score
Prior vascular disease	
No	0
Yes	6
Diabetes mellitus	
No	0
Yes	6
Systolic blood pressure, mmHg	
≤ 90	10
91-100	8
101-120	5
121-180	1
181-200	3
≥ 201	5



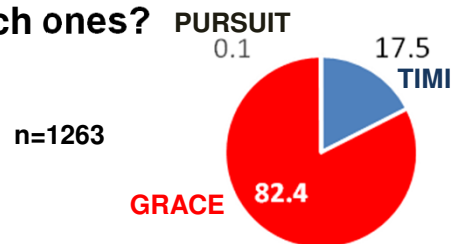
CRUSADE: major bleeding and mortality



Did you use any score for stratifying the ischemic risk of you patients?

Yes, 1263 (48.9%)

If yes, which ones?



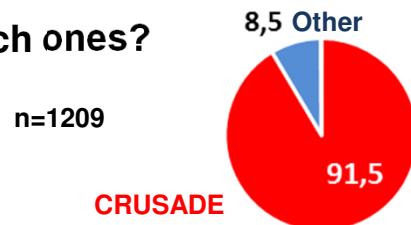
Was your patient at HIGH ischemic risk?

Yes, 762 (60.3%)

Did you use any score for stratifying the bleeding risk of you patients?

Yes, 1209 (46.8%)

If yes, which ones?



Was your patient at HIGH bleeding risk?

Yes, 369 (30.5%)



Mean $\pm$ SD 151.7 $\pm$ 37.6

Median: 148.8; 25th-75th percentile: 126.7-175.1

McNemar's test (GRACE Score >140)

STEMI
p=0.83

NSTE-ACS
p=0.88



Mean $\pm$ SD 32.2 $\pm$ 18.5

Median: 30.0; 25th-75th percentile: 18.0-47.0

McNemar's test (CRUSADE Score >40)

STEMI
p=0.10

NSTE-ACS
p=0.006

Decision making in NSTEMI-ACS

2.1. Treatment

Recommendations	Class ^a	Level ^b
Assessment of the individual bleeding risk is recommended on the basis of baseline characteristics (by use of risk scores), type, and duration of pharmacotherapy.	I	C
Drugs or combinations of drugs and non-pharmacological procedures (vascular access) known to carry a reduced risk of bleeding are indicated in patients at high risk of bleeding.	I	B

Recommendations	Class ^a	Level ^b
The choice of combination of oral antiplatelet agents, a GP IIb/IIIa receptor inhibitor, and anticoagulants should be made in relation to the risk of ischaemic and bleeding events.	I	C

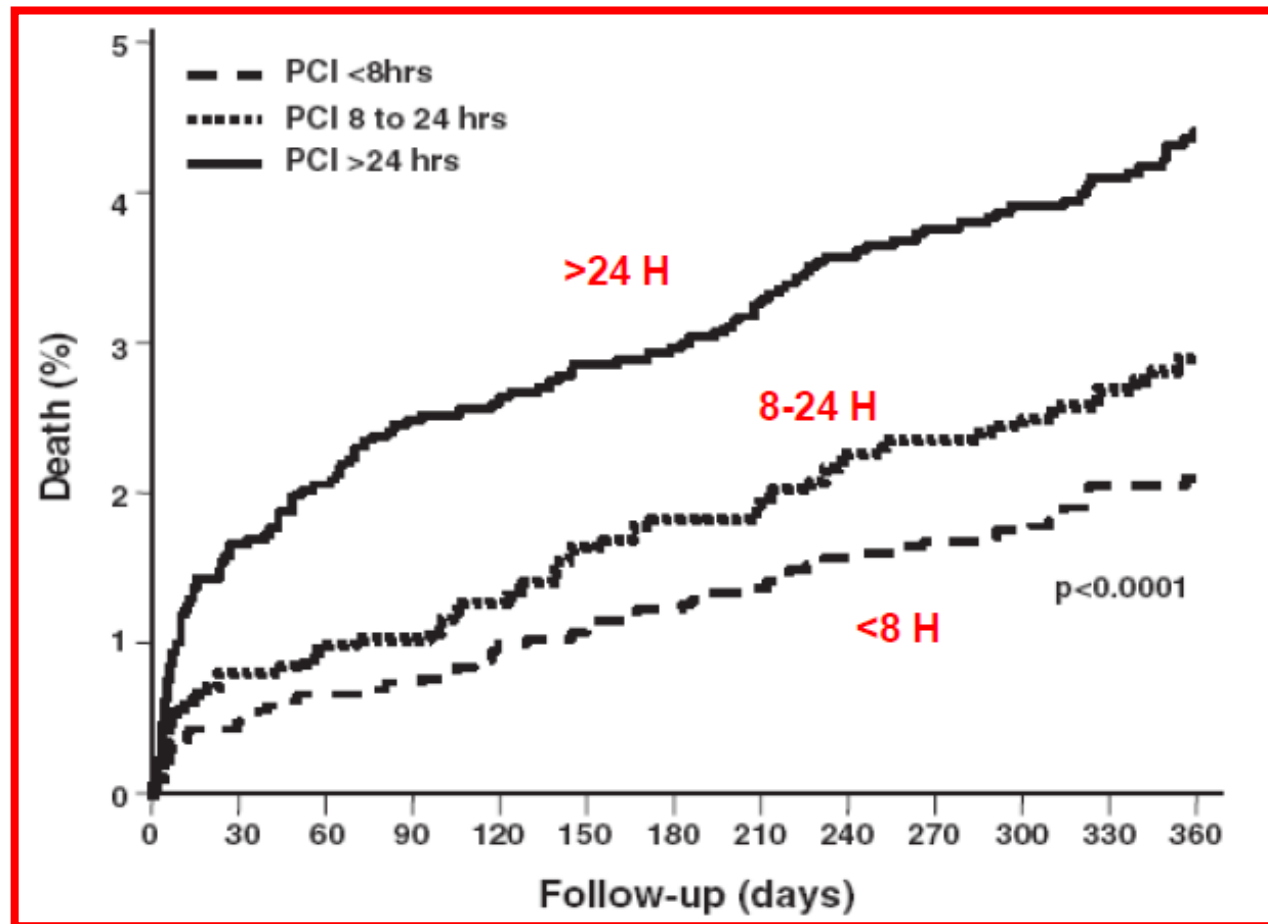
Decision making in NSTEMI-ACS

3. Coronary Angiography

Recommendations	Class ^a	Level ^b
An invasive strategy (within 72 h after first presentation) is indicated in patients with: • at least one high-risk criterion (<i>Table 9</i>); • 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

Impact of Delay to Angioplasty in Patients With Acute Coronary Syndromes Undergoing Invasive Management

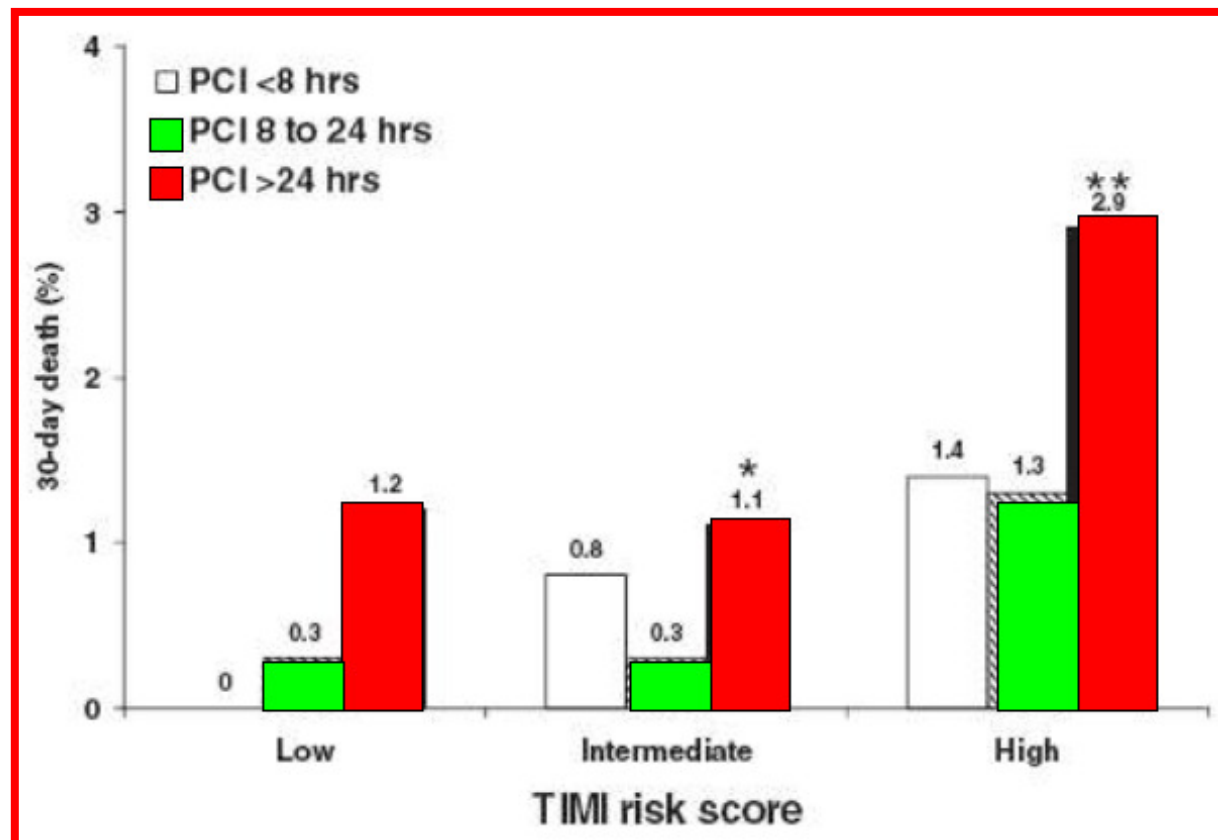
Analysis From the ACUTY (Acute Catheterization
and Urgent Intervention Triage strategY) Trial



Soraija P. et Al - JACC 2010

Impact of Delay to Angioplasty in Patients With Acute Coronary Syndromes Undergoing Invasive Management

Analysis From the ACUTY (Acute Catheterization
and Urgent Intervention Triage strategY) Trial



Soraija P. et Al - JACC 2010

Optimal timing of coronary angiography and potential intervention in non-ST-elevation acute coronary syndromes

Demosthenes G. Katritsis^{1*}, George C.M. Siontis², Adnan Kastrati³, Arnoud W.J. van't Hof⁴, Franz-Josef Neumann³, Konstantinos C.M. Siontis², and John P.A. Ioannidis^{2,5,6}

We conducted a meta-analysis of randomized trials addressing the optimal timing (early vs. delayed) of coronary angiography in NSTEMI-ACS. Four trials with 4013 patients were eligible (ABOARD, ELISA, ISAR-COOL, TIMACS) and data for longer follow-up periods than those published became available for this meta-analysis by the ELISA and ISAR-COOL investigators. The median time from admission or randomization to coronary angiography ranged from 1.16 to 14 h in the early and 20.8–86 h in the delayed strategy group. No statistically significant difference of risk of death [random effects risk ratio (RR) 0.85, 95% confidence interval (CI) 0.64–1.11] or myocardial infarction (MI) (RR 0.94, 95% CI 0.61–1.45) was detected between the two strategies. Early intervention significantly reduced the risk for recurrent ischaemia (RR 0.59, 95% CI 0.38–0.92, $P=0.02$) and the duration of hospital stay (by 28%, 95% CI 22–35%, $P<0.001$). Furthermore, decreased major bleeding events (RR 0.78, 95% CI 0.57–1.07, $P=0.13$), and less major events (death, MI, or stroke) (RR 0.91, 95% CI 0.82–1.01, $P=0.09$) were observed with the early strategy but these differences were not nominally significant.

The NEW ENGLAND JOURNAL *of* MEDICINE

ESTABLISHED IN 1812

MAY 21, 2009

VOL. 360 NO. 21

Early versus Delayed Invasive Intervention in Acute Coronary Syndromes

Shamir R. Mehta, M.D., M.Sc., Christopher B. Granger, M.D., William E. Boden, M.D., Philippe Gabriel Steg, M.D., Jean-Pierre Bassand, M.D., David P. Faxon, M.D., Rizwan Afzal, M.Sc., Susan Chrolavicius, R.N., Sanjit S. Jolly, M.D., M.Sc., Petr Widimsky, M.D., Alvaro Avezum, M.D., Hans-Jurgen Rupprecht, M.D., Jun Zhu, M.D., Jacques Col, M.D., Madhu K. Natarajan, M.D., M.Sc., Craig Horsman, B.Sc., Keith A.A. Fox, M.B., Ch.B., and Salim Yusuf, M.B., B.S., D.Phil., for the TIMACS Investigators*

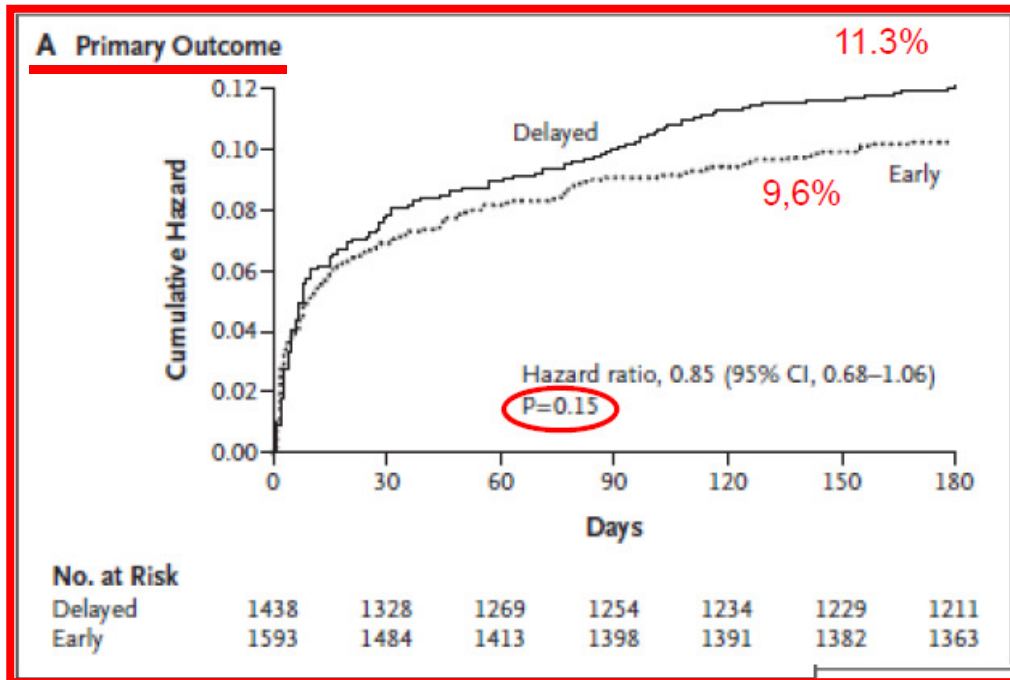
METHODS

We randomly assigned 3031 patients with acute coronary syndromes to undergo either routine early intervention (coronary angiography ≤ 24 hours after randomization) or delayed intervention (coronary angiography ≥ 36 hours after randomization). The primary outcome was a composite of death, myocardial infarction, or stroke at 6 months. A prespecified secondary outcome was death, myocardial infarction, or refractory ischemia at 6 months.

TIMACS Study. NEJM 2009

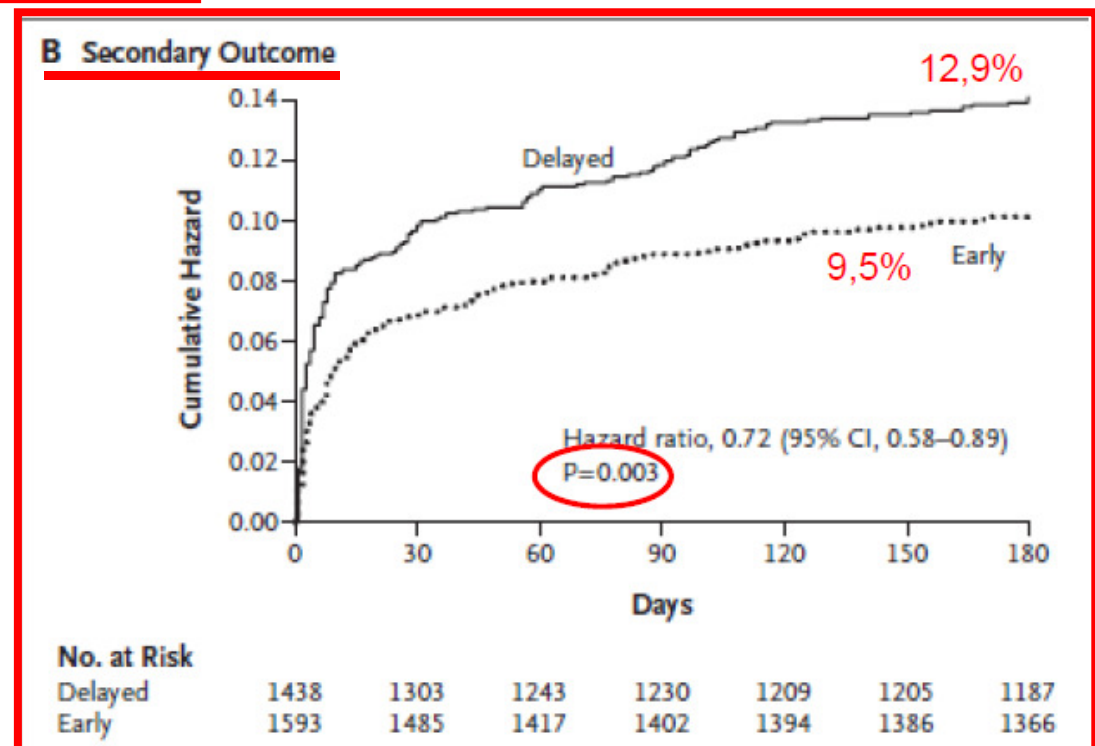
Follow-up: 6 mesi

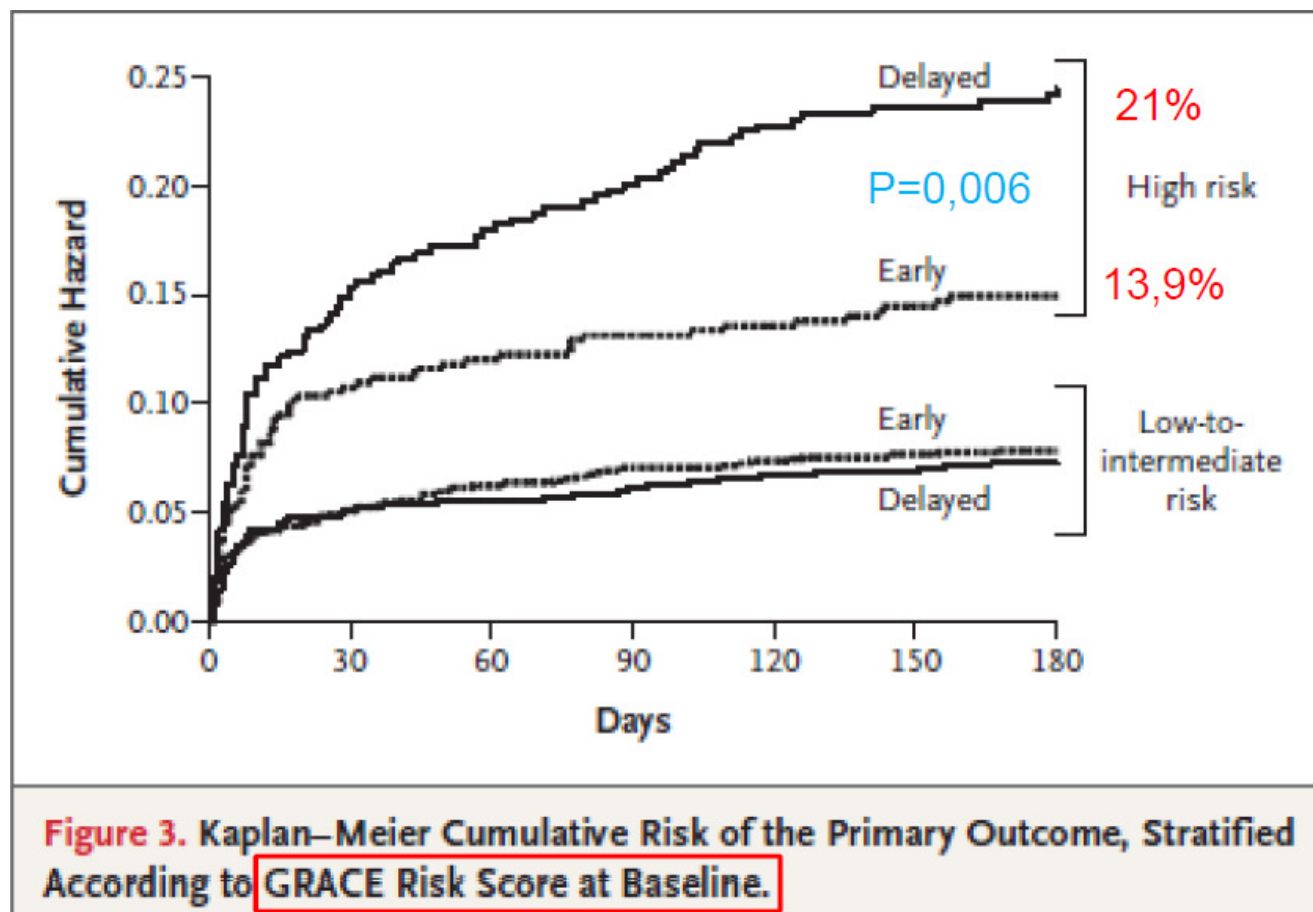
**End-point primario:
morte, IMA non fatale,
stroke**



**End-point secondario:
morte, IMA non fatale,
ischemia refrattaria**

TIMACS Study. NEJM 2009





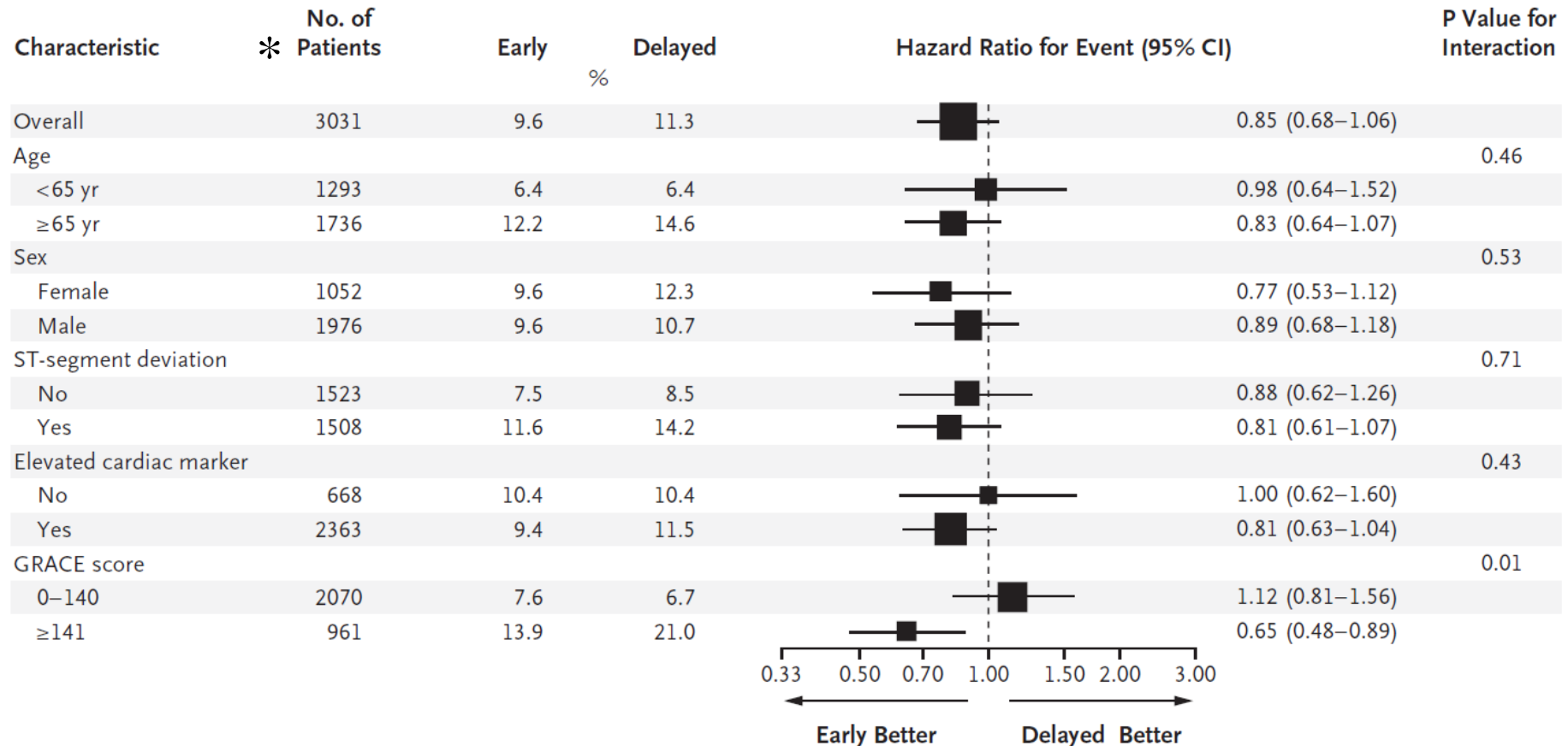
GRACE Risk Score
 > 140

GRACE Risk Score
 ≤ 140

The NEW ENGLAND JOURNAL of MEDICINE

TIMACS Study

A Primary Outcome



End-point primario: morte, IMA non fatale, stroke

TIMACS Study. NEJM 2009

Timing della Coronarografia



Strategia invasiva
di emergenza (entro 2 ore)

Pazienti a rischio molto elevato:

- Angina refrattaria
- Classe Killip > 1
- Instabilità emodinamica
- Aritmie ventricolari minacciose

Timing della Coronarografia



Strategia invasiva d'urgenza (entro 24 ore)

Pazienti ad alto rischio definiti da:

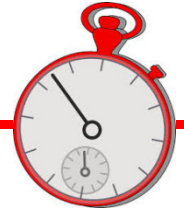
➤ GRACE Risk Score > 140

oppure

➤ Presenza di 1 dei 2 criteri «primari»
di alto rischio:

- Tn POS
- Alterazioni dinamiche ST / T

Timing della Coronarografia



Strategia invasiva precoce (entro 72 ore)

- **Almeno 1 criterio di alto rischio**
(«primario» o «secondario»)

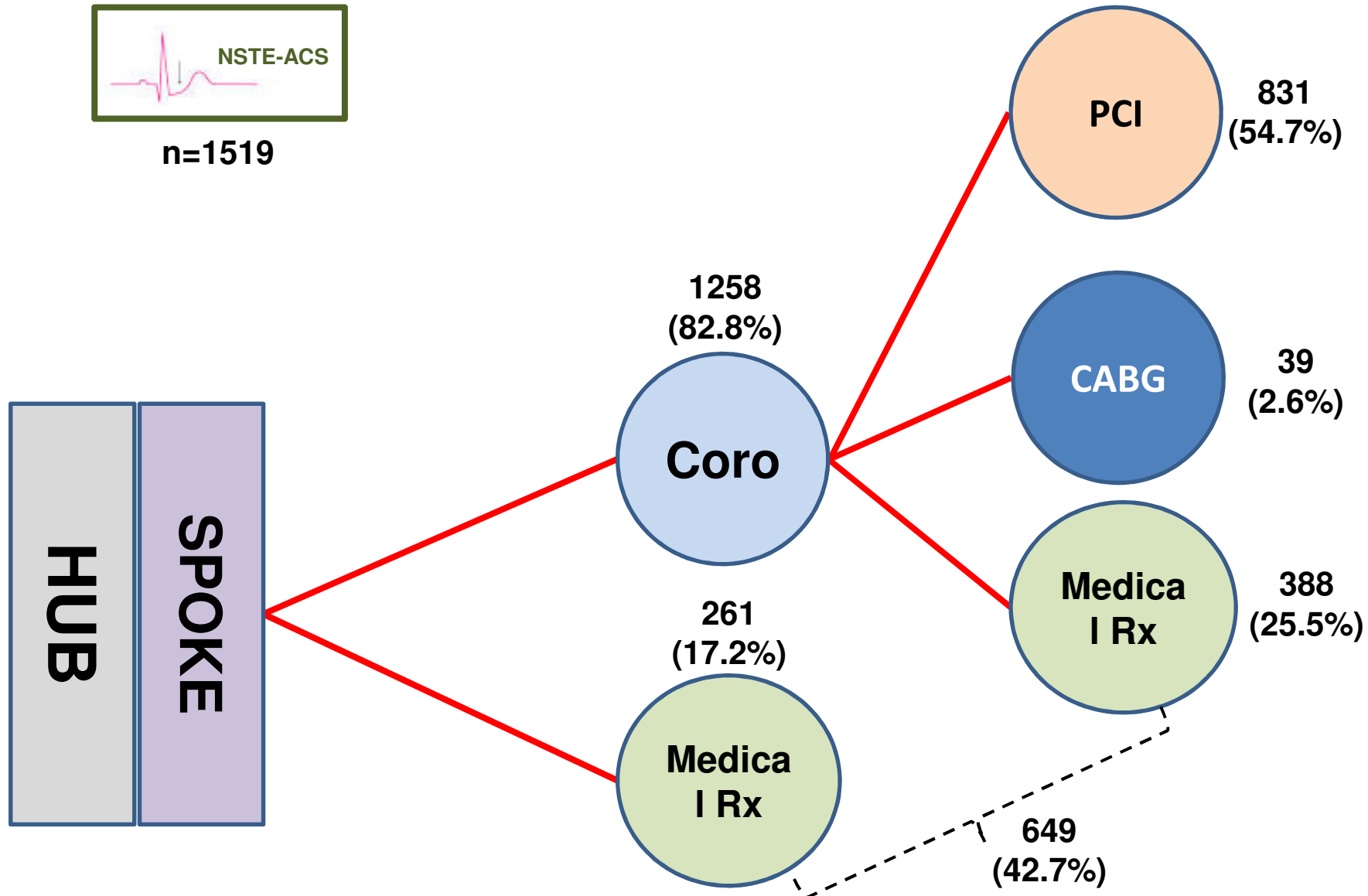
oppure

- **Sintomi ricorrenti**

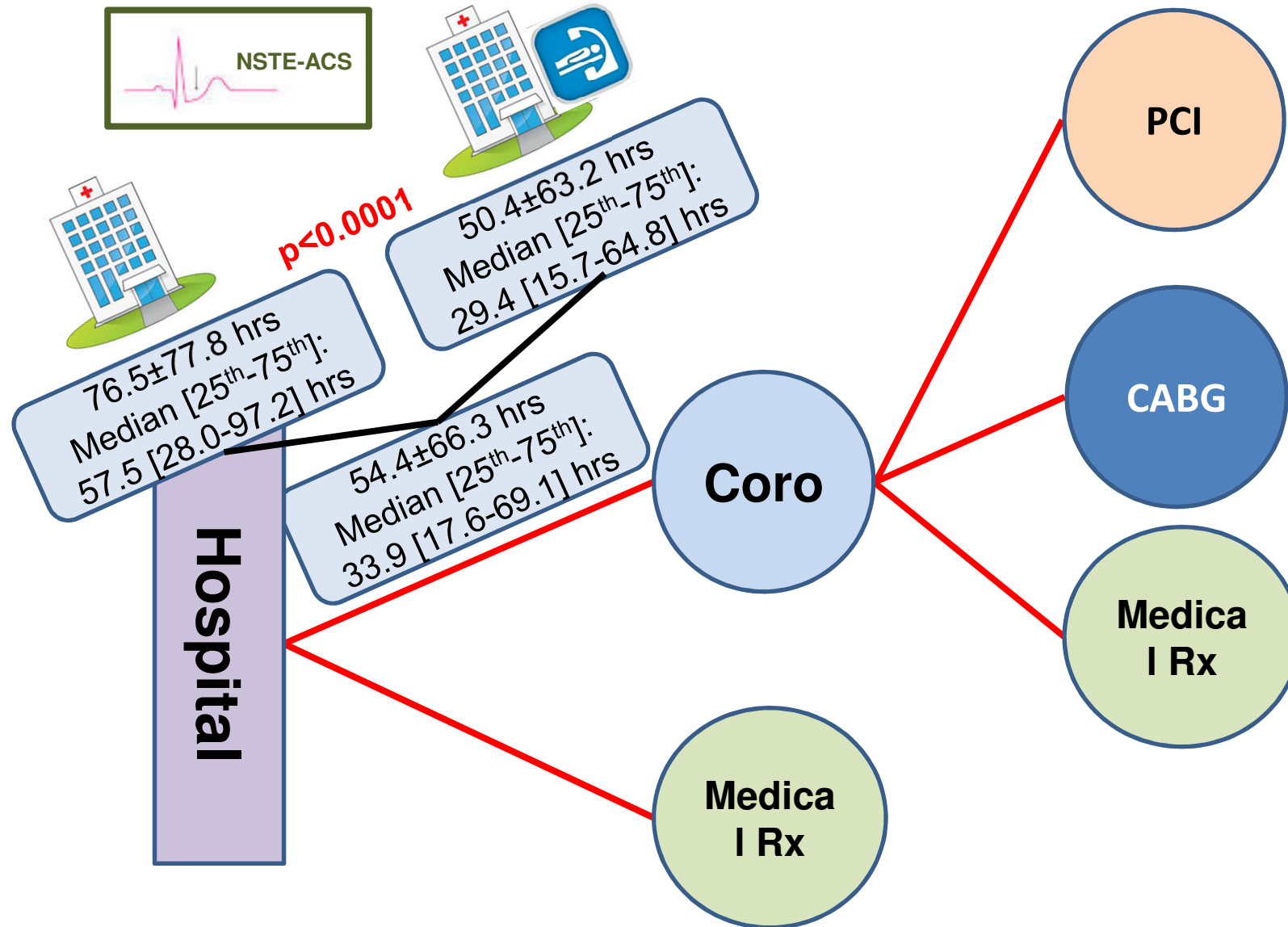
NSTE-ACS: Strategies and Timing



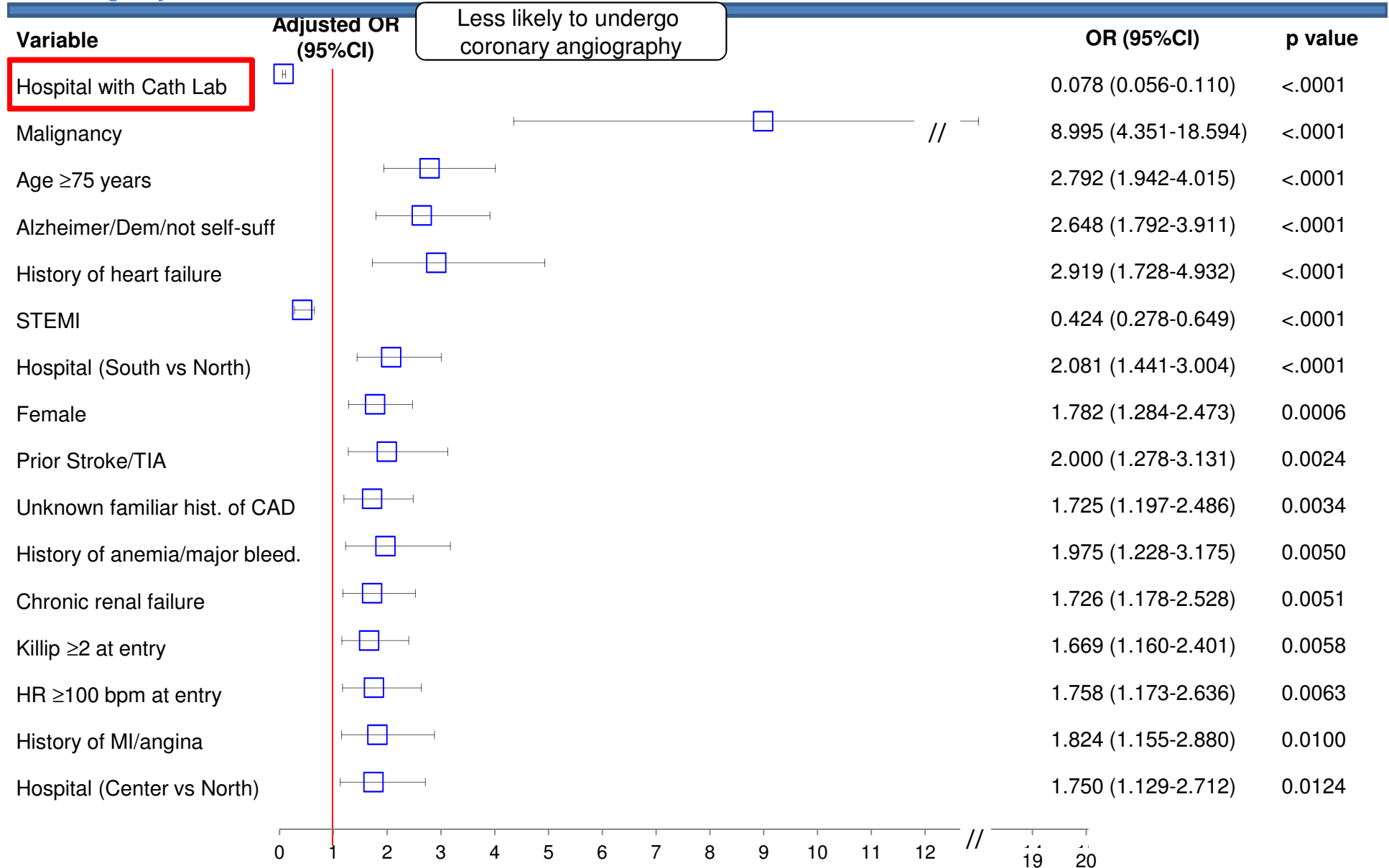
n=1519



NSTE-ACS: Strategies and Timing



Independent Predictors of NO Coronary Angio



Fattori che condizionano un approccio invasivo nelle SCA (specie nelle NSTE)

Disponibilità di Cath Lab

Coronary Angiography	Overall n= 2280	STEMI n= 1022	NSTE-ACS n= 1258
Radial approach, n (%)	1663 (72.9)	713 (69.8)	950 (75.5)
Vascular closure devices, n (%)	860 (37.7)	398 (38.9)	462 (36.7)
CAD severity, n (%)			
not determined	12 (0.5)	3 (0.3)	9 (0.7)
0 vessel	155 (6.8)	33 (3.2)	122 (9.7)
1 vessel	944 (41.4)	504 (49.3)	440 (35.0)
2 vessels	603 (26.5)	287 (28.1)	316 (25.1)
3 vessels	566 (24.8)	195 (19.1)	371 (29.5)

PCI	Overall n= 1755	STEMI n= 923	NSTE-ACS n= 832
Successfull PCI, n (%)	1717 (97.8)	905 (98.1)	812 (97.6)
PCI with DES, %	70.9	68.0	74.1
PCI with BMS, %	26.0	29.3	22.3
Number of stent, , mean±SD			
BMS	1.47±0.8	1.44±0.8	1.50±0.8
DES	1.60±0.9	1.57±0.8	1.63±0.9
Baseline TIMI 0/1, n (%)	51.1	66.5	34.0
Complete revascularization, %	73.0	74.4	71.6

Uno sguardo oltre-oceano

Circulation

JOURNAL OF THE AMERICAN HEART ASSOCIATION

Published online Sept 23, 2014



American
Heart
Association®

2014 AHA/ACC Guideline for the Management of Patients With Non-ST-Elevation Acute Coronary Syndromes: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines

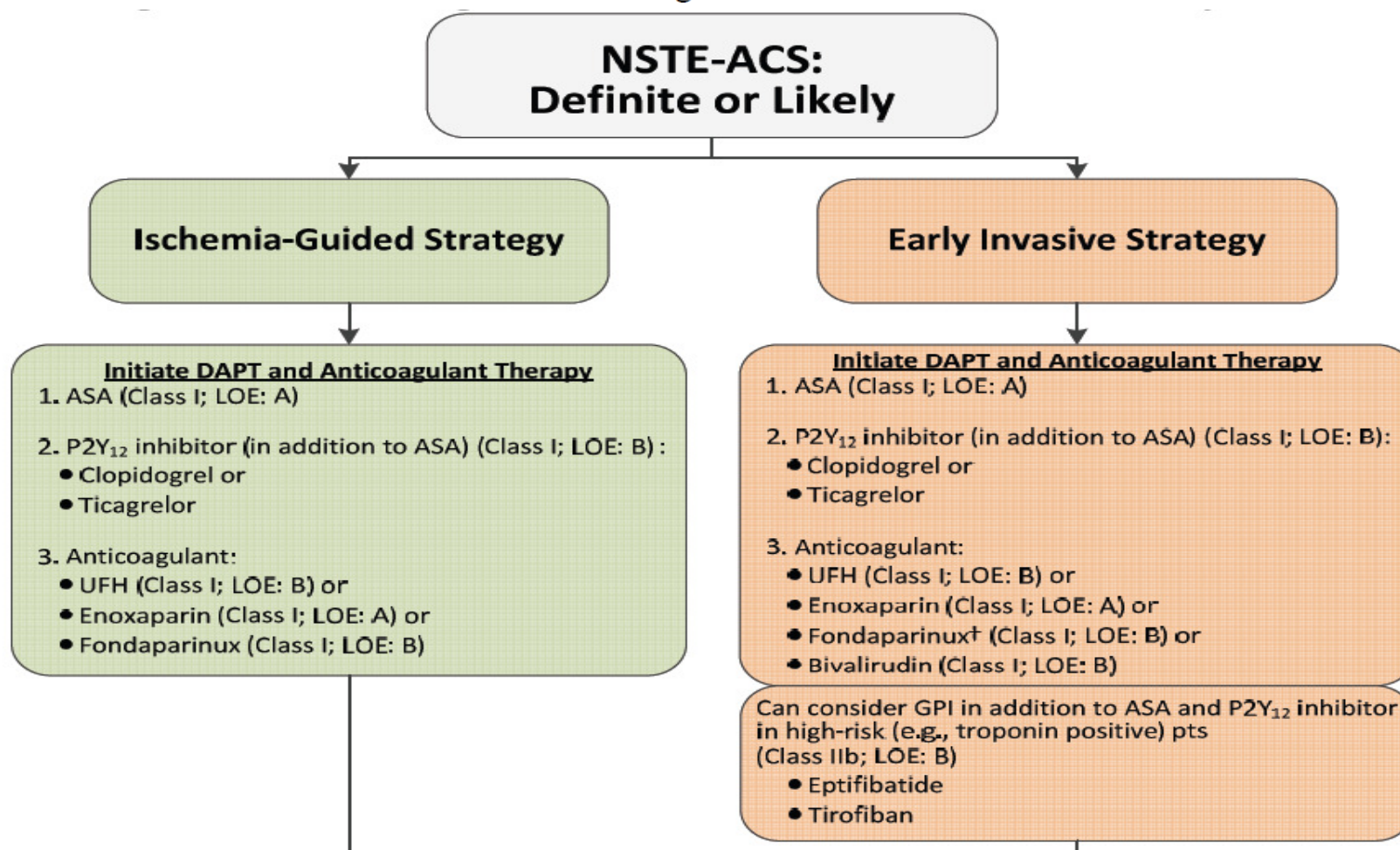
Ezra A. Amsterdam, Nanette K. Wenger, Ralph G. Brindis, Donald E. Casey, Jr., Theodore G. Ganiats, David R. Holmes, Jr., Allan S. Jaffe, Hani Jneid, Rosemary F. Kelly, Michael C. Kontos, Glenn N. Levine, Philip R. Liebson, Debabrata Mukherjee, Eric D. Peterson, Marc S. Sabatine, Richard W. Smalling and Susan J. Zieman

NSTE ACS AHA-ACC guidelines 2014



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Timing della Coronarografia



Immediate invasive (within 2 h)	Refractory angina
	Signs or symptoms of HF or new or worsening mitral regurgitation
	Hemodynamic instability
	Recurrent angina or ischemia at rest or with low-level activities despite intensive medical therapy
	Sustained VT or VF
Ischemia-guided strategy	Low-risk score (e.g., TIMI [0 or 1], GRACE [<109])
	Low-risk Tn-negative female patients
	Patient or clinician preference in the absence of high-risk features
Early invasive (within 24 h)	None of the above, but GRACE risk score >140
	Temporal change in Tn (Section 3.4)
	New or presumably new ST depression
Delayed invasive (within 25–72 h)	None of the above but diabetes mellitus
	Renal insufficiency (GFR <60 mL/min/1.73 m ²)
	Reduced LV systolic function (EF <0.40)
	Early postinfarction angina
	PCI within 6 mo
	Prior CABG
	GRACE risk score 109–140; TIMI score ≥ 2

4.4.4. Early Invasive and Ischemia-Guided Strategies: Recommendations

Class I

1. An urgent/immediate invasive strategy (diagnostic angiography with intent to perform revascularization if appropriate based on coronary anatomy) is indicated in patients (men and women[¶]) with NSTEMI-ACS who have refractory angina or hemodynamic or electrical instability (without serious comorbidities or contraindications to such procedures) (42, 44, 138, 338). (*Level of Evidence: A*)
2. An early invasive strategy (diagnostic angiography with intent to perform revascularization if appropriate based on coronary anatomy) is indicated in initially stabilized patients with NSTEMI-ACS (without serious comorbidities or contraindications to such procedures) who have an elevated risk for clinical events (Table 8) (42, 44, 138, 333, 334, 338, 339). (*Level of Evidence: B*)

Class IIa

1. It is reasonable to choose an early invasive strategy (within 24 hours of admission) over a delayed invasive strategy (within 25 to 72 hours) for initially stabilized high-risk patients with NSTEMI-ACS. For those not at high/intermediate risk, a delayed invasive approach is reasonable (139). (*Level of Evidence: B*)

Conclusioni - 1

- ✓ Le NSTEMI-ACS rappresentano un problema importante per la crescente incidenza, la complessità e la gravità
- ✓ Le NSTEMI-ACS hanno un impatto rilevante sul sistema sanitario
- ✓ Il timing della valutazione coronarografica è dettato da una valutazione clinica articolata, poliparametrica:
 - D'emergenza (entro 2 ore)
 - D'urgenza (entro 24 ore)
 - Precoce (entro 72 ore)

Conclusioni - 2

- ✓ **Tuttavia il drive più importante all'esecuzione precoce della coronarografia rimane la disponibilità di un Cath Lab**
- ✓ **Occorre infine considerare che accanto alle urgenze cliniche esistono le urgenze organizzative e logistiche**



Scala dei Turchi – Punta Grande (Realmonte -AG-)

Grazie per l'attenzione