SOCIEDAD ANDALUZA DE CARDIOLOGÍA

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# 50

# Congreso Sociedad Andaluza de Cardiología

## "Congreso Andaluz de las Enfermedades Cardiovasculares"

## 14 – 16 mayo 2015

Hotel Abades Nevada Palace - Granada

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50 Congreso Sociedad Andaluza de Cardiología
"Congreso Andaluz de las Enfermedades Cardiovasculares"
14 – 16 mayo 2015
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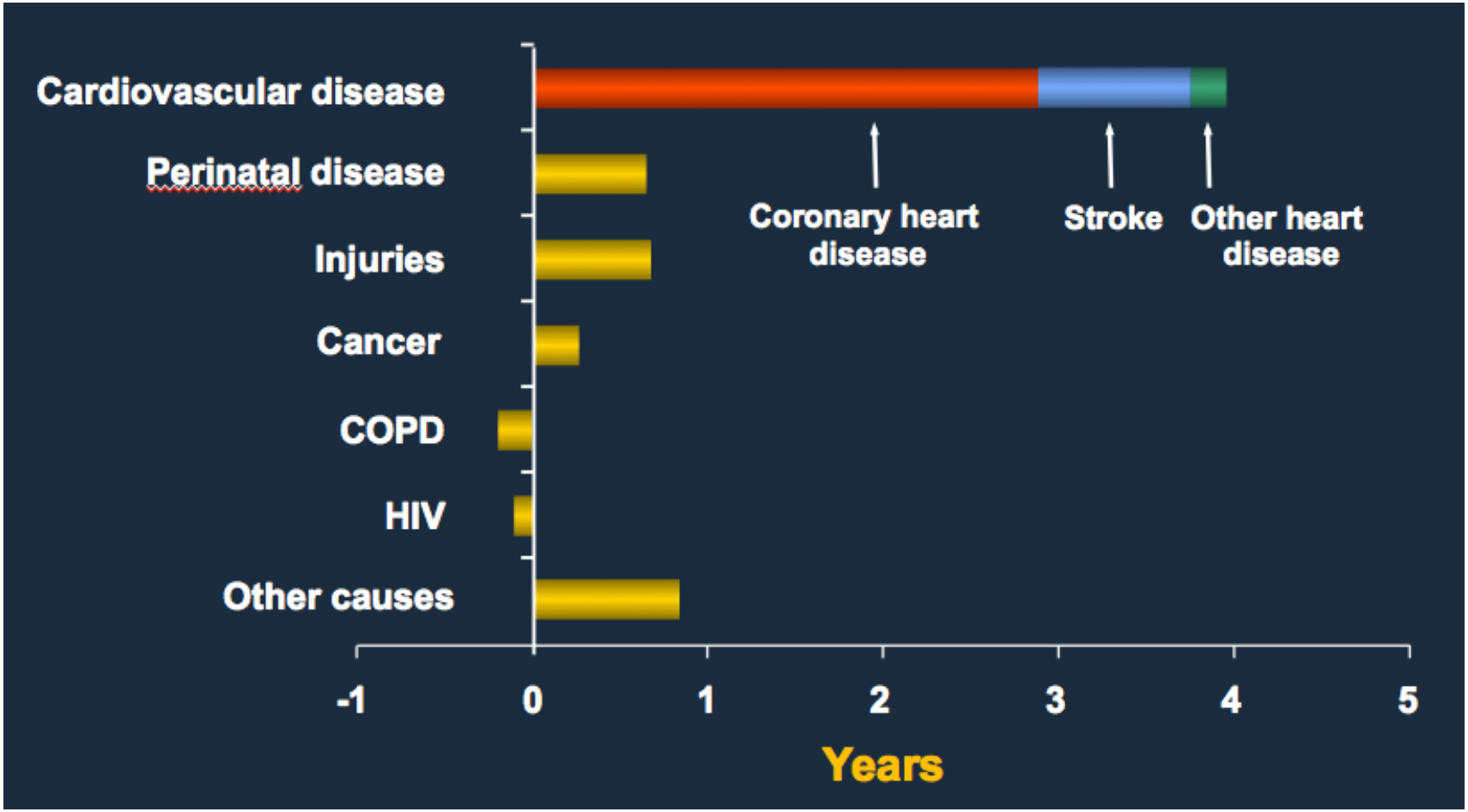
# ESQUEMA DE TRATAMIENTO ACTUAL MEDIANTE REVASCULARIZACION PRECOZ EN EL INFARTO AGUDO DE MIOCARDIO

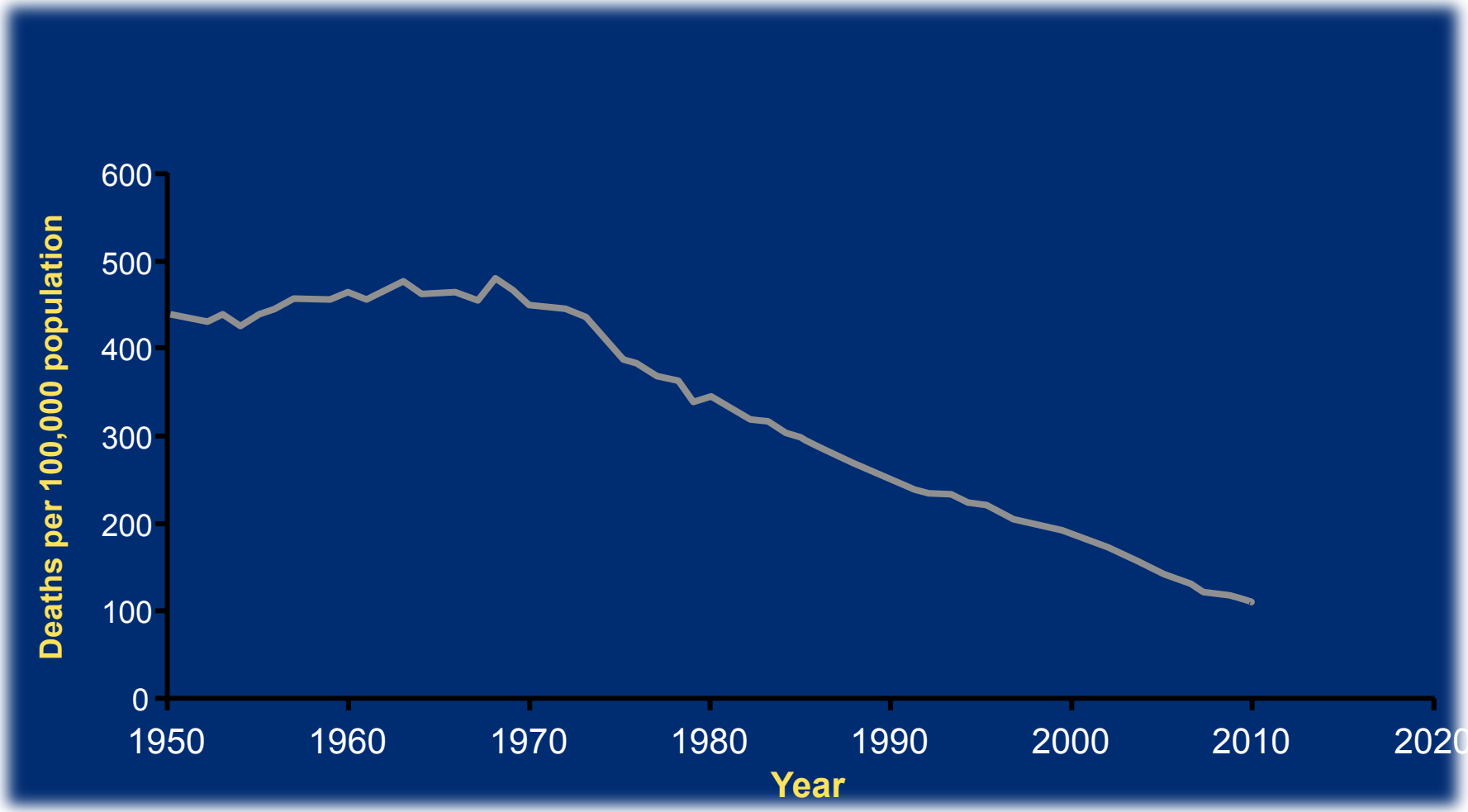
**Mónica Fernández Quero**
Unidad de Hemodinámica
Área del Corazón, Sevilla

# Change in US Life Expectancy
## Between 1970 and 2000: 8 years↑



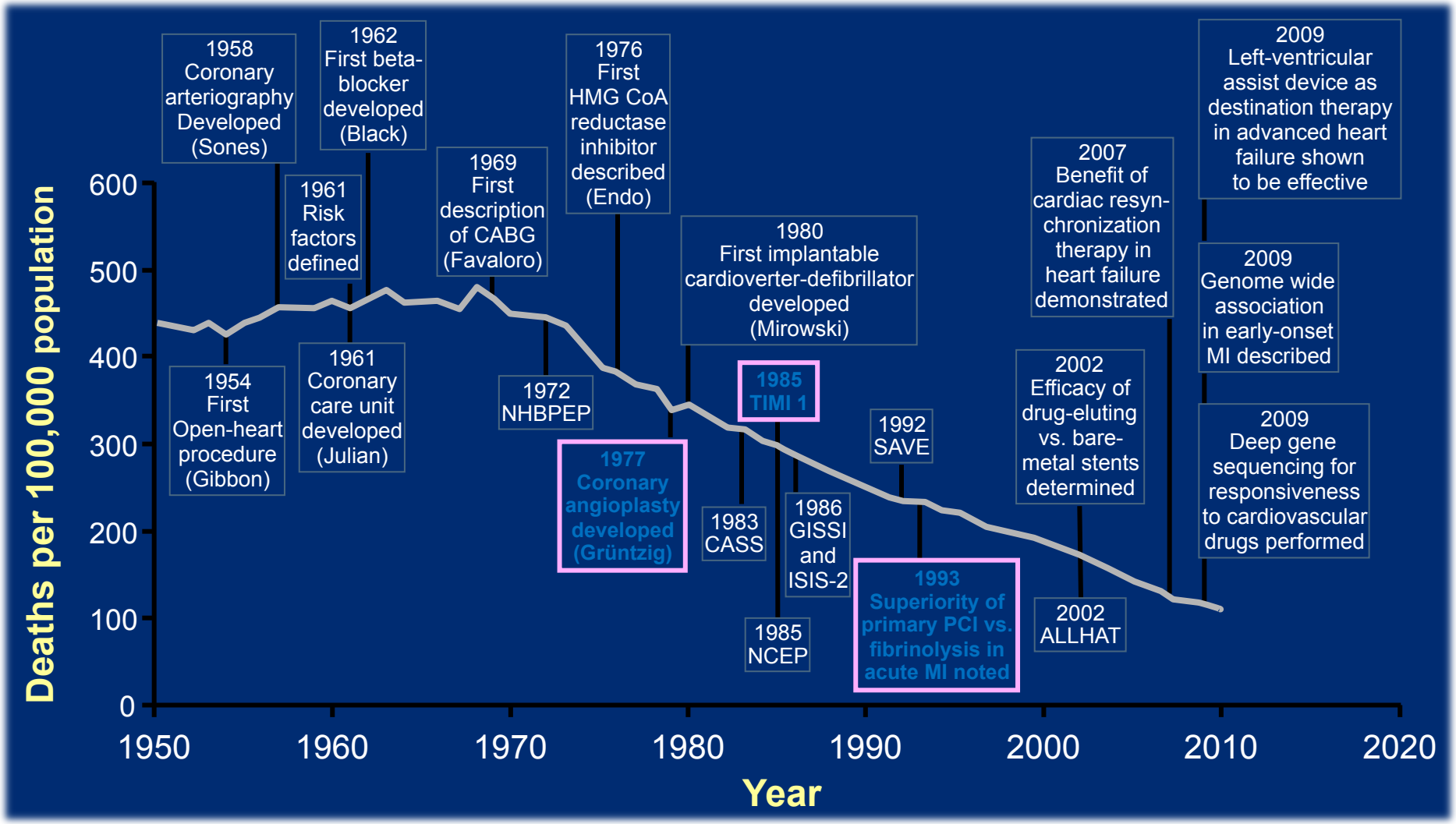

C. Lenfant et al. *NEJM* 2003;349:868–874

# Decline in Deaths from Cardiovascular Disease in Relation to Scientific Advances




Nabel EG and Braunwald E. 2012;366:54-63

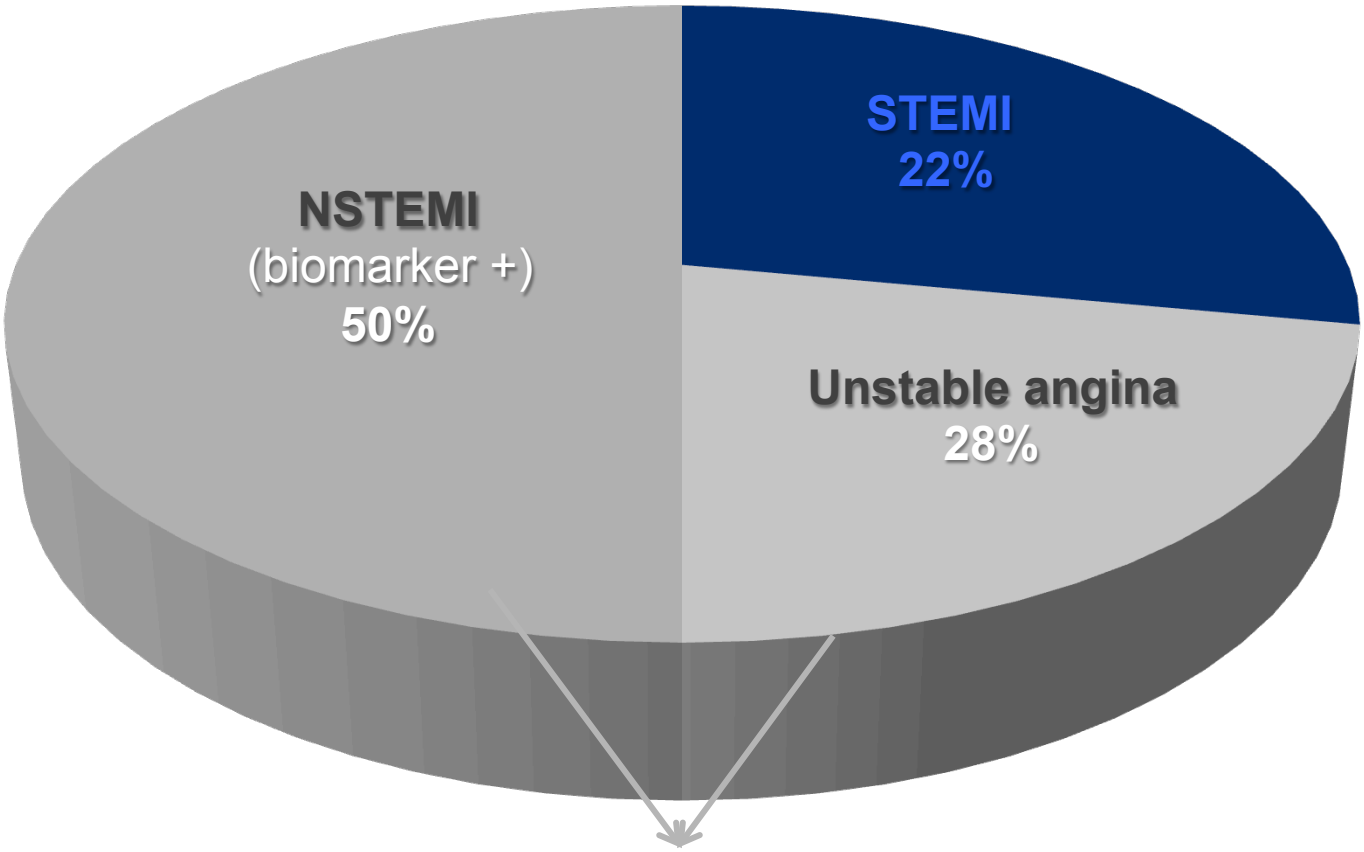
# Decline in Deaths from Cardiovascular Disease in Relation to Scientific Advances




Nabel EG and Braunwald E. 2012;366:54-63

# Acute Coronary Syndromes (ACS)

## 1.41 million hospital admissions for ACS in 2010

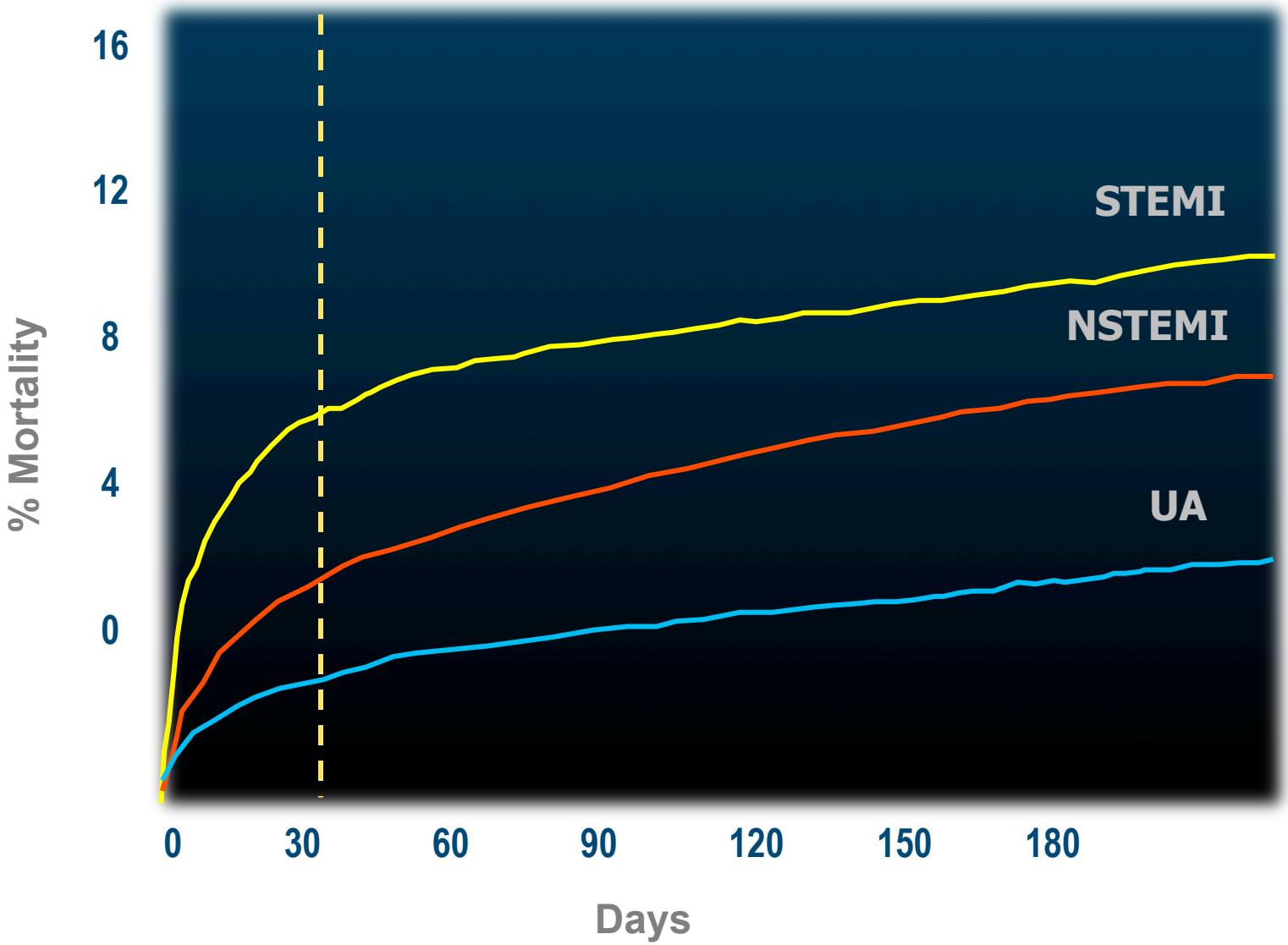



## NSTE-ACS

Heart Disease and Stroke Statistics – 2014 Update. Circulation. 2014;129:e28–e292..

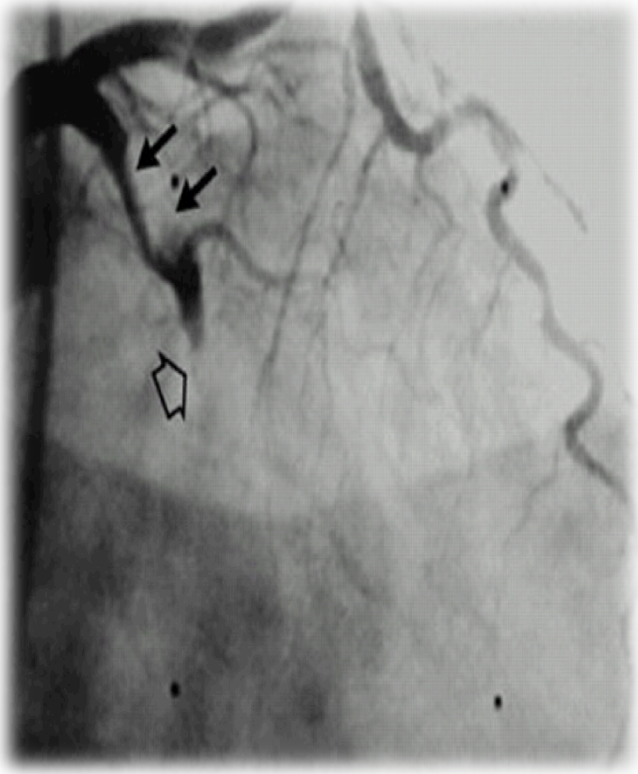
# Mortality in Acute Coronary Syndromes

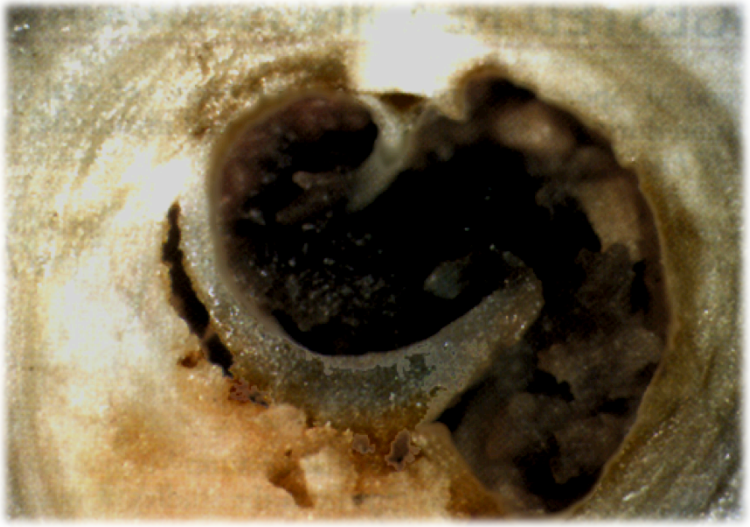
## Death from admission to 6 mos (GRACE n=43,810)




Fox KAA et al. BMJ. 2006;333:1091.

# AMI: pathophysiology

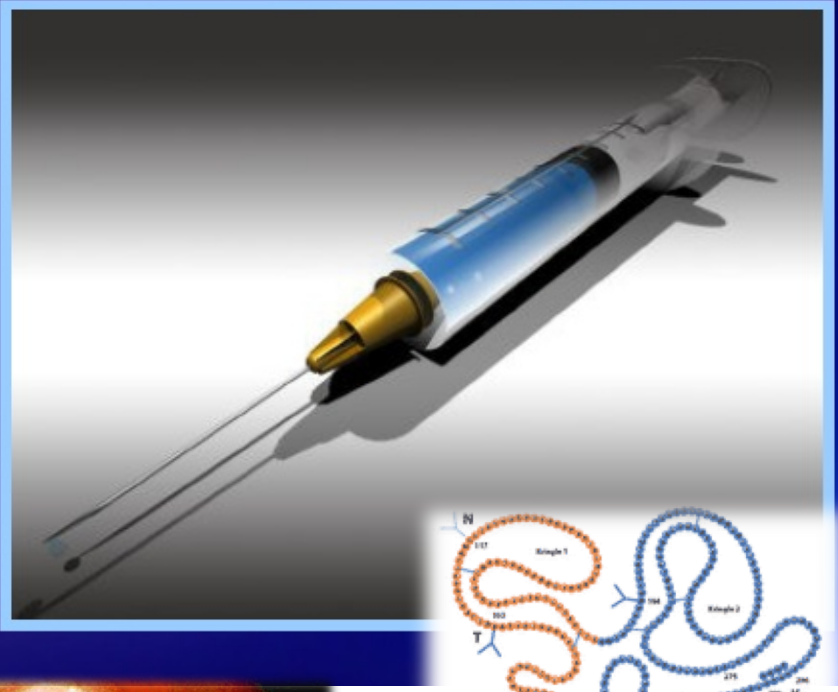


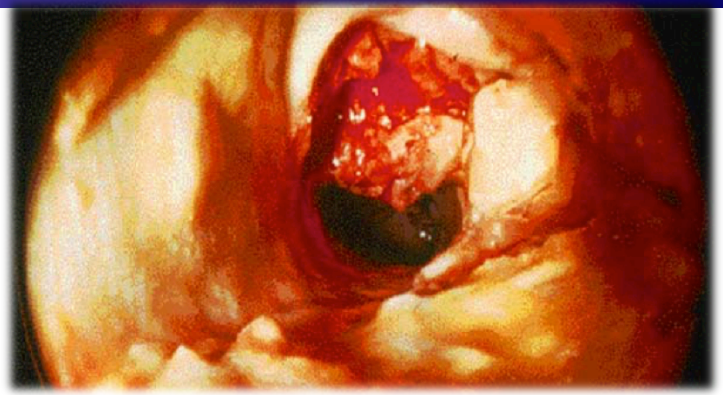


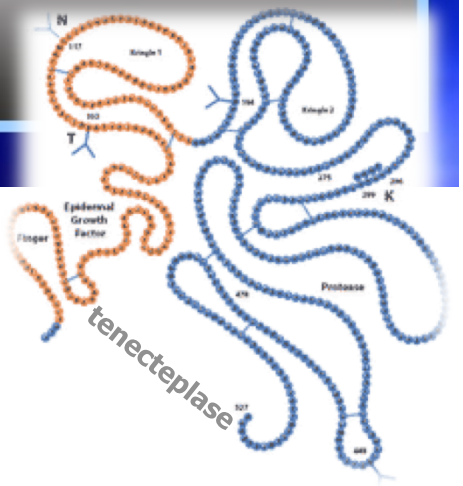
**ruptured plaque with occlusive thrombus**

# Angioplastia Primaria

# Fibrinolisis







# Fibrinolytic therapy

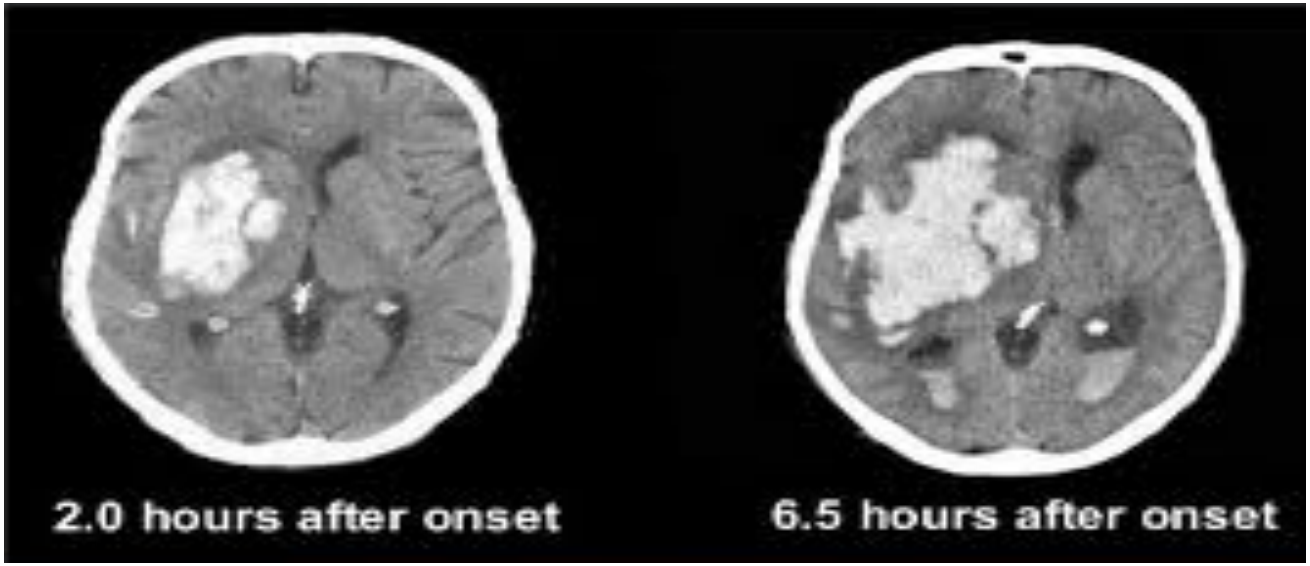
**… did save lives compared to placebo, BUT**

- **at best, restored TIMI 3 flow in 55% (rt-PA)**
- **incidence of recurrent ischemia and reinfarction**

**+**

**ICH**

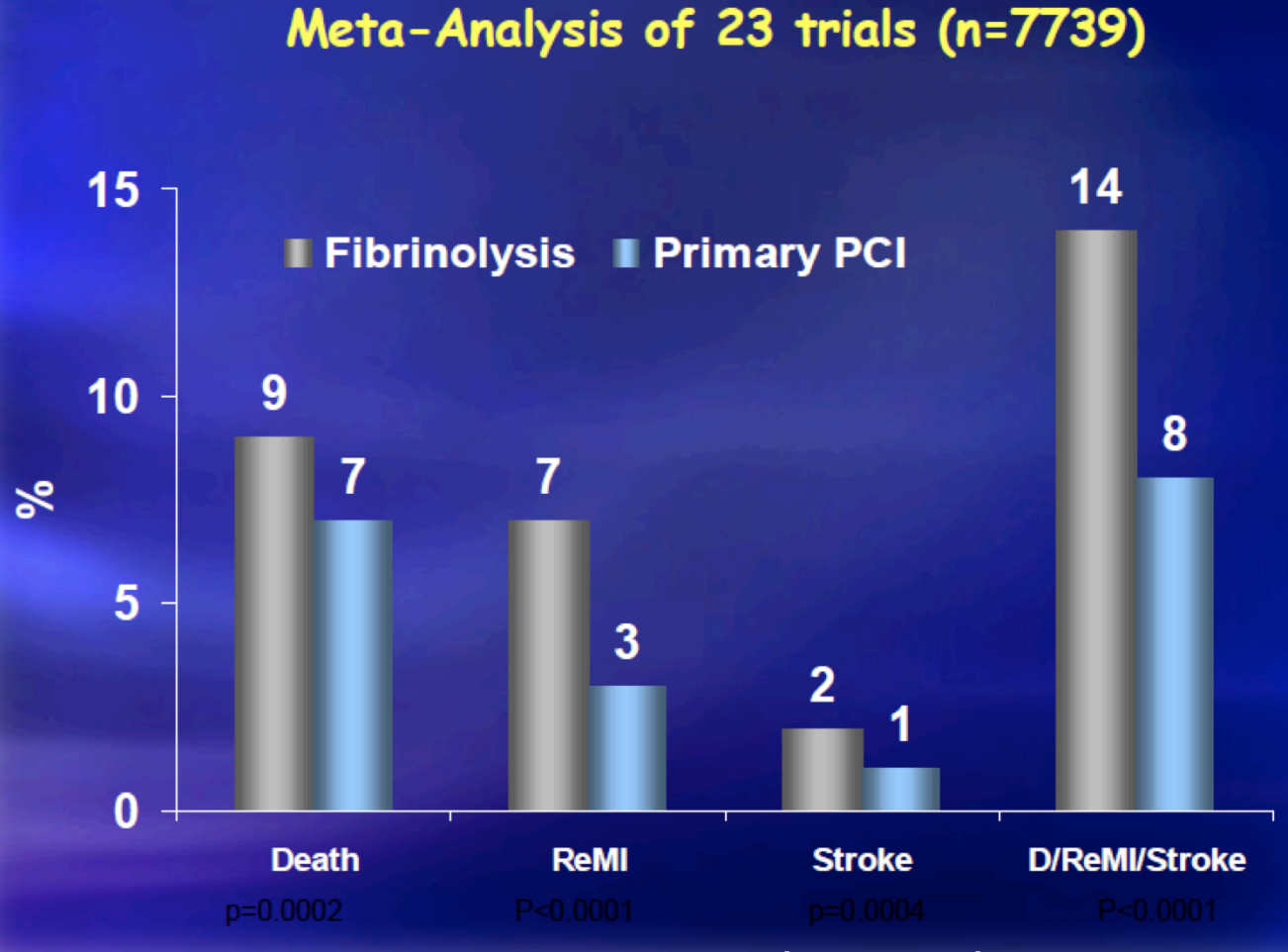
**0.5-1.0% of pts**




2 hours after t-PA

6 hours after t-PA

# Primary PCI vs. Fibrinolysis

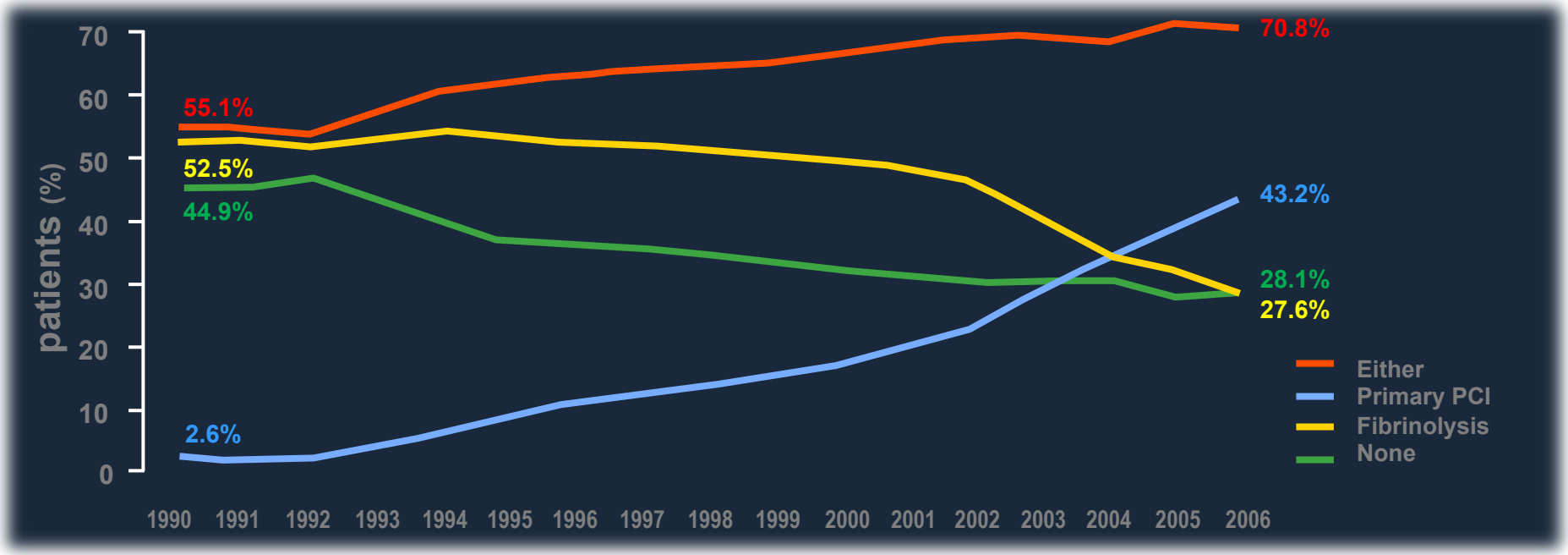



Keeley EC, et al. Lancet 2003; 362:13-20

# Evolution in Reperfusion

774,279 reperfusion eligible STEMI pts at 2,157 hospitals from 1990-2006

## Type of Reperfusion Therapy

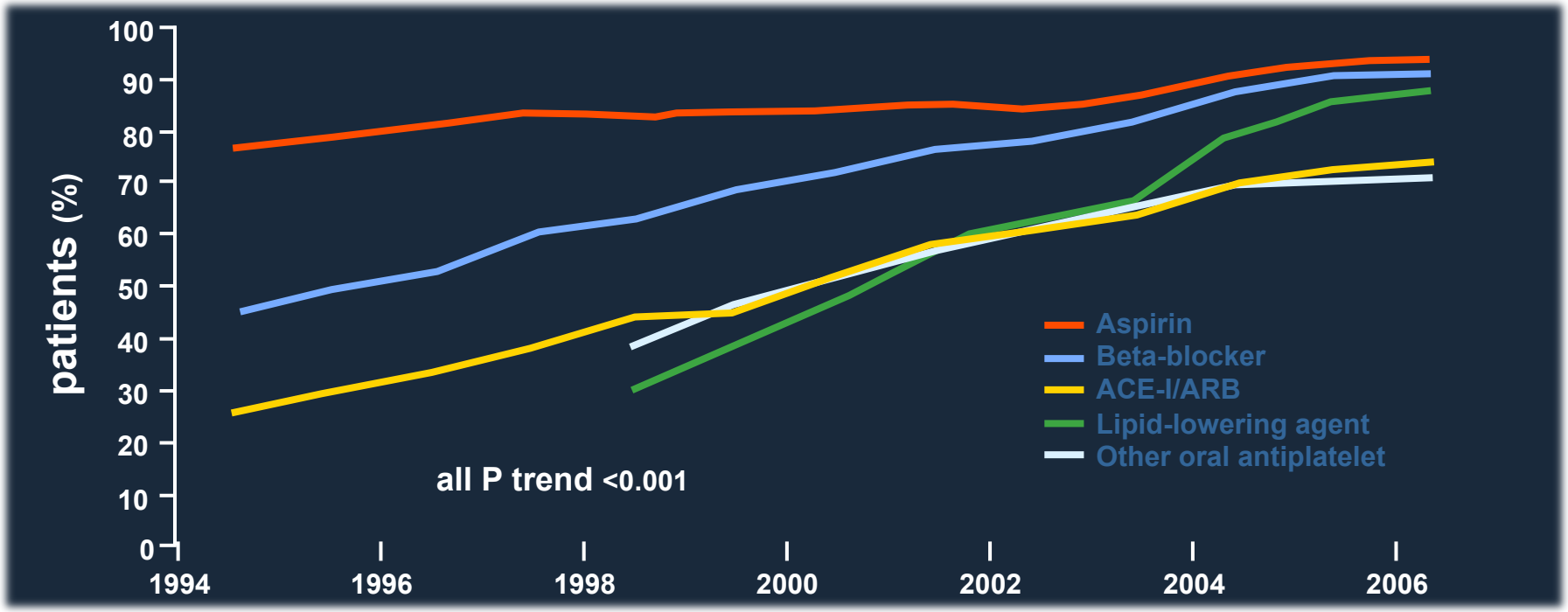



Gibson CM et al. *Am Heart J* 2008;156:1035-44

# Evolution in Reperfusion

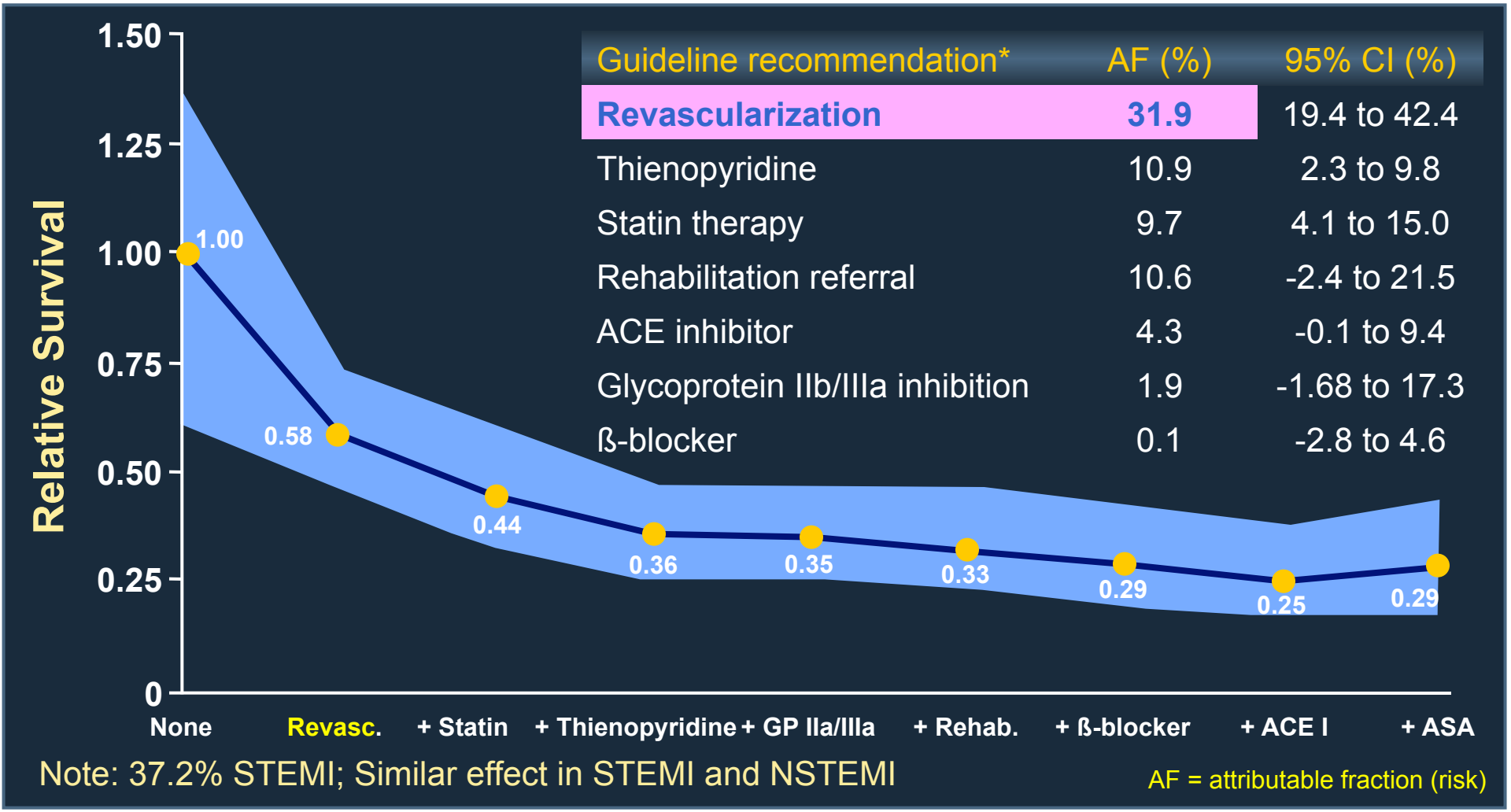
1,146,609 STEMI pts at 2,157 hospitals from 1990-2006

## Improvements in Medical Therapy: Discharge Meds




Peterson ED et al. *Am Heart J* 2008;156:1045-55

# 6-Month Survival after Hospital Discharge According to Guideline Recommendations in ACS (GRACE Registry): N=1,716 Cases and 3,432 Controls



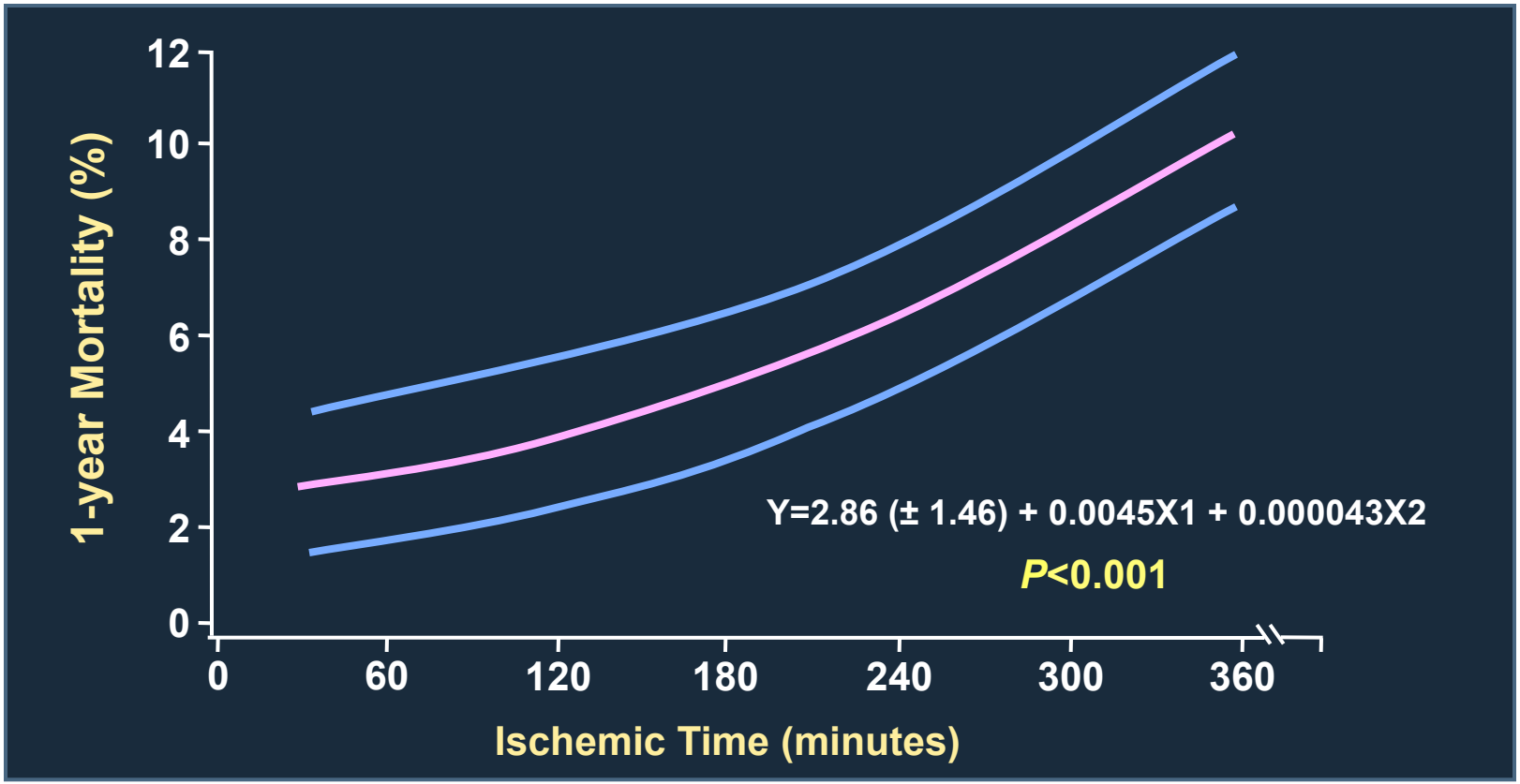

| Guideline recommendation* | AF (%) | 95% CI (%) |
|---|---|---|
| **Revascularization** | **31.9** | 19.4 to 42.4 |
| Thienopyridine | 10.9 | 2.3 to 9.8 |
| Statin therapy | 9.7 | 4.1 to 15.0 |
| Rehabilitation referral | 10.6 | -2.4 to 21.5 |
| ACE inhibitor | 4.3 | -0.1 to 9.4 |
| Glycoprotein IIb/IIIa inhibition | 1.9 | -1.68 to 17.3 |
| ß-blocker | 0.1 | -2.8 to 4.6 |

Note: 37.2% STEMI; Similar effect in STEMI and NSTEMI

AF = attributable fraction (risk)

Chew DP et al. *Heart* 2010;96:1201-6

# TIME from Symptom Onset to Treatment Predicts 1-year Mortality after Primary PCI




***the relative risk of 1-year mortality increases by 7.5% for each 30-minute delay***

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

## do whatever it takes to **reduce time** from *symptom onset to ER* arrival and time from *ER arrival to PCI* !


**Public awareness** of MI symptoms

Chest pain **centers of excellence** with lower DBTs and excellent outcomes

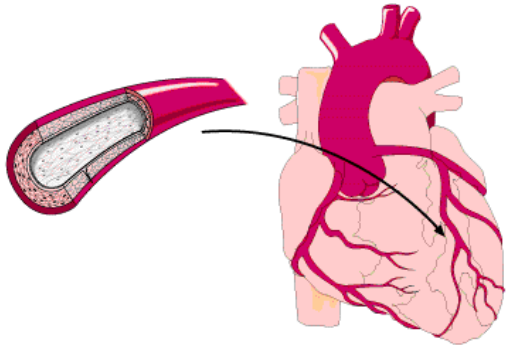
Regional **coordination**

Ambulance ECG telemetry

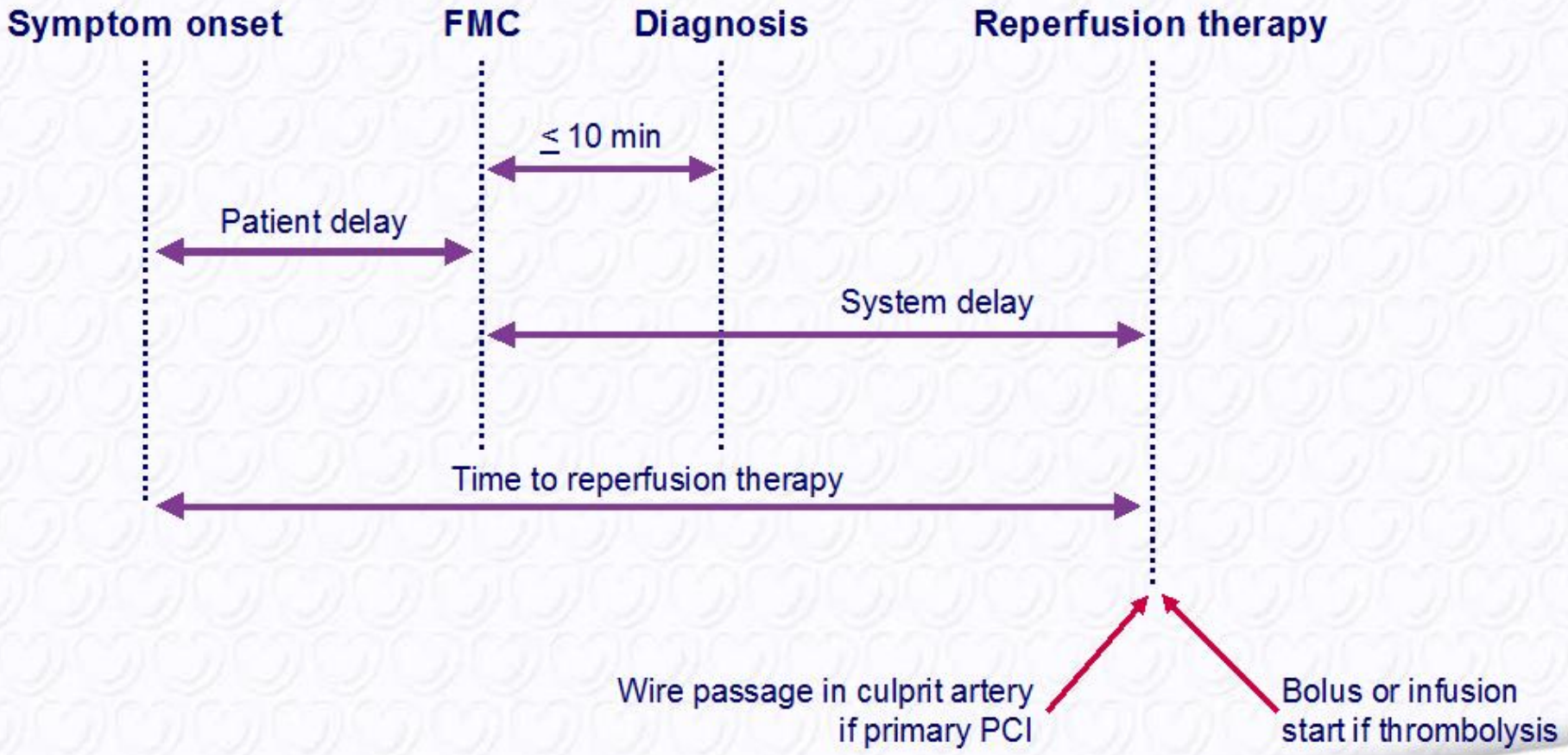
Ambulance/ER **CCL activation**

ICs sleep in hospital

Continual **QI**



# Components of delay in STEMI and ideal time intervals for intervention




All delays are related to FMC (first medical contact)

European Heart Journal (2012) 33, 2569–2619
doi:10.1093/eurheartj/ehs215

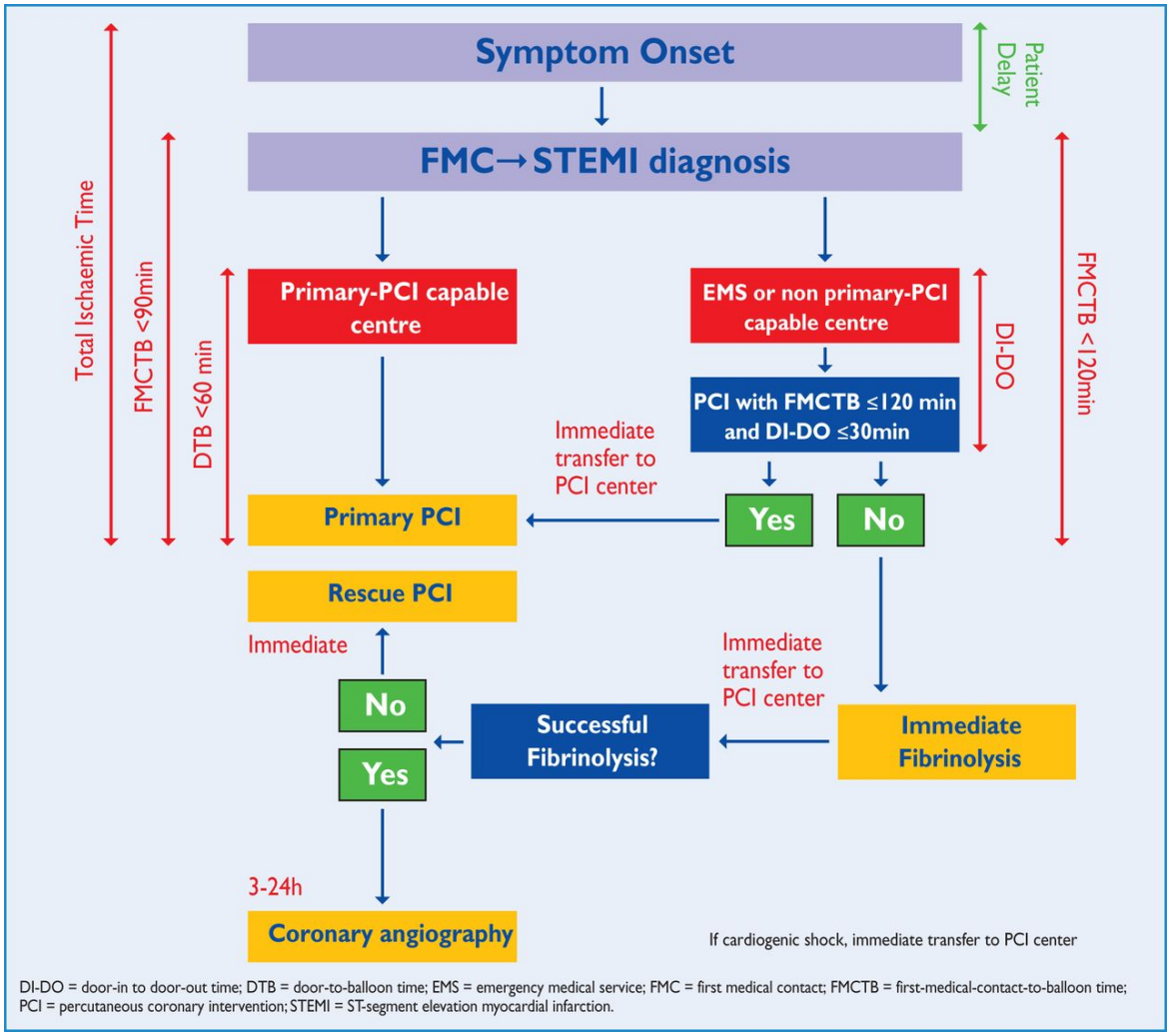
# Important delays and treatment goals in the management of acute STEMI

| Delays | Target |
|---|---|
| Preferred for FMC to ECG and diagnosis. | **≤ 10 min** |
| Preferred for FMC to fibrinolysis ('FMC to needle'). | **≤ 30 min** |
| Preferred for FMC to primary PCI ('door to balloon') in primary PCI hospitals. | **≤ 60 min** |
| Preferred for FMC to primary PCI. | **≤ 90 min** (≤ 60 min if early presenter with large area at risk) if this target cannot be met, consider fibrinolysis. |
| Acceptable for primary PCI rather than fibrinolysis. | **≤ 120 min** (≤ 90 min if early presenter with large area at risk) if this target cannot be met, consider fibrinolysis. |
| Preferred for successful fibrinolysis to angiography. | **3-24 h** |

FMC = first medical contacts; PCI = percutaneous coronary intervention.

European Heart Journal (2012) 33, 2569–2619
doi:10.1093/eurheartj/ehs215

**Organization of STEMI patient disposal describing pre- and in-hospital management and reperfusion strategies within 12 hours of first medical contact with ideal time interval for interventions.**




**Authors/Task Force members et al. Eur Heart J 2014;eurheartj.ehu278**



European Heart Journal

# Primary PCI for myocardial reperfusion in STEMI: indications and logistics


| Recommendations | Class[a] | Level[b] |
|---|---|---|
| **Indication** | | |
| Reperfusion therapy is indicated in all patients with time from symptom onset <12 hours duration and persistent ST-segment elevation or (presumed) new LBBB. | I | A |
| Primary PCI is the recommended reperfusion therapy over fibrinolysis if performed by an experienced team in a timely fashion. | I | A |
| In patients with time from symptom onset >12 hours, primary PCI is indicated in the presence of continuing ischaemia, life-threatening arrhythmias or if pain and ECG changes have been stuttering. | I | C |
| Primary PCI is indicated for patients with severe acute heart failure or cardiogenic shock due to STEMI independent from time delay of symptom onset. | I | B |
| Reperfusion therapy with primary PCI should be considered in patients presenting late (12–48 hours) after symptom onset. | IIa | B |

| Recommendations | Class[a] | Level[b] |
|---|---|---|
| **Logistics** | | |
| It is recommended that the pre-hospital management of STEMI patients be based on regional networks designed to deliver reperfusion therapy timely and effectively, and to offer primary PCI to as many patients as possible. | I | B |
| It is recommended that all EMSs, emergency departments, coronary care units, and catheterization laboratories have a written updated STEMI management protocol, preferably shared within geographic networks. | I | C |
| It is recommended that primary PCI-capable centres deliver a 24-hour/7-day service and ensure for primary PCI to be performed as fast as possible and at the latest within 60 minutes of hospital arrival. | I | B |
| Patients transferred to a PCI-capable centre for primary PCI should bypass the emergency department and be transferred directly to the catheterization laboratory. | IIa | B |

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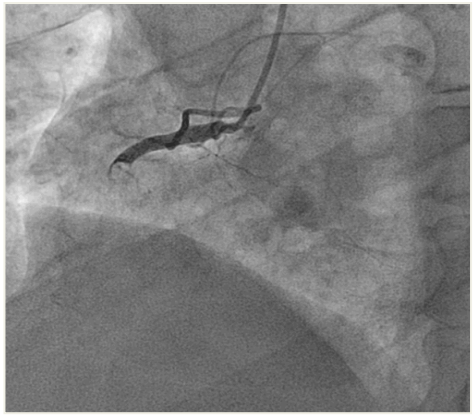
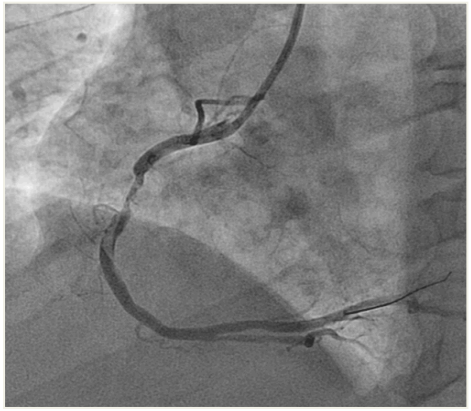
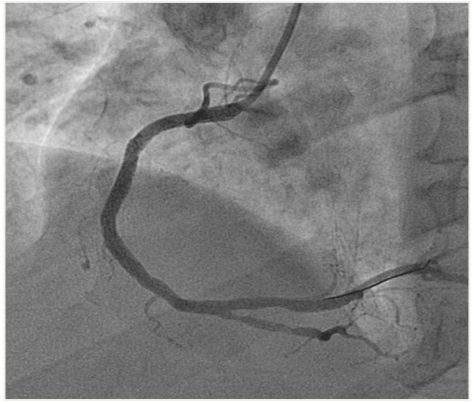
Virgen del Rocío

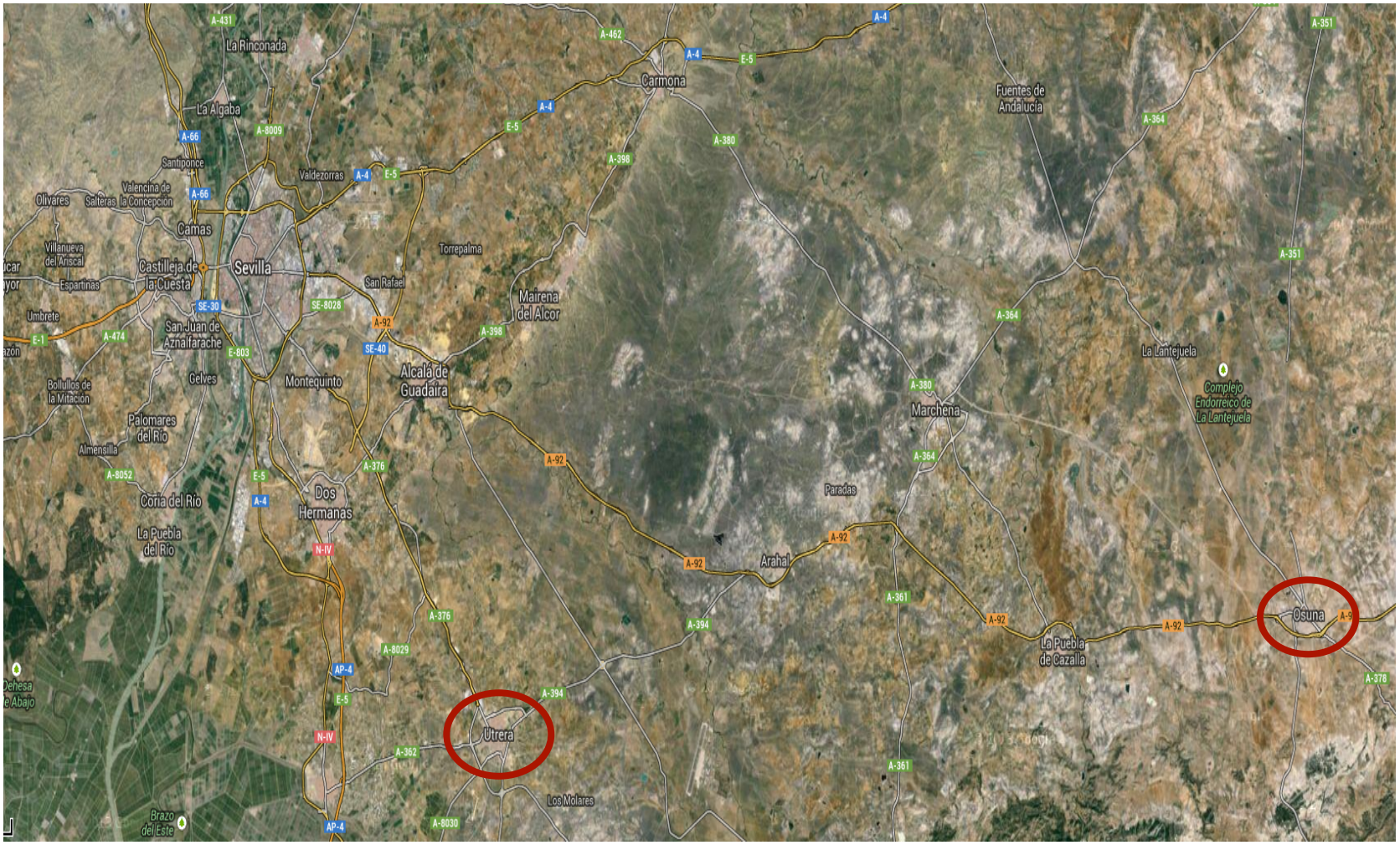




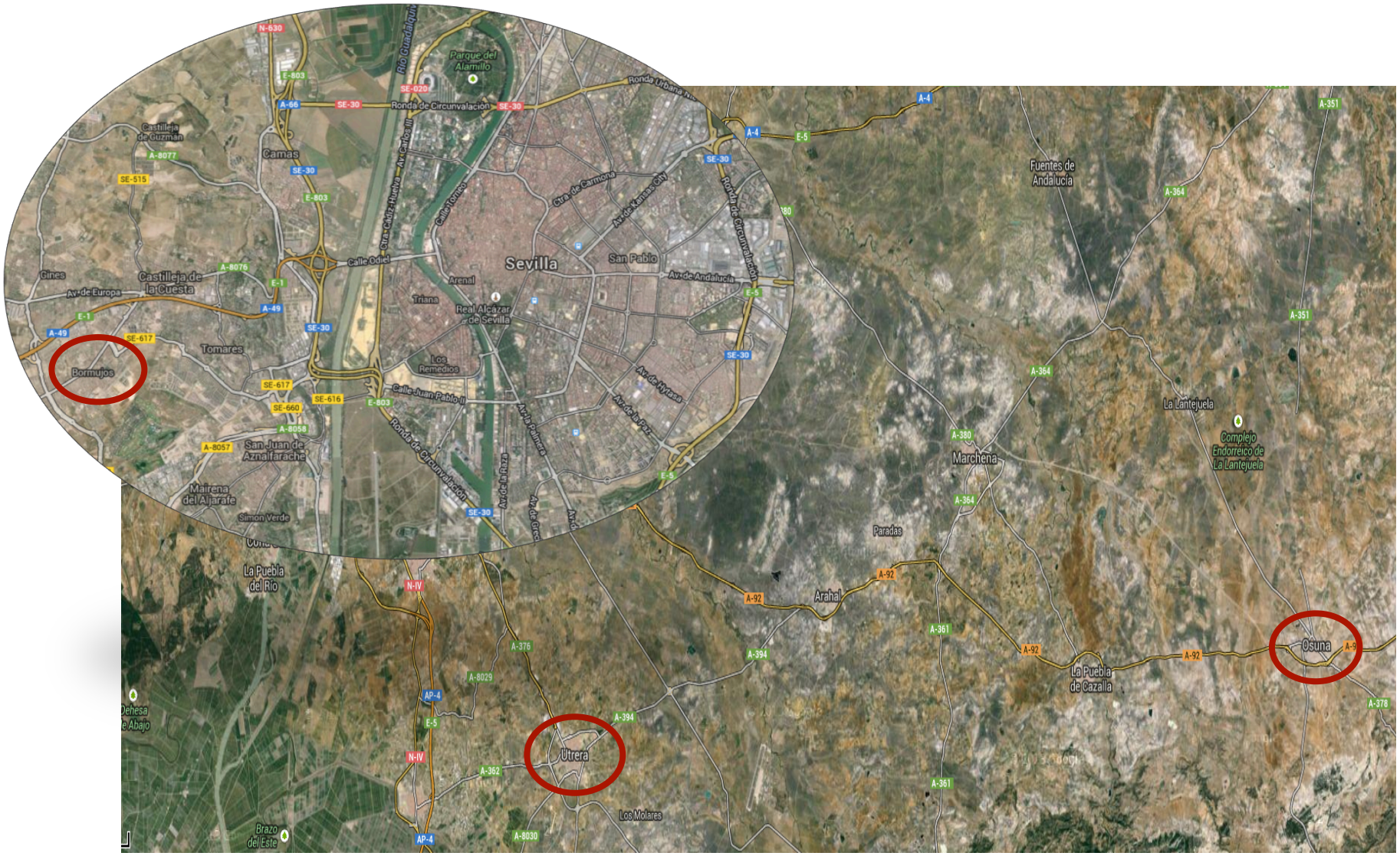


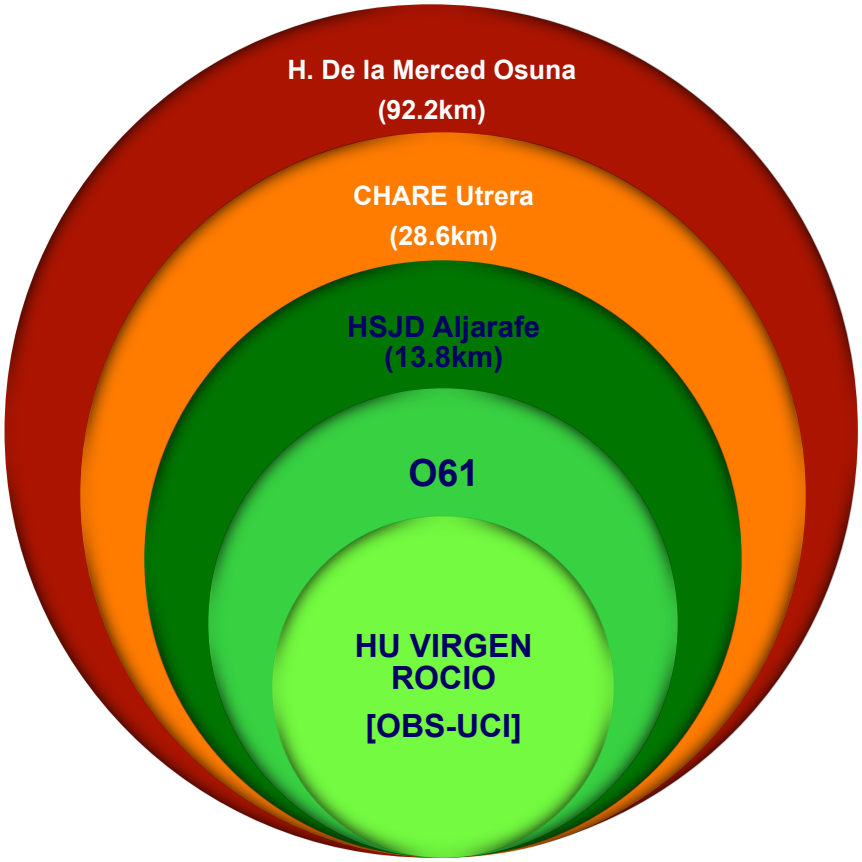
El *Área del Corazón Hospital Virgen del Rocío* posee un *programa de ACTP Primaria* que funciona 24 horas los 365 días del año, de forma que es el método rutinario de reperfusión para todos los infartos con elevación del ST

# área sanitaria, población asignada 875 331 habitantes



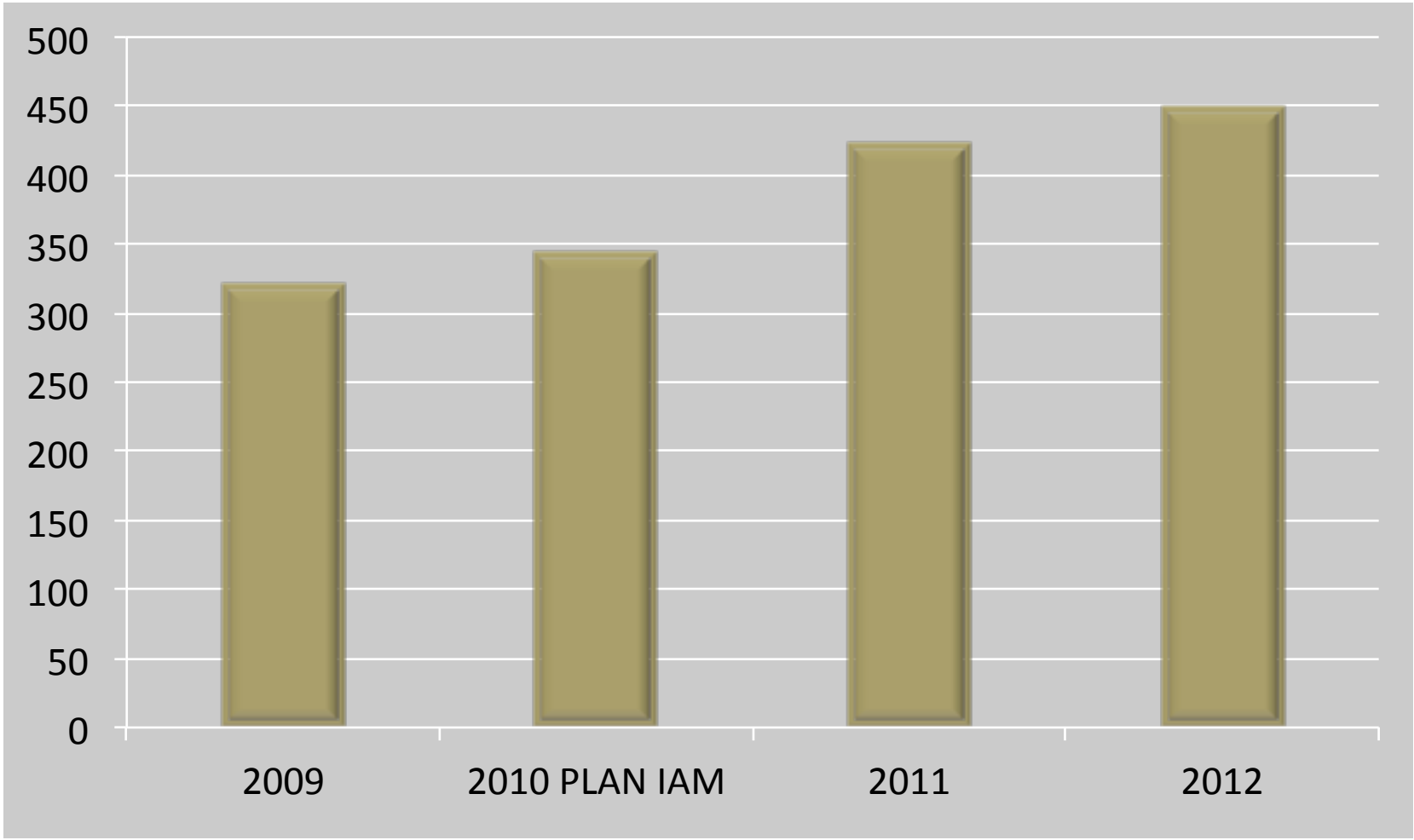
# área sanitaria, población asignada 875 331 habitantes



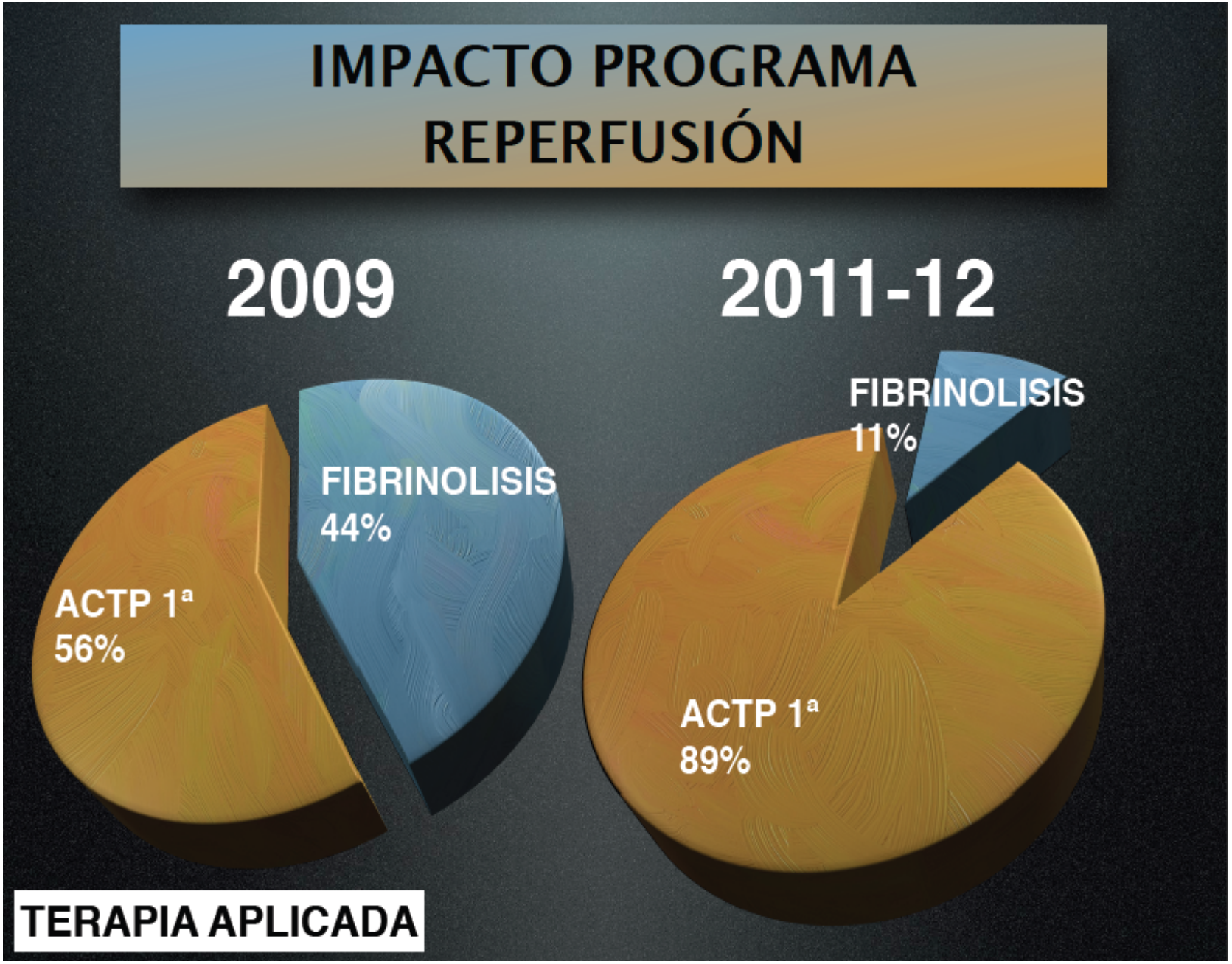

H. De la Merced Osuna
(92.2km)
CHARE Utrera
(28.6km)
HSJD Aljarafe
(13.8km)
O61
HU VIRGEN
ROCIO
[OBS-UCI]

# APTC PRIMARIAS PROVINCIA SEVILLA

## 2009-2012 : INCREMENTO 40 % APTC PRIMARIA



# IMPACTO PROGRAMA REPERFUSIÓN



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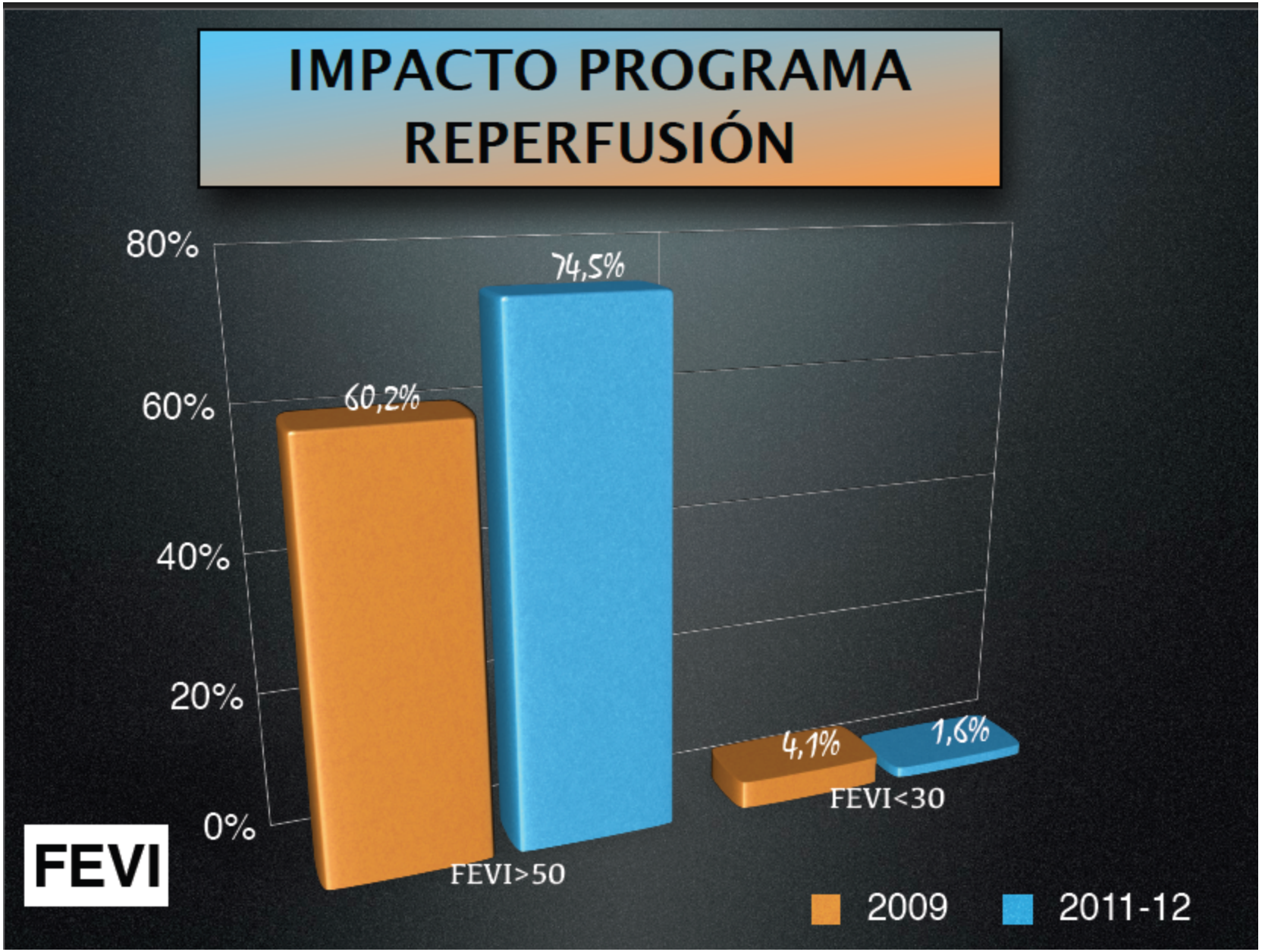
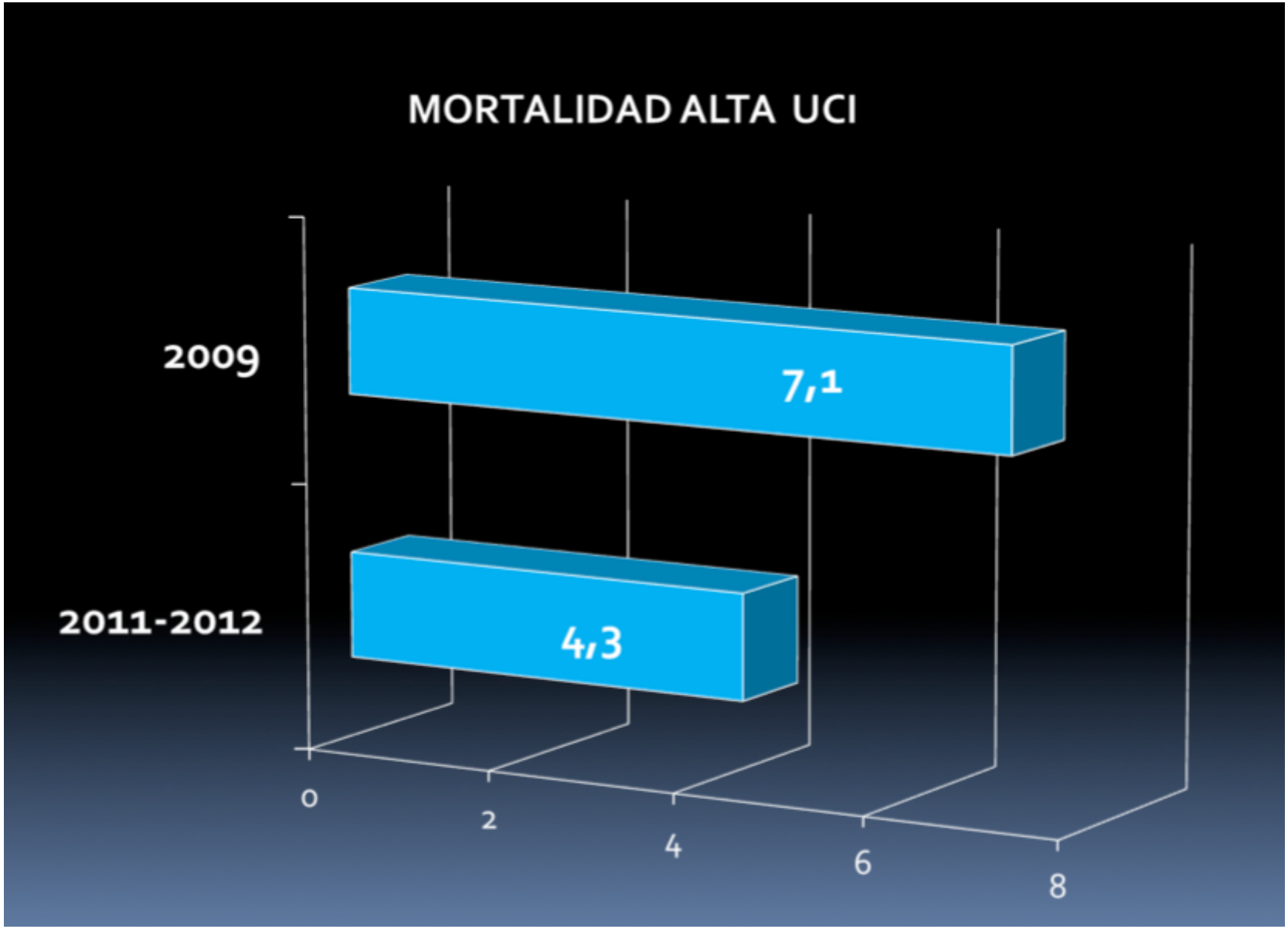



MORTALIDAD ALTA UCI
2009
7,1
2011-2012
4,3
0
2
4
6
8

# Primary PCI for myocardial reperfusion in STEMI: procedural aspects (strategy and technique)

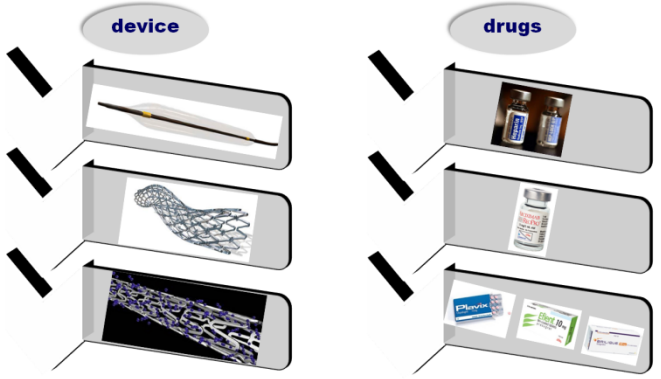
| Recommendations | Class[a] | Level[b] |
|---|---|---|
| **Strategy** | | |
| Primary PCI should be limited to the culprit vessel with the exception of cardiogenic shock and persistent ischaemia after PCI of the supposed culprit lesion. | IIa | B |
| Staged revascularization of non-culprit lesions should be considered in STEMI patients with multivessel disease in case of symptoms or ischaemia within days to weeks after primary PCI. | IIa | B |
| Immediate revascularization of significant non-culprit lesions during the same procedure as primary PCI of the culprit vessel may be considered in selected patients. | IIb | B |
| In patients with continuing ischaemia and in whom PCI of the infarct-related artery cannot be performed, CABG should be considered. | IIa | C |


## Achieve all four parameters of successful reperfusion

- Relief of chest pain
- ST-segment resolution
- Restoration of TIMI-3 flow
- Myocardial perfusion grade 3-4

- Hemodynamic and electrical instability
- Must act quickly

**Evolution of Primary PCI**

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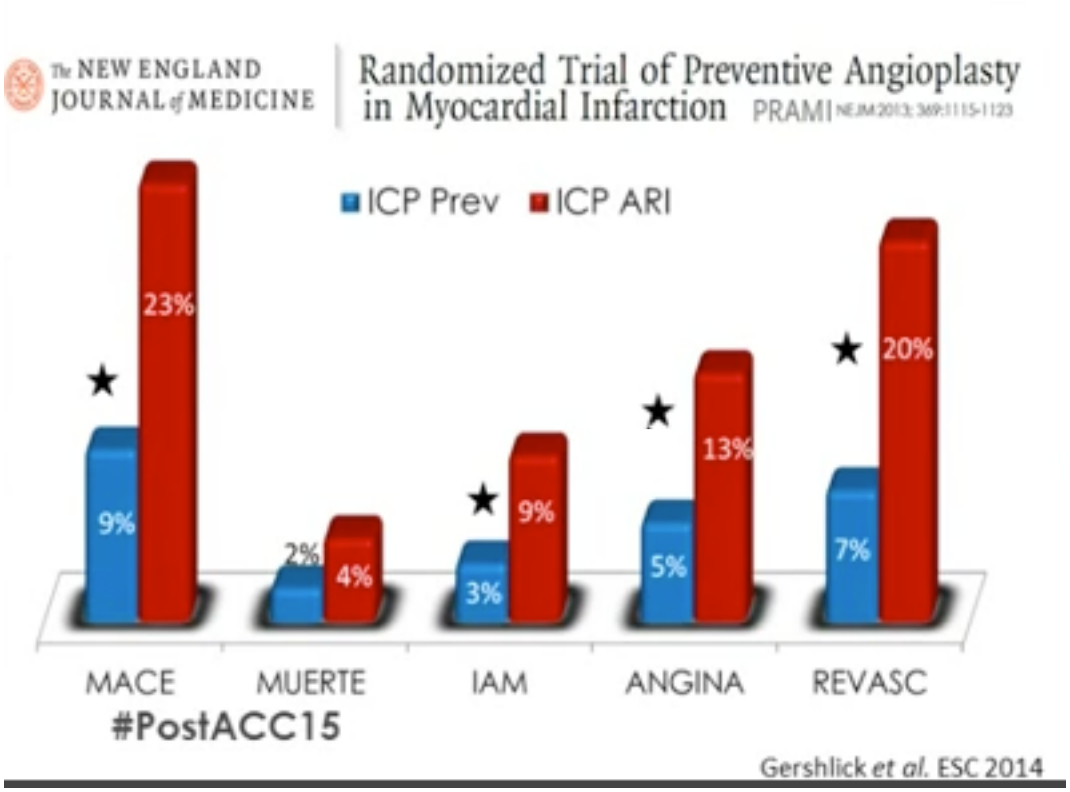
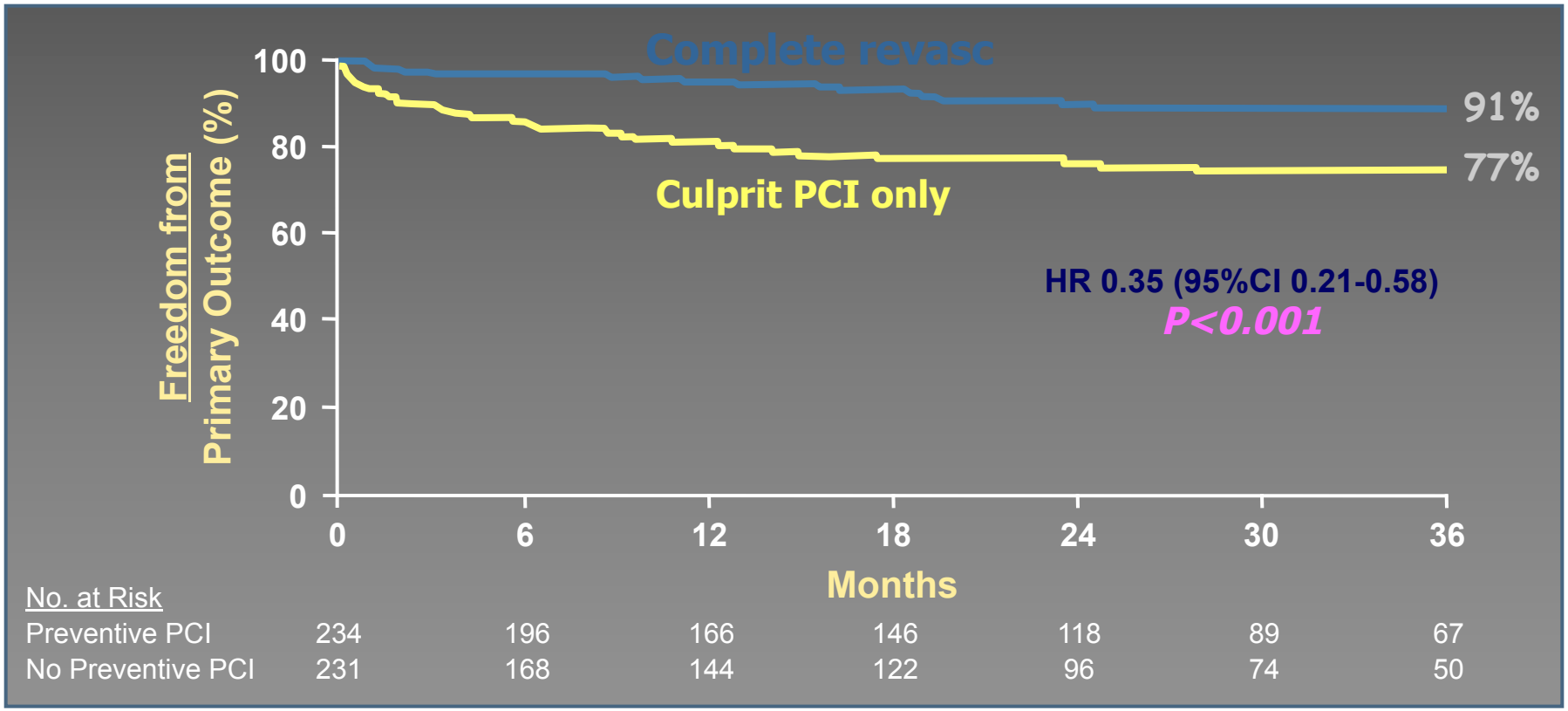
# PRAMI: "Preventative" PCI of non-culprit lesions after culprit lesion primary PCI in STEMI



# PRAMI: "Preventative" PCI of non-culprit lesions after culprit lesion primary PCI in STEMI

465 non-shock pts at 5 UK sites with MVD after successful primary PCI randomized to NCL PCI of non-LM DS 50-99% stenoses vs. conservative care
600 pts planned; DSMB stopped trial early after 465 pts enrolled (2008-2013)

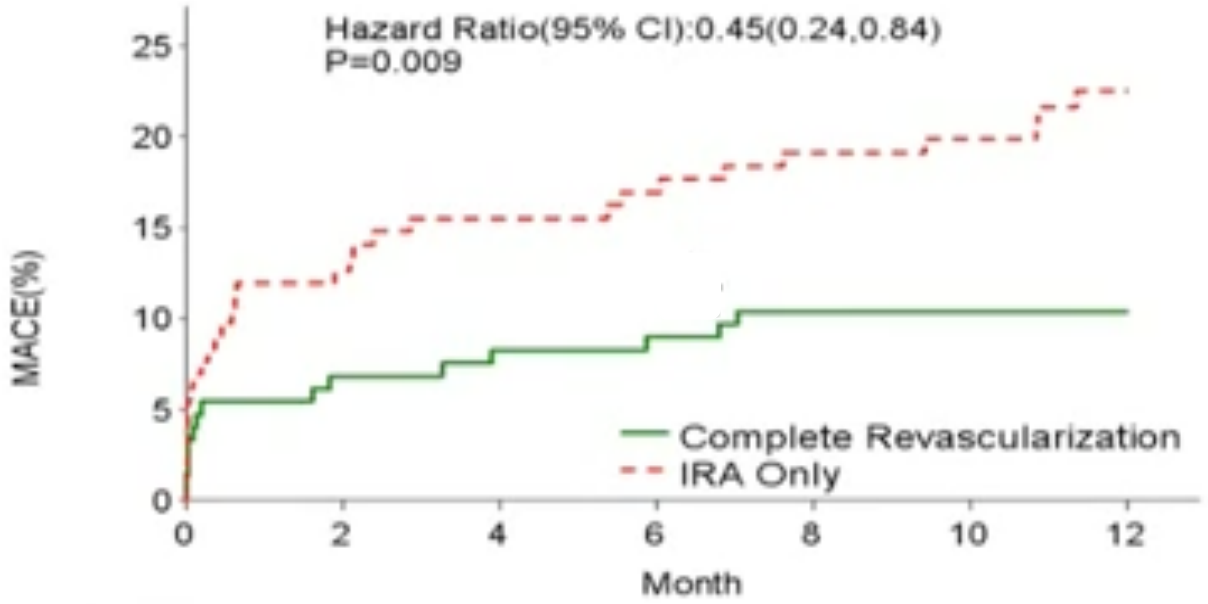
## Primary endpoint: Cardiac death, MI or refractory angina




Wald DS et al. *NEJM* 2013:on-line

# CULPRIT -MACE

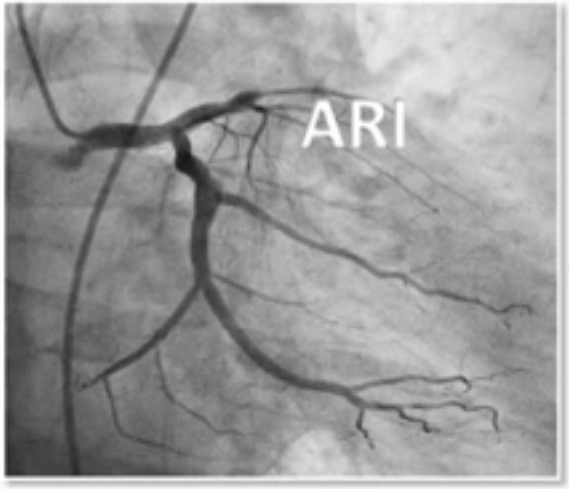
(total mortality, recurrent MI, heart failure, revascularisation)



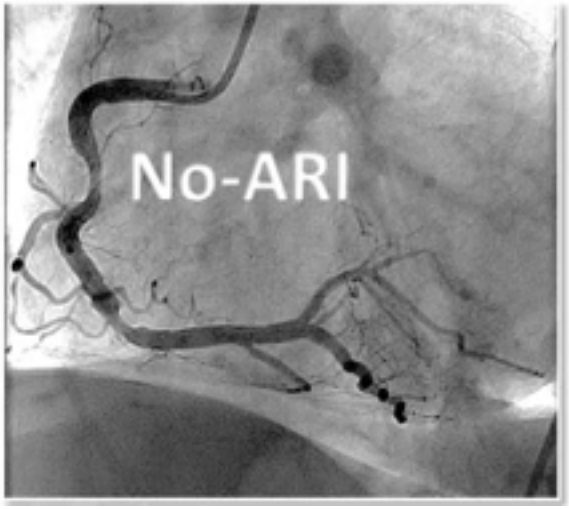

| Number at risk: | | | | | | |
|---|---|---|---|---|---|---|
| Complete:150 | 131 | 129 | 128 | 125 | 108 | 73 |
| IRA Only:146 | 122 | 118 | 116 | 111 | 98 | 68 |

Gershlick *et al.* ESC 2014

# DANAMI3-PRIMULTI




- **30-50%** pacientes somentidos ICPP presentan enfermedad multivaso.
- Las guías recomiendan ICP sólo de la ARI.
- Existen evidencias a favor de revascularizar el resto de lesiones.




Guías Europeas de Revascularización

| Enf. Multivaso | | |
|---|---|---|
| ICPP Solo ARI | IIa | B |
| Diferir el resto de vasos | IIa | B |
| ICPP todos los vasos | IIb | B |

#PostACC15

# DANAMI3-PRIMULTI

627

IAM Multivaso
Aleat tras éxito ARI

313
ICPP ARI

314
ICPP + Revasc guiada x FFR diferida

| | IRA only (n = 313) | Complete revascularisation (n = 314) |
|---|---|---|
| Age (years) | 64 (range 34 – 92) | 64 (range 37 – 94) |
| Male | 255 (82%) | 251 (80%) |
| Medical history | | |
| Diabetes | 42 (13%) | 29 (9%) |
| Hypertension | 146 (47%) | 130 (41%) |
| Current smoking | 151 (48%) | 160 (51%) |
| Previous MI | 27 (9%) | 17 (5%) |
| Infarct location | | |
| Anterior | 112 (36%) | 105 (33%) |
| Inferior | 179 (57%) | 195 (62%) |
| Posterior | 20 (6%) | 10 (3%) |
| Three vessel disease | 100 (32%) | 97 (31%) |
| Stenosis on proximal LAD | 86 (28%) | 80 (26%) |

#PostACC15

# DANAMI3-PRIMULTI

627

IAM Multivaso
Aleat tras éxito ARI

313
ICPP ARI

314
ICPP + Revasc guiada x FFR diferida

| | IRA only (n = 313) | Complete revascularisation (n = 314) | P |
|---|---|---|---|
| Procedure duration (min) | 42 (31 – 59) | 76 (56 – 100) | <0·0001 |
| Contrast volume (ml) | 170 (125 – 220) | 280 (215 – 365) | <0·0001 |
| Fluoroscopy dose (Gycm$^2$) | 49 (33 – 74) | 77 (52 – 115) | <0·0001 |
| N° arteries treated per patient | 1 (1–2) | 2 (1–3) | <0·0001 |
| Number of implanted stents | 1 (1–1) | 2 (1–3) | <0·0001 |
| Stent diameter (mm) | 3·5 (2·75–3·5) | 3·0 (2·75–3·5) | 0·005 |
| Total stent length (mm) | 18 (15–28) | 33 (18–51) | <0·0001 |
| Stent type | | | 0·5 |
| No stenting | 18 (6%) | 12 (4%) | |
| Bare-metal | 5 (2%) | 3 (1%) | |
| Drug-eluting | 290 (93%) | 298 (96%) | |
| Use of Glycoprotein IIb/IIIa inhibitor | 72 (23%) | 64 (20%) | 0·4 |
| Use of Bivalirudin | 234 (75%) | 237 (76%) | 0·8 |

#PostACC15

# DANAMI 3-PRIMULTI

2

627

IAM Multivaso

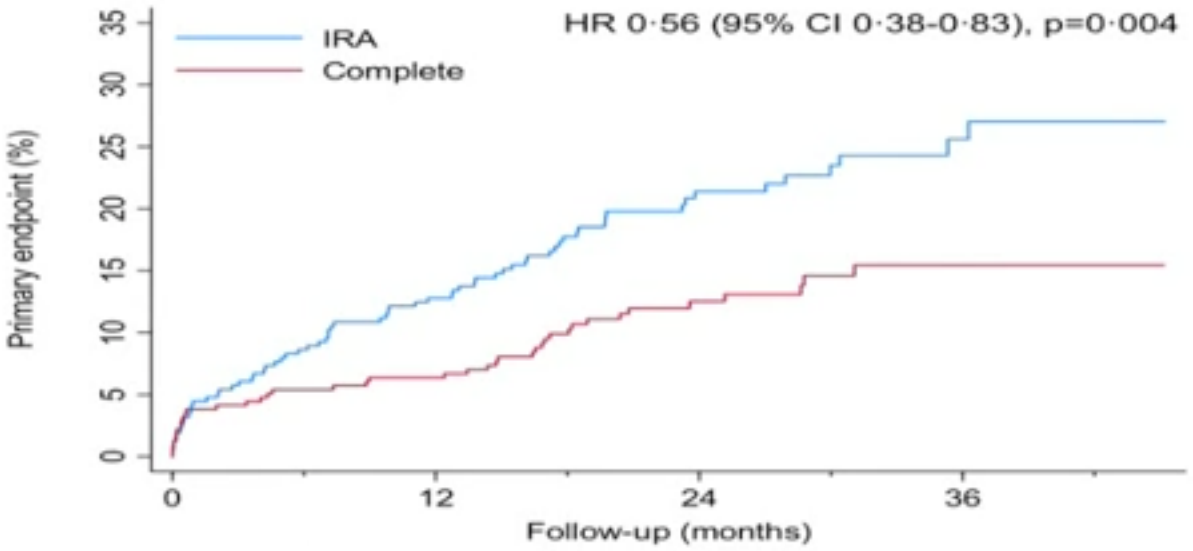
Aleat tras éxito ARI

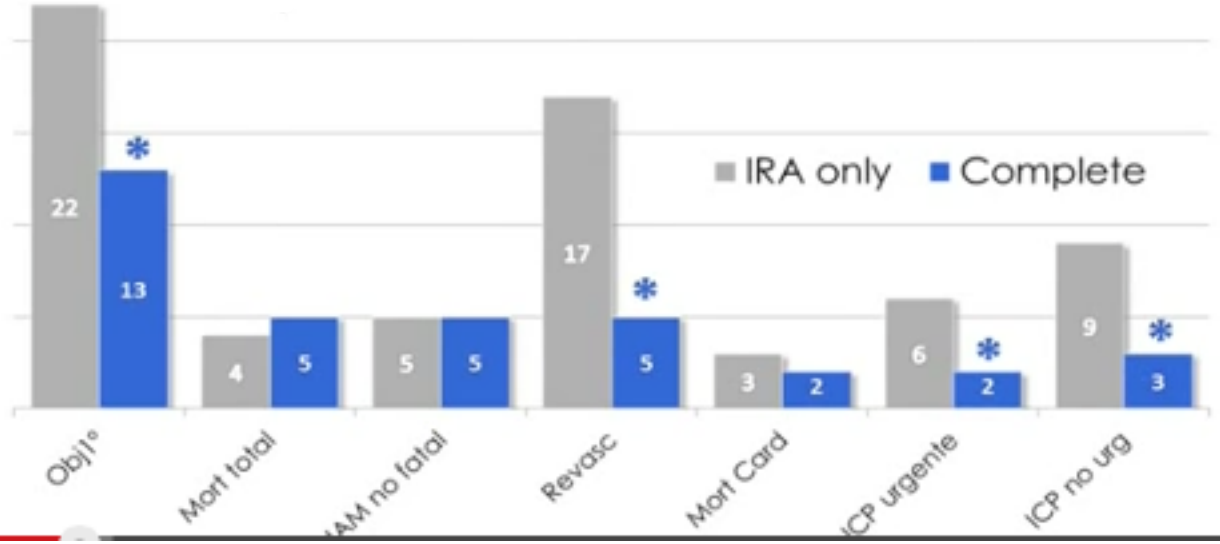
313

ICPP ARI

314

ICPP + Revasc guiada x FFR diferida



# DANAMI 3-PRIMULTI

## CONCLUSIONES

La revascularización guíada por **FFR** en pacientes

- **Mulitvaso**
- ICPP con **éxito** de **ARI**

1. Disminuye el objetivo 1°
2. Disminuye 40% la tasa de revasc. Urgente
3. **No** disminuye los eventos duros.

**Por tanto**
La estrategia de solo ARI es recomendable ante cualquier dificultad anticipada sobre No-ARI


| Recommendations | Class[a] | Level[b] |
|---|---|---|
| **Technique** | | |
| Stenting is recommended (over balloon angioplasty) for primary PCI. | I | A |
| New-generation DES are recommended over BMS in primary PCI. | I | A |
| Radial access should be preferred over femoral access if performed by an experienced radial operator. | IIa | A |
| Thrombus aspiration may be considered in selected patients | IIb | A |

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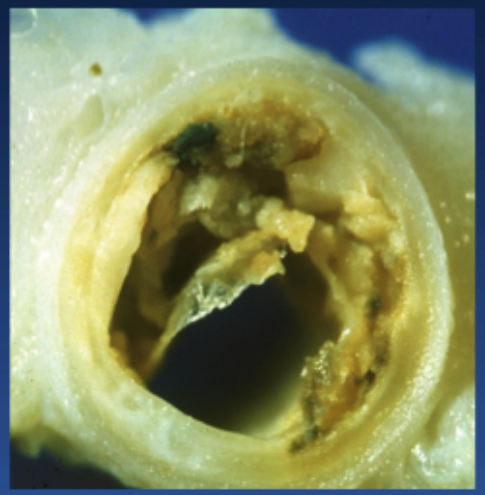
# Limitations of Balloon Angioplasty in AMI



Post POBA

# 13 RCTs of BMS vs. Balloon PTCA in AMI

## N=6922

| | Bare metal stents | Balloon angioplasty | RR [95% CI] | RR [95% CI] | P Value |
|---|---|---|---|---|---|
| **30 day events** | | | | | |
| Mortality | 2.9% | 3.0% | | 0.97 [0.74, 1.27] | 0.83 |
| Reinfarction | 2.0% | 2.2% | | 0.92 [0.66, 1.27] | 0.61 |
| TVR | 3.1% | 5.1% | | 0.60 [0.47, 0.77] | 0.0001 |
| **6-12 month events** | | | | | |
| Mortality | 5.1% | 5.2% | | 0.98 [0.79, 1.10] | 0.82 |
| Reinfarction | 3.7% | 3.9% | | 0.94 [0.74, 1.20] | 0.61 |
| TVR | 11.3% | 18.4% | | 0.62 [0.55, 0.69] | <0.0001 |


De Luca G et al. Int J Cardiol. 2007;119:306-9.

# DESERT: Pooled pt-level meta-analysis from 11 of 13 RCTs of SES/PES vs. BMS in primary PCI

N=6298. mean FU 1201 ± 440 days

Cox models with piecewise time-constant regression coefficients

| Outcome | Interval | HR (95%CI)* | *p*-value |
|---|---|---|---|
| Death | 0-1 year | 0.93 (0.70-1.22) | 0.14 |
| | 1-2 years | 0.58 (0.37-0.93) | 0.23 |
| | >2 years | 0.93 (0.65-1.33) | 0.18 |
| Reinfarction | 0-1 year | 0.85 (0.63-1.16) | 0.31 |
| | 1-2 years | 1.34 (0.81-2.23) | 0.25 |
| | >2 years | 2.06 (1.22-3.49) | 0.03 |
| Stent thrombosis | 0-1 year | 0.90 (0.66-1.23) | 0.52 |
| | 1-2 years | 1.38 (0.70-2.71) | 0.35 |
| | >2 years | 2.81 (1.28-6.19) | 0.04 |
| TVR | 0-1 year | 0.48 (0.41-0.58) | <0.001 |
| | 1-2 years | 0.66 (0.49-0.87) | 0.01 |
| | >2 years | 0.93 (0.62-1.38) | 0.71 |

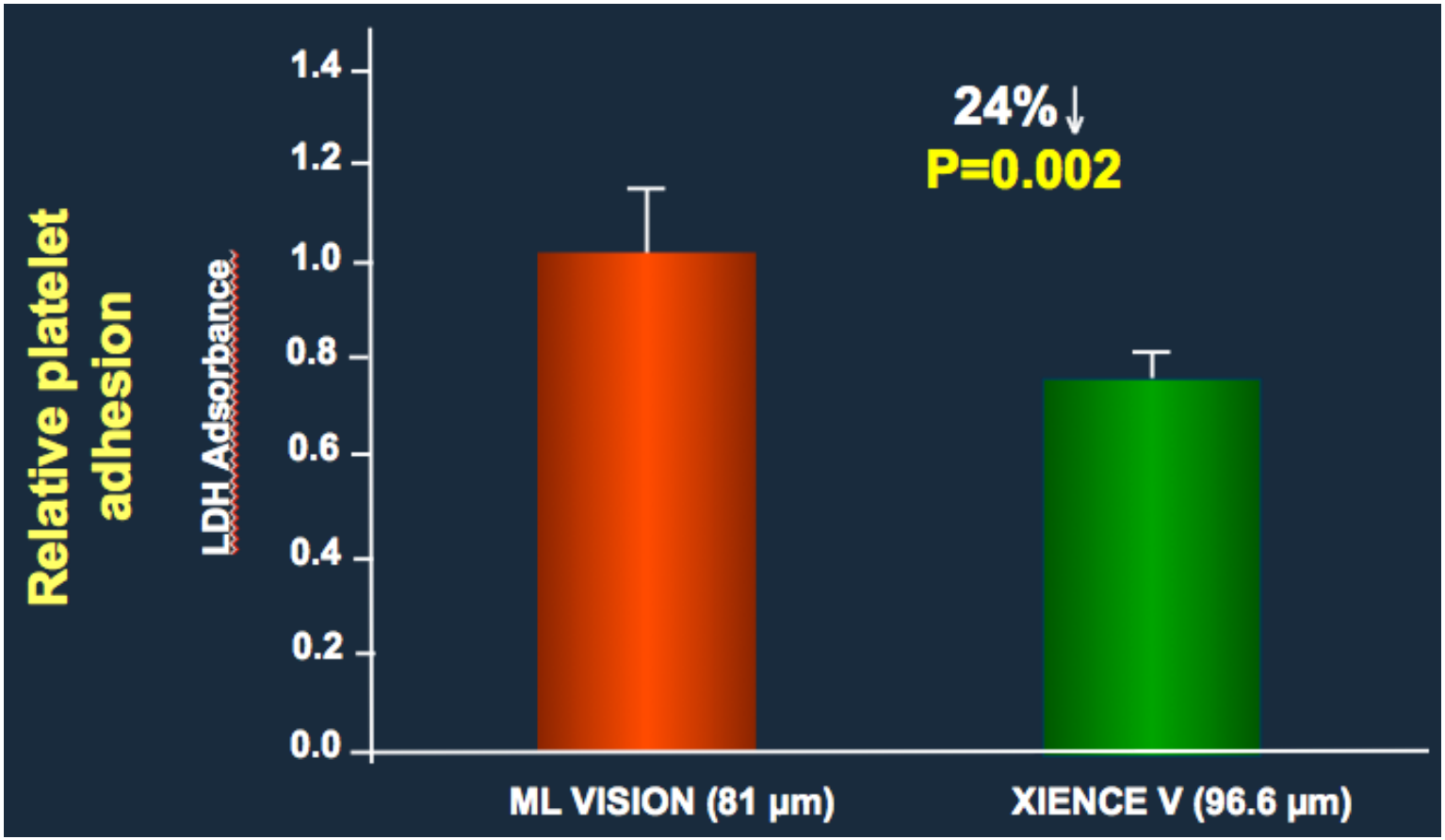
*HR for DES Vs BMS

De Luca G et al. *Arch Intern Med*. 2012;172:611-21

# Stent Thrombosis is Affected by Stent Design, Deployment and Polymer

## Impact of Xience / Promus polymer coating

### In vitro pulsatile Chandler loop model with porcine blood

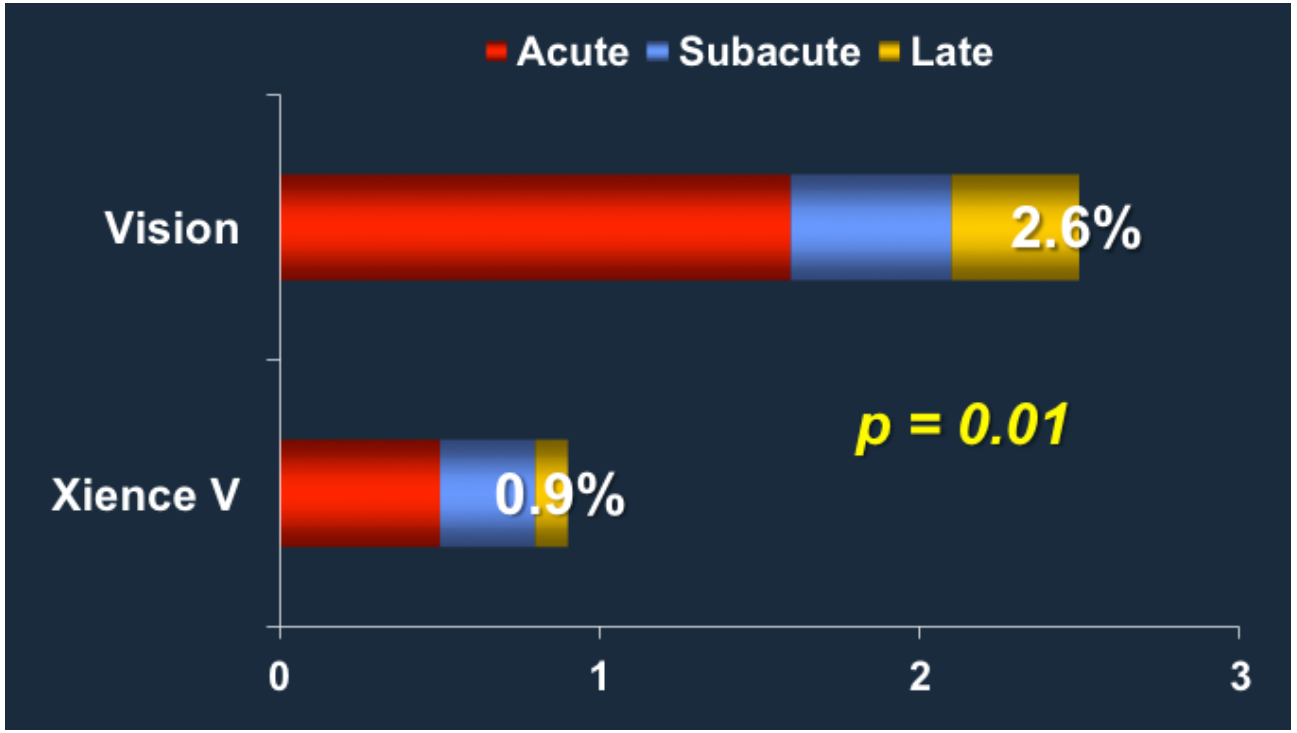



Kolandaivelu K et al. *Circulation* 2011;123:1400-09

# EXAMINATION Trial

1504 pts with STEMI undergoing PCI within 48° (85% primary PCI within 12°) were randomized to Xience V EES vs. Vision BMS

## Stent thrombosis (Def/prob) within 1 year




Definite ST was reduced with Xience V from 1.9% to 0.5%, p=0.01

Sabate M et al. Lancet 2012;380:1482–90

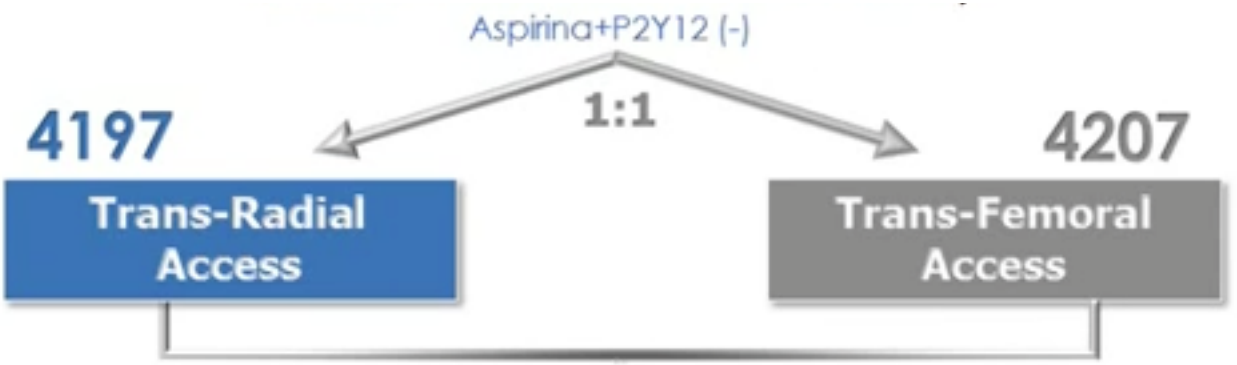
# SCA sometido a ICP

MATRIX

78

8404

SCACEST+
SCASEST
Con 1 FR
>60º, MDM(+)
Isquemia ECG



MATRIX

78

8404

Biv vs
HPN+IIb/IIIa

SCA sometido a ICP

Aspirina+P2Y12(+)

1:1

4197

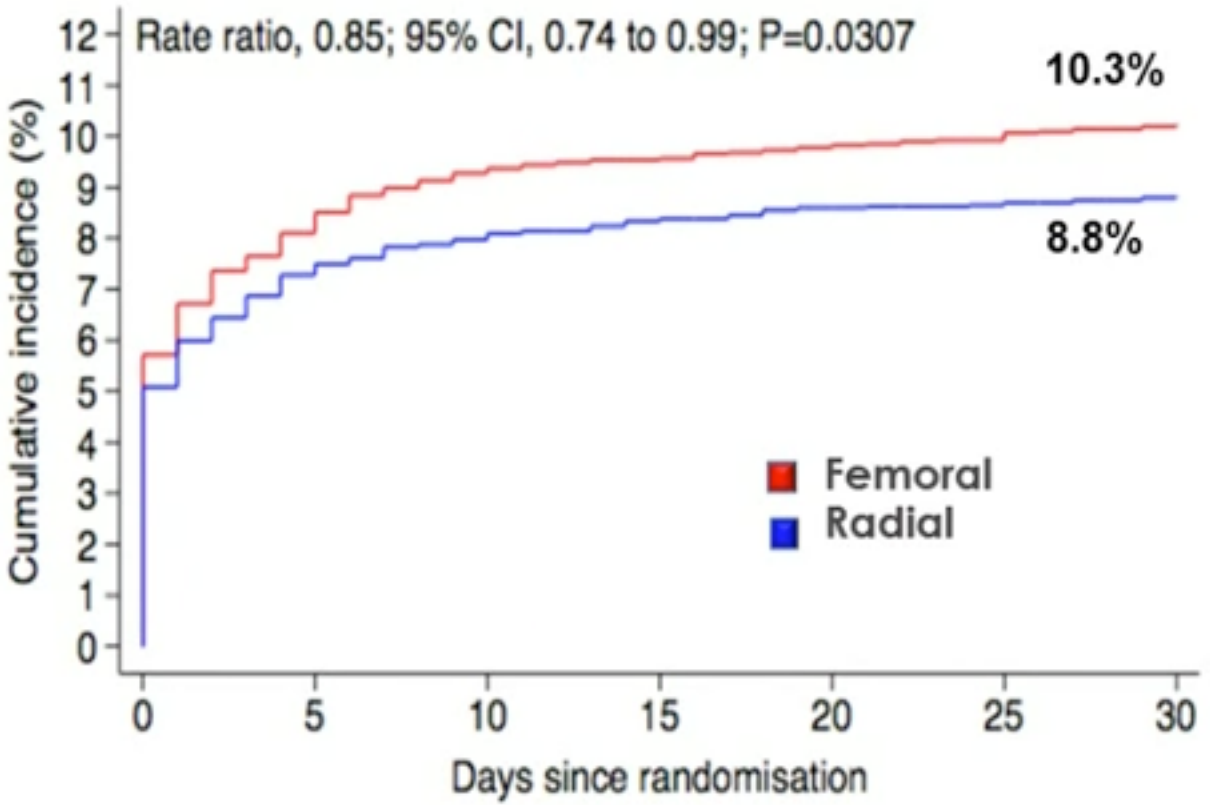
Trans-Radial Access

4207

Trans-Femoral Access

# EFICACIA: MACE

## Mortalidad+IAM+ACV




#PostACC15

MATRIX

78

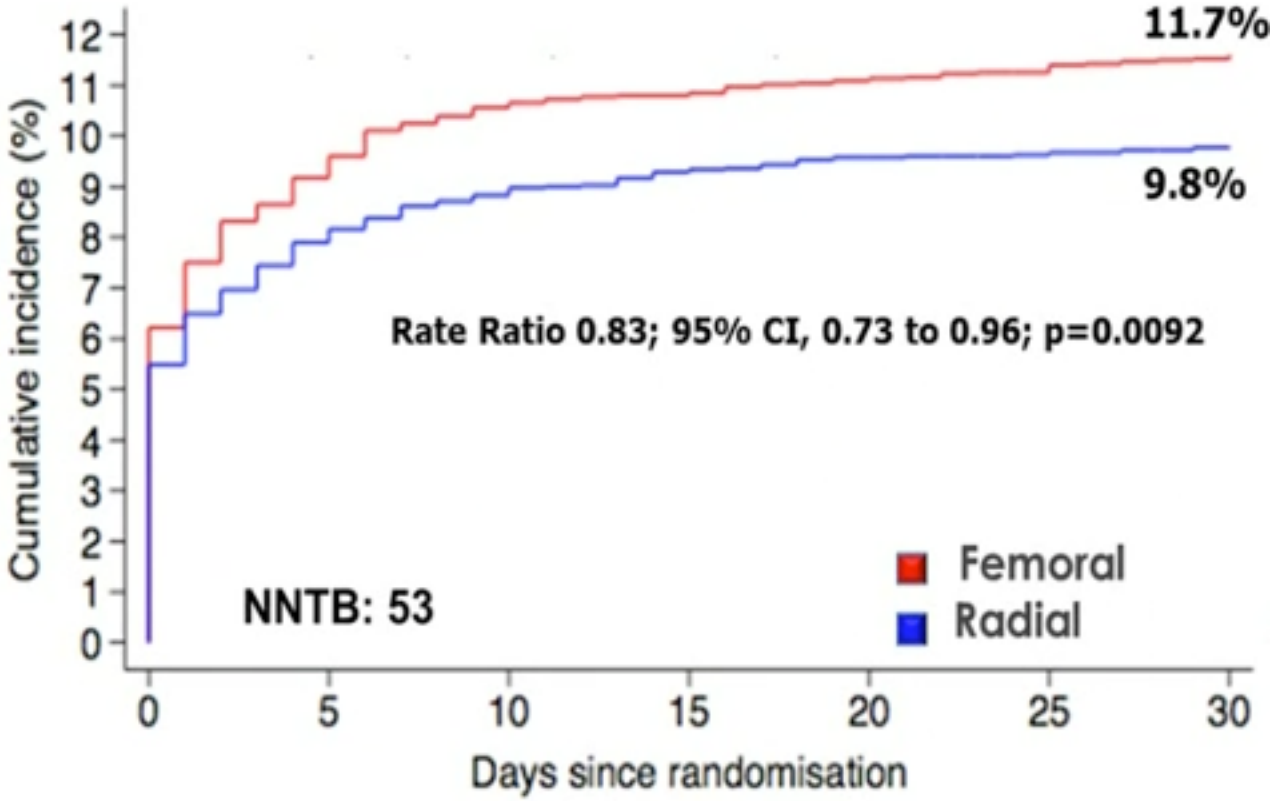
8404

Biv vs
HPN+IIb/IIIa

SCA sometido a ICP


# EFICACIA+SEGURIDAD: NACE

## Mortalidad+IAM+ACV+Sangrado BARC 3-5




#PostACC15

MATRIX

78

8404

Biv vs
HPN+IIb/IIIa

# CONCLUSIONES

En **SCA+ICP**, el acceso radial

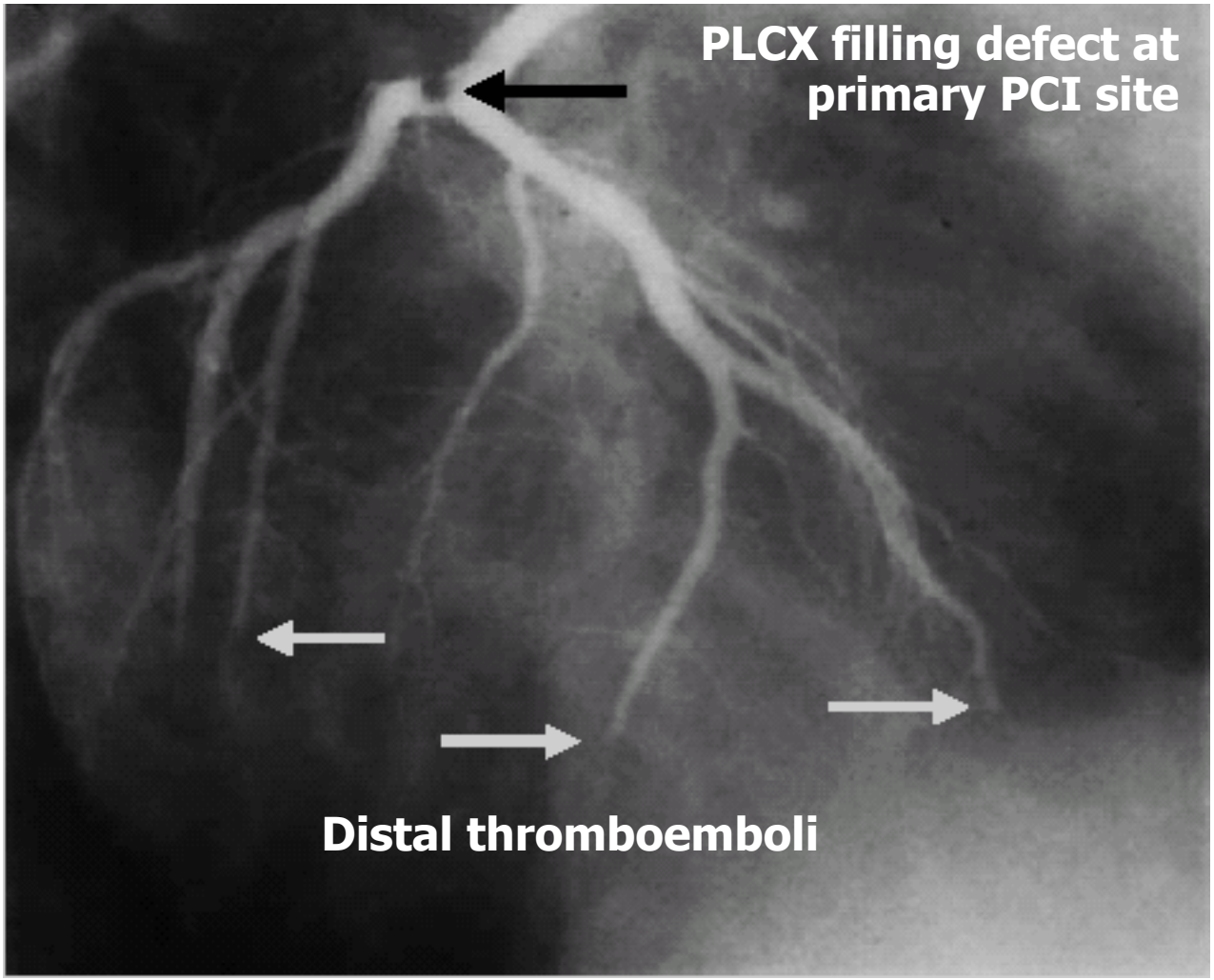
1. Disminuye la mortalidad
2. Disminuye los sangrados no mortales.
3. **NNTB: 53**

**Por tanto**
Estrategia de **elección** en SCA + ICP independientemente del régimen de anticoagulación.

# Impact of Macroscopic Distal Emboli (DE)

**DE occurred in 27 of 178 (15%) pts after primary PTCA**

- ↓ ST res
- ↑ Infarct size
- ↑ Mortality

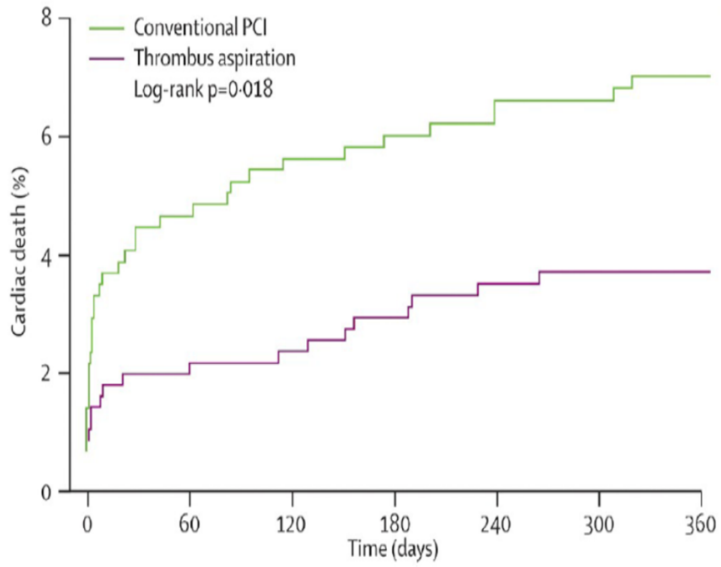



*Henriques JPS et al. EHJ 2002;23:1112-7*

# Microscopic distal emboli and no reflow

TIMI 3 flow with absent microvascular perfusion

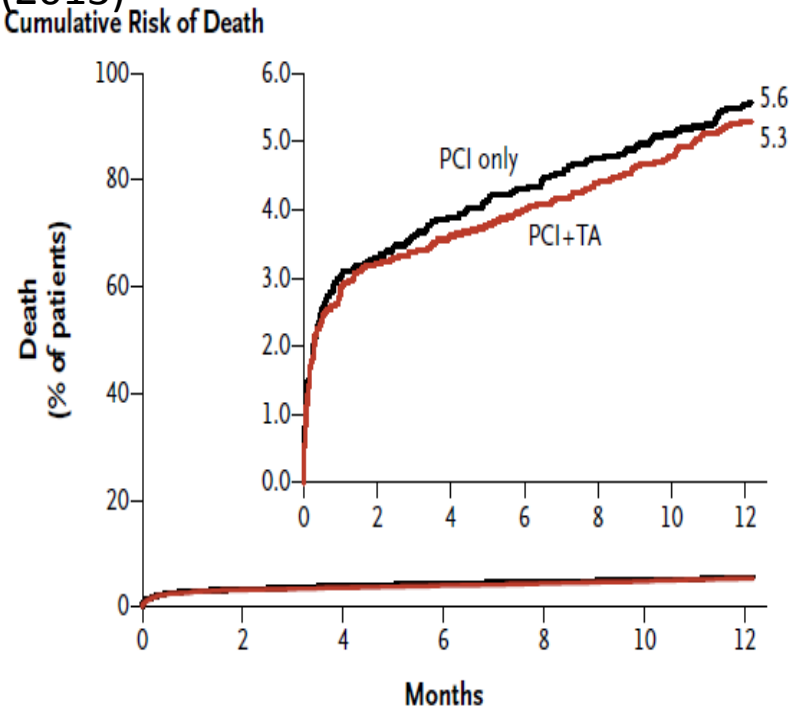
Large effect size in TAPAS (2008)




University Medical Center Groningen

Vlaar P, et al. TAPAS 1-year clinical outcome. Lancet 2008;371:1915-20

No difference in TASTE (2013)

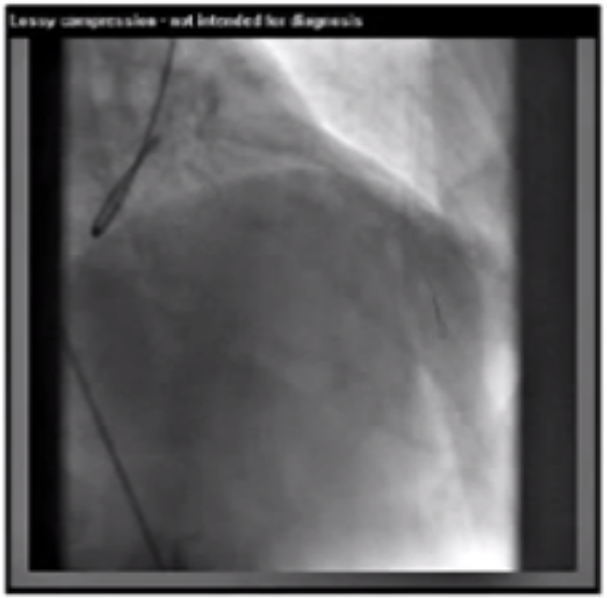



TAPAS trial (N=1071) showed a large benefit vs. TASTE (N=7244) showed no benefit of thrombus aspiration

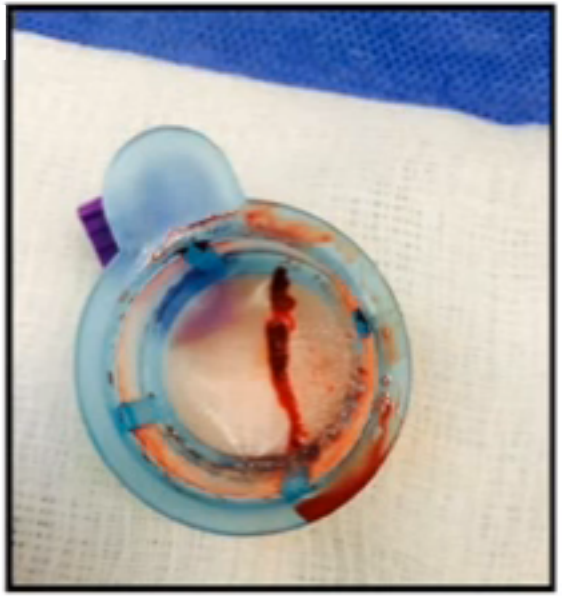
Vlaar PJ, et al. Lancet 2008;371:1915-20.
Frobert O, et al. N Engl J Med 2013.
Lagerqvist B, et al. N Engl J Med. 2014.

# Randomized trial of manual aspiration Thrombectomy + PCI vs. PCI Alone in STEMI (TOTAL)

## Rationale for Thrombectomy



Major Limitation of Primary PCI:
Distal Embolization and Reduced Flow

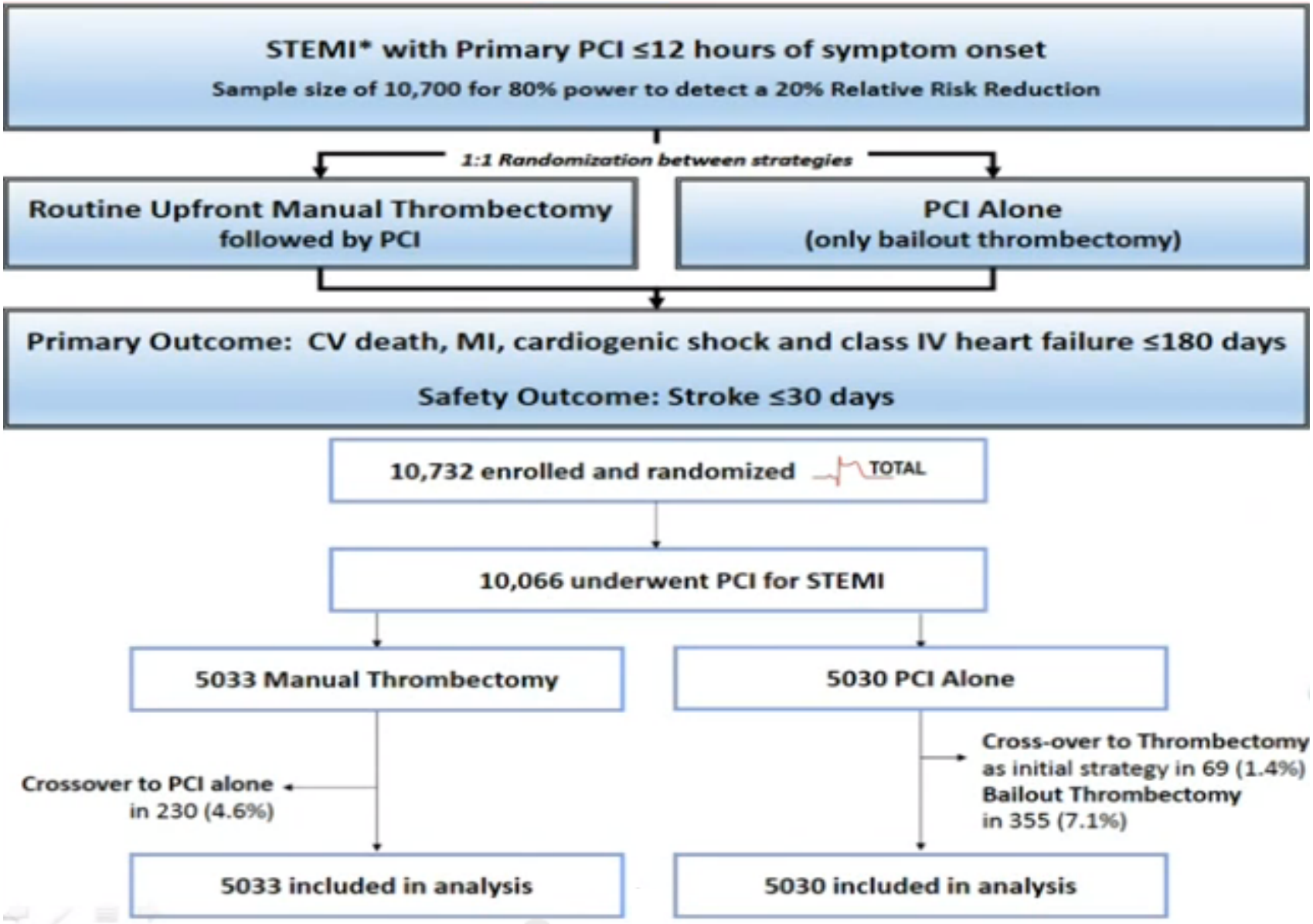


Hypothesis: Aspiration thrombectomy may reduce embolization and improve clinical outcomes

TOTAL

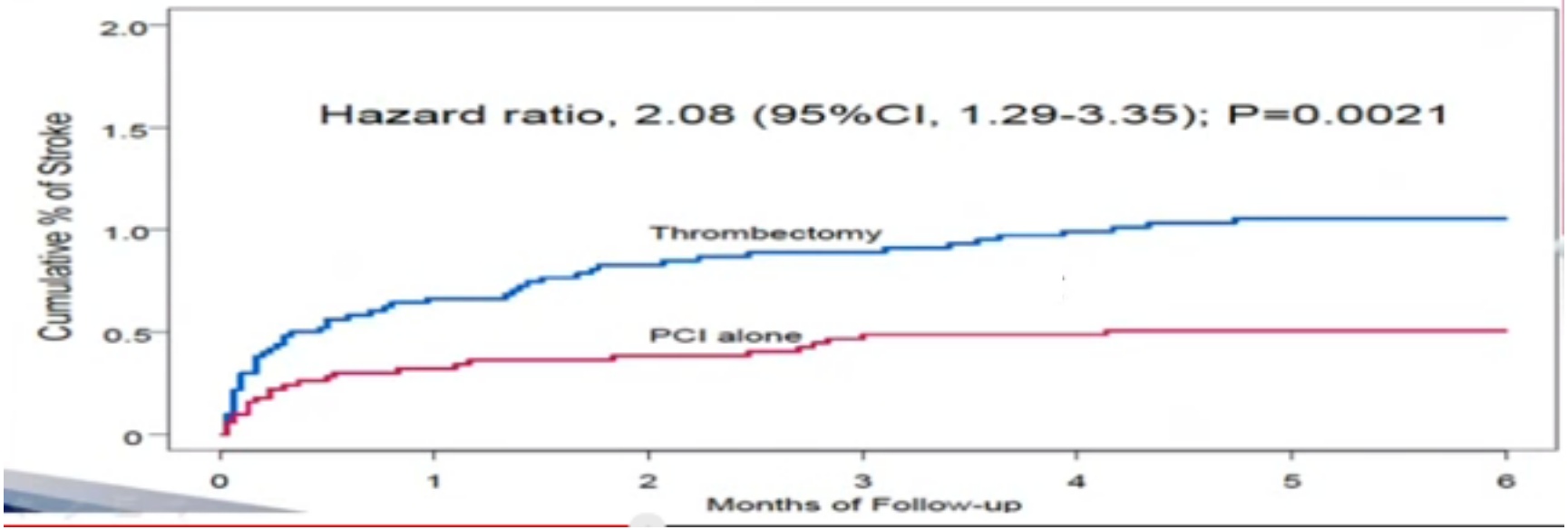
#PostACC15

# TOTAL


STEMI* with Primary PCI ≤12 hours of symptom onset
Sample size of 10,700 for 80% power to detect a 20% Relative Risk Reduction
1:1 Randomization between strategies
Routine Upfront Manual Thrombectomy followed by PCI
PCI Alone (only bailout thrombectomy)
Primary Outcome: CV death, MI, cardiogenic shock and class IV heart failure ≤180 days
Safety Outcome: Stroke ≤30 days
10,732 enrolled and randomized
TOTAL
10,066 underwent PCI for STEMI
5033 Manual Thrombectomy
5030 PCI Alone
Crossover to PCI alone in 230 (4.6%)
Cross-over to Thrombectomy as initial strategy in 69 (1.4%)
Bailout Thrombectomy in 355 (7.1%)
5033 included in analysis
5030 included in analysis

# TOTAL

| Day 180 | Thrombectomy (N=5033) (%) | PCI alone (N=5030) (%) | HR | 95% CI | p |
|---|---|---|---|---|---|
| CV death, MI, shock or class IV heart failure | 347 (6.9%) | 351 (7.0%) | 0.99 | 0.85-1.15 | 0.86 |
| CV death | 157 (3.1%) | 174 (3.5%) | 0.90 | 0.73-1.12 | 0.34 |
| Recurrent MI | 99 (2.0%) | 92 (1.8%) | 1.07 | 0.81-1.43 | 0.62 |
| Cardiogenic Shock | 92 (1.8%) | 100 (2.0%) | 0.92 | 0.69-1.22 | 0.56 |
| Class IV heart failure | 98 (1.9%) | 90 (1.8%) | 1.09 | 0.82-1.45 | 0.57 |



# TOTAL: conclusiones

Routine thrombectomy compared to PCI alone with only bailout thrombectomy did not reduce CV death, MI, shock or heart failure within 180 days

Routine thrombectomy was associated with increased risk of stroke within 30 days

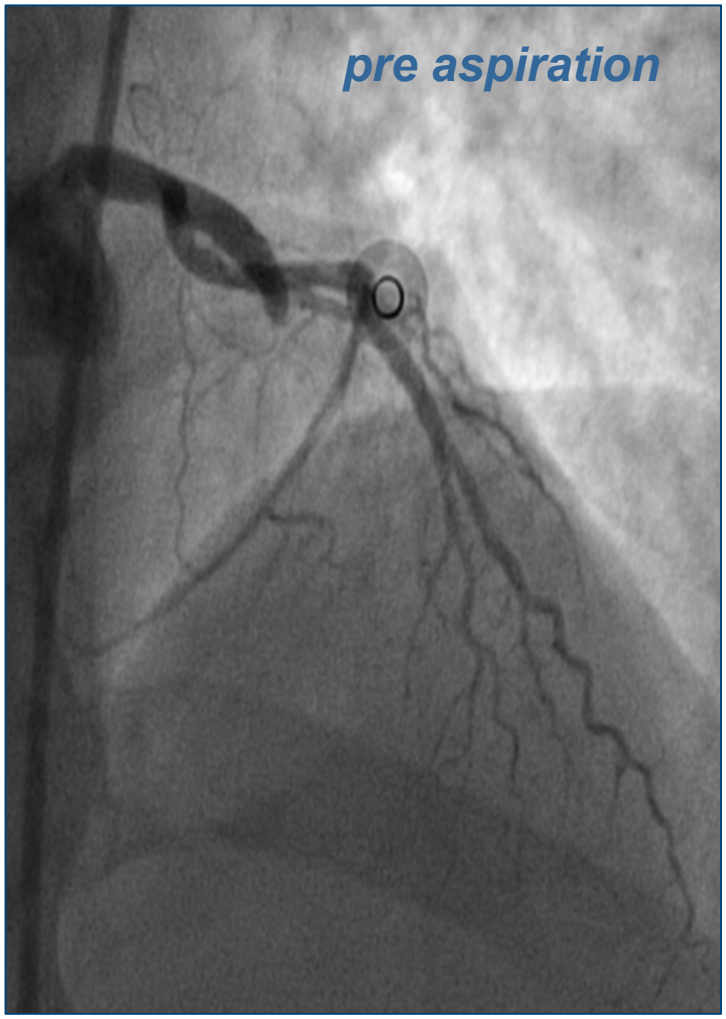
TOTAL and TASTE emphasize the need to conduct large randomized trials of common interventions even when small trials appear positive

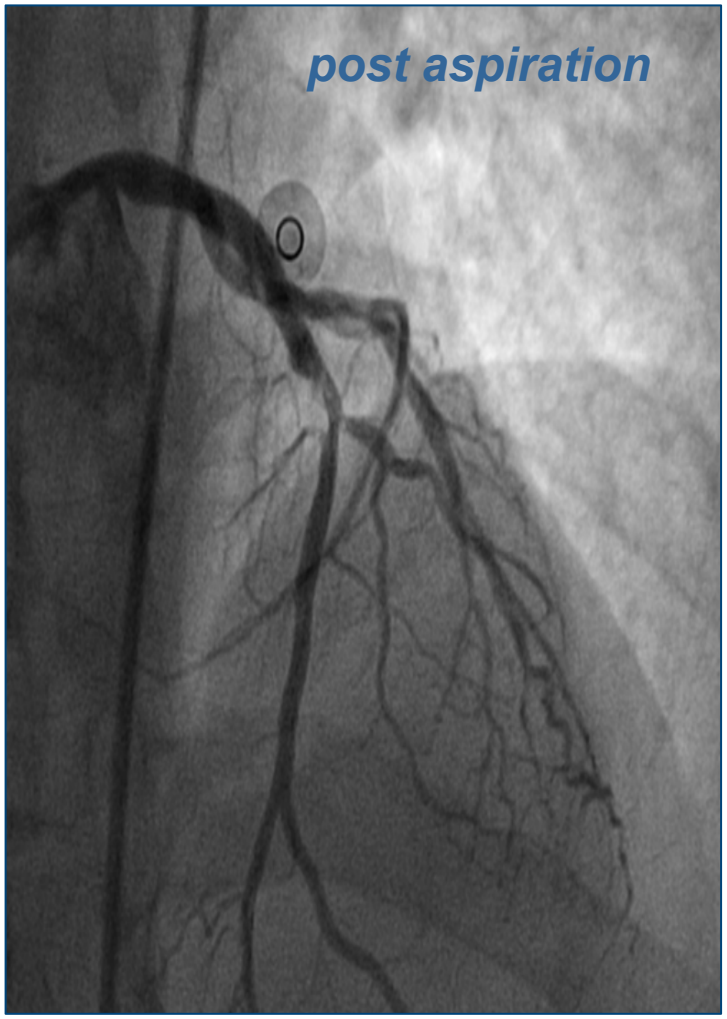

ORIGINAL ARTICLE

Randomized Trial of Primary PCI with or without Routine Manual Thrombectomy

#PostACC15

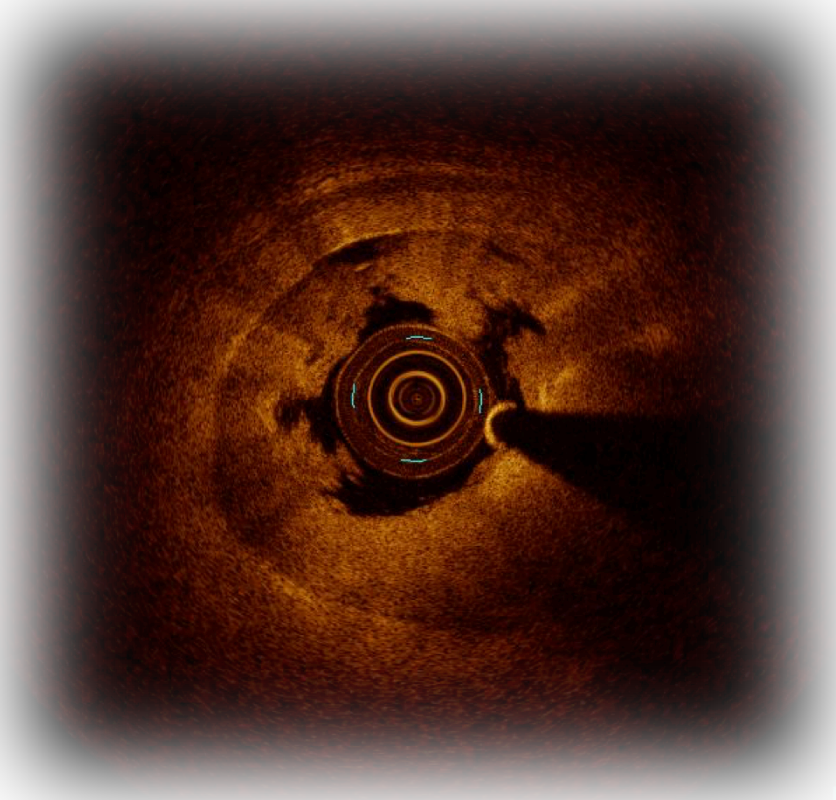
# How effective is manual thrombus aspiration?

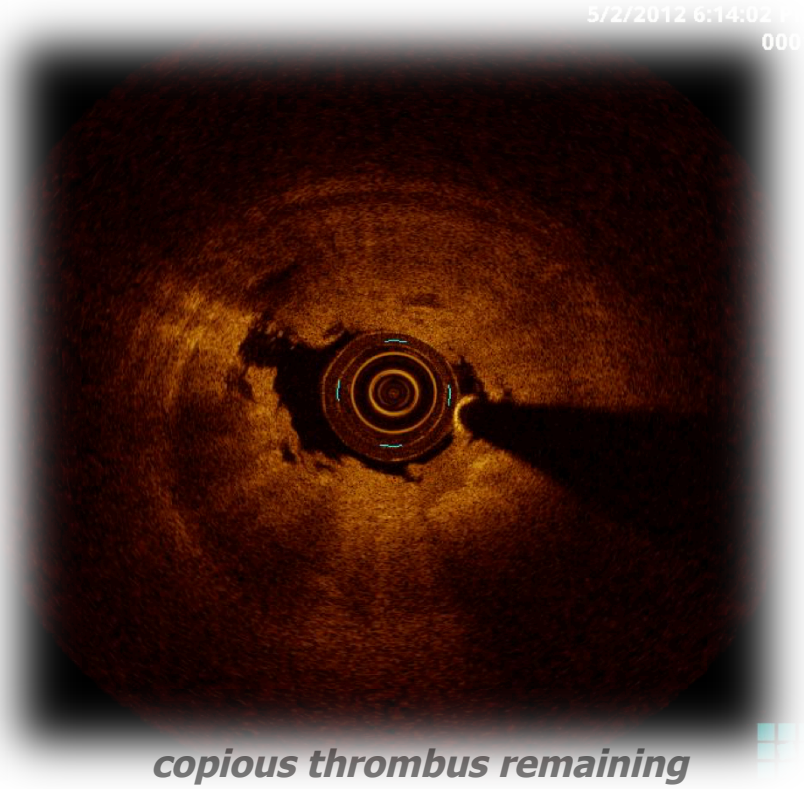


# How effective is manual thrombus aspiration?

## Post aspiration





*copious thrombus remaining*

c/o Prof. Valdes, Murcia, Spain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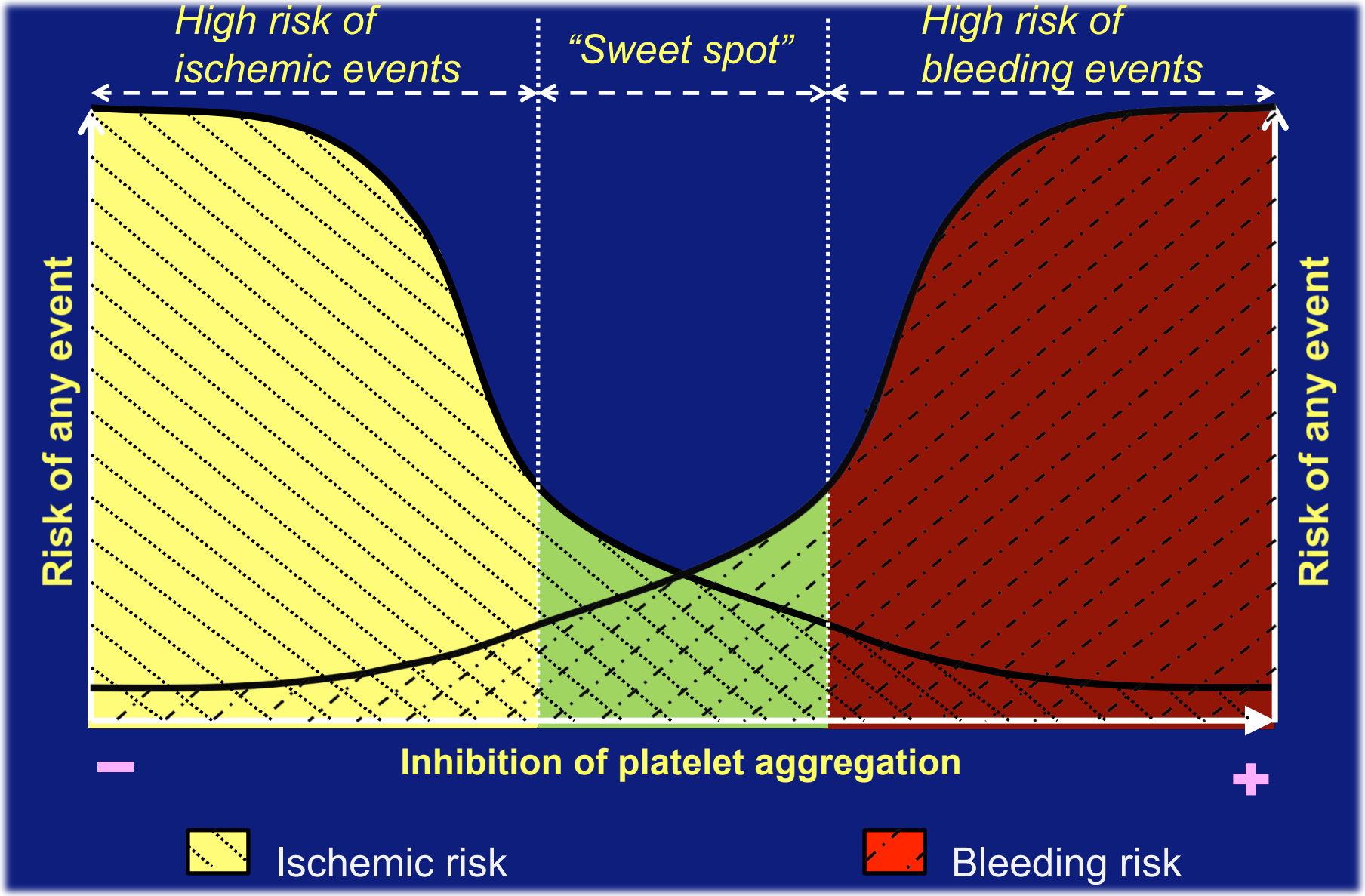
## Recommendations for antithrombotic treatment in patients with STEMI undergoing primary PCI

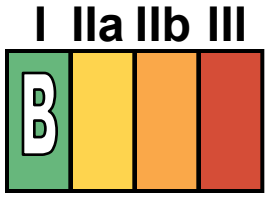
| Recommendations | Class[a] | Level[b] |
|---|---|---|
| **Antiplatelet therapy** | | |
| ASA is recommended for all patients without contraindications at an initial oral loading dose of 150–300 mg (or 80–150 mg i.v.) and at a maintenance dose of 75–100 mg daily long-term regardless of treatment strategy. | I | A |
| A $P2Y_{12}$ inhibitor is recommended in addition to ASA and maintained over 12 months unless there are contraindications such as excessive risk of bleeding. Options are: | I | A |
| • Prasugrel (60 mg loading dose, 10 mg daily dose) if no contraindication | I | B |
| • Ticagrelor (180 mg loading dose, 90 mg twice daily) if no contraindication | I | B |
| • Clopidogrel (600 mg loading dose, 75 mg daily dose), only when prasugrel or ticagrelor are not available or are contraindicated. | I | B |
| It is recommended to give $P2Y_{12}$ inhibitors at the time of first medical contact. | I | B |
| GP IIb/IIIa inhibitors should be considered for bail-out or evidence of no-reflow or a thrombotic complication. | IIa | C |
| Upstream use of a GP IIb/IIIa inhibitor (vs. in-lab use) may be considered in high-risk patients undergoing transfer for primary PCI. | IIb | B |
| **Anticoagulants** | | |
| Anticoagulation is recommended for all patients in addition to antiplatelet therapy during PCI. | I | A |
| The anticoagulation is selected according to both ischaemic and bleeding risks, and according to the efficacy–safety profile of the chosen agent. | I | C |
| Unfractionated heparin: 70–100 U/kg i.v. bolus when no GP IIb/IIIa inhibitor is planned; 50–70 U/kg i.v. bolus with GPIIb/IIIa inhibitor. | I | C |
| Bivalirudin 0.75 mg/kg i.v. bolus followed by i.v. infusion of 1.75 mg/kg/h for up to 4 hours after the procedure. | IIa | A |
| Enoxaparin i.v. 0.5 mg/kg with or without GP IIb/IIIa inhibitor. | IIa | B |

# Balancing Safety and Efficacy




Ferreiro & Angiolillo. Thromb Haemost 2010

# Posthospitalization Plan of Care

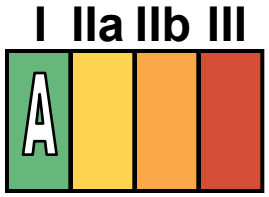



Posthospital systems of care designed to prevent hospital readmissions should be used to facilitate the transition to effective, coordinated outpatient care for all patients with STEMI.


Exercise-based cardiac rehabilitation/secondary prevention programs are recommended for patients with STEMI.

# Posthospitalization Plan of Care


A clear, detailed, and evidence-based plan of care that promotes medication adherence, timely follow-up with the healthcare team, appropriate dietary and physical activities, and compliance with interventions for secondary prevention should be provided to patients with STEMI.




Encouragement and advice to stop smoking and to avoid secondhand smoke should be provided to patients with STEMI.

**ESQUEMA DE TRATAMIENTO ACTUAL MEDIANTE REVASCULARIZACION PRECOZ EN EL INFARTO AGUDO DE MIOCARDIO**

# CONCLUSIONES

## ANGIOPLASTIA PRIMARIA

## CREACIÓN DE REDES ASISTENCIALES

## STENTS FARMACOACTIVOS DE SEGUNDA GENERACIÓN

## ACCESO RADIAL

## REVASCULARIZACIÓN COMPLETA

## TROMBOASPIRACIÓN NO DE RUTINA

## REHABILITACIÓN CARDÍACA Y PREVENCIÓN SECUNDARIA

muchas gracias