SCA a debate

Coordinación en Asistencia Extra-hospitalaria del paciente con SCA

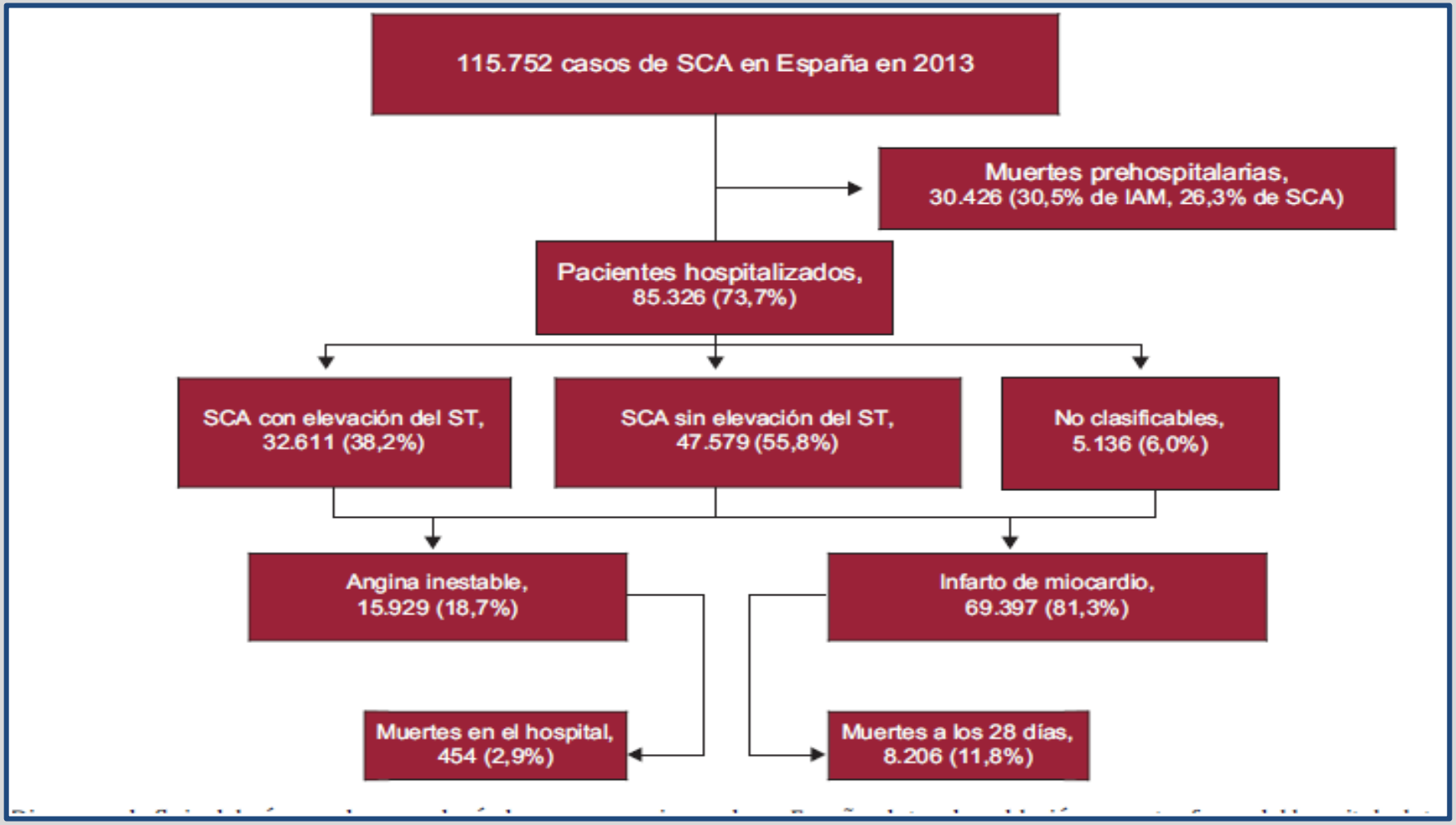
Dr. Andrés Iñiguez

SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

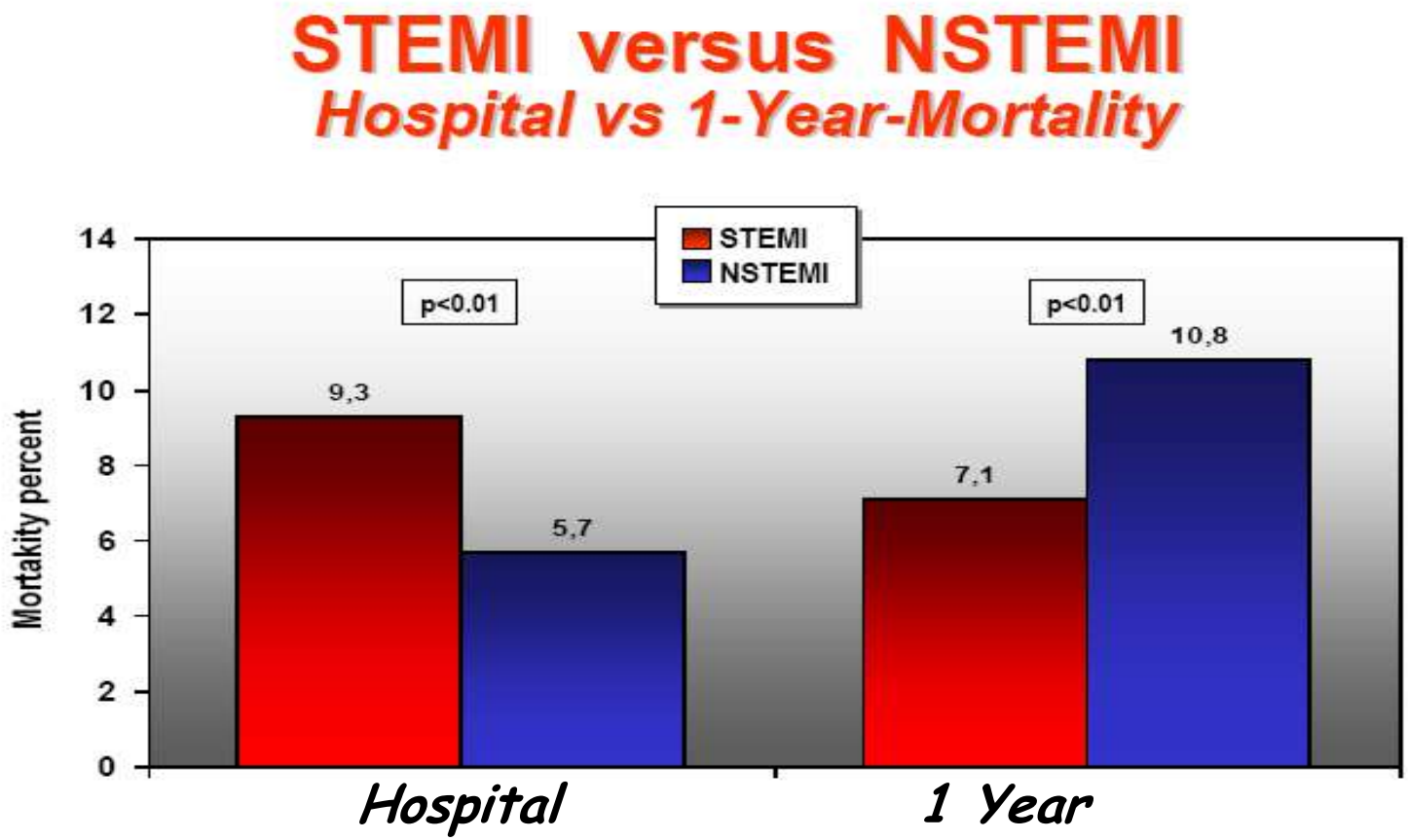
Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

SCA: MORTALIDAD en ESPAÑA 2013



Dégano IR, Elosúa, R , Marrugat J. www.revespcardiol.org

SCA: MORTALIDAD



ESC Guidelines for the Management of NSTE-ACS (6)

S. C. A.

¿ Es factible diagnosticar y tratar mejor a un paciente con SCA, con una mejor coordinación entre Asistencia Hospitalaria y Extra-hospitalaria ?

Andres.Iniguez.Romo@sergas.es

S. C. A.

¿ Es factible diagnosticar y tratar mejor a un paciente con SCA, con una mejor coordinación entre Asistencia Hospitalaria y Extra-hospitalaria ?

- Proporcionando información y formación acerca del SCA.

S. C. A. : Fisiopatología

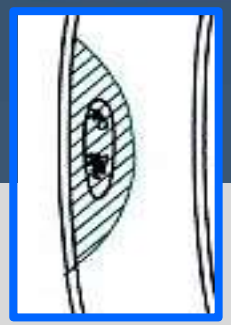
Arterioscler Thromb Vasc Biol 2010;30:1282-92.

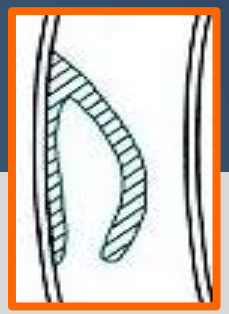
Compromiso progresivo de la luz coronaria

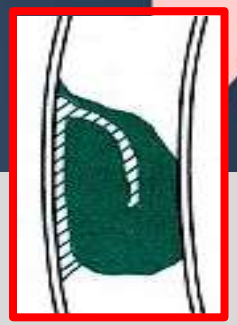
Espasmo Vascular y Trombosis "in situ"

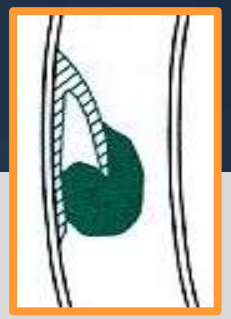
Rotura Aguda de Placa

Rotura de Placa Vulnerable

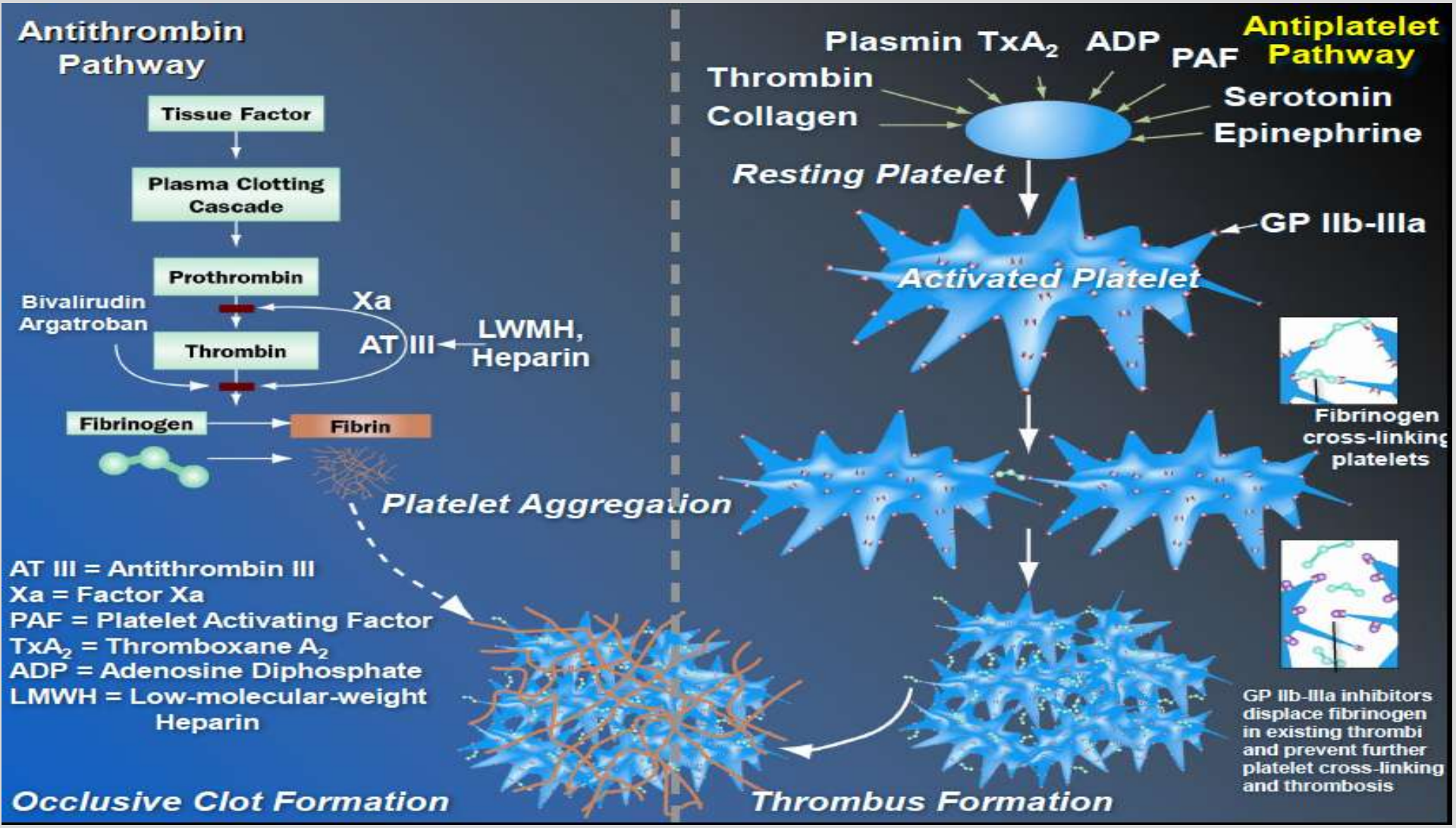






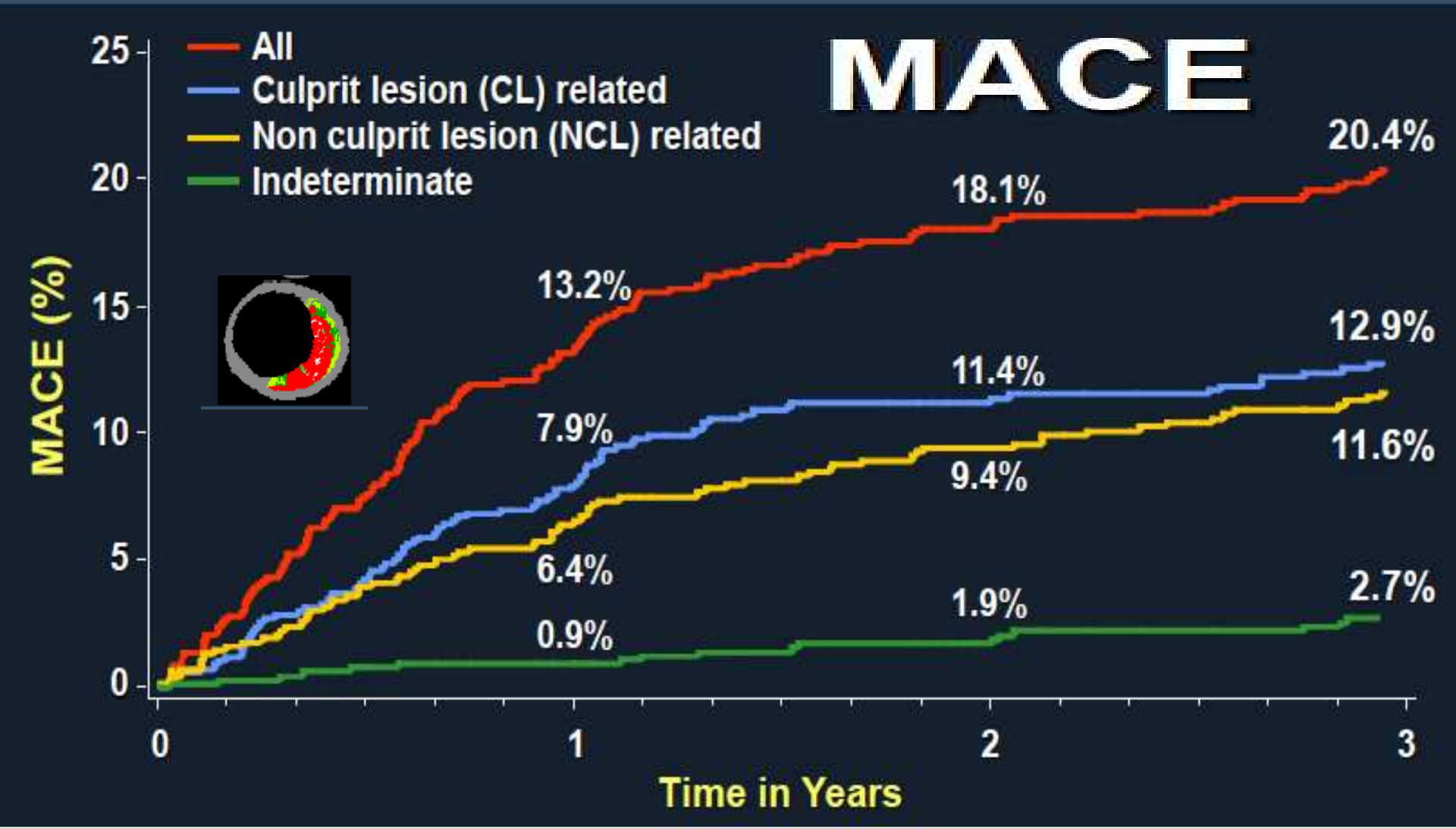


S. C. A.: Papel de Plaquetas y Coagulación



Andres.Iniguez.Romo@sergas.es

S.C.A. (Prospect Trial)

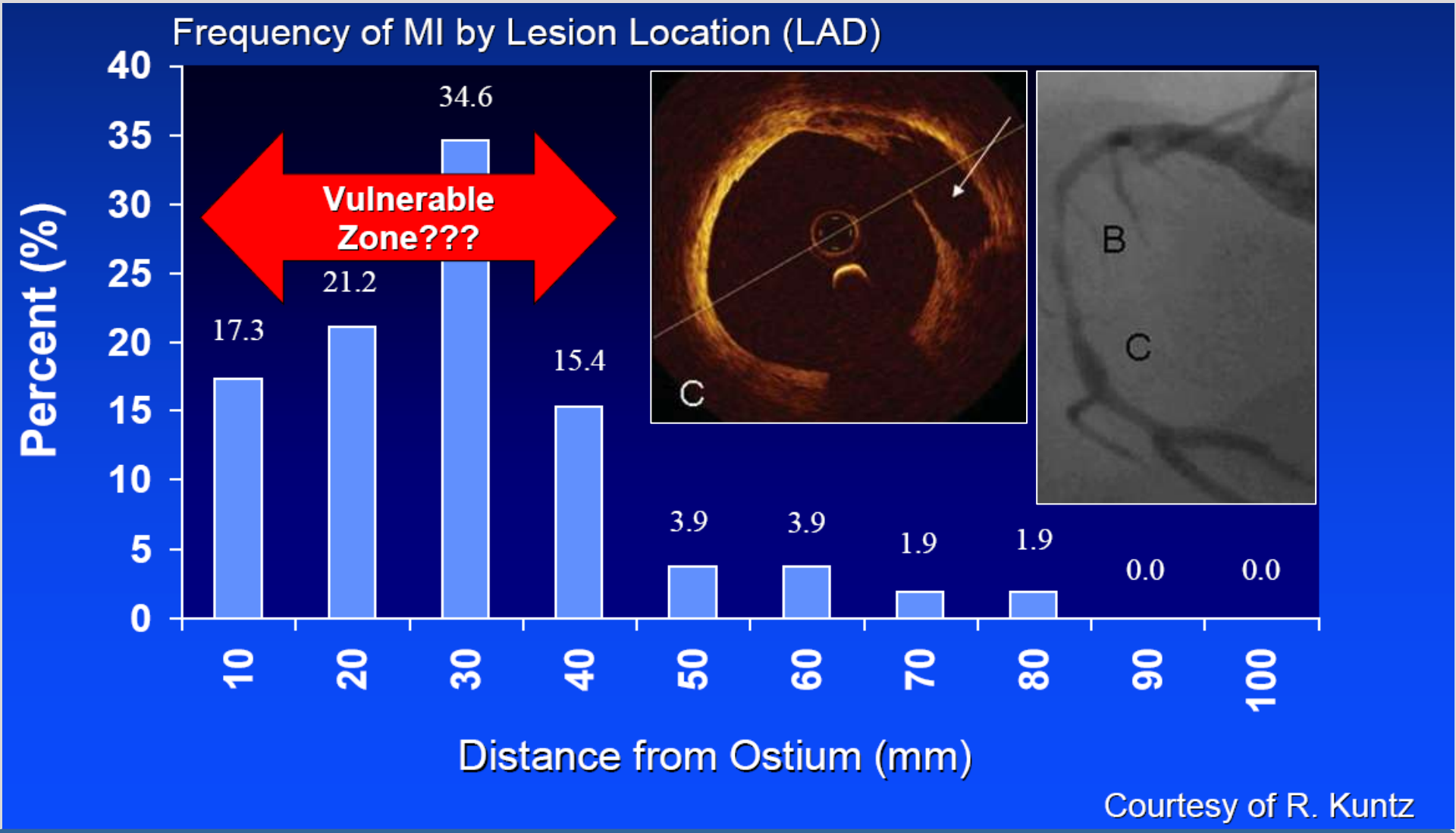


SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

S.C.A. (Lesiones Vulnerables)



European Heart Journal
doi:10.1093/eurheartj/ehm236

ESC GUIDELINES

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).

www.escardio.org/guidelines

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

EUROPEAN SOCIETY OF CARDIOLOGY®

SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

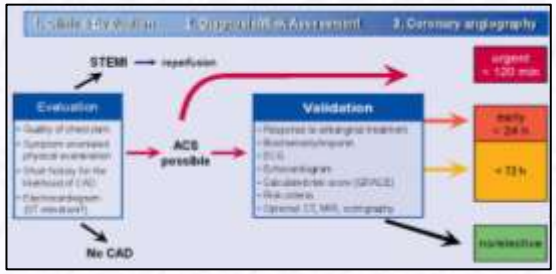
Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

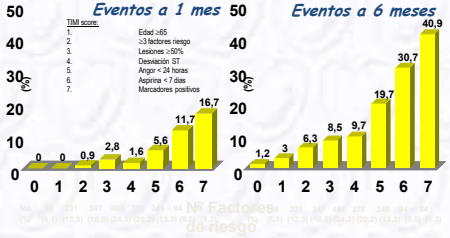
SCA: Manejo Diagnóstico y Terapéutico

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

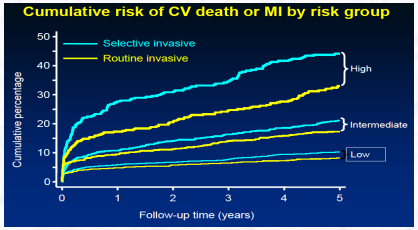
- **Step 1**
  - Initial evaluation.



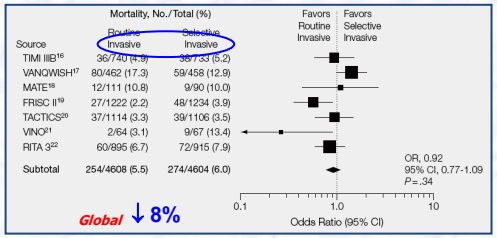
- **Step 2**
  - Diagnosis validation and risk assessment.



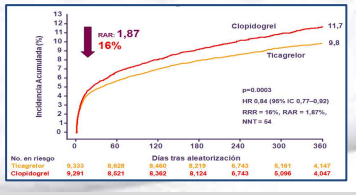
- **Step 3**
  - Invasive strategy.



- **Step 4**
  - Revascularization modality.



- **Step 5**
  - Hospital discharge and post-discharge.



Andres.Iniguez.Romo@sergas.es

What is new?

- **Diagnostic**
  - High-sensitive troponin introduced
  - Echocardiography standard
  - Coronary CT for rule-out in low/intermediate risk patients
- **Risk Stratification**
  - 3-hour fast rule-out protocol
  - Bleeding risk score (CRUSADE)
- **Medical Treatment**
  - Ticagrelor and prasugrel introduced
- **Revascularization**
  - Timing of revascularization

www.escardio.org/guidelines

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

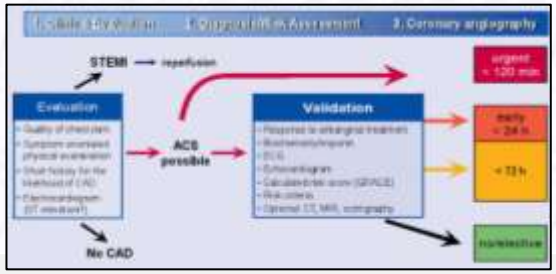
EUROPEAN SOCIETY OF CARDIOLOGY®

Andres.Iniguez.Romo@sergas.es

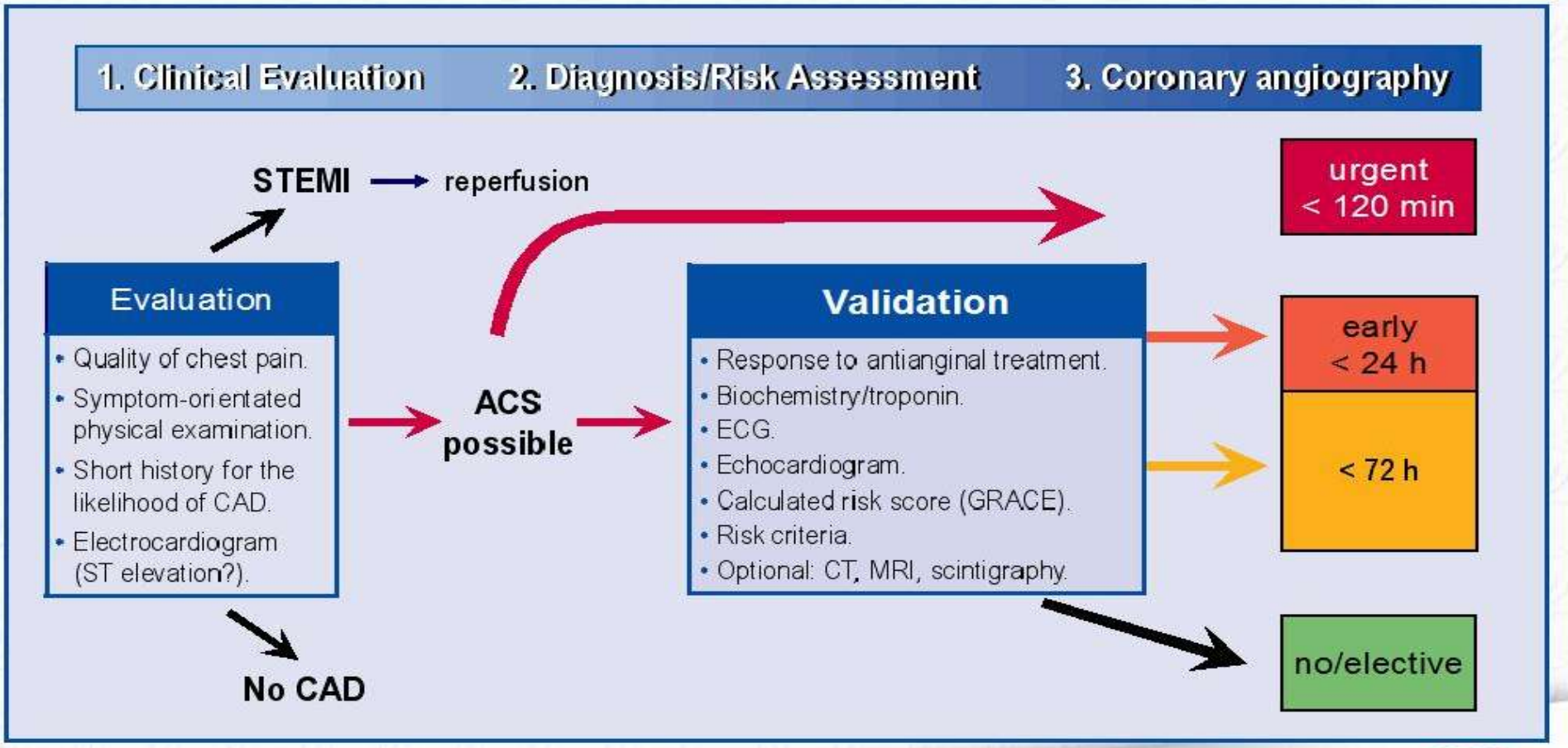
SCA: Manejo Diagnóstico y Terapéutico

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

- **Step 1**
  - Initial evaluation.



S. C. A.: Algoritmo de Decisión



www.escardio.org/guidelines

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

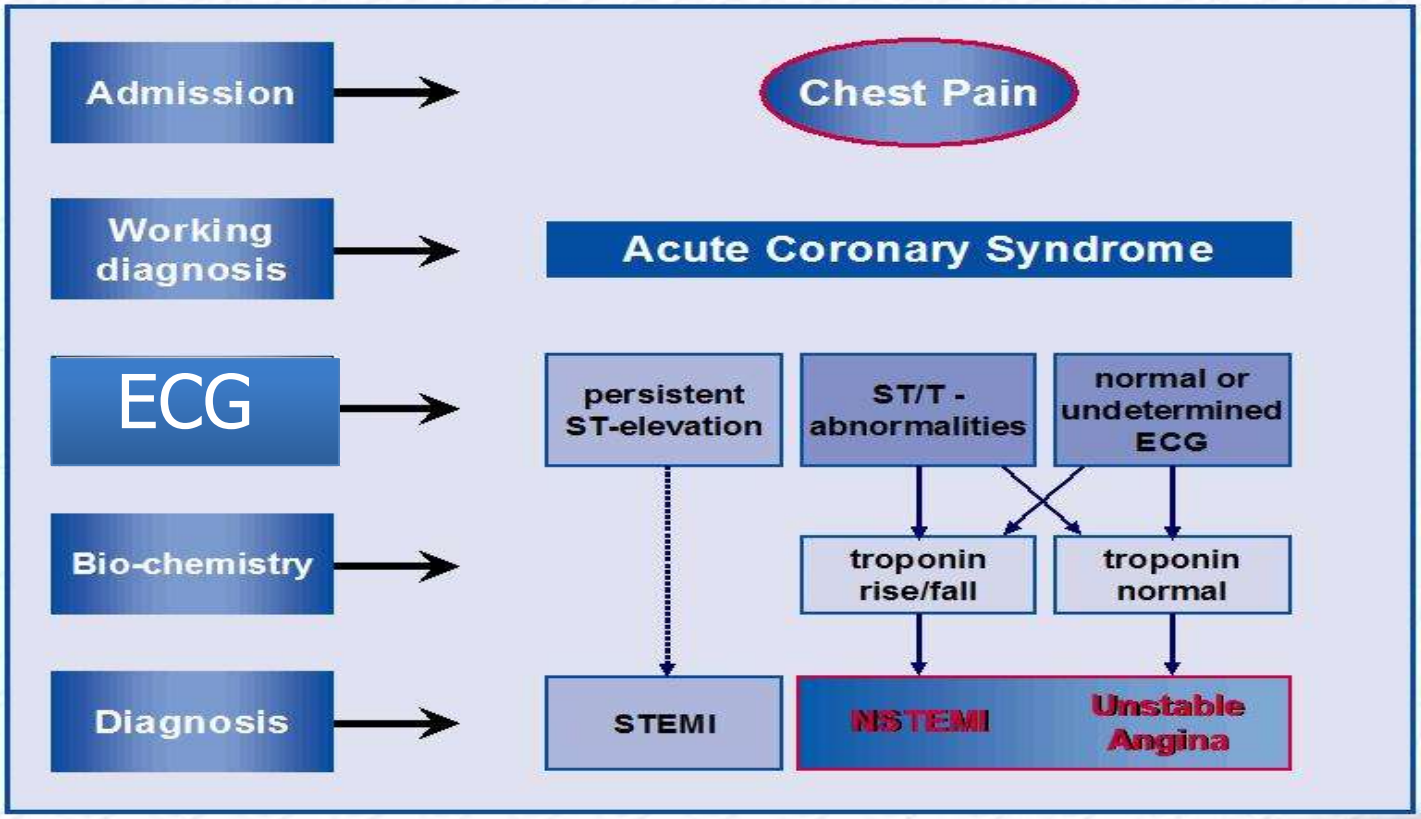
EUROPEAN SOCIETY OF CARDIOLOGY®

SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

S.C.A.: Presentación Clínica



www.escardio.org/guidelines

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

EUROPEAN SOCIETY OF CARDIOLOGY®

Andres.Iniguez.Romo@sergas.es

Initial therapeutic measures

Oxygen	Insufflation (4-8 L/min) if oxygen saturation is < 90%.
Nitrates	Sublingual or intravenous (caution if systolic blood pressure is < 90 mmHg).
Morphine	3-5 mg intravenous or subcutaneously, if severe pain.

www.escardio.org/guidelines

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

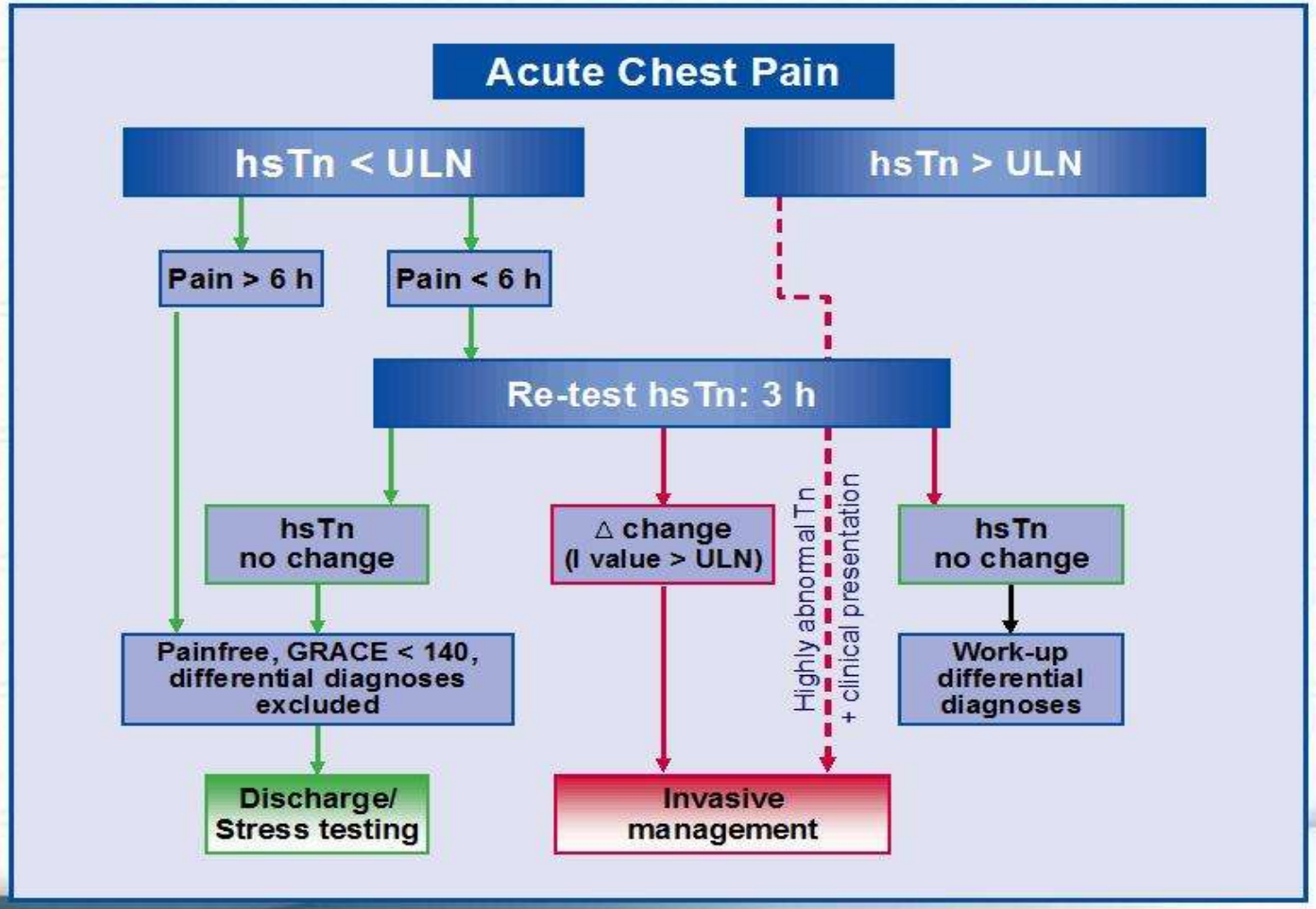
EUROPEAN SOCIETY OF CARDIOLOGY®

SCA: Manejo Diagnóstico y Terapéutico

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

- **Step 2**
  - Diagnosis validation and risk assessment.

Rapid rule-out of ACS with high-sensitivity troponin



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

www.escardio.org/guidelines

EUROPEAN SOCIETY OF CARDIOLOGY®

SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

Recommendations for diagnosis and risk stratification (1)

Recommendations	Class	Level
In patients with a suspected NSTE-ACS, diagnosis and short-term ischaemic/ bleeding risk stratification should be based on a combination of clinical history, symptoms, physical findings, ECG (repeated or continuous ST monitoring), and biomarkers.	I	A
ACS patients should be admitted preferably to dedicated **chest pain units or coronary care units.**	I	C
It is recommended to use established risk scores **for prognosis and bleeding (e.g. GRACE, CRUSADE).**	I	B
A 12-lead ECG should be obtained within 10 min after first medical contact and immediately read by an experienced physician. This should be repeated in the case of recurrence of symptoms, and after 6–9 and 24 h, and before hospital discharge.	I	B
Additional ECG leads (V_3R, V_4R, V_7–V_9) are recommended when routine leads are inconclusive.	I	C

www.escardio.org/guidelines

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

EUROPEAN SOCIETY OF CARDIOLOGY®

SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

Recommendations for diagnosis and risk stratification (2)

Recommendations	Class	Level
Blood has to be drawn promptly for troponin (cardiac troponin T or I) measurement. The result should be available within 60 min. The test should be repeated 6-9 h after initial assessment if the first measurement is not conclusive. Repeat testing after 12-24 h is advised if the clinical condition is still suggestive of ACS.	I	A
A rapid rule-out protocol (0 and 3 h) is recommended when highly sensitive troponin tests are available.	I	B
An echocardiogram is recommended for all patients to evaluate regional and global LV function and to rule in or rule out differential diagnoses.	I	C
Coronary angiography is indicated in patients in whom the extent of CAD or the culprit lesion has to be determined.	I	C
Coronary CT angiography should be considered as an alternative to invasive angiography to exclude ACS when there is a low to intermediate likelihood of CAD and when troponin and ECG are inconclusive.	IIa	B
In patients without recurrence of pain, normal ECG findings, negative troponins tests, and a low risk score, a non-invasive stress test for inducible ischaemia is recommended before deciding on an invasive strategy.	I	A

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

www.escardio.org/guidelines

EUROPEAN SOCIETY OF CARDIOLOGY®

Andres.Iniguez.Romo@sergas.es

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

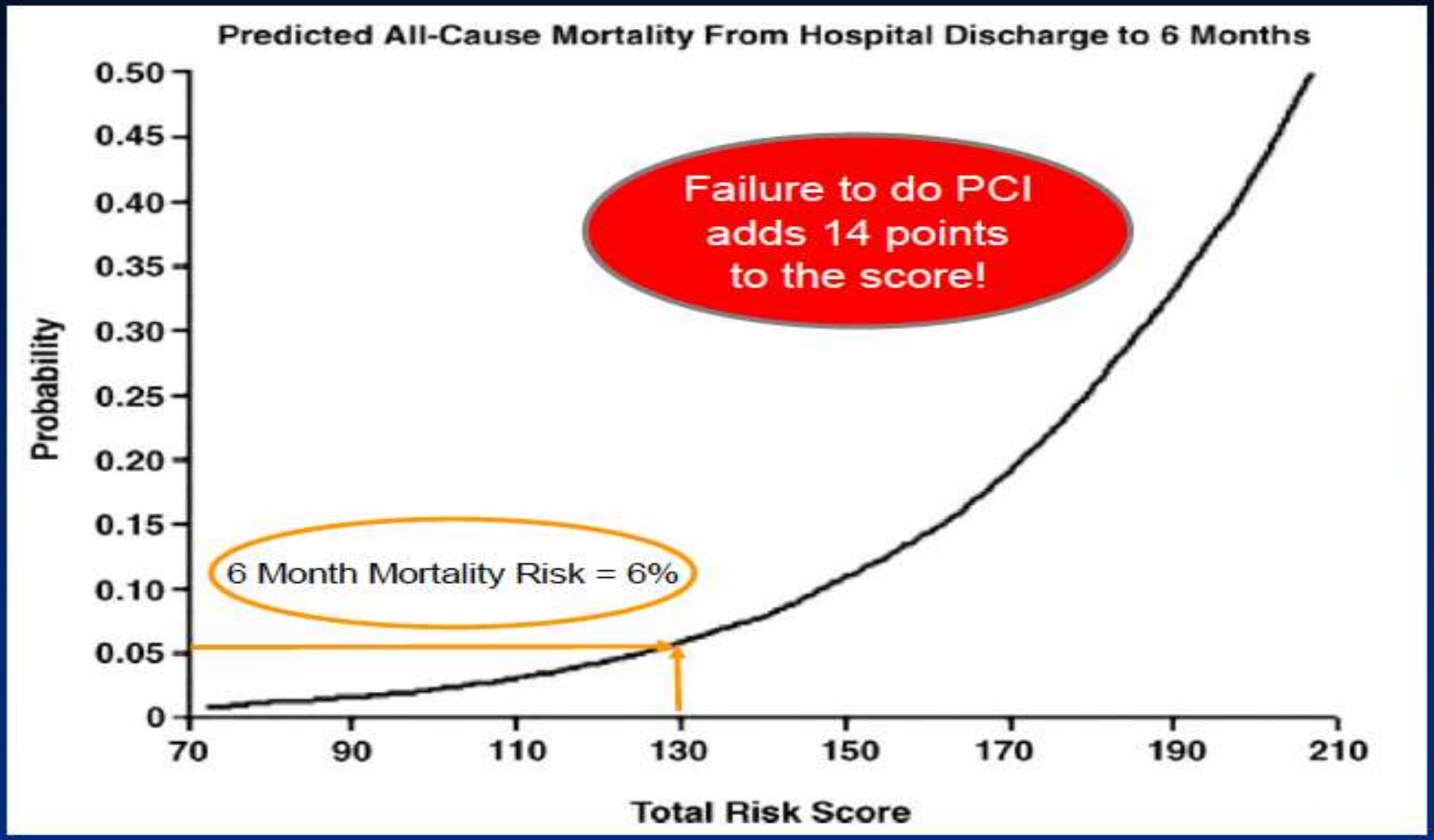
www.escardio.org/guidelines

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

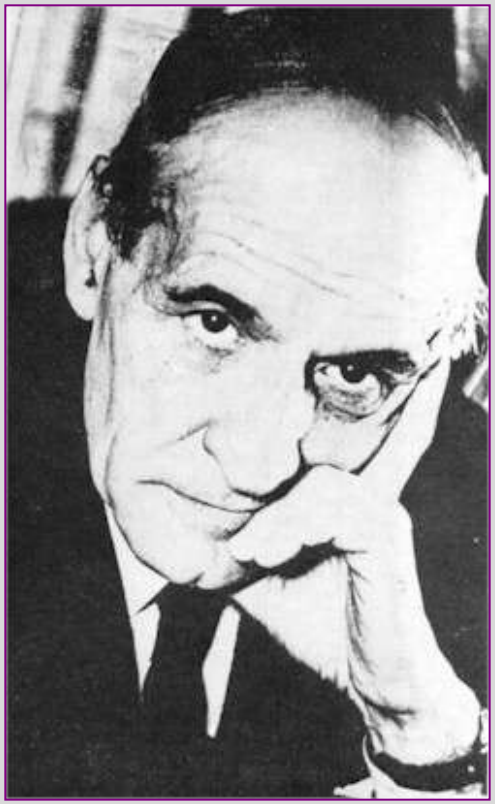
EUROPEAN SOCIETY OF CARDIOLOGY®

Andres.Iniguez.Romo@sergas.es

SCASEST: Escalas de Riesgo



SCASEST: ¿ Anatomía Coronaria ?



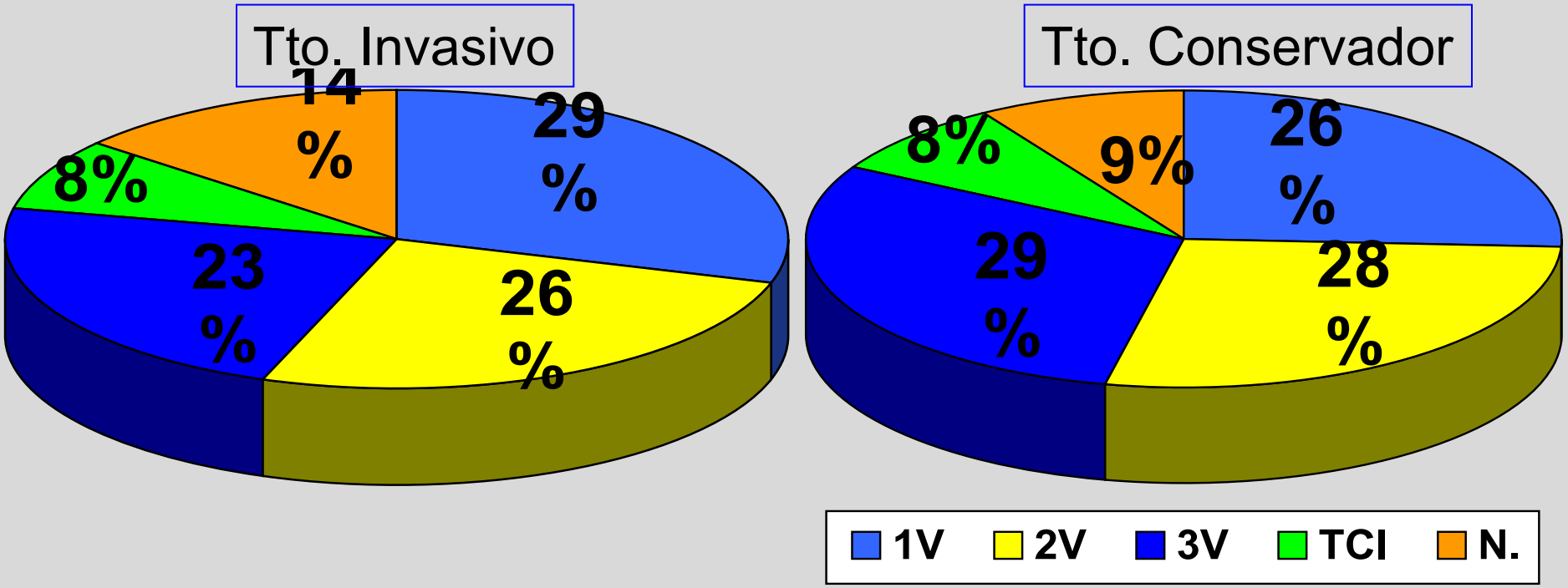
Lo que pasa es que no sabemos que es lo que pasa, y esto es lo que verdaderamente nos pasa.

Ortega y Gasset – 1933.

SCASEST: ¿ Patología Coronaria ?

⇨ **Pacientes con** SCA sin ↑ del ST **tratados de forma INVASIVA o CONSERVADORA tienen**

similar patología coronaria.



FRISC II. *Lancet. 1999;354:708-15.*

SCASEST: ¿ Coronariografía ?

- ⇨ **Identificación Inequívoca Etiológica**
- ⇨ **Estratificación Riesgo Fiable**
- ⇨ **Tratamiento Eficiente Precoz**

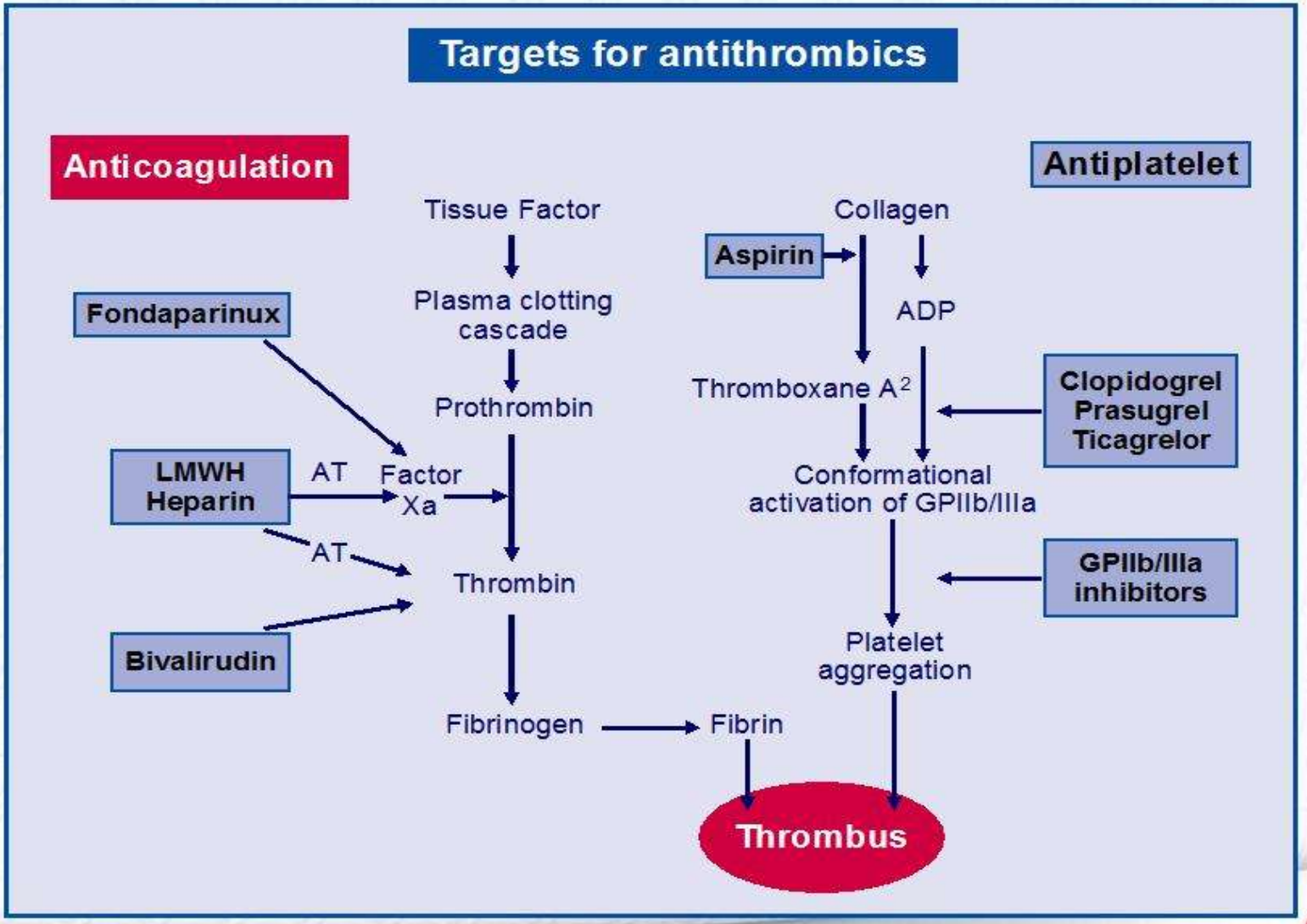
SCASEST: ¿ Orientación Trp & Dgt. ?

SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

Targets for antithrombics



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

www.escardio.org/guidelines

EUROPEAN SOCIETY OF CARDIOLOGY®

SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

Checklist of treatments when an ACS diagnosis appears likely

Aspirin	Initial dose of 150-300 mg non-enteric formulation followed by 75-100 mg/day (i.v. administration is acceptable).
$P2Y_{12}$ inhibitor	Loading dose of ticagrelor or clopidogrel.
Anticoagulation	Choice between different options depends on strategy: • Fondaparinux 2.5 mg/daily subcutaneously, • Enoxaparin 1 mg/kg twice daily subcutaneously, • UFH i.v. bolus 60-70 IU/kg (maximum 5000 IU) followed by infusion of 12-15 IU/kg/h (maximum 1000 IU/h) titrated to aPTT 1.5-2.5 × control, • Bivalirudin is indicated only in patients with a planned invasive strategy.
Oral ß-Blocker	If tachycardic or hypertensive without signs of heart failure.

www.escardio.org/guidelines

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

EUROPEAN SOCIETY OF CARDIOLOGY®

Andres.Iniguez.Romo@sergas.es

Recommendations for oral antiplatelet agents (1)

Recommendations	Class	Level
Aspirin should be given to all patients without contraindications at an initial loading dose of 150-300 mg, and at a maintenance dose of 75-100 mg daily long-term regardless of treatment strategy.	I	A
A $P2Y_{12}$ inhibitor should be added to aspirin as soon as possible and maintained over 12 months, unless there are contraindications such as excessive risk of bleeding.	I	A
A proton pump inhibitor (preferably not omeprazole) in combination with DAPT is recommended in patients with a history of gastrointestinal haemorrhage or peptic ulcer, and appropriate for patients with multiple other risk factors (*H. elicobacter pylori* infection, age ≥ 65 years, concurrent use of anticoagulants or steroids).	I	A
Prolonged or permanent withdrawal of $P2Y_{12}$ inhibitors within 12 months after the index event is discouraged unless clinically indicated.	I	C
Ticagrelor (180 mg loading dose, 90 mg twice daily) is recommended for all patients at moderate-to-high risk of ischaemic events (e.g. elevated troponins), regardless of initial treatment strategy and including those pre-treated with clopidogrel (which should be discontinued when ticagrelor is commenced).	I	B
Prasugrel (60 mg loading dose, 10 mg daily dose) is recommended for $P2Y_{12}$-inhibitor-naïve patients (especially diabetics) in whom coronary anatomy is known and who are proceeding to PCI unless there is a high risk of life-threatening bleeding or other contraindications.	I	B

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

www.escardio.org/guidelines

EUROPEAN SOCIETY OF CARDIOLOGY®

SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

Recommendations for oral antiplatelet agents (2)

Recommendations	Class	Level
Clopidogrel (300 mg loading dose, 75 mg daily dose) is recommended for patients who cannot receive ticagrelor or prasugrel.	I	A
A 600 mg loading dose of clopidogrel (or a supplementary 300 mg dose at PCI following an initial 300 mg loading dose) is recommended for patients scheduled for an invasive strategy when ticagrelor or prasugrel is not an option.	I	B
A higher maintenance dose of clopidogrel 150 mg daily should be considered for the first 7 days in patients managed with PCI and without increased risk of bleeding.	IIa	B
Increasing the maintenance dose of clopidogrel based on platelet function testing is not advised as routine, but may be considered in selected cases.	IIb	B
Genotyping and/or platelet function testing may be considered in selected cases when clopidogrel is used.	IIb	B
In patients pre-treated with $P2Y_{12}$ inhibitors who need to undergo non-emergent major surgery (including CABG), postponing surgery at least for 5 days after cessation of ticagrelor or clopidogrel, and 7 days for prasugrel, if clinically feasible and unless the patient is at high risk of ischaemic events should be considered.	IIa	C
Ticagrelor or clopidogrel should be considered to be (re-)started after CABG surgery as soon as considered safe.	IIa	B
The combination of aspirin with an NSAID (selective COX-2 inhibitors and non-selective NSAID) is not recommended.	III	C

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

www.escardio.org/guidelines

EUROPEAN SOCIETY OF CARDIOLOGY®

Andres.Iniguez.Romo@sergas.es

Recommendations for GPIIb/IIIa receptor inhibitors

Recommendations	Class	Level
The choice of combination of oral antiplatelet agents, a GPIIb/IIIa receptor inhibitor, and anticoagulants should be made in relation to the risk of ischaemic and bleeding events.	I	C
Among patients who are already treated with DAPT, the addition of a GPIIb/IIIa receptor inhibitor for high-risk PCI (elevated troponin, visible thrombus) is recommended if the risk of bleeding is low.	I	B
Eptifibatide or tirofiban added to aspirin should be considered prior to angiography in high-risk patients not preloaded with $P2Y_{12}$ inhibitors.	IIa	C
In high-risk patients eptifibatide or tirofiban may be considered prior to early angiography in addition to DAPT, if there is ongoing ischaemia and the risk of bleeding is low.	IIb	C
GPIIb/IIIa receptor inhibitors are not recommended routinely before angiography in an invasive treatment strategy.	III	A
GPIIb/IIIa receptor inhibitors are not recommended for patients on DAPT who are treated conservatively.	III	A

www.escardio.org/guidelines

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

EUROPEAN SOCIETY OF CARDIOLOGY®

SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

Recommendations for anticoagulants

Recommendations	Class	Level
Anticoagulation is recommended for all patients in addition to antiplatelet therapy.	I	A
The anticoagulation should be selected according to both ischaemic and bleeding risks, and according to the efficacy-safety profile of the chosen agent.	I	C
Fondaparinux (2.5 mg subcutaneously daily) is recommended as having the most favourable efficacy-safety profile with respect to anticoagulation.	I	A
If the initial anticoagulant is fondaparinux, a single bolus of UFH (85 IU/kg adapted to ACT, or 60 IU in the case of concomitant use of GPIIb/IIIa receptor inhibitors) should be added at the time of PCI.	I	B
Enoxaparin (1 mg/kg twice daily) is recommended when fondaparinux is not available.	I	B
If fondaparinux or enoxaparin are not available, UFH with a target aPTT of 50-70 s or other LMWHs at the specific recommended doses are indicated.	I	C
Bivalirudin plus provisional GPIIb/IIIa receptor inhibitors are recommended as an alternative to UFH plus GPIIb/IIIa receptor inhibitors in patients with an intended urgent or early invasive strategy, particularly in patients with a high risk of bleeding.	I	B
In a purely conservative strategy, anticoagulation should be maintained up to hospital discharge.	I	A
Discontinuation of anticoagulation should be considered after an invasive procedure unless otherwise indicated.	IIa	C
Crossover of heparins (UFH and LMWH) is not recommended.	III	B

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

www.escardio.org/guidelines

EUROPEAN SOCIETY OF CARDIOLOGY®

Recommendations for diabetic patients

Recommendations	Class	Level
All patients with NSTE-ACS should be screened for diabetes. Blood glucose levels should be monitored frequently in patients with known diabetes or admission hyperglycaemia.	I	C
Treatment of elevated blood glucose should avoid both excessive hyperglycaemia [10-11 mmol/L (> 180-200 mg/dL)] and hypo-glycaemia [< 5 mmol/L (< 90 mg/dL)].	I	B
Antithrombotic treatment is indicated as in non-diabetic patients.	I	C
Renal function should be closely monitored following contrast exposure.	I	C
An early invasive strategy is recommended.	I	A
DESs are recommended to reduce rates of repeat revascularization.	I	A
CABG surgery should be favoured over PCI in diabetic patients with main stem lesions and/or advanced multivessel disease.	I	B

www.escardio.org/guidelines

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

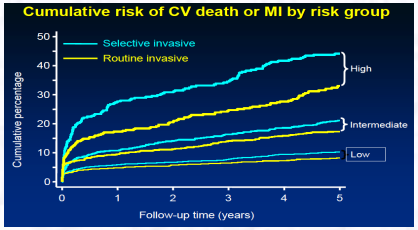
EUROPEAN SOCIETY OF CARDIOLOGY®

Andres.Iniguez.Romo@sergas.es

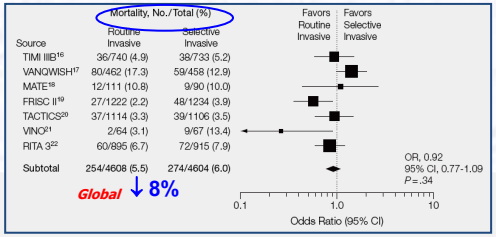
SCA: Manejo Diagnóstico y Terapéutico

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

- **Step 3**
  - Invasive strategy.



- **Step 4**
  - Revascularization modality.



Global ↓ 8%

¿ Importante para el paciente ?

SCA de Alto Riesgo

The Cause

Ruptured thin-cap fibroatheroma and luminal thrombus in the setting of systemic inflammation and platelet activation

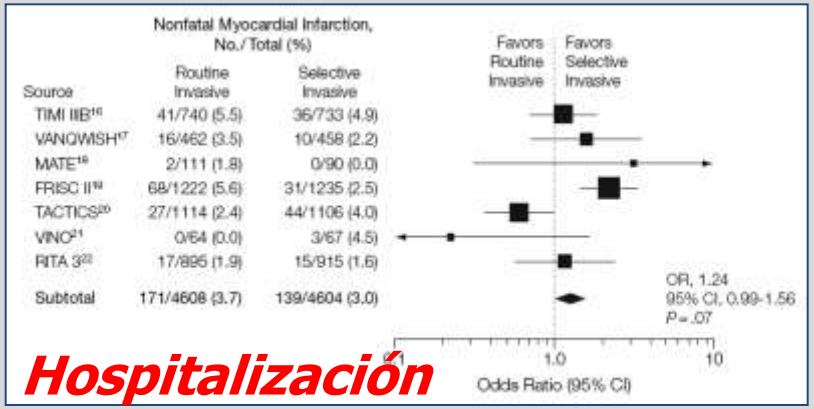
The Solution

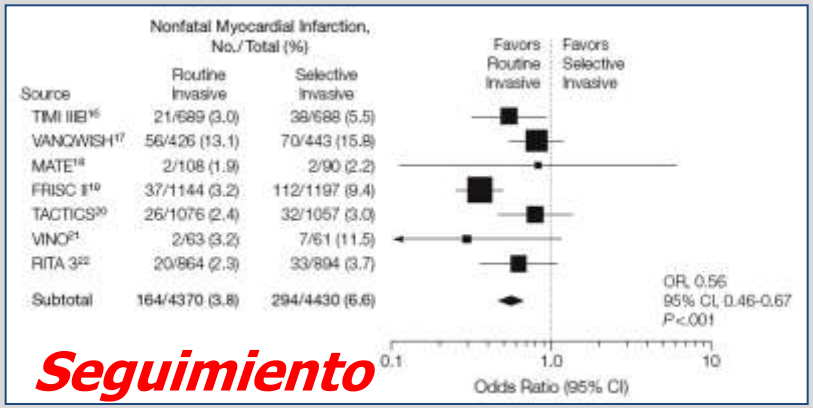
Revascularization with stenting (in most pts) to stabilize the ruptured plaque

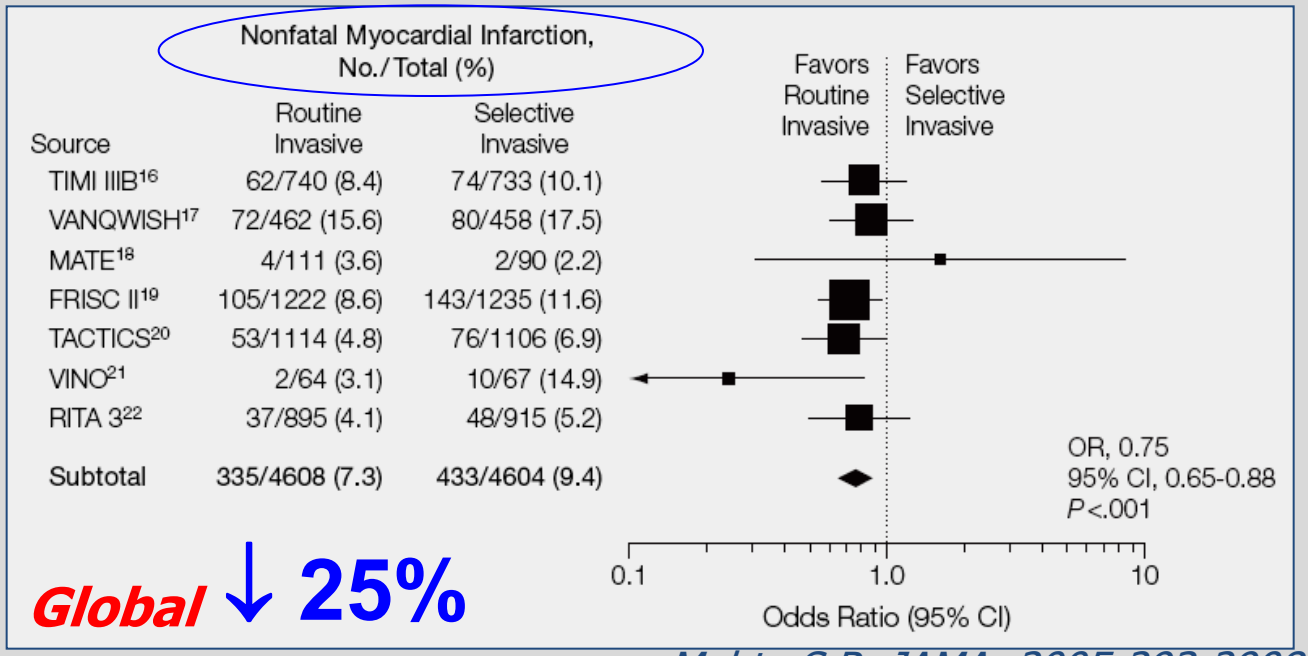
NSTEACS: PCI ~70%

STEMI: PCI ~90%

SCASEST: **¿Estrategia Invasiva Vs Conservadora?**

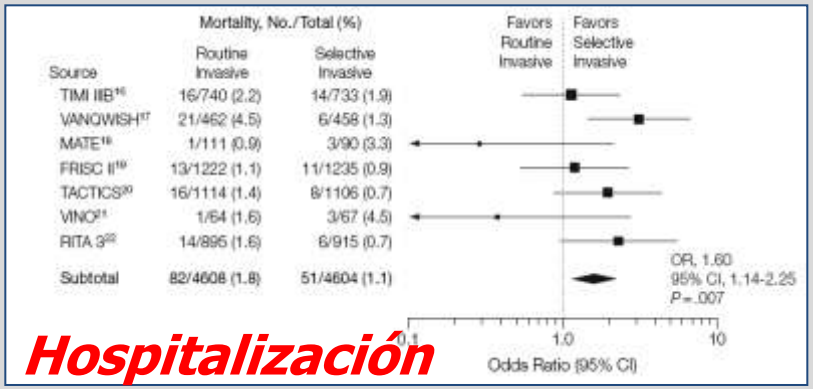


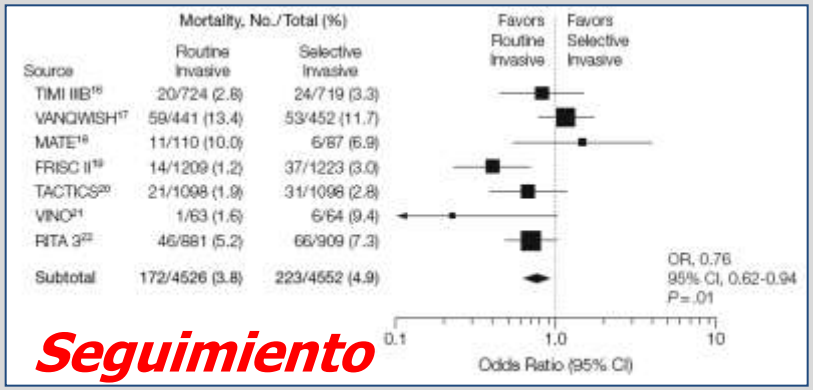


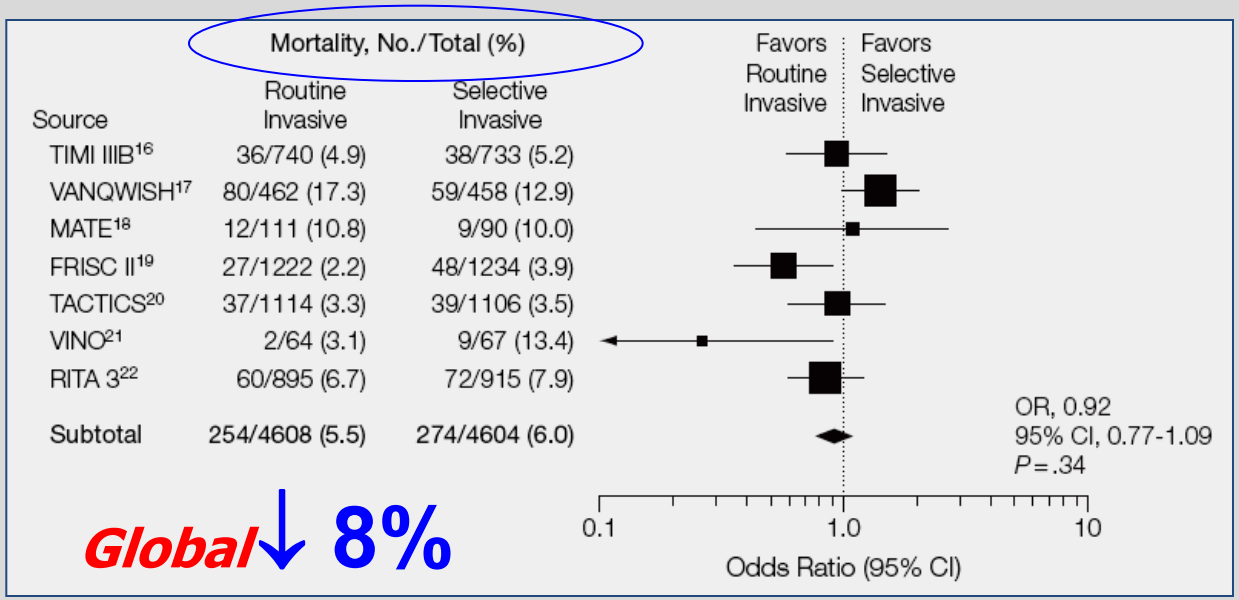


Mehta S.R. JAMA. 2005;293:2908-2917

SCASEST: **¿Estrategia Invasiva Vs Conservadora?**

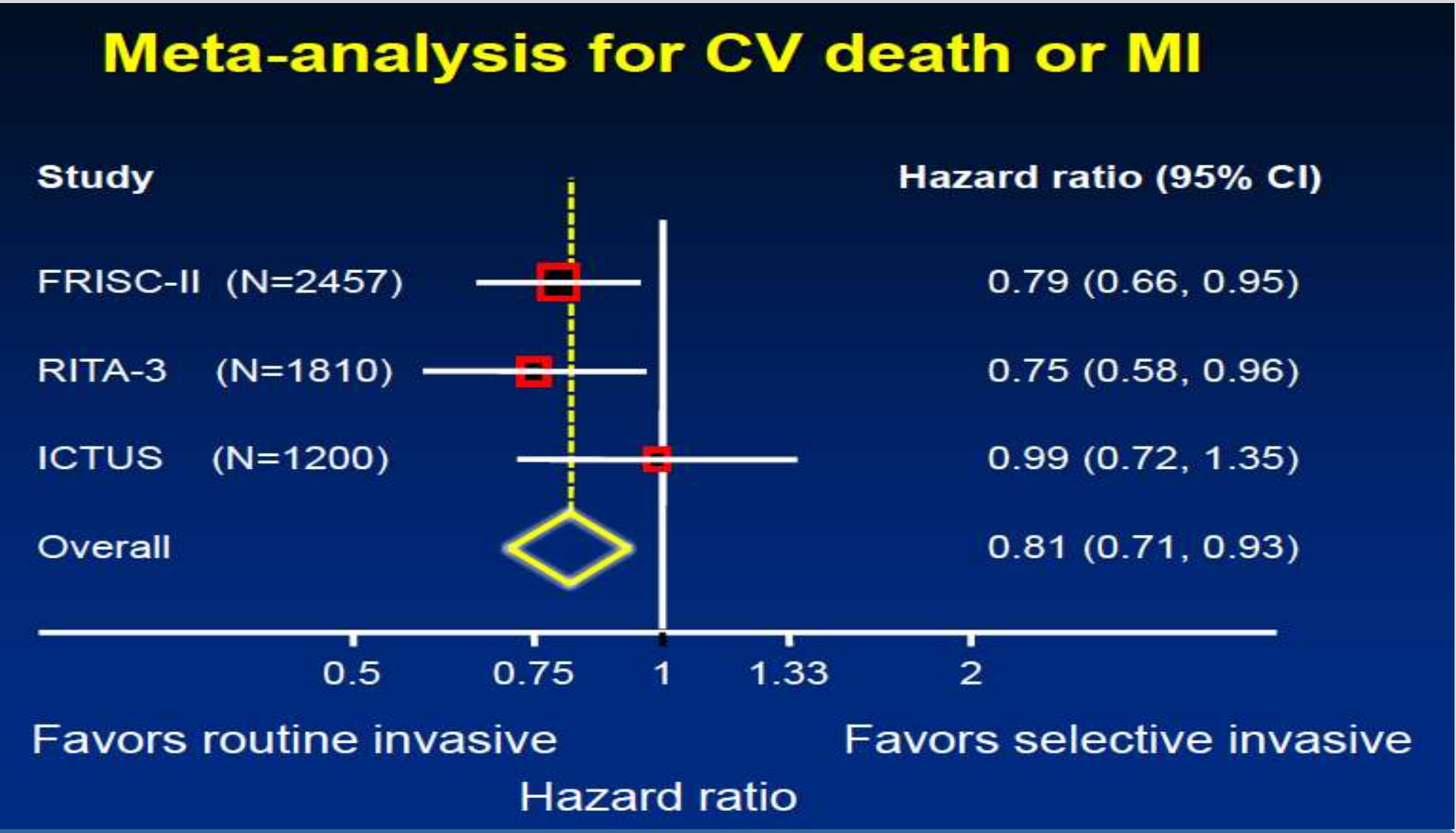




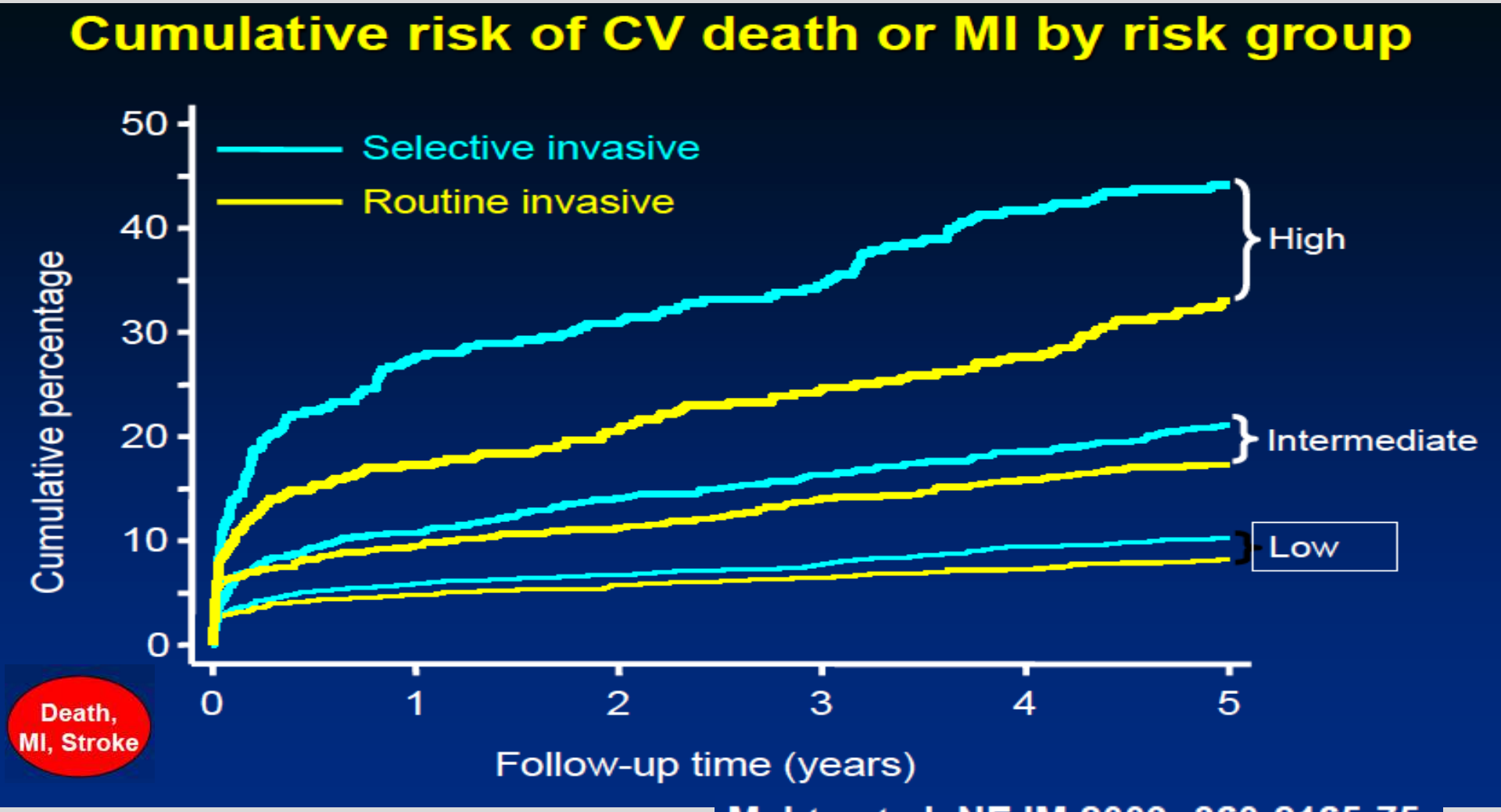


Mehta S.R. JAMA. 2005;293:2908-2917

SCASEST: Intervencionismo Precoz



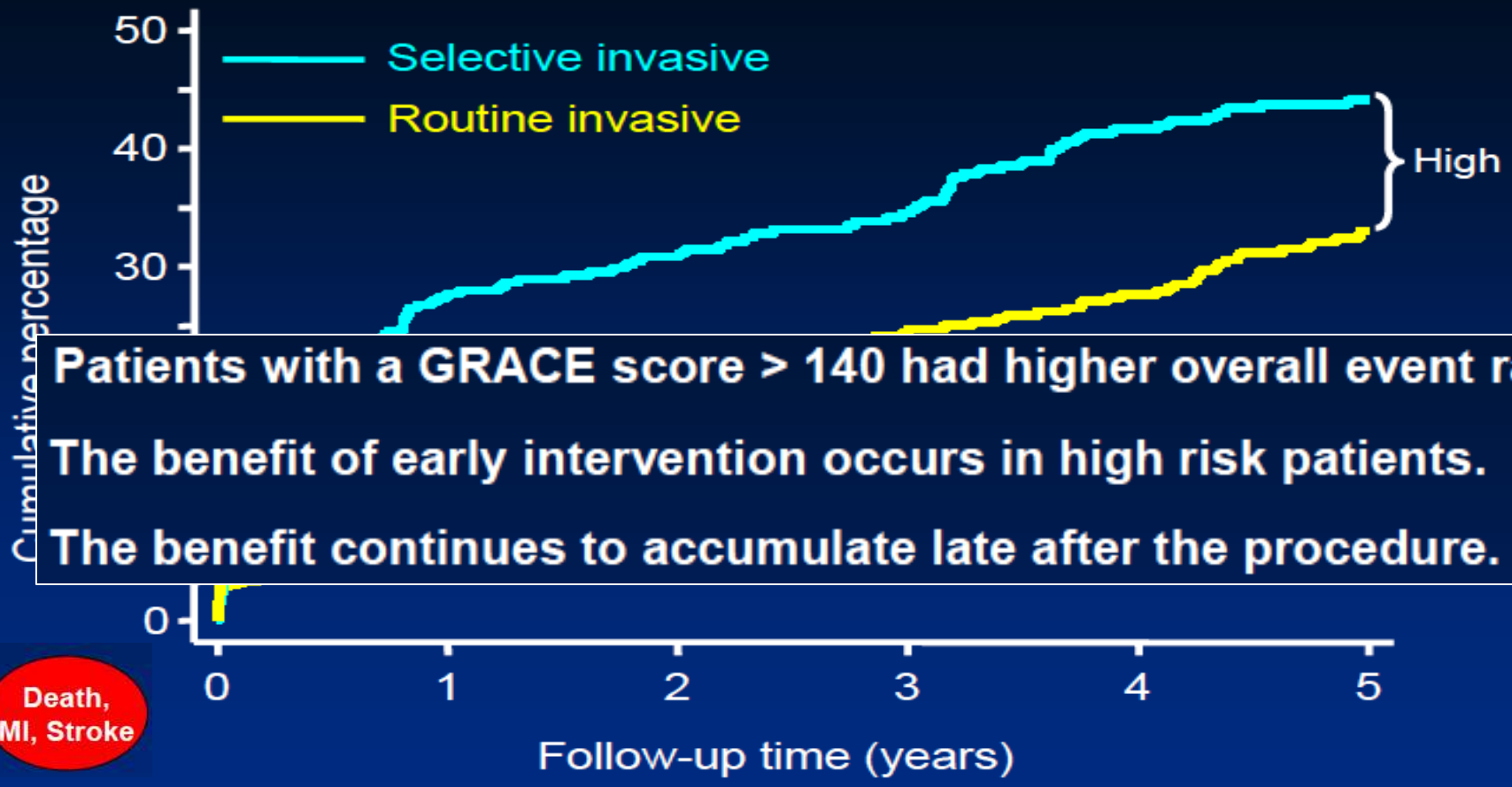
SCASEST: Intervencionismo Precoz



Mehta et al. NEJM 2009; 360:2165-75

SCASEST: Intervencionismo Precoz

Cumulative risk of CV death or MI by risk group



Patients with a GRACE score > 140 had higher overall event rates.

The benefit of early intervention occurs in high risk patients.

The benefit continues to accumulate late after the procedure.

Death, MI, Stroke

Mehta et al. NEJM 2009; 360:2165-75

Checklist of antithrombotic treatments prior to PCI

Aspirin	Confirm loading dose prior to PCI.
$P2Y_{12}$ inhibitor	Confirm loading dose of ticagrelor or clopidogrel prior to PCI. If $P2Y_{12}$ naïve, consider prasugrel (if < 75 years age, > 60 kg, no prior stroke or TIA).
Anticoagulation	• Fondaparinux pre-treated: add UFH for PCI. • Enoxaparin pre-treated: add if indicated. • UFH pre-treated: titrate to ACT > 250 s, or switch to bivalirudin (0.1 mg/kg bolus followed by 0.25 mg/kg/h).
GPIIb/IIIa receptor inhibitor	• Consider tirofiban or eptifibatide in patients with high-risk anatomy or troponin elevation. • Abciximab only prior to PCI in high-risk patients.

www.escardio.org/guidelines

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

EUROPEAN SOCIETY OF CARDIOLOGY®

Andres.Iniguez.Romo@sergas.es

SCASEST: Tto. Farmacológico Precoz

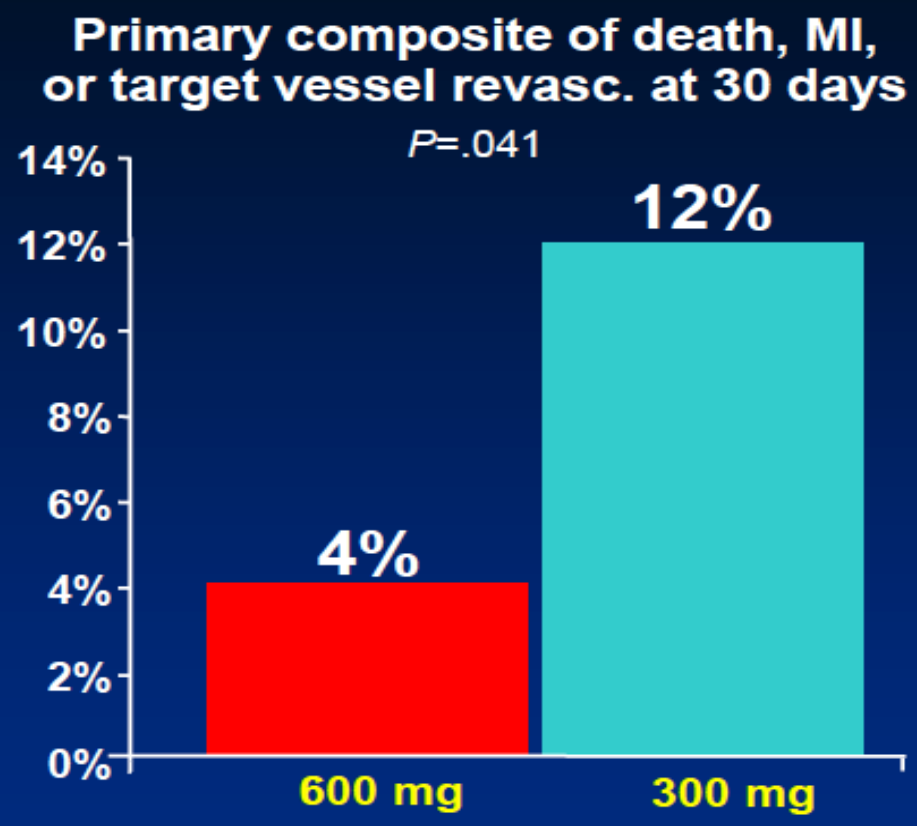
ARMYDA-2 Study: Design and Primary End Point

255 patients with stable CAD or NSTEMI prior to PCI
13% received GP IIb/IIIa inhibitors
20% received drug-eluting stents

Randomized 4-8 Hours Pre-PCI

High Loading Dose of Clopidogrel 600 mg Pre-PCI

Standard Loading Dose of Clopidogrel 300 mg Pre-PCI



ARMYDA-2, Antiplatelet therapy for Reduction of MYocardial Damage during Angioplasty.
Patti G, et al. *Circulation*. 2005;111(16):2099-2106.

SCASEST: Intervencionismo Precoz

NSTE-ACS: Timing of Coronary Angiography

ISAR-COOL

UA/NSTEMI

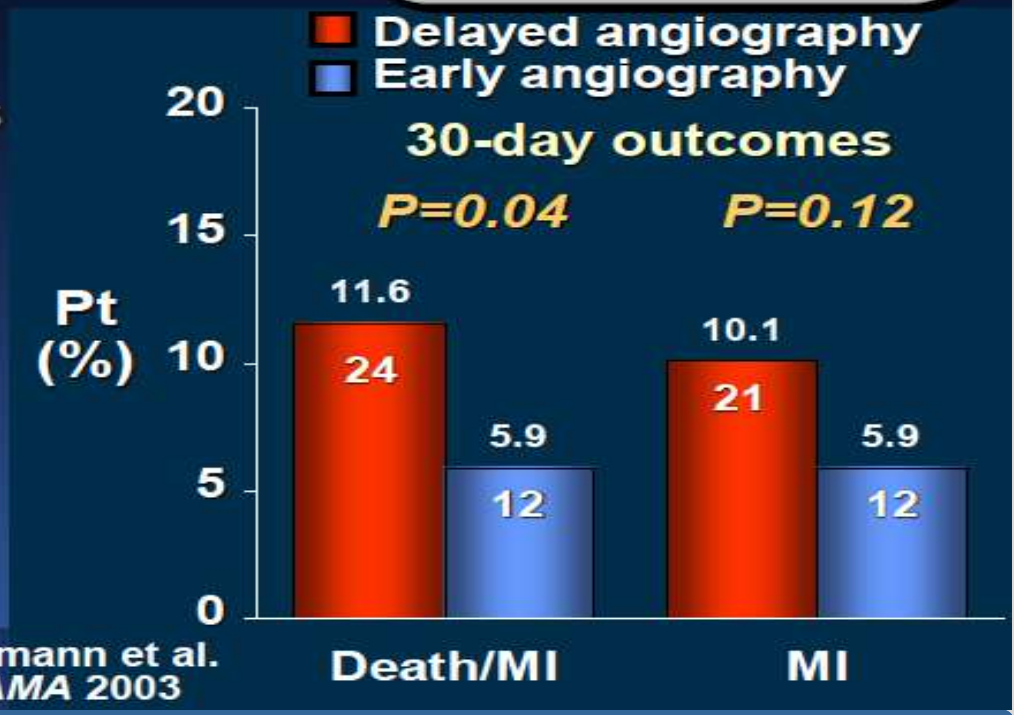
- Early angiography (n=207) 2.4 hrs
- Prolonged antithrombotics (n=203) 86 hrs

Antithrombotic regimen

- ASA
- Clopidogrel 600 mg
- UFH
- Tirofiban

MI definition

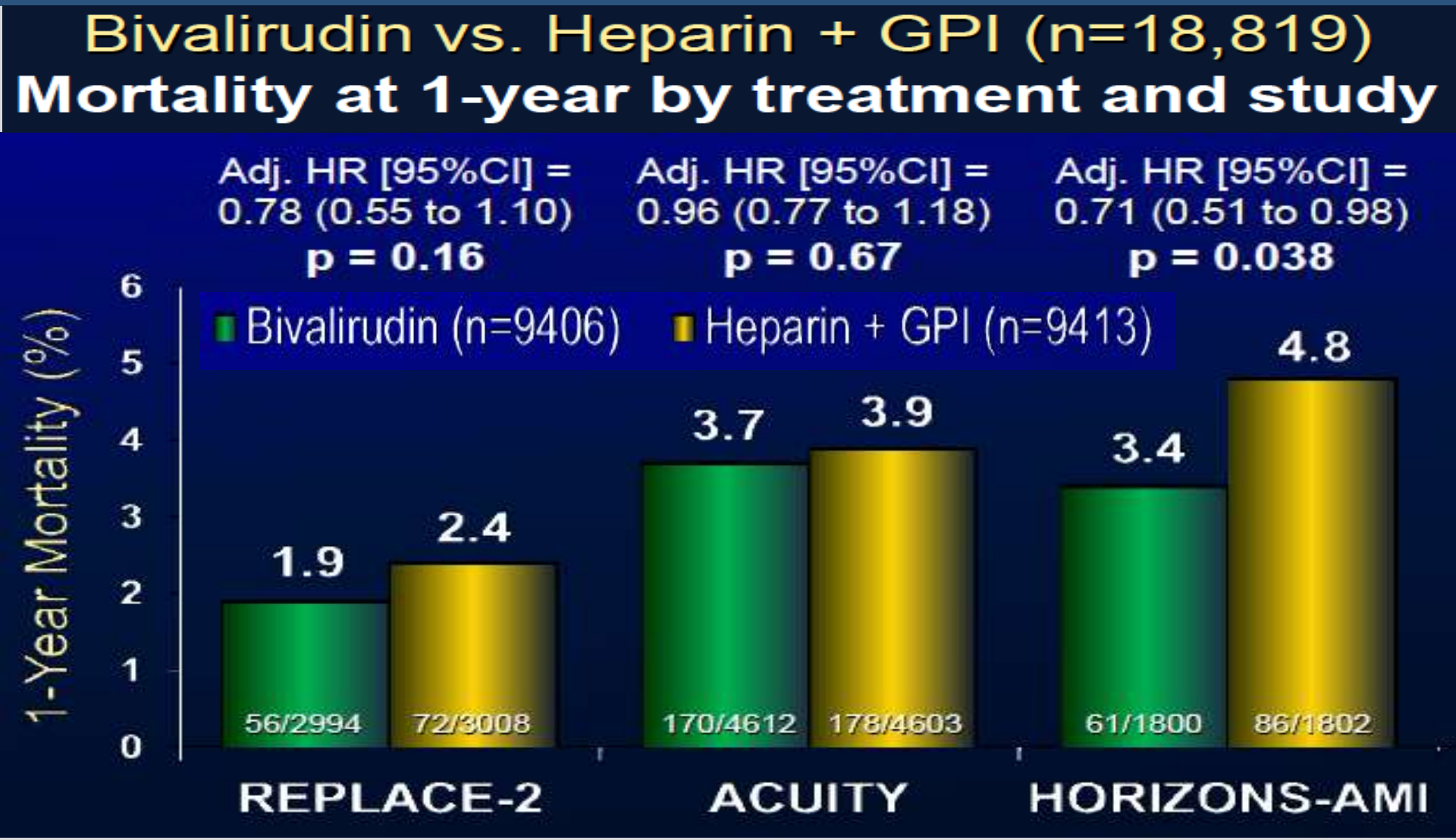
- CK 5x ↑
- LBBB
- New Q-waves



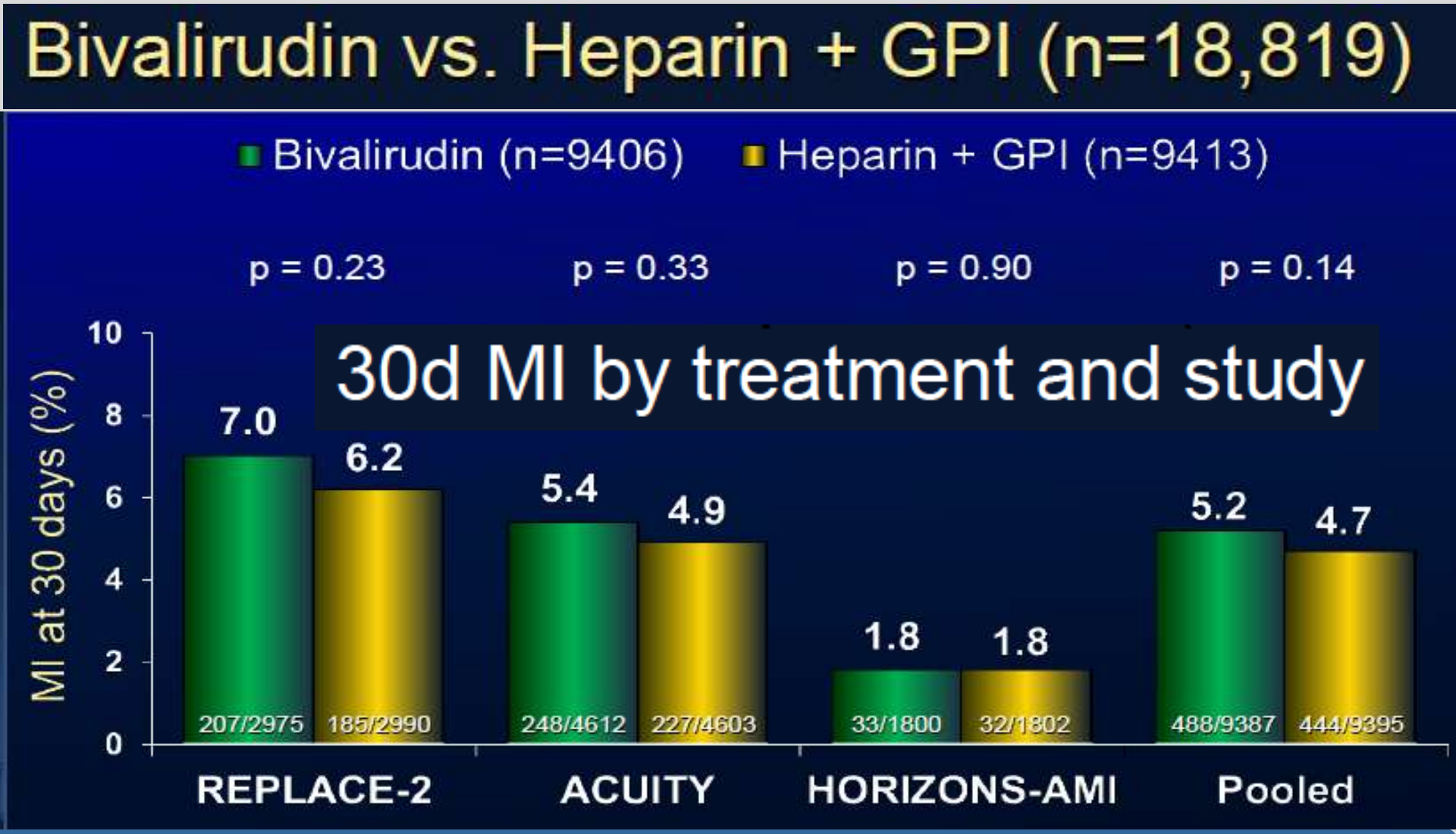
Neumann et al. *JAMA* 2003

Self-Assessment Course

SCASEST: Tto. Farmacológico Precoz



SCASEST: Tto. Farmacológico Precoz



SCASEST: Tto. Farmacológico Precoz

ISAR-REACT 4 Trial flow-chart

1,721 Pts with NSTEMI

Pre-treated with 600 mg of clopidogrel

Double-blind
(double-dummy drug)

861 pts

Abciximab

Bolus of 0.25 mg/kg
Infusion of 0.125 µg/kg/min for 12h

Unfractionated heparin

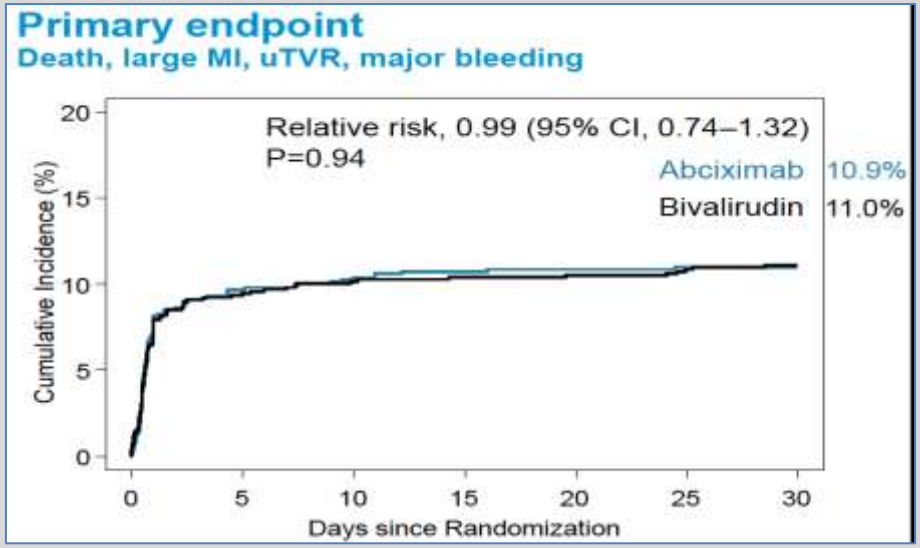
Bolus of 70 U/kg

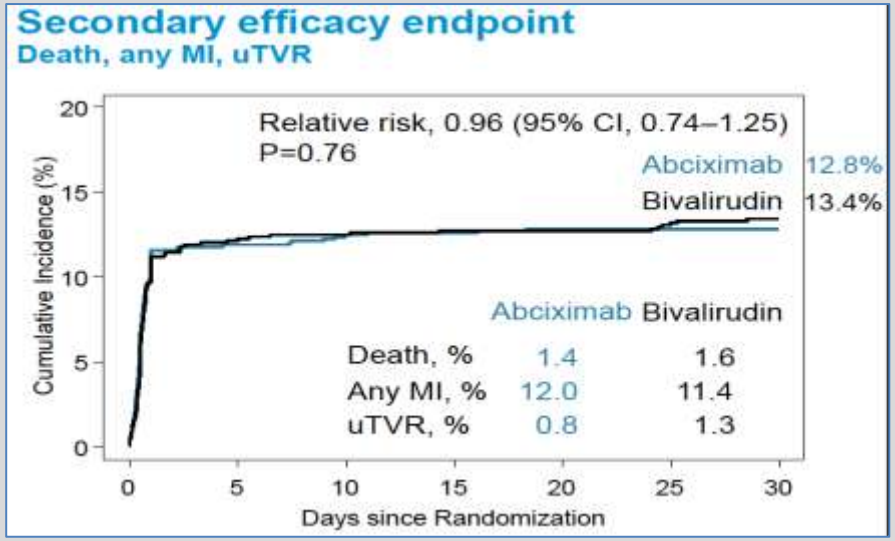
860 pts

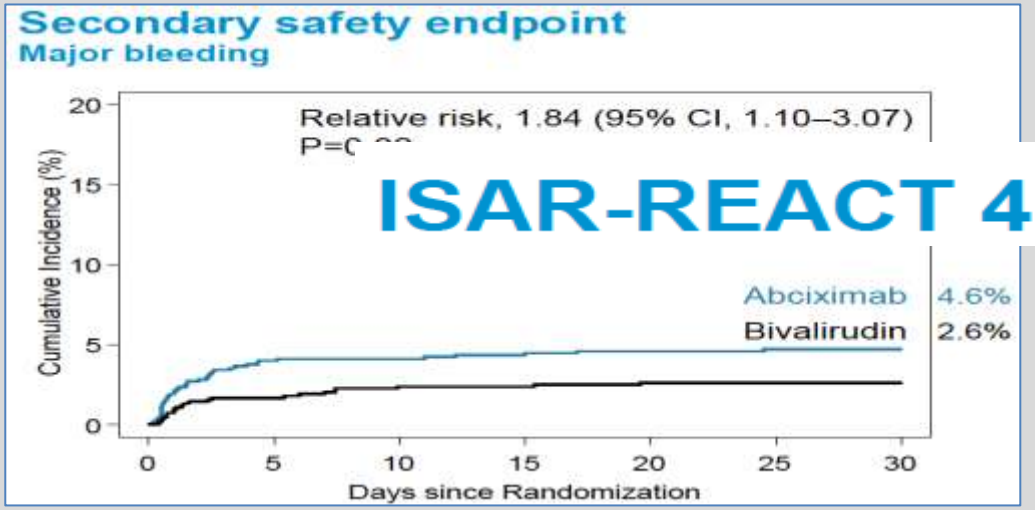
Bivalirudin

Bolus of 0.75 mg/kg
Infusion of 1.75 mg/kg/hr
for duration of PCI

SCASEST: Tto. Farmacológico Precoz





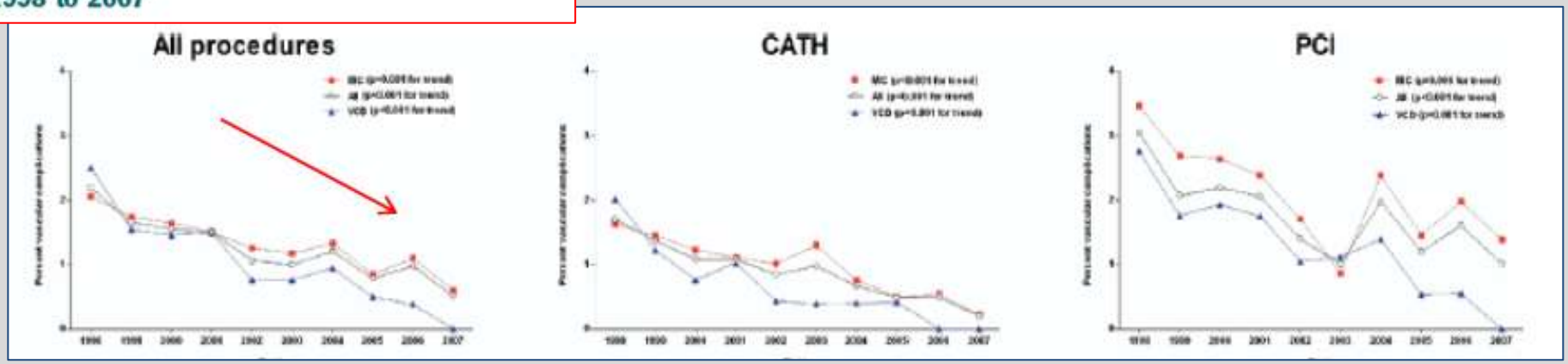


ISAR-REACT 4 Trial

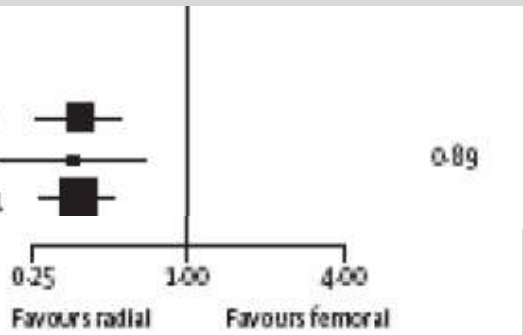
Andres.Iniguez.Romo@sergas.es

Complicaciones Vasculares

Trends in Vascular Complications After Diagnostic Cardiac Catheterization and Percutaneous Coronary Intervention Via the Femoral Artery, 1998 to 2007



	Total	Radial (n/N [%])	Femoral (n/N [%])	HR (95% CI)	p value	Interaction p value
Major vascular complications						
Clinical diagnosis						
NSTE-ACS	5063	37/2552 (1·4)	96/2511 (3·8)	0·38 (0·26–0·55)	<0·0001	
STEMI	1958	12/955 (1·3)	35/1003 (3·5)	0·36 (0·19–0·70)	0·002	0·89
Overall	7021	49/3507 (1·4)	131/3514 (3·7)	0·37 (0·27–0·52)	<0·0001	



Acceso Radial: RIVAL

SCASEST: Tto. Farmacológico Precoz

TRITON-TIMI 38 Study Design

Wiviott SD, et al. *Am Heart J.* 2006;152:627-635.

ACS (STEMI or UA/NSTEMI) & Planned PCI

ASA ↓ N=13,600

Double-blind

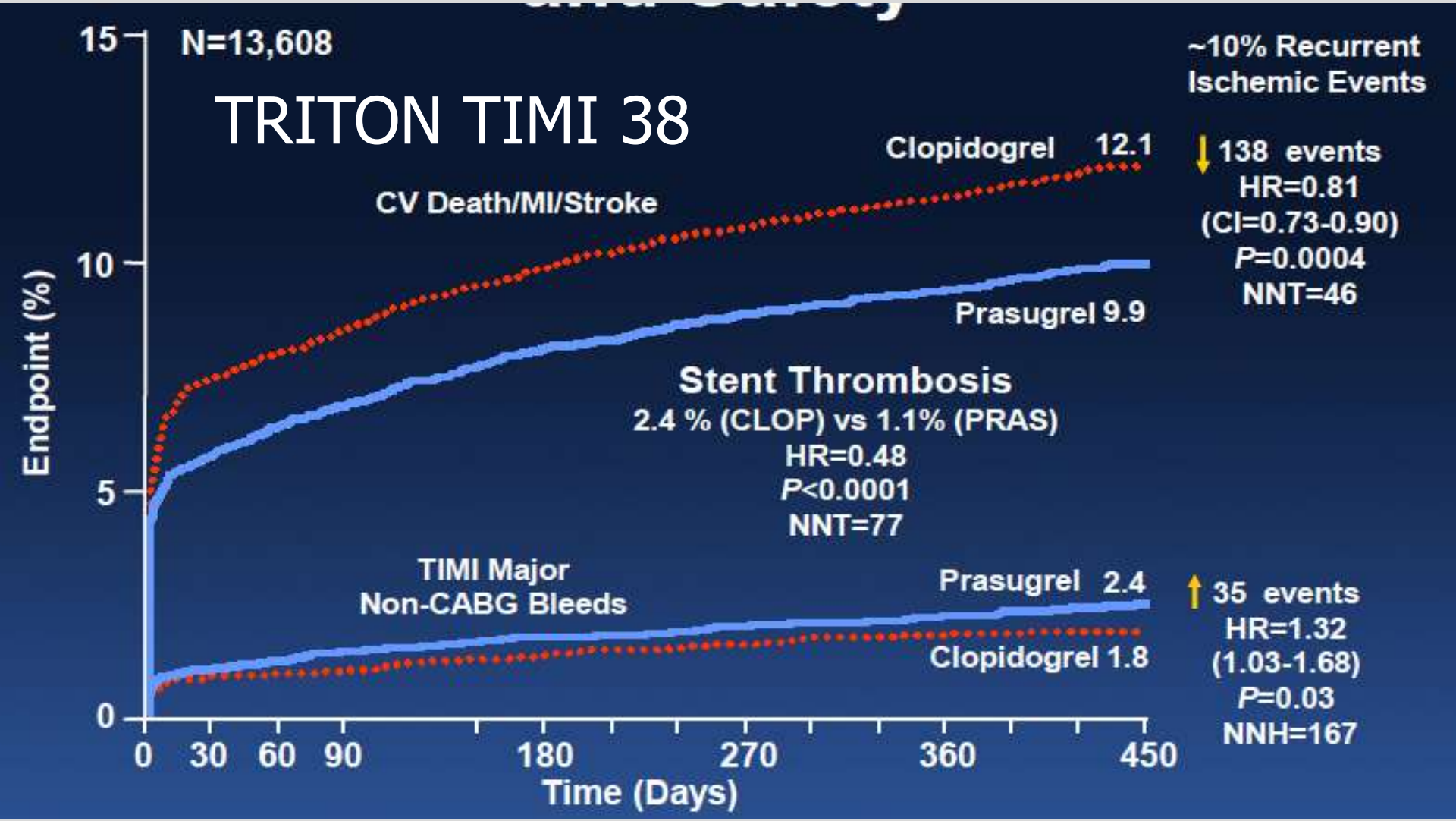
Clopidogrel	Prasugrel
300 mg LD/75 mg MD	60 mg LD/10 mg MD

Median duration of therapy = 12 months

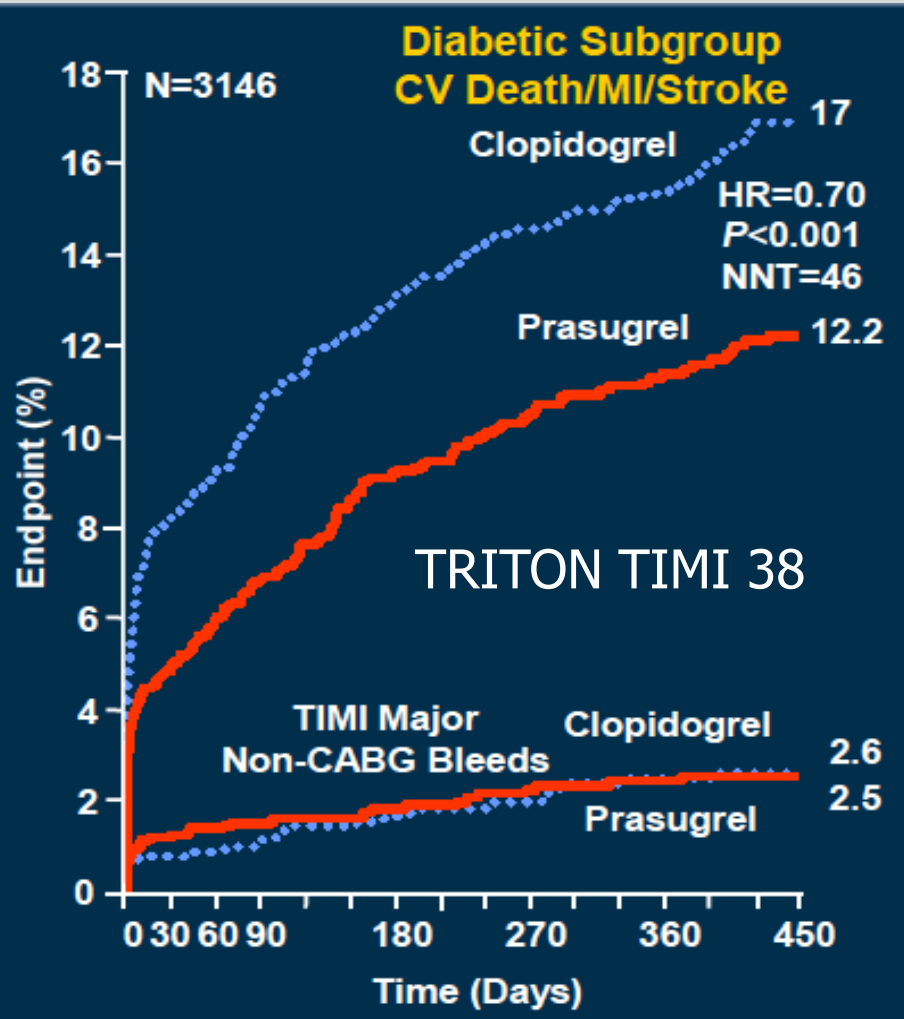
1° endpoint: CV death, MI, stroke

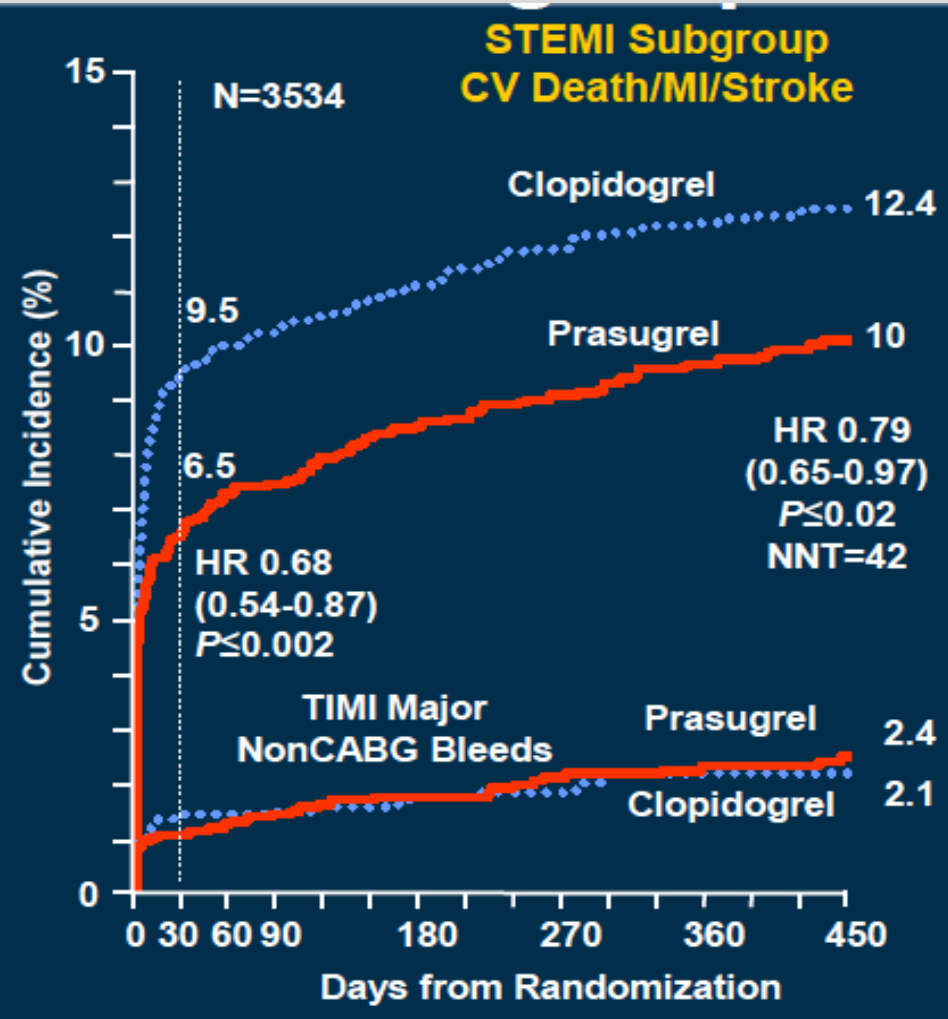
2° endpoints: CV death, MI, stroke, rehospitalization for recurrent ischemia, UTVR, ST

SCASEST: Tto. Farmacológico Precoz



SCASEST: Tto. Farmacológico Precoz





Wiviott SD, et al. *Circulation.* 2008;118:1626-1636. Montalescot G, et al. *Lancet.* 2009;373:723-731.

SCASEST: Tto. Farmacológico Precoz

PLATO Study Design

James S, et al. *Am Heart J.* 2009;157:599-605.

UA/NSTEMI (moderate to high risk) or STEMI (if primary PCI)
Clopidogrel-treated or -naïve
Randomized within 24 hours of index event
(N=18,624)

Clopidogrel
If pretreated, no additional LD
If naïve, standard 300 mg LD, then 75 mg QD maintenance;
(additional 300 mg allowed pre-PCI)

Ticagrelor
180 mg LD, then
90 mg BID maintenance;
(additional 90 mg pre-PCI)

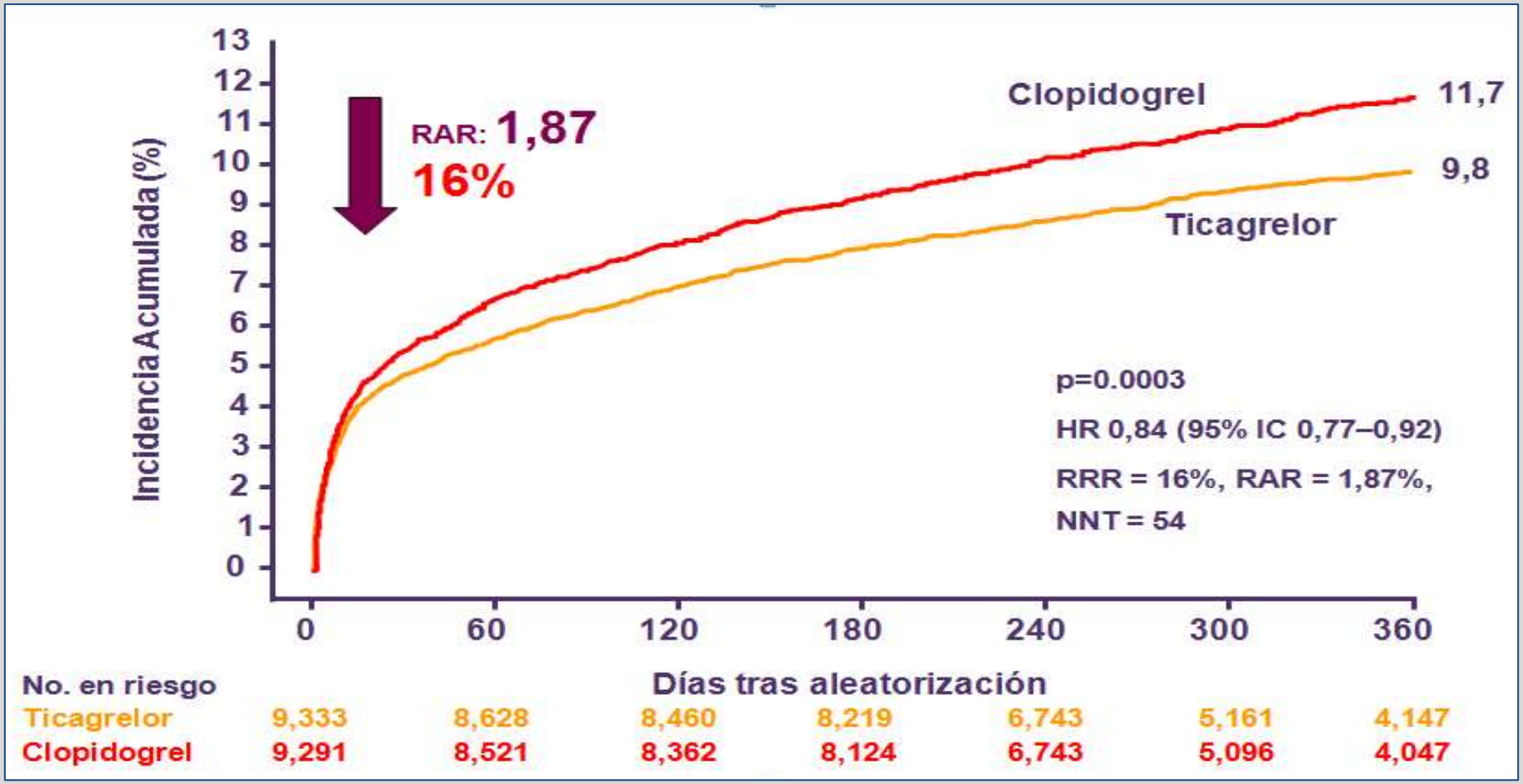
6-12-month maximum exposure

Primary endpoint: CV death + MI + stroke
Primary safety endpoint: Total major bleeding

SCASEST: Tto. Farmacológico Precoz

PLATO: Objetivo Primario de Eficacia

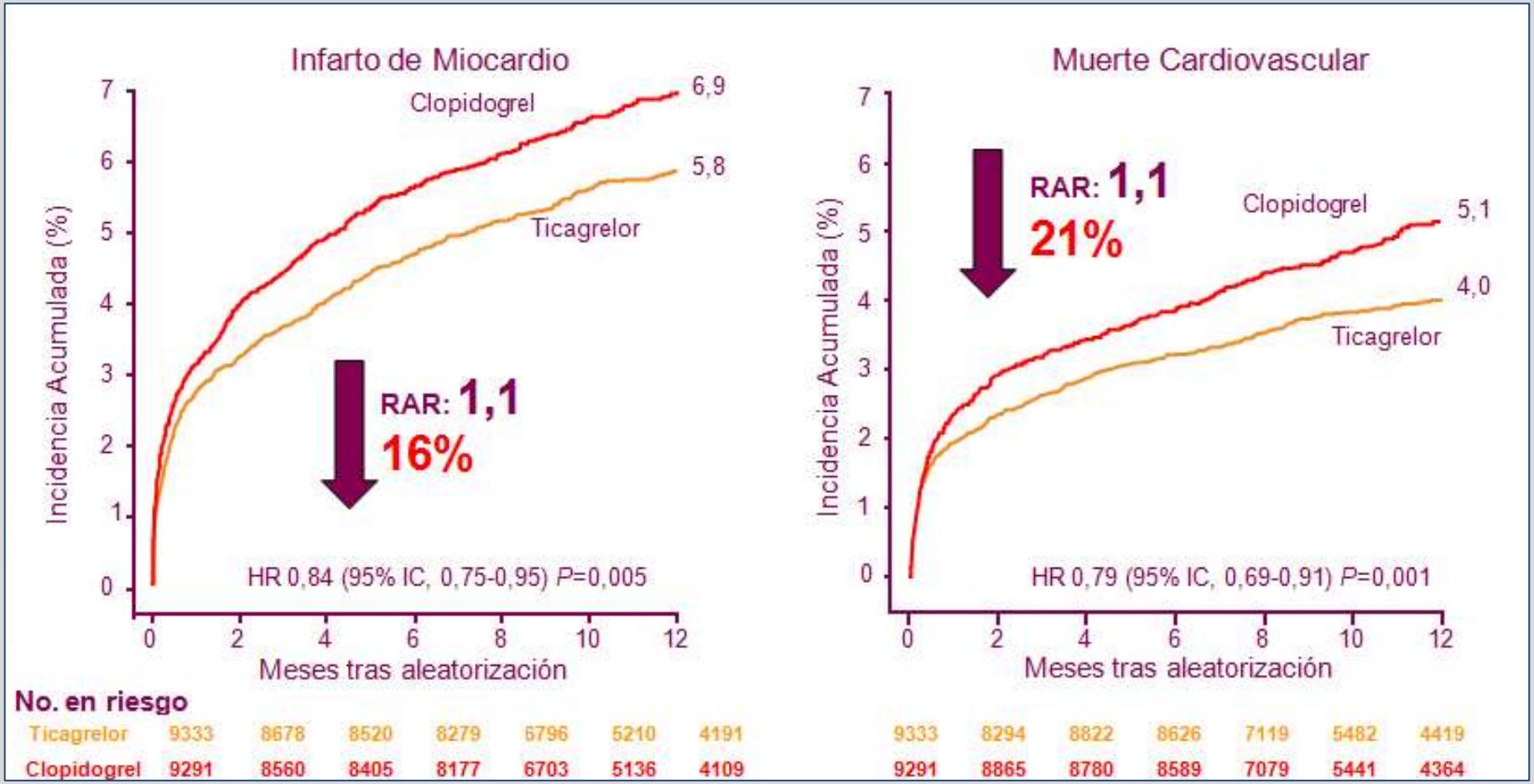
(Objetivo compuesto de Muerte CV, IM e Ictus)



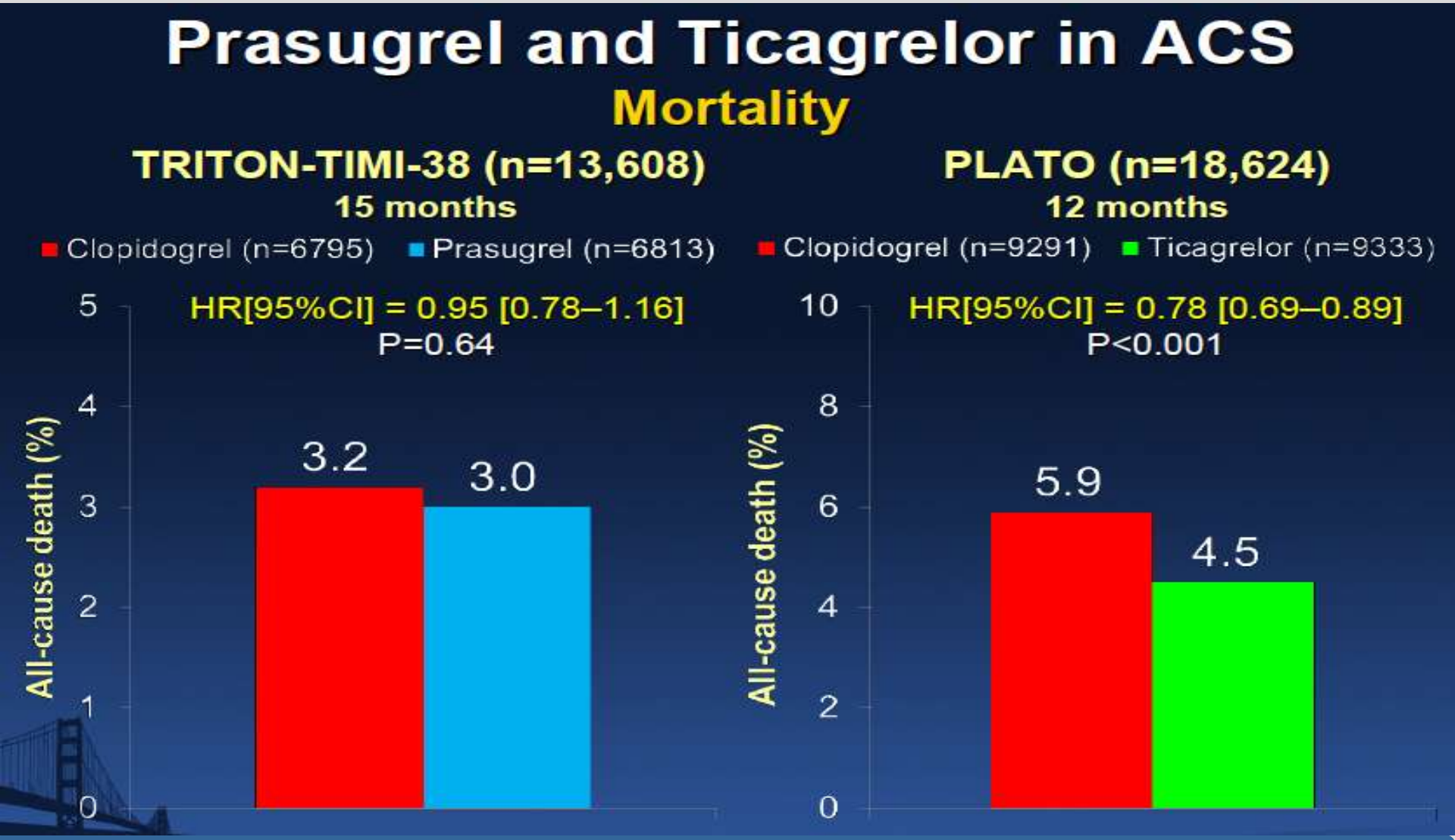
SCASEST: Tto. Farmacológico Precoz

PLATO: Objetivos Secundarios de Eficacia

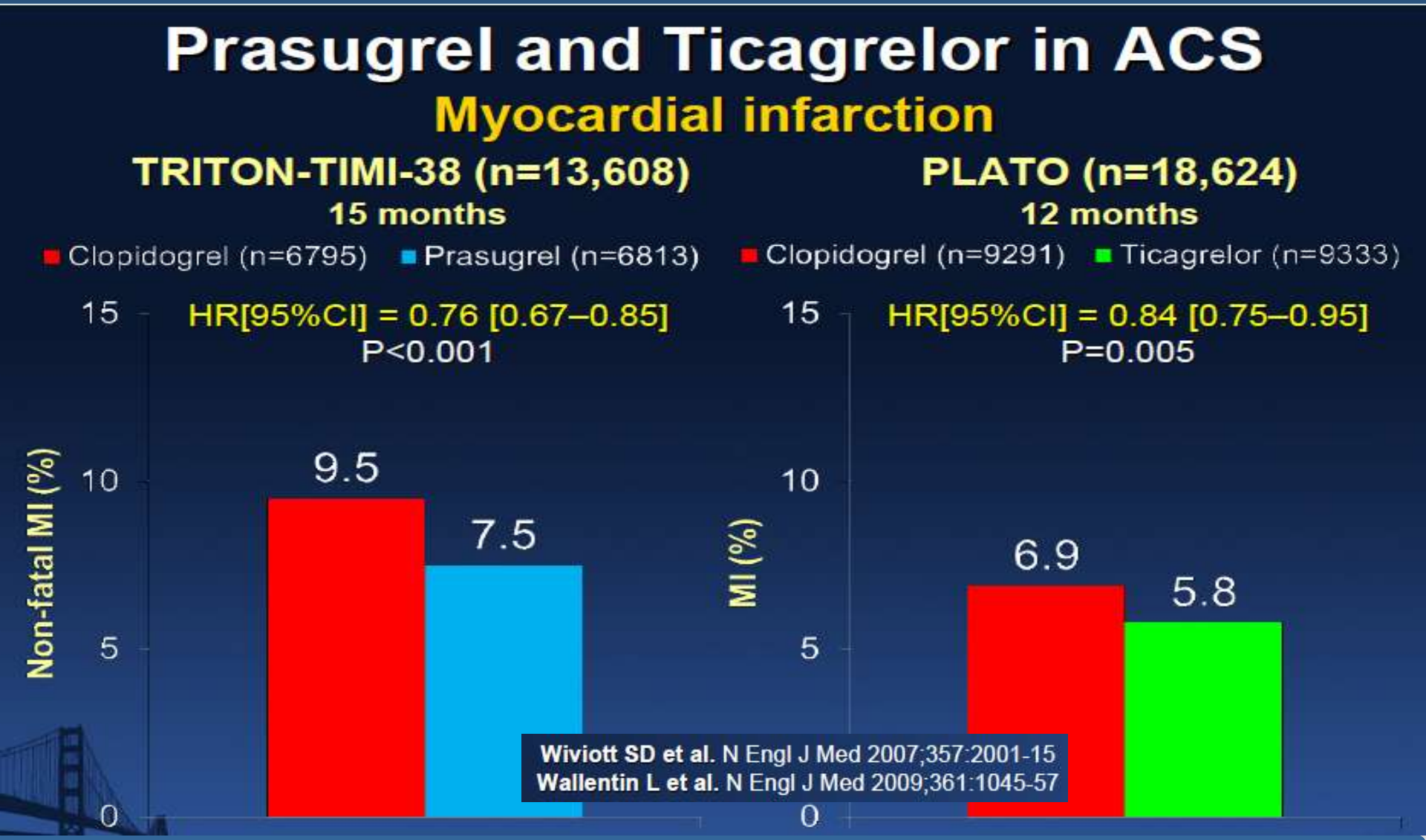
(Objetivo compuesto de Muerte CV, IM e Ictus)



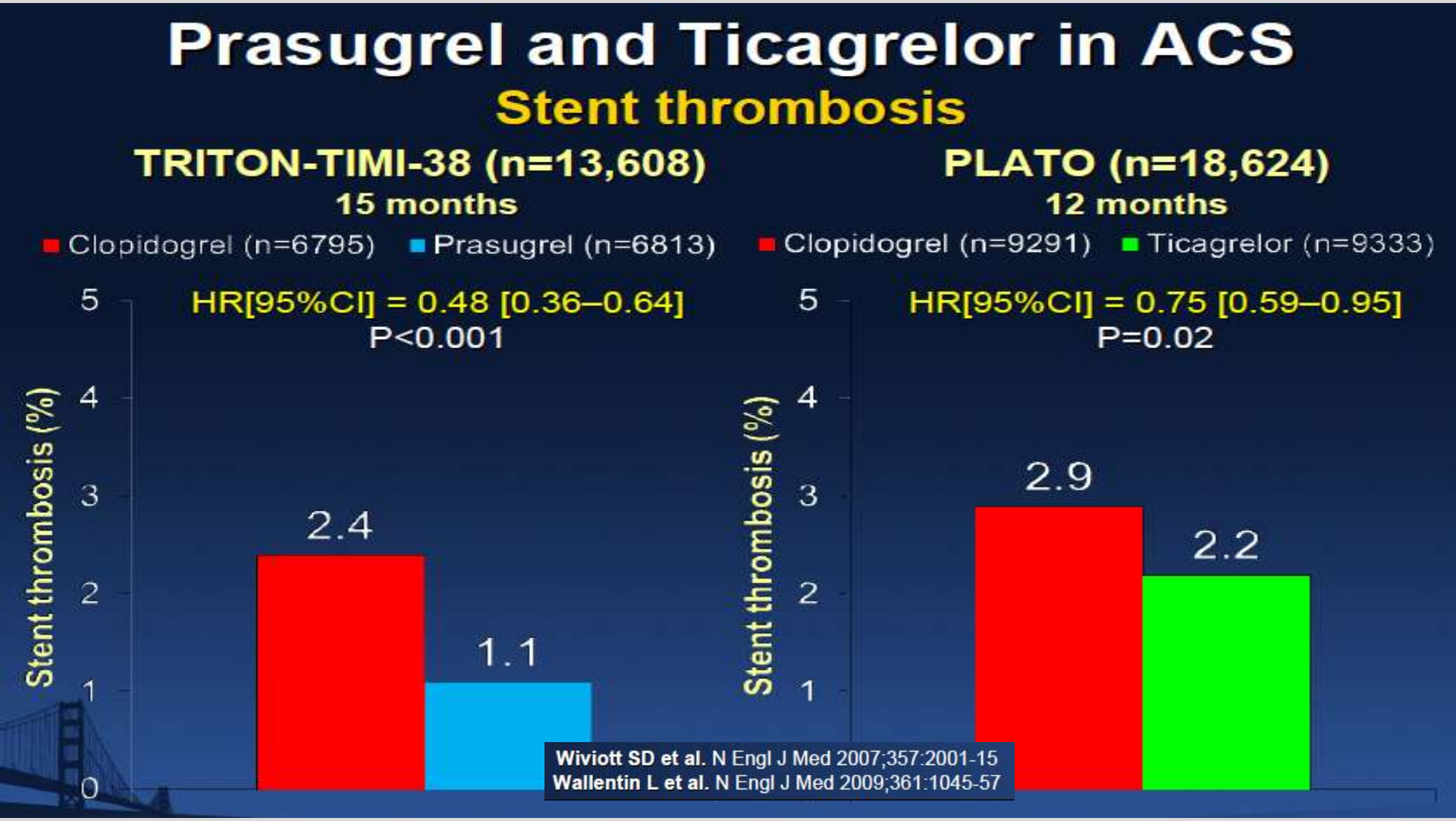
SCASEST: Tto. Farmacológico Precoz



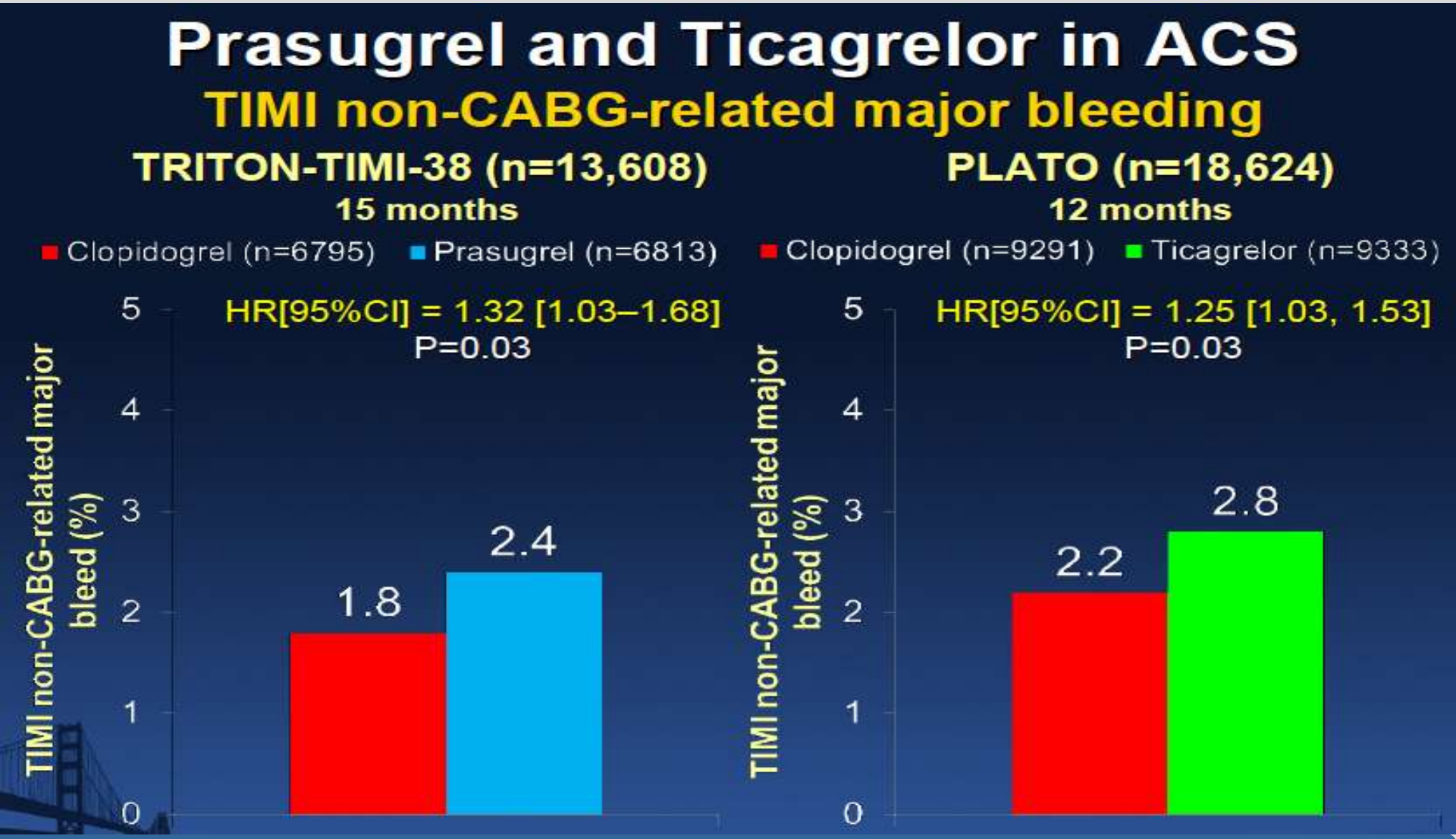
SCASEST: Tto. Farmacológico Precoz



SCASEST: Tto. Farmacológico Precoz



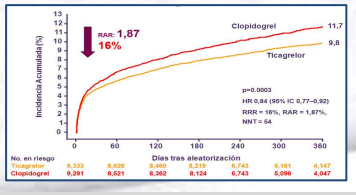
SCASEST: Tto. Farmacológico Precoz



SCA: Manejo Diagnóstico y Terapéutico

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

- **Step 5**
  - Hospital discharge and post-discharge.



Recommendations for drugs in secondary prevention

Recommendations	Class	Level
β-Blockers are recommended in all patients with reduced LV systolic function (LVEF ≤ 40%).	I	A
ACE inhibitors are indicated within 24 h in all patients with LVEF ≤ 40% and in patients with heart failure, diabetes, hypertension, or CKD, unless contraindicated.	I	A
ACE inhibitors are recommended for all other patients to prevent recurrence of ischaemic events, with preference given to agents and doses of proven efficacy.	I	B
ARBs are recommended for patients who are intolerant to ACE inhibitors, with preference given to agents and doses of proven efficacy.	I	B
Aldosterone blockade with eplerenone is indicated in patients after MI who are already being treated with ACE inhibitors and β-blockers and who have an LVEF ≤ 35% and either diabetes or heart failure, without significant renal dysfunction [serum creatinine > 221 μmol/L (> 2.5 mg/dL) for men and > 177 μmol/L (> 2.0 mg/dL) for women] or hyperkalaemia.	I	A
Statin therapy with target LDL-C levels < 1.8 mmol/L (< 70 mg/dL) initiated early after admission is recommended.	I	B

www.escardio.org/guidelines

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

EUROPEAN SOCIETY OF CARDIOLOGY®

Andres.Iniguez.Romo@sergas.es

Measures checked at discharge

Aspirin	Continue life long.
$P2Y_{12}$ inhibitor	Continue for 12 months (unless at high risk of bleeding).
β-Blocker	If LV function depressed.
ACE inhibitor/ ARB	If LV function depressed. Consider for patients devoid of depressed LV function.
Aldosterone antagonist/ eplerenone	If depressed LV function (LVEF ≤ 35%) and either diabetes or heart failure, without significant renal dysfunction.
Statin	Titrate to achieve target LDL-C levels < 1.8 mmol/L (< 70 mg/dL).
Lifestyle	Risk-factor counselling, referral to cardiac rehabilitation/ secondary prevention programme.

www.escardio.org/guidelines

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

EUROPEAN SOCIETY OF CARDIOLOGY®

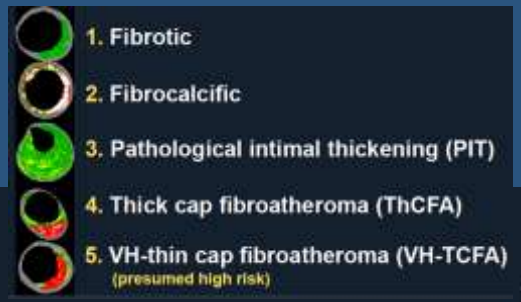
S. C. A.

¿ Es factible diagnosticar y tratar mejor a un paciente con SCA, con una mejor coordinación entre Asistencia Hospitalaria y Extra-hospitalaria ?

- Mejorando o cambiando el modelo de organización ?

Andres.Iniguez.Romo@sergas.es

SCASEST: Prospect



Stone GW, Maehara A, Lansky AJ, et al. A prospective natural-history study of coronary atherosclerosis. N Engl J Med 2011;364:226-35.

Virtual histology lesion classification

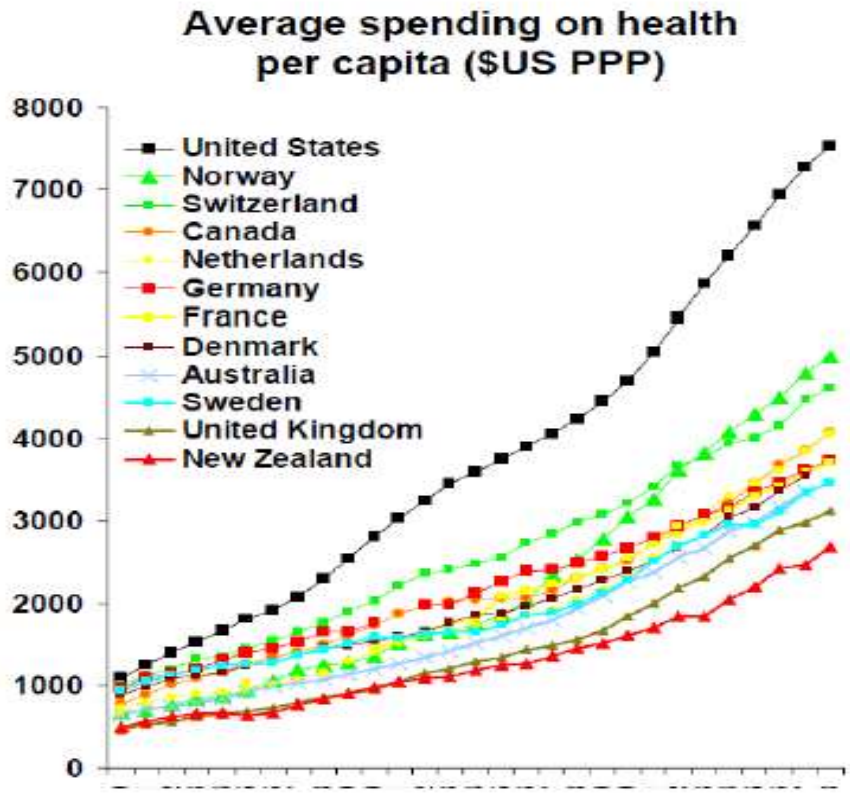
Median 3 .4 Yr MACE Rate (%) per Isn

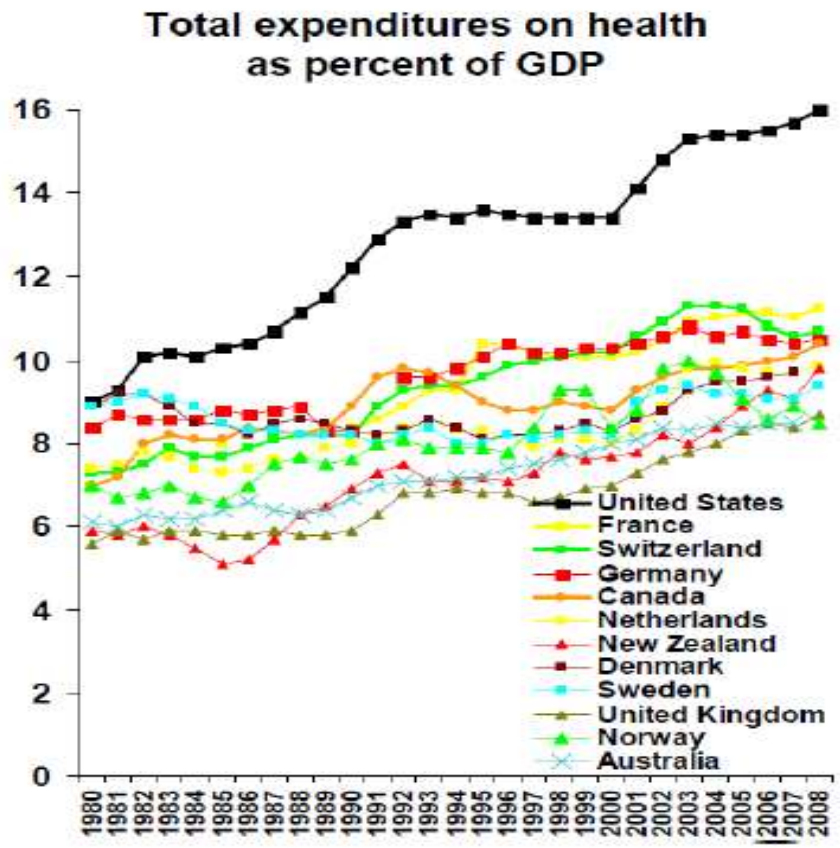
Present Absent

	TCFA	MLA ≤4.0mm2	PB ≥70%	MLA ≤4mm2 + TCFA	PB ≥70% + MLA ≤4mm2	PB ≥70% + TCFA	PB ≥70% + MLA ≤4mm2 + TCFA
Present	4.4	5.4	9.1	9.2	10.2	15.3	17.2
Absent	1.2	1.1	1.2	1.5	1.6	1.5	1.8
Lesion HR	3.8 (2.2, 6.6)	5.0 (2.9, 8.7)	7.9 (4.6, 13.8)	6.4 (3.4, 12.2)	6.7 (3.4, 13.0)	10.8 (5.5, 21.0)	10.8 (4.3, 27.2)
P value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Prevalence*	51.2%	49.1%	30.7%	17.4%	15.4%	11.0%	4.6%

SCASEST: Costes

International Comparison of Spending on Health, 1980–2008





Source: OECD Health Data 2010 (June 2010).

NHS
National Institute for
Health and Clinical Excellence

Andres.Iniguez.Romo@sergas.es

SCA: ¿ Modelo de Organización ?

"No es posible resolver los problemas de hoy con las soluciones de ayer"
Roger Van Oech

"Si buscas resultados distintos, no hagas siempre lo mismo"
Albert Einstein

SCA: ¿ Modelo de Organización ?

innovación en servicios

Implantar servicios asistenciales más efectivos (conseguir los objetivos de calidad de forma segura) y más eficientes (con menor coste)

SCA: ¿ Modelo de Organización ?

Es necesario que los servicios de salud se transformen de una forma ágil para dar respuesta correcta a sus necesidades a menor coste.

- La ineficiencia es gasto
- Si no hacemos nada, lo que nos espera son los recortes
- ¿ Camino ?:
    - Innovación en procesos asistenciales
    - Papel del profesional
        - Identificador de puntos de mejora
        - Promotor de proyectos de innovación.
        - Implicación en Gestión Clínica

Andres.Iniguez.Romo@sergas.es

Recommendations for performance measures

Recommendations	Class	Level
Development of regional and/or national programmes to measure performance indicators systematically and provide feedback to individual hospitals is recommended.	I	C

www.escardio.org/guidelines

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

EUROPEAN SOCIETY OF CARDIOLOGY®

SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

SCA: ¿ Modelo de Organización ?

SCA: ¿ Modelo de Organización ?

Te voy a enviar a un seminario para aprender a ser más productivo y trabajar más.

SCA: ¿ Modelo de Organización ?

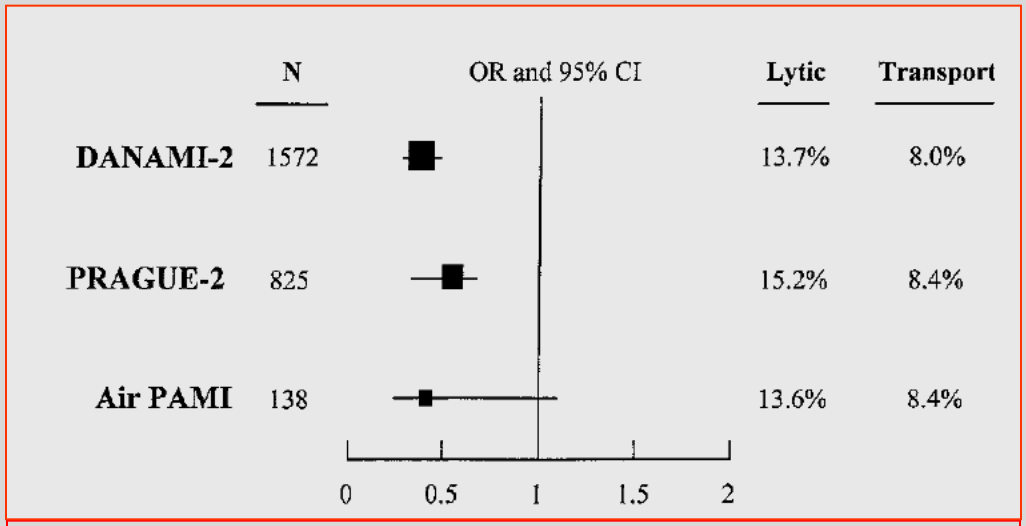
Need for Centers to Care for Patients With Acute Coronary Syndromes

Robert M. Califf, MD; David P. Faxon, MD

Regionalization of Care for Acute Ischemic Heart Disease

A Call for Specialized Centers

Eric J. Topol, MD; Dean J. Kereiakes, MD



Transporte + ACTP primaria Mejor *Trombolisis Mejor*

Editor's Commentary

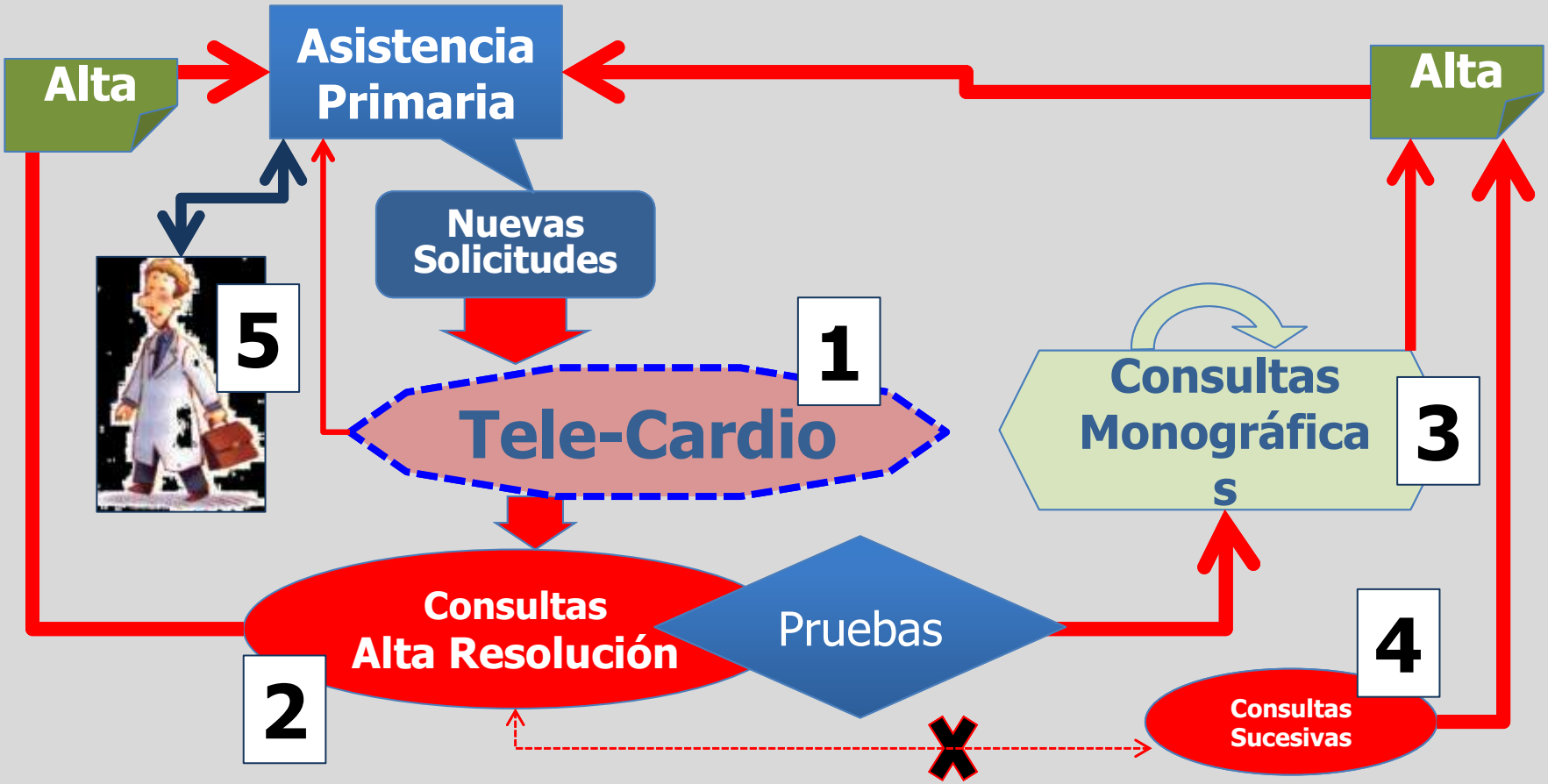
Centers of Excellence

James T. Willerson, MD

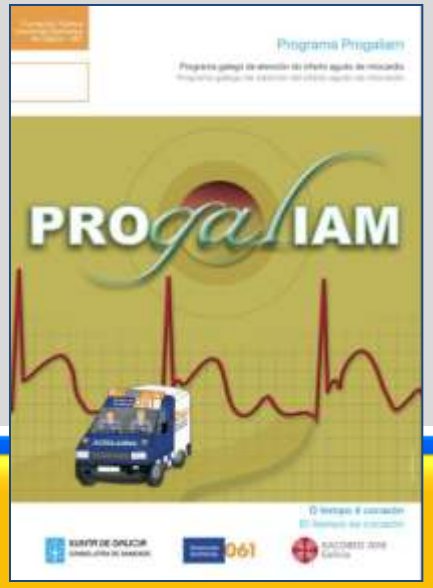
Circulation 2003; 107:1463-1466.
Circulation 2003; 107:1467-1470.
Circulation 2003; 107:1471-1472.

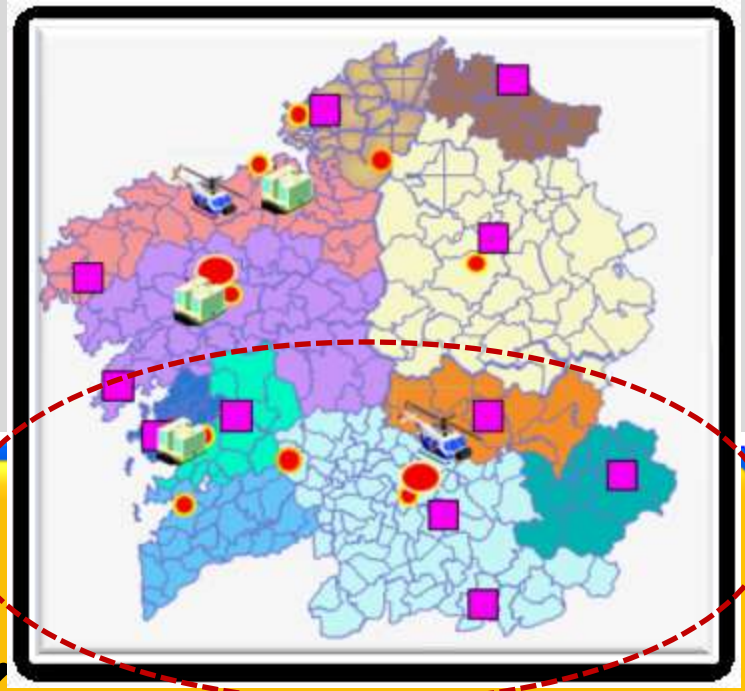
SCA: ¿ Modelo de Organización ?

Procesos Clínicos Sin Hospitalización: **Nuevo Modelo**



PROGALIAM: Desde 2005

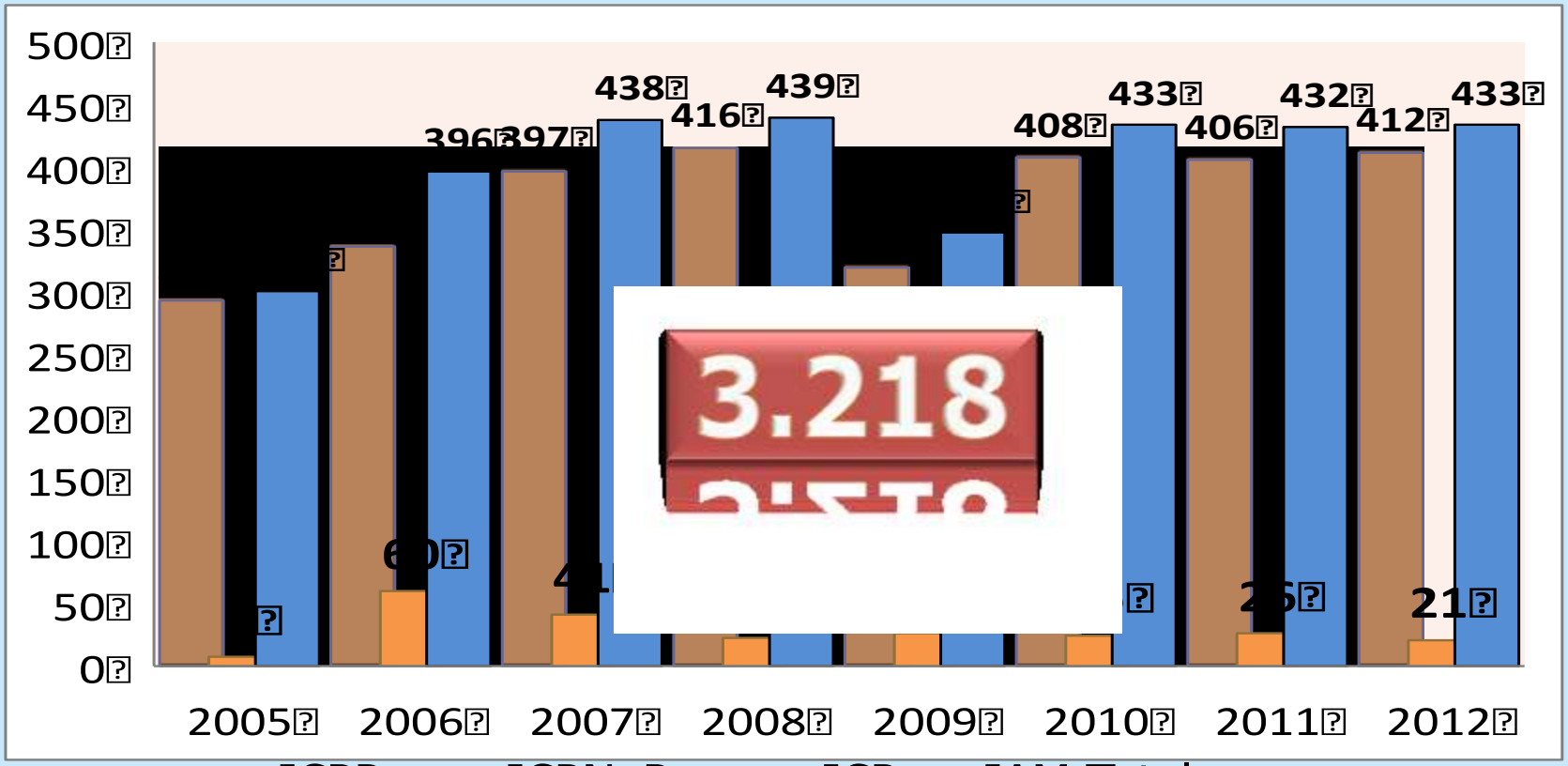




Resultados en el Área Sur

PROGALIAM: Desde 2005

Total ACTP en el IAM (2005-2012)

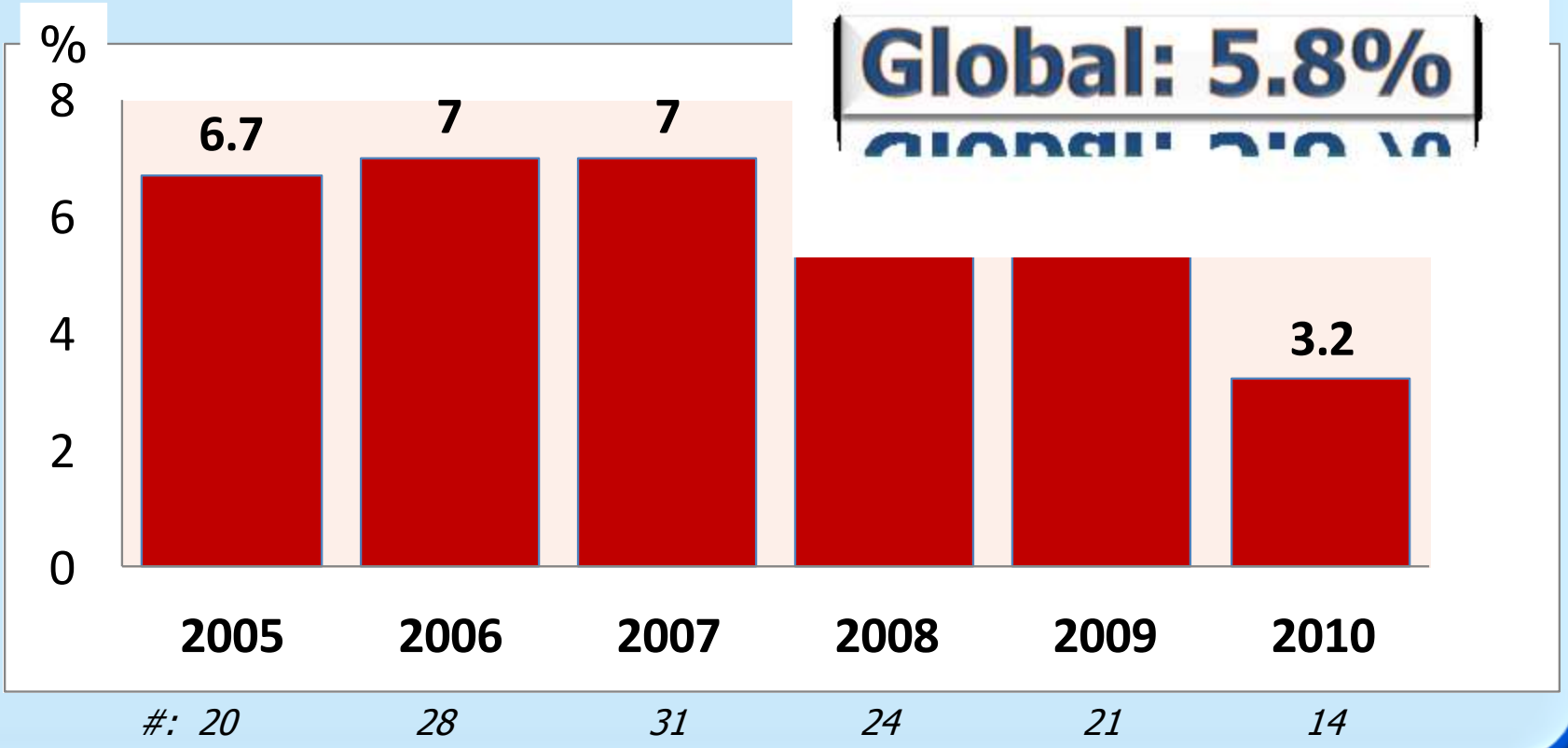


3.218

Andres.Iniguez.Romo@sergas.es

PROGALIAM: Desde 2005

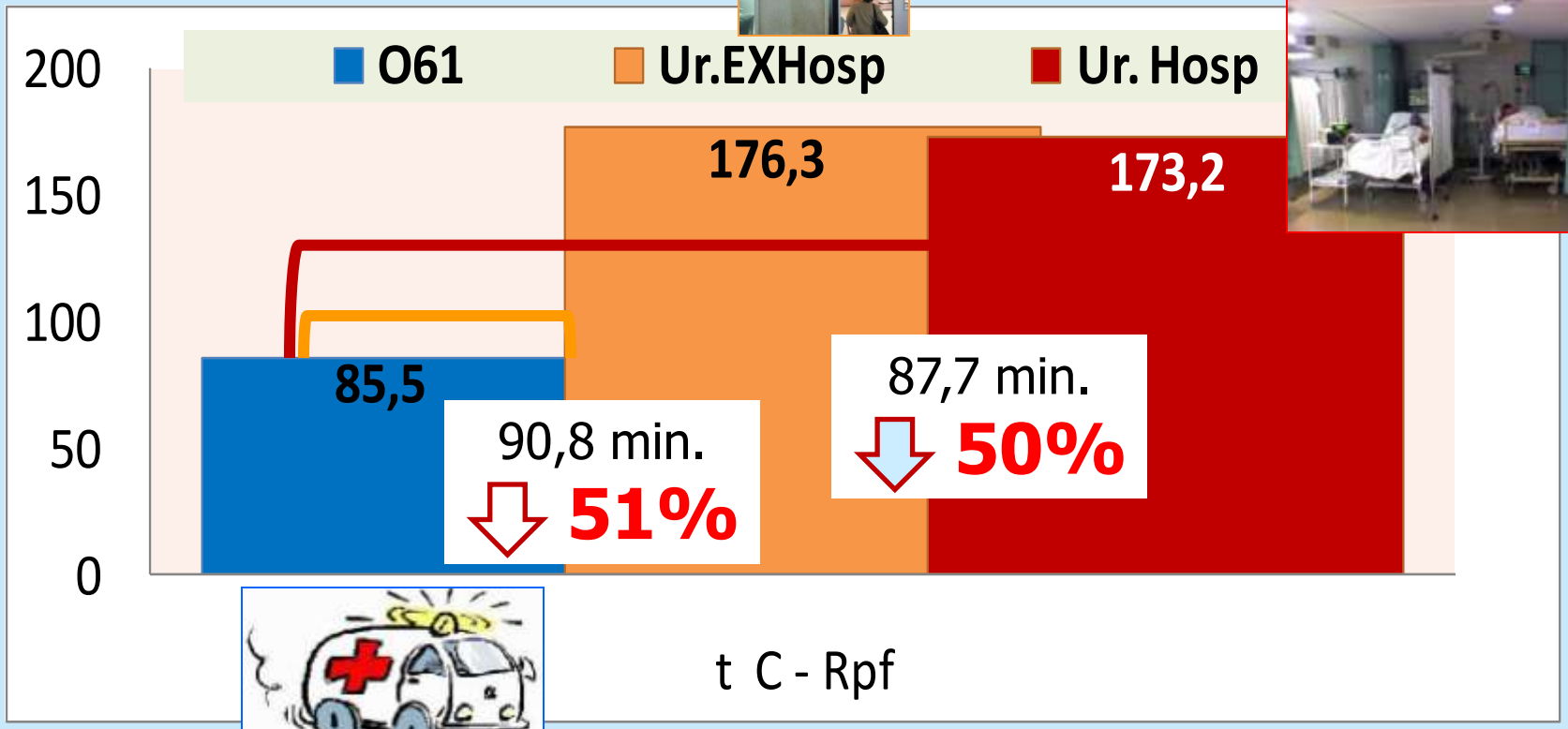
In-Hospital Mortality rate (2005-2010)



Global: 5.8%

Tiempos de Reperfusion: ***¿ Mejoras ?***

Primer Contacto Médico - Reperfusión



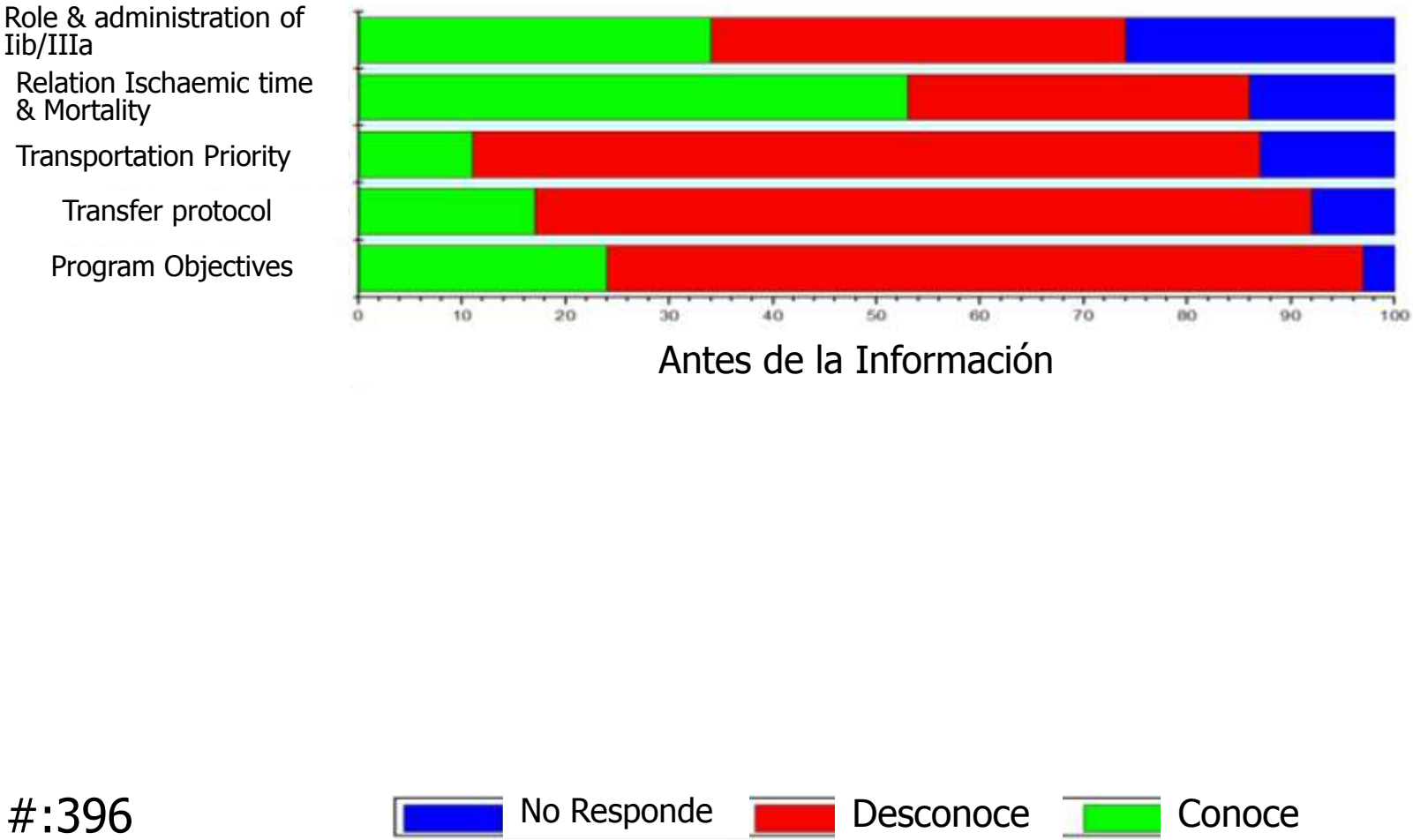
SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

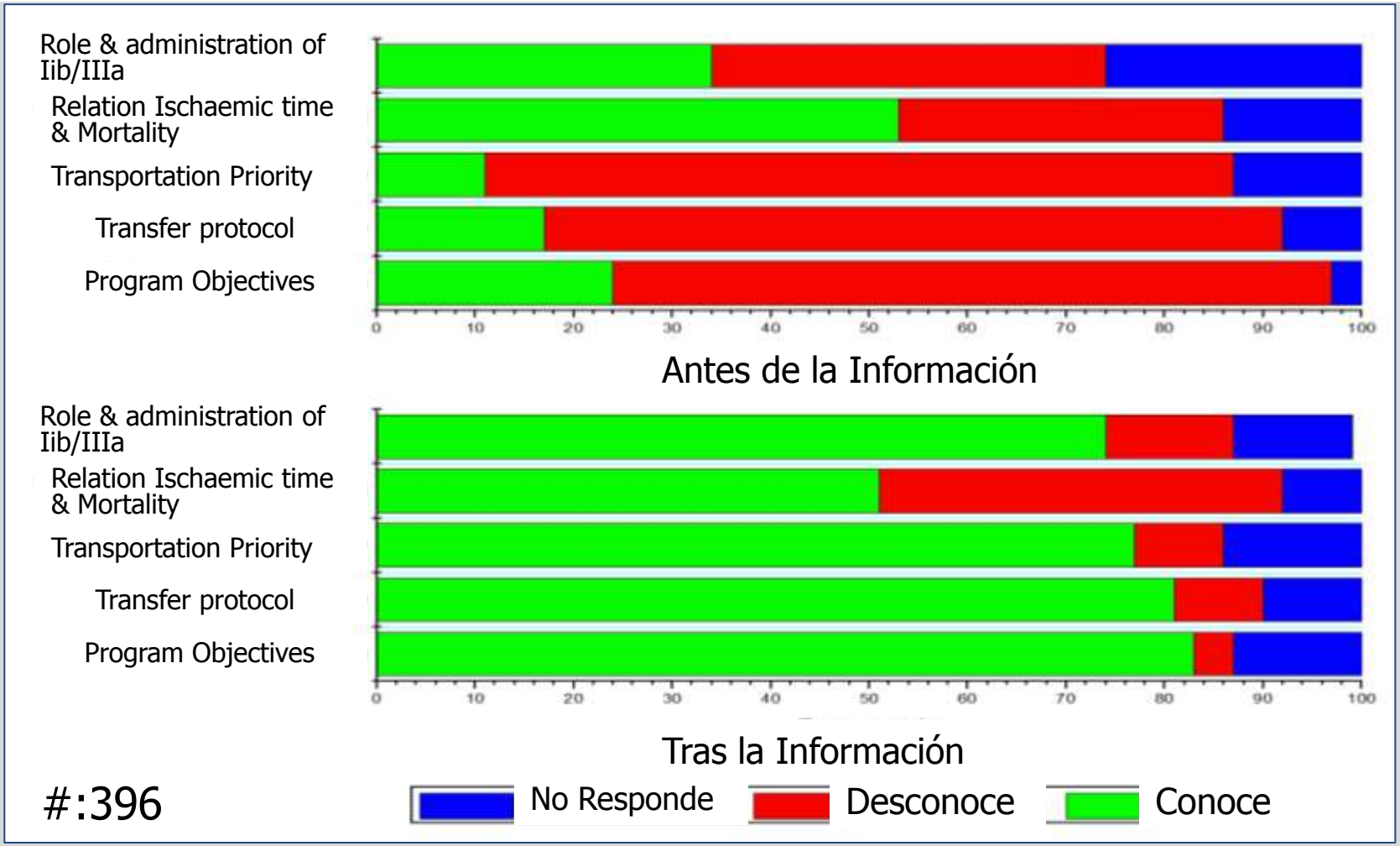
Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

PROGALIAM Sur: Información / Formación

PROGALIAM Sur: Información / Formación

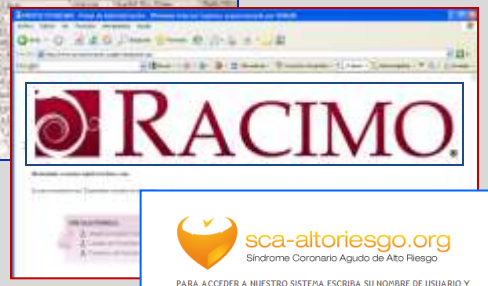


PROGALIAM Sur: Información / Formación

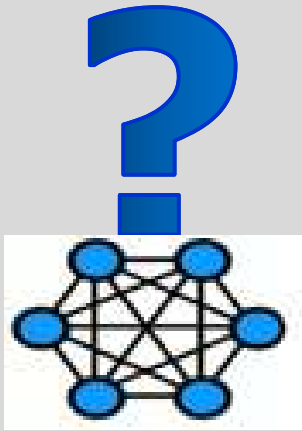


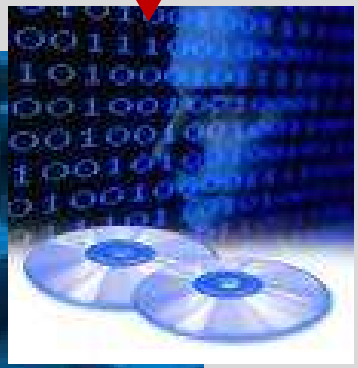
Redes: De la Información a la Innovación

Datos
Información



Conocimiento





Innovación

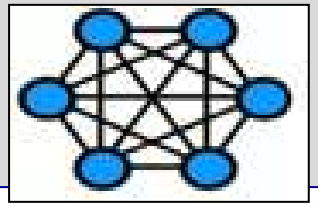
SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

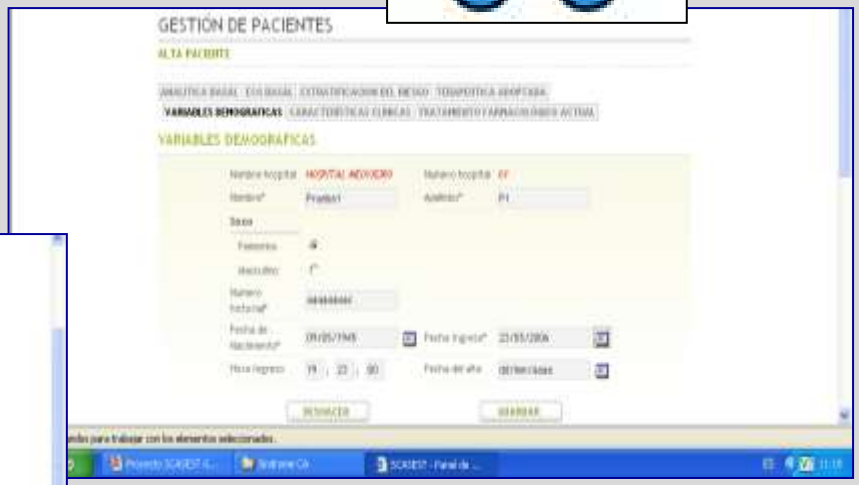
Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

SCA: ¿ Modelo de Organización ?

Protocolización
Trabajo en Red





SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

Redes y Conocimiento

La producción de conocimiento científico está estrechamente relacionado con:

- ✓ Las organizaciones formales que se creen para ello.
- ✓ Los procesos de investigación que se desarrollan en ellas.
- ✓ El resultado de una asociación e integración de **recursos** de todo tipo.

Esta integración tiene como objeto producir conocimiento a partir de las necesidades de la sociedad, y de ahí obtener innovación.

Redes y Conocimiento

Existe una relación entre el grado de profundidad de una red y los distintos tipos de vínculos con las acciones y los valores que los acompañan.

Rovere (1998)

Andres.Iniguez.Romo@sergas.es

"Cuando un medico se equivoca,
lo mejor es echarle tierra al asunto".

Andres.Iniguez.Romo@sergas.es

Andres.Iniguez.Romo@sergas.es

CRUSADE score of in-Hospital major bleeding

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
Male	0
Female	8
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

www.crusadebleedingscore.org

www.escardio.org/guidelines

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

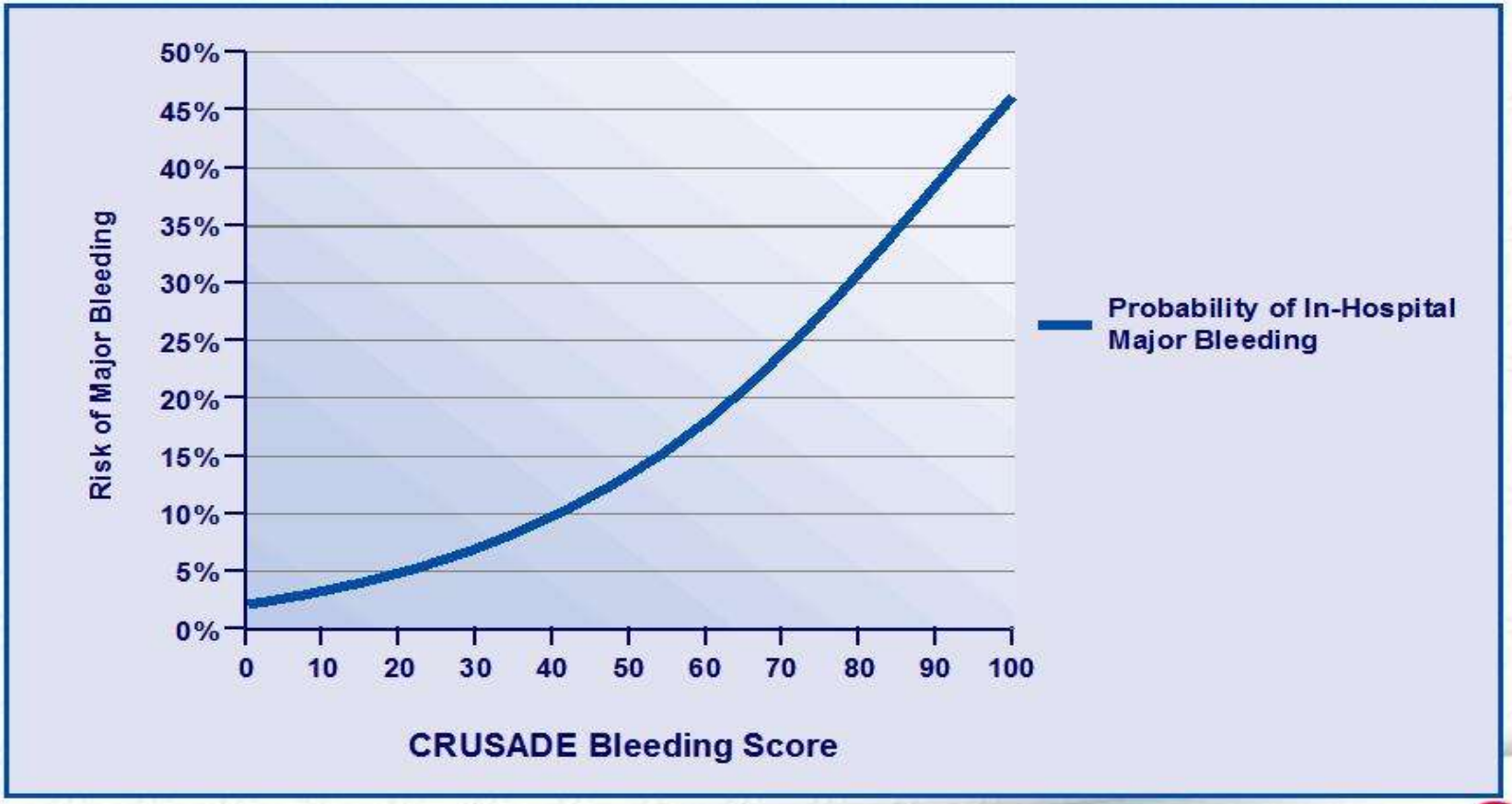
EUROPEAN SOCIETY OF CARDIOLOGY®

SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

Risk of major bleeding across the spectrum of CRUSADE bleeding score



www.escardio.org/guidelines

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

EUROPEAN SOCIETY OF CARDIOLOGY®

SERVIZO GALEGO de SAÚDE
Complexo Hospitalario Universitario de Vigo

Andres.Iniguez.Romo@sergas.es

Área de Cardioloxía
Complexo Hospitalario Universitario de Vigo

$P2Y_{12}$ Inhibitors

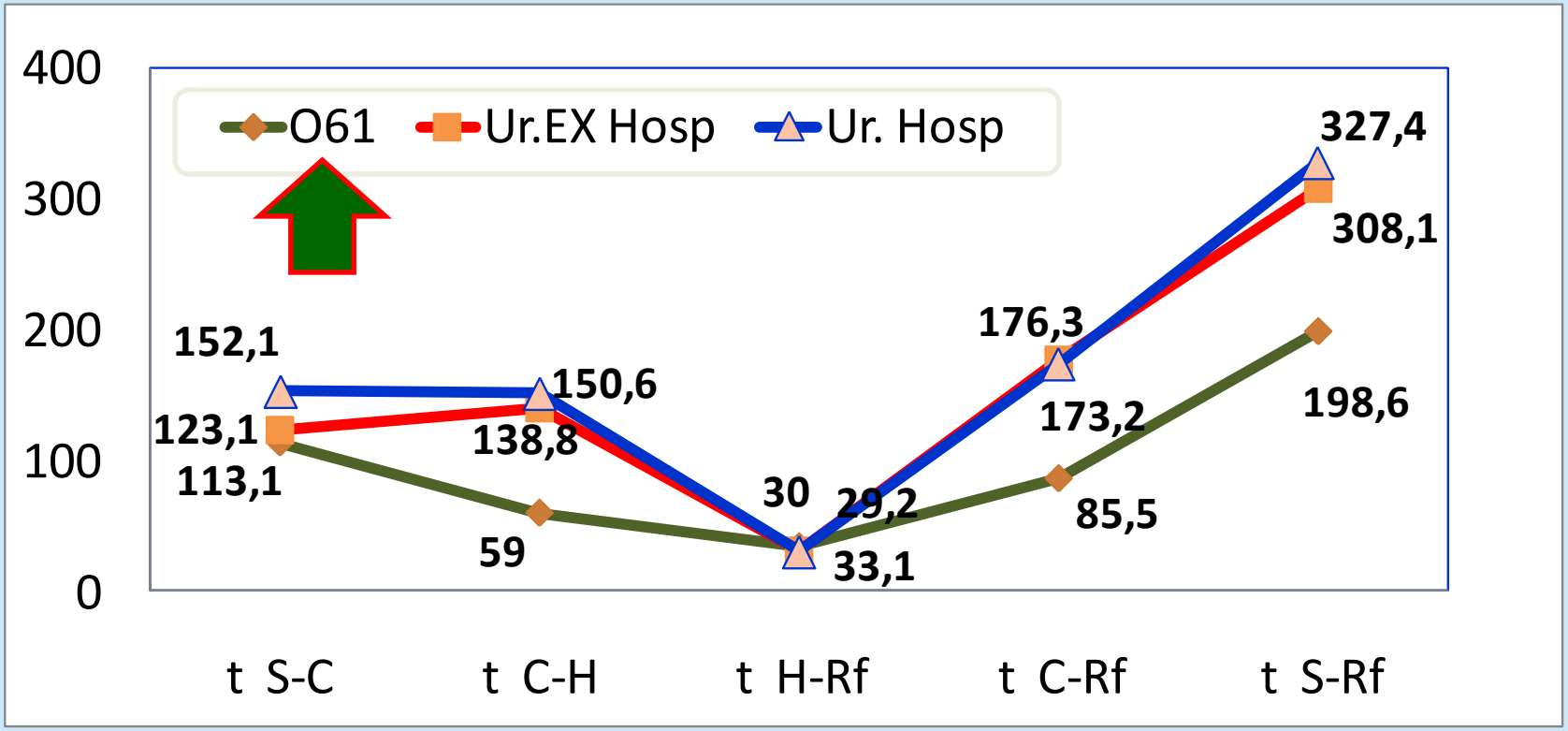
	Clopidogrel	Prasugrel	Ticagrelor
Class	Thienopyridine	Thienopyridine	Triazolopyrimidine
Reversibility	Irreversible	Irreversible	Reversible
Activation	Prodrug, limited by metabolization	Prodrug, not limited by metabolization	Active drug
Onset of effect	2-4 h	30 min	30 min
Duration of effect	3-10 days	5-10 days	3-4 days
Withdrawal before major surgery	5 days	7 days	5 days

www.escardio.org/guidelines

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

EUROPEAN SOCIETY OF CARDIOLOGY®

Andres.Iniguez.Romo@sergas.es

PROGALIAM: Desde 2005

Isquemia-Reperfusion Times