SOCIEDAD ESPAÑOLA DE CARDIOLOGÍA

EL TRATAMIENTO INICIAL

Grupo Arritmias Cardiacas SEMES

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SCACEST: TRATAMIENTO INICIAL

- Objetivos
- Medidas Generales: Oxigenoterapia
- Nitratos
- Beta-bloqueantes
- IECA / ARA-II
- TTO Hiperglucemia
- HTA
- TTO Complicaciones: Arritmias Cardiacas
- Conclusiones

TTO INICIAL SCACEST: OBJETIVOS

- Comienzo: Primer Contacto Médico
- **SIN RETRASAR TERAPIAS REPERFUSIÓN & ATT**
- Garantizar Oxigenación Miocardio.
  - ↓ Pre y Postcarga
  - ↓ Consumo O_2 miocardio
- Profilaxis y TTO Complicaciones: Arritmias, ICC

Part 9: Acute Coronary Syndromes

2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations

Robert E. O'Connor, Co-Chair*; Leo Bossaert, Co-Chair*; Hans-Richard Arntz; Steven C. Brooks; Deborah Diercks; Gilson Feitosa-Filho; Jerry P. Nolan; Terry L. Vanden Hoek; Darren L. Walters; Aaron Wong; Michelle Welsford; Karen Woolfrey; on behalf of the Acute Coronary Syndrome Chapter Collaborators

(*Circulation*. 2010;122[suppl 2]:S422–S465.)

Initial Therapeutic Interventions

Few studies have been published that directly address out-of-hospital or ED interventions for ACS. In some situations, extrapolation from in-hospital evidence was needed to provide some guidance for out-of-hospital and early ED management.

MEDIDAS GENERALES (I): ANALGESIA

- Incrementar confort
- Dolor → activación simpática → vasoconstricción → ↑ Trabajo Cardiaco y Consumo O_2 miocardio.
- **Opiáceos i.v. (titulados): Cloruro Mórfico** (¿Petidina IAM inferior-VD?)
  - **Antieméticos**

Association of intravenous morphine use and outcomes in acute coronary syndromes: Results from the CRUSADE Quality Improvement Initiative

Trip J. Meine, MD,[a] Matthew T. Roe, MD, MHS,[a] Anita Y. Chen, MS,[a] Manesh R. Patel, MD,[a] Jeffrey B. Washam, PharmD,[a] E. Magnus Ohman, MD,[b] W. Frank Peacock, MD,[c] Charles V. Pollack, Jr, MD, MA,[d] W. Brian Gibler, MD,[c] and Eric D. Peterson, MD, MPH,[a] for the CRUSADE Investigators *Durham and*

Am Heart J 2005;149:1043-9.

Conclusions Use of morphine either alone or in combination with nitroglycerin for patients presenting with NSTE ACS was associated with higher mortality even after risk adjustment and matching on propensity score for treatment. This analysis

MEDIDAS GENERALES (II): ANALGESIA

- **AINE:**
  - **No utilizar (retirar TTO crónico)**

Cardiovascular Risk and Inhibition of Cyclooxygenase

A Systematic Review of the Observational Studies of Selective and Nonselective Inhibitors of Cyclooxygenase 2

Patricia McGettigan, MD, FRACP
David Henry, MB, ChB, FRCP

JAMA. 2006;296:1633-1644

Conclusions This review confirms the findings from randomized trials regarding the risk of cardiovascular events with rofecoxib and suggests that celecoxib in commonly used doses may not increase the risk, contradicts claims of a protective effect of naproxen, and raises serious questions about the safety of diclofenac, an older drug.

Do selective cyclo-oxygenase-2 inhibitors and traditional non-steroidal anti-inflammatory drugs increase the risk of atherothrombosis? Meta-analysis of randomised trials

Patricia M Kearney, Colin Baigent, Jon Godwin, Heather Halls, Jonathan R Emberson, Carlo Patrono

bmj.com 2006;332:1302

Conclusions Selective COX 2 inhibitors are associated with a moderate increase in the risk of vascular events, as are high dose regimens of ibuprofen and diclofenac, but high dose naproxen is not associated with such an excess.

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(*Circulation*. 2010;122[suppl 2]:S422–S465.)

NSAIDs should not be administered and may be harmful in subjects with suspected ACS. Patients with suspected ACS who are taking NSAIDs should have them discontinued when feasible.

. Lorazepam with nitroglycerin may be considered to alleviate pain in patients with cocaine-associated

MEDIDAS GENERALES (III): ANSIOLITICOS

- **Diacepam:**
  - Ansiolisis.
  - Efecto antiarrítmico: Directo y por ↓ Catecolaminas circulantes
  - Vasodilatación coronaria

Diazepam in immediate post-myocardial infarct period

A double blind trial

ROBERT A DIXON,* I RALPH EDWARDS,† JEREMY PILCHER‡

Br Heart J 1980; **43**: 535–40

SUMMARY One hundred and thirty-one male patients admitted to a coronary care unit with myocardial infarction, later confirmed, were randomly allocated to receive either 10 mg diazepam every six hours, or a matched placebo, for 48 hours. During this period, no differences were found between the treatment groups in the incidence of fatal or non-fatal tachyarrhythmias

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(*Circulation*. 2010;122[suppl 2]:S422–S465.)

may be administered to patients with ACS to alleviate apprehension and anxiety, there is no evidence that anxiolytics facilitate ECG resolution, reduce infarct size, or decrease mortality in undifferentiated patients with suspected ACS.

MEDIDAS GENERALES (IV):OXIGENOTERAPIA

Oxigenoterapia en el infarto agudo de miocardio: una encuesta-web sobre la práctica y las creencias de los clínicos

JUAN B. CABELLO[1], JOSÉ I. EMPARANZA[2], VICENTE RUIZ GARCÍA[3], AMANDA BURLS[4]

Emergencias 2009; 21: 422-428

El protocolo o GPC local ¿recomienda el uso tratamiento con oxígeno?		
Sí	98	63,2
No	27	17,4
No tenemos GPC local	10	6,5
No lo sé	6	3,9
Sí, pero sólo en circunstancias específicas	14	9,0
Perdidos	14	–
Indica tu situación profesional		
Residente	0	0
Adjunto de hospital	136	88,4
Médico de familia	17	10,9
Enfermero	0	0
Otras	2	1,3
Perdidos	14	–
¿Cuál es tu especialidad?		
Medicina de urgencias y emergencias	29	18,8
Cardiología	89	57,4
Medicina interna	9	5,8
Medicina familiar y comunitaria	13	8,4
Medicina Intensiva	12	7,7
Otras	3	1,9
Perdidos	14	–

IAM: Infarto agudo de miocardio. GPC: Guía de práctica clínica.

	Número	Porcentaje
¿En tu práctica tratas con oxígeno a los pacientes con IAM?		
Siempre	68	40,2
Siempre, a menos que esté contraindicado	47	27,8
Habitualmente	30	17,8
A veces	9	5,3
No aplicable	3	1,8
Sólo si hay una indicación específica	12	7,1
¿Cuántos pacientes con IAM tratas aproximadamente al año?		
0	2	1,2
1-10	21	12,9
11-25	19	11,7
26-50	33	20,2
Más de 50	88	54,5
Perdidos	6	–
¿Crees que el oxígeno disminuye el dolor del paciente con IAM?		
Sí, casi siempre	10	6,3
Habitualmente	29	18,4
A veces	30	19,0
Casi nunca	36	22,8
Nunca	31	19,6
No, incluso puede empeorarlo	3	1,9
No lo sé	19	12,0
Perdidos	11	–
¿Crees que el oxígeno reduce la mortalidad por IAM?		
Sí, tiene un efecto claro	30	19,1
Probablemente sí	40	25,5
Sí, pero el efecto no es importante	15	9,6
No lo sé	36	22,9
No, no tiene ningún efecto	36	22,9

Conclusiones: La oxigenoterapia en IAM es una práctica muy extendida, que se justifica en parte por la creencia de que mejora el dolor o/y la mortalidad.

MEDIDAS GENERALES (V):OXIGENOTERAPIA

- **No evidencia de efecto beneficioso.**
- **↑FiO_2 Potencialmente perjudicial:**
  - Hiperoxia ↓GC ↑Resistencias periféricas.
    - > en SCACEST sin ICC ni Shock
  - SatO2>90%→ TTO ↑FiO_2 no ↑Transporte O_2
  - PaO_2 determinante mayor del tono regulador coronario: Hiperoxia ↓Flujo Coronario
  - Lesión reperfusión: hiperoxia → radicales libres

Routine use of oxygen in the treatment of myocardial infarction: systematic review

M Wijesinghe,[1] K Perrin,[1] A Ranchord,[2] M Simmonds,[2] M Weatherall,[3] R Beasley[1,4]

Heart 2009;**95**:198–202

Conclusion: The limited evidence that does exist suggests that the routine use of high-flow oxygen in uncomplicated MI may result in a greater infarct size and possibly increase the risk of mortality.

MEDIDAS GENERALES (V):OXIGENOTERAPIA

Oxygen therapy for acute myocardial infarction

Juan B Cabello[1], Amanda Burls[2], José I Emparanza[3], Sue Bayliss[4], Tom Quinn[5]

THE COCHRANE COLLABORATION®

There is no conclusive evidence from randomised controlled trials to support the routine use of inhaled oxygen in patients with acute AMI. A definitive randomised controlled trial is urgently required given the mismatch between trial evidence suggestive of possible harm from routine oxygen use and recommendations for its use in clinical practice guidelines.

BTS guideline for emergency oxygen use in adult patients

B R O'Driscoll,[1] L S Howard,[2] A G Davison[3] on behalf of the British Thoracic Society

Thorax 2008;**63**(Suppl VI):vi1–vi68.

Table 4 Conditions for which patients should be monitored closely but oxygen therapy is not required unless the patient is hypoxaemic (section 8.13)

- If hypoxaemic, the initial oxygen therapy is nasal cannulae at 2–6 l/min or simple face mask at 5–10 l/min unless saturation is <85% (use reservoir mask) or if at risk from hypercapnia (see below).
- The recommended initial target saturation range, unless stated otherwise, is 94–98%
- If oximetry is not available, give oxygen as above until oximetry or blood gas results are available
- If patients have COPD or other risk factors for hypercapnic respiratory failure, aim at a saturation of 88–92% pending blood gas results but adjust to 94–98% if the $Paco_2$ is normal (unless there is a history of respiratory failure requiring NIV or IPPV) and recheck blood gases after 30–60 min

	Additional comments	Grade of recommendation
Myocardial infarction and acute coronary syndromes	Most patients with acute coronary artery syndromes are not hypoxaemic and the benefits/harms of oxygen therapy are unknown in such cases	Grade D

- **Monitorización PulsiO2.**
- **O2 si Disnea, Hipoxia (SatO2<94-95%) o ICC.**

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TTO INICIAL SCACEST: NITRATOS

- Resultados positivos era pre-reperfusión
- Discreto alivio del dolor
- No útil para diagnóstico del SCA (ERC 2010)

Intravenous Nitroglycerin Therapy to Limit Myocardial Infarct Size, Expansion, and Complications

Effect of Timing, Dosage, and Infarct Location

Bodh I. Jugdutt, MBChB, MSc, and J. Wayne Warnica, MD

(*Circulation* 1988;78:906–919)

therapy in acute myocardial infarction limits indexes of infarct size, infarct expansion, and major infarct-related complications independent of infarct location. Greater benefit on infarct size occurs with early timing and target mean blood pressure ≥80 mm Hg. (*Circulation*

Randomised, double-blind trial of intravenous diltiazem versus glyceryl trinitrate for unstable angina pectoris

Erwin J A M Göbel, Raymond W M Hautvast, Wiek H van Gilst, Jan N Spanjaard, Hans L Hillege, Mike J L DeJongste, G Peter Molhoek, Kong I Lie

These results indicate that intravenous diltiazem, compared with intravenous glyceryl trinitrate, significantly reduces ischaemic events and can be used safely in patients with unstable angina.

Lancet 1995; **346:** 1653–57

TTO INICIAL SCACEST: NITRATOS (II)

- **No evidencia de efecto beneficioso TTO rutinario.**
  - No estudios SUH / Emerg. Prehospitalaria
- **Utiles (vía i.v.) :**
  - **HTA e ICC**
  - No en HipoTA PAS <90mmHg), IAM VD o uso Inhibidores Fosfodiesterasa tipo 5 (48 h previas)

ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation

The Task Force on the management of ST-segment elevation acute myocardial infarction of the European Society of Cardiology (ESC)

European Heart Journal (2012) 33, 2569–2619

The routine use of nitrates in STEMI has not been shown to be of value and is not therefore recommended.

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(*Circulation*. 2010;122[suppl 2]:S422–S465.)

Although it is reasonable to consider the early administration of nitroglycerin in selected patients without contraindications, insufficient evidence exists to support or refute the routine administration of nitroglycerin in the ED or prehospital setting in patients with a suspected ACS. There may be some benefit if nitroglycerin administration results in pain relief.

TTO INICIAL SCACEST: β-BLOQUEANTES

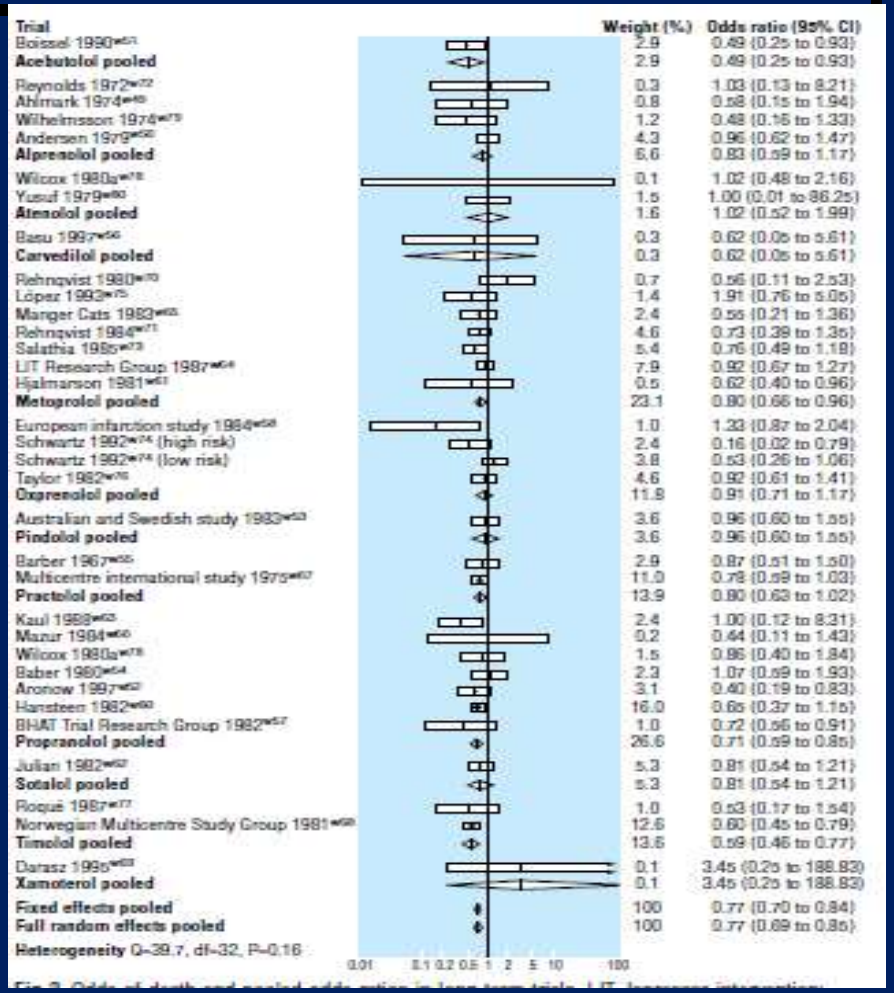
- **Efecto beneficioso en supervivencia, re-IAM, ↓Tamaño IAM y prevención complicaciones (arritmias, disfunción VI)**

β Blockade after myocardial infarction: systematic review and meta regression analysis

Nick Freemantle, John Cleland, Philip Young, James Mason, Jane Harrison

BMJ 1999;318:1730–7

Conclusions β Blockers are effective in long term secondary prevention after myocardial infarction, but they are underused in such cases and lead to avoidable mortality and morbidity.



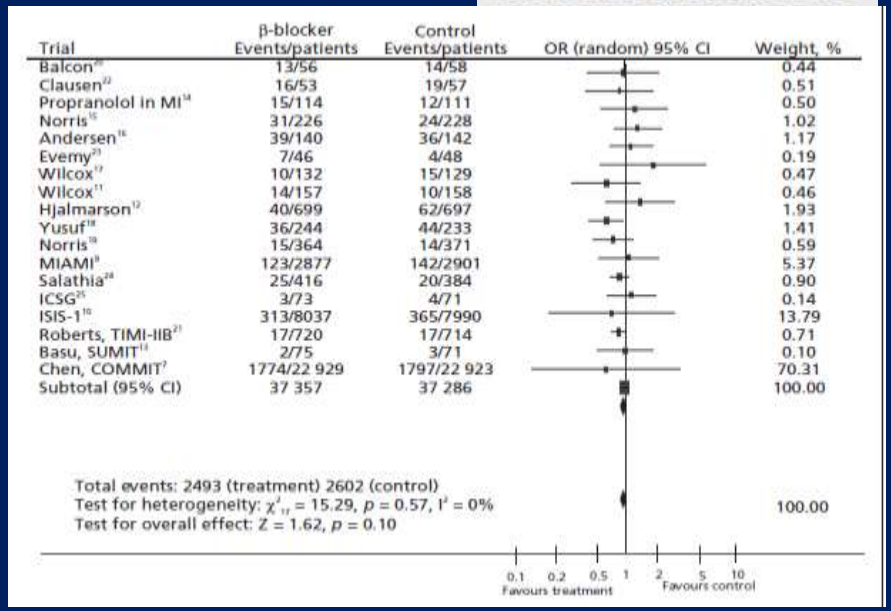
TTO INICIAL SCACEST: β-BLOQUEANTES (II)

- **Potencial efecto perjudicial TTO precoz iv sistemático (¿Beneficioso en Killip I?)**
  - **Contraindicados ICC**

Do β-blockers reduce short-term mortality following acute myocardial infarction? A systematic review and meta-analysis

Abdullah Al-Reesi, MD;* Nabil Al-Zadjali, MD;† Jeff Perry, MD;* Dean Fergusson, PhD;‡ Mohammed Al-Shamsi, MD;* Majid Al-Thagafi, MD;* Ian Stiell, MD*

CJEM 2008;10(3):215-23

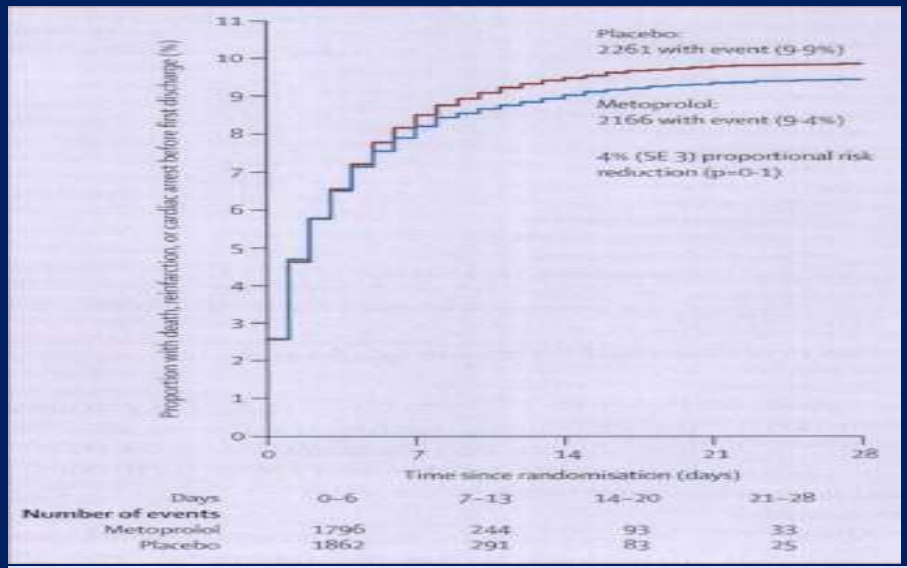


Conclusion: Acute intervention with β-blockers does not result in a statistically significant short-term survival benefit following AMI but may be beneficial for low-risk (Killip class I) patients.

Early intravenous then oral metoprolol in 45 852 patients with acute myocardial infarction: randomised placebo-controlled trial

COMMIT (CLOpidogrel and Metoprolol in Myocardial Infarction Trial) collaborative group*

Lancet 2005; 366: 1622-32



Interpretation The use of early β-blocker therapy in acute MI reduces the risks of reinfarction and ventricular fibrillation, but increases the risk of cardiogenic shock, especially during the first day or so after admission. Consequently, it might generally be prudent to consider starting β-blocker therapy in hospital only when the haemodynamic condition after MI has stabilised.

TTO INICIAL SCACEST: β-BLOQUEANTES (III)

Immediate Versus Deferred β-Blockade Following Thrombolytic Therapy in Patients With Acute Myocardial Infarction

Results of the Thrombolysis in Myocardial Infarction (TIMI) II-B Study

(*Circulation* 1991;83:422–437)

β-blockers are safe when given early after thrombolytic therapy and are associated with decreased myocardial ischemia and reinfarction in the first week but offer no benefit over late administration in improving ventricular function or reducing mortality.

- **Efecto beneficioso en supervivencia, re-IAM, ↓Tamaño IAM y prevención complicaciones (arritmias, disfunción VI)**
  - **Vía oral: TTO sistemático a todos los pacientes tras estabilización.**
  - **Vía iv: Taquiarritmias, HTA**

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European Heart Journal (2012) 33, 2569–2619

Thus, early i.v. use of beta-blockers is contraindicated in patients with clinical signs of hypotension or congestive heart failure. Early use may be associated with a modest benefit in low-risk, haemodynamically stable patients. In most patients, however, it is prudent to wait for the patient to stabilize before starting a beta-blocker and to use oral, rather than i.v.,

TTO INICIAL SCACEST: IECA

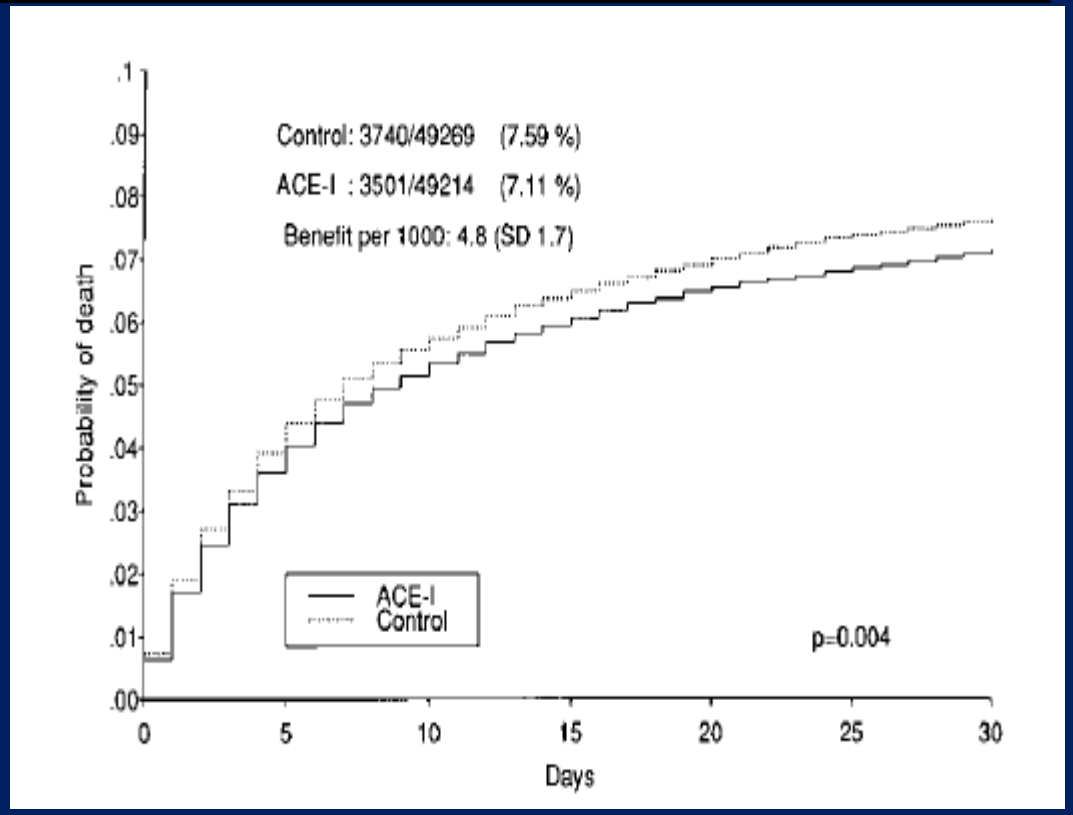
- **Efecto beneficioso en supervivencia, re-IAM, ↓Tamaño IAM y prevención complicaciones (arritmias, disfunción VI)**

Indications for ACE Inhibitors in the Early Treatment of Acute Myocardial Infarction

Systematic Overview of Individual Data From 100 000 Patients in Randomized Trials

ACE Inhibitor Myocardial Infarction Collaborative Group*

(*Circulation*. 1998;97:2202-2212.)



Conclusions—These results support the use of ACE inhibitors early in the treatment of acute MI, either to a wide range of patients or selectively in patients with anterior MI and in those at increased risk of death. (*Circulation*.

TTO INICIAL SCACEST: IECA (II)

- **Seguros, Bien tolerados, ↑ Supervivencia**
- **Indicados (en 1ª 24h) (I-A):**
  - **HTA**
  - **Disfunción VI (FE < 40%)**
  - **ICC fase aguda**
  - **Diabetes**
  - **IAM anterior**
- **Todos Pacientes sin contraindicaciones (IIa-A)**

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(*Circulation*. 2010;122[suppl 2]:S422–S465.)

It is well established that angiotensin-converting enzyme (ACE) inhibitors should be given to patients with an impaired ejection fraction (<40%) or who have experienced heart failure in the early phase.

ACE inhibitors and ARBs reduce mortality in patients with AMI; however, there is insufficient evidence to support the routine initiation of ACE inhibitors and ARBs in the prehospital or ED setting in patients with a myocardial infarction.

TTO INICIAL SCACEST: ARA-II

Valsartan, Captopril, or Both in Myocardial Infarction Complicated by Heart Failure, Left Ventricular Dysfunction, or Both

Marc A. Pfeffer, M.D., Ph.D., John J.V. McMurray, M.D., Eric J. Velazquez, M.D., Jean-Lucien Rouleau, M.D., Lars Køber, M.D., Aldo P. Maggioni, M.D., Scott D. Solomon, M.D., Karl Swedberg, M.D., Ph.D., Frans Van de Werf, M.D., Ph.D., Harvey White, D.Sc., Jeffrey D. Leimberger, Ph.D., Marc Henis, M.D., Susan Edwards, M.S., Steven Zelenkofske, D.O., Mary Ann Sellers, M.S.N., and Robert M. Califf, M.D., for the Valsartan in Acute Myocardial Infarction Trial Investigators*

Valsartan is as effective as captopril in patients who are at high risk for cardiovascular events after myocardial infarction. Combining valsartan with captopril increased the rate of adverse events without improving survival.

N Engl J Med 2003;349:1893-906.

- **Intolerancia a IECA.**
- **Valsartán:**
  - **HTA**
  - **Disfunción VI (FE < 40%)**
  - **ICC fase aguda**
  - **Especialmente si no toleran IECA**

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An ARB, preferably valsartan, is an alternative to ACE inhibitors in patients with heart failure or LV systolic dysfunction, particularly those who are intolerant to ACE inhibitors.	I	B

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TTO INICIAL SCACEST: HIPERGLUCEMIA

- **Hiperglucemia al ingreso: Potente predictor**
  - **Mortalidad Global**
  - Complicaciones durante el ingreso hospitalario
- Pacientes con / sin DM previa

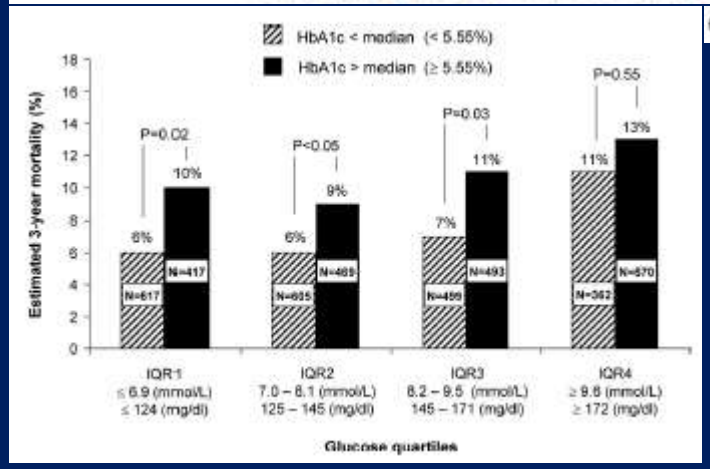
HiperG: M Corto Plazo (Tamaño IAM)

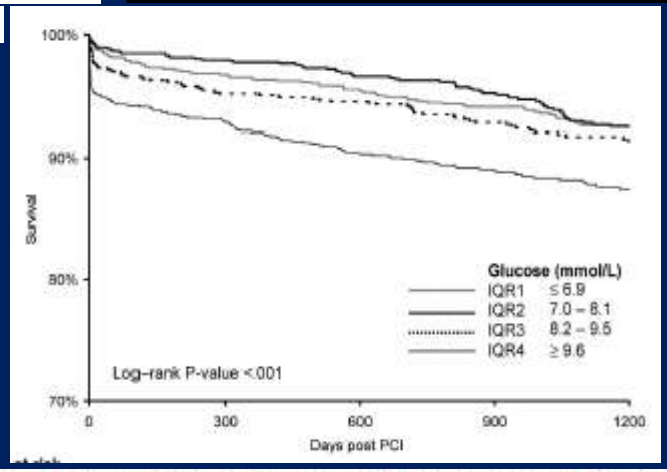
HbA1C: M Largo Plazo (> riesgo basal)

Prognostic Value of Admission Glycosylated Hemoglobin and Glucose in Nondiabetic Patients With ST-Segment–Elevation Myocardial Infarction Treated With Percutaneous Coronary Intervention

Jorik R. Timmer, MD, PhD*; Miriam Hoekstra, MD*; Maarten W.N. Nijsten, MD, PhD; Iwan C.C. van der Horst, MD, PhD; Jan Paul Ottervanger, MD, PhD; Robbert J. Slingerland, PhD; Jan-Henk E. Dambrink, MD, PhD; Henk J.G. Bilo, MD, PhD; Felix Zijlstra, MD, PhD; Arnoud W.J. van 't Hof, MD, PhD

(*Circulation*. 2011;124:704-711.)





Conclusions—In nondiabetic patients with ST-segment–elevation myocardial infarction, both elevated admission glucose and HbA_{1c} levels were associated with adverse outcome. Both of these parameters reflect different patient populations,

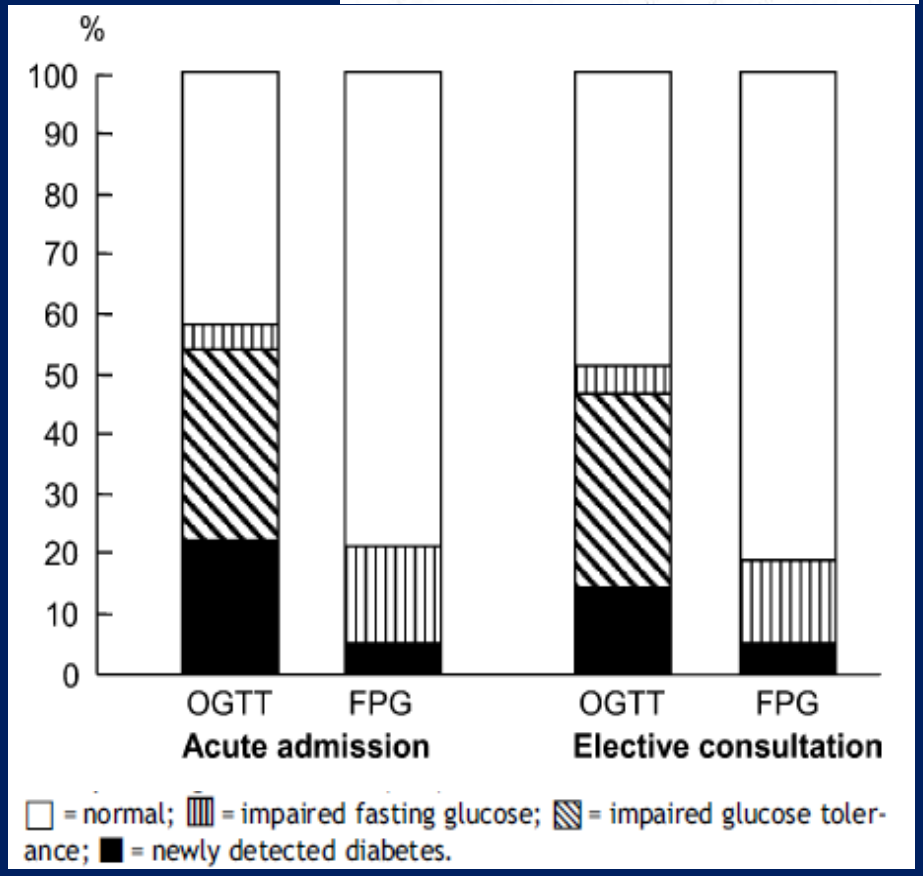
TTO INICIAL SCACEST: HIPERGLUCEMIA (II)

The prevalence of abnormal glucose regulation in patients with coronary artery disease across Europe

The Euro Heart Survey on diabetes and the heart

Małgorzata Bartnik[a,b,*], Lars Rydén[a], Roberto Ferrari[c], Klas Malmberg[a], Kalevi Pyörälä[d], Maarten Simoons[e], Eberhard Standl[f], Jordi Soler-Soler[g], John Öhrvik[h], on behalf of the Euro Heart Survey Investigators

European Heart Journal (2004) **25**, 1880–1890



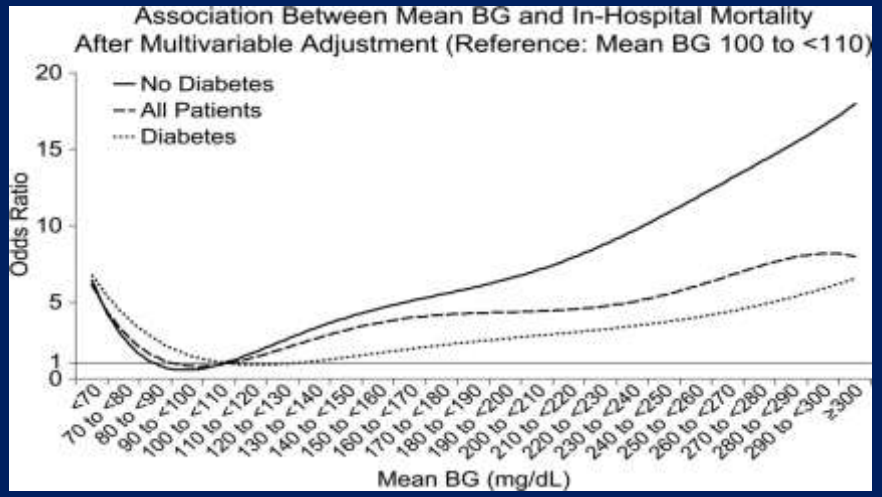
Conclusion This survey demonstrates that normal glucose regulation is less common than abnormal glucose regulation in patients with CAD.

Glucose-Lowering Targets for Patients With Cardiovascular Disease

Focus on Inpatient Management of Patients With Acute Coronary Syndromes

Mikhail Kosiborod, MD; Darren K. McGuire, MD, MHSc

Circulation. 2010;122:2736-2744.



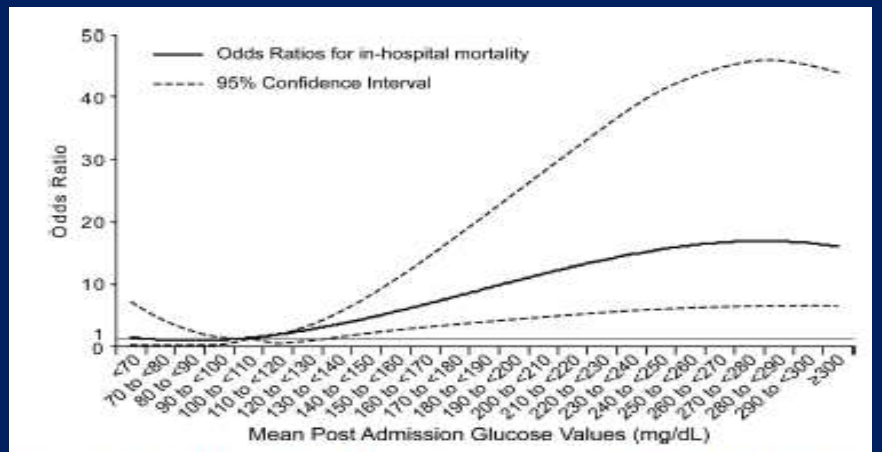


Figure 2. Glucose normalization and survival during AMI hospi-

TTO DE LA HIPERGLUCEMIA EN SCA: RESULTADOS

Glucose-Lowering Targets for Patients With Cardiovascular Disease

Focus on Inpatient Management of Patients With Acute Coronary Syndromes

Mikhail Kosiborod, MD; Darren K. McGuire, MD, MHSc

Circulation. 2010;122:2736-2744.

Table. Clinical Trials of Glucose Control in ACS

Trial	Targeted Glucose Control	Elevated Blood Glucose on Entry	Glucose Targets Specified	Blood Glucose Contrast Achieved	Clinical End Points	Results
DIGAMI (1995)	+/−	+; ≈280 mg/dL	+; 126–180 mg/dL vs usual care acutely, 90–126 mg/dL fasting blood glucose vs usual care afterward	+/−; 173 vs 211 mg/dL during first 24 h, difference in A_1C but not fasting blood glucose afterward	+	+/−; mortality neutral at 3 mo (primary end point), improved survival in glucose control arm by 1 y
Pol-GIK (1999)	−	−; 124 mg/dL	−	N/A; 106 vs 112 mg/dL in intervention vs control arms	+	Significantly higher mortality in intervention vs control arm at 35 d
DIGAMI2 (2005)	+/−	+; 229 mg/dL	+; 126–180 mg/dL in-hospital vs usual care acutely, 90–126 mg/dL fasting blood glucose (group 1 only) vs usual care afterward	+/−; 164 vs 180 mg/dL at 24 h, no difference afterward	+	−; mortality neutral between 3 groups
CREATE-ECLA (2005)	−	+; 162 mg/dL	−	N/A; glucose higher in intervention arm vs control (187 vs 148 mg/dL)	+	Mortality neutral
HI-5 (2006)	+/−	+; ≈198 mg/dL	+; 72–180 mg/dL vs usual care	−; 149 vs 162 mg/dL (P=NS) during first 24 h	+	−; mortality neutral in-hospital, at 3 and 6 mo

N/A indicates not applicable

Glucose-Insulin-Potassium Therapy in Patients With ST-Segment Elevation Myocardial Infarction

JAMA. 2007;298(20):2399-2405

Table 3. 30-Day Outcomes in the Combined OASIS-6 and CREATE-ECLA GIK Trials

30-Day Outcomes	No. (%) of Patients: GIK (n = 11 462)	No. (%) of Patients: Control (n = 11 481)	HR (95% CI)	P Value
Death	1108 (9.7)	1068 (9.3)	1.04 (0.96-1.13)	.33
Heart failure	1891 (16.5)	1916 (16.7)	0.99 (0.93-1.06)	.82
Death or heart failure	2325 (20.3)	2339 (20.4)	1.00 (0.94-1.06)	>.99
Reinfarction	279 (2.4)	283 (2.5)	0.99 (0.84-1.17)	.93
Stroke	80 (0.7)	91 (0.8)	0.88 (0.65-1.19)	.42
Cardiogenic shock	613 (5.3)	586 (5.1)	1.05 (0.94-1.18)	.40
Cardiac arrest	397 (3.5)	439 (3.8)	0.91 (0.79-1.04)	.16

Abbreviations: CI, confidence interval; CREATE-ECLA, Clinical Trial of Reviparin and Metabolic Modulation in Acute Myocardial Infarction Treatment and Evaluation-Estudios Clinicos Latino America; GIK, glucose-insulin-potassium; HR, hazard ratio; OASIS-6, Organization for the Assessment of Strategies for Ischemic Syndromes-6.

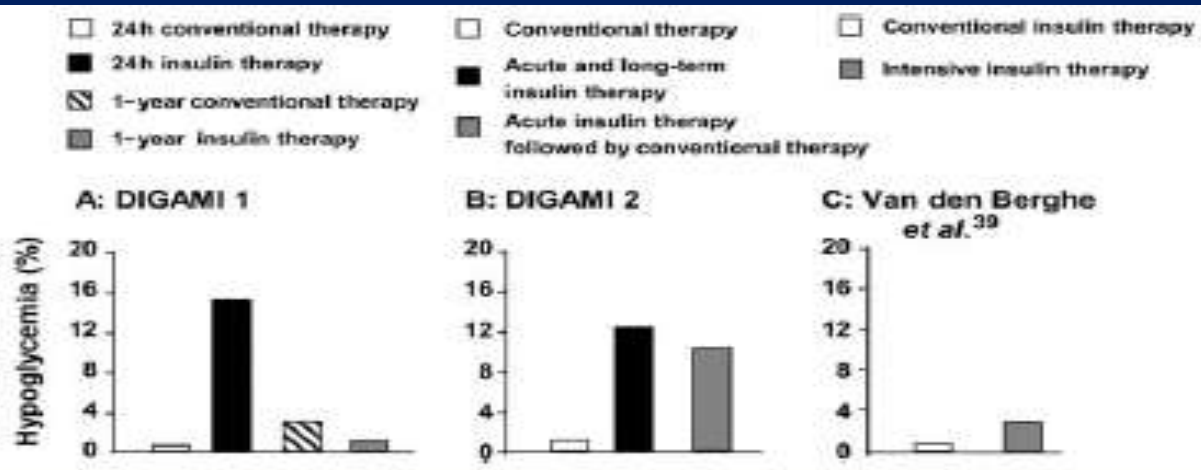
Conclusions Infusion of GIK provided no benefit and may cause early harm following STEMI. Avoidance of infusion-related hyperglycemia, hyperkalemia, and net fluid

TTO DE LA HIPERGLUCEMIA EN ACS: RESULTADOS (II)

Glycaemic control in acute coronary syndromes: prognostic value and therapeutic options

Raffaele De Caterina[1*], Rosalinda Madonna[1], Harald Sourij[2], and Thomas Wascher[2,3]

European Heart Journal (2010) **31**, 1557–1564

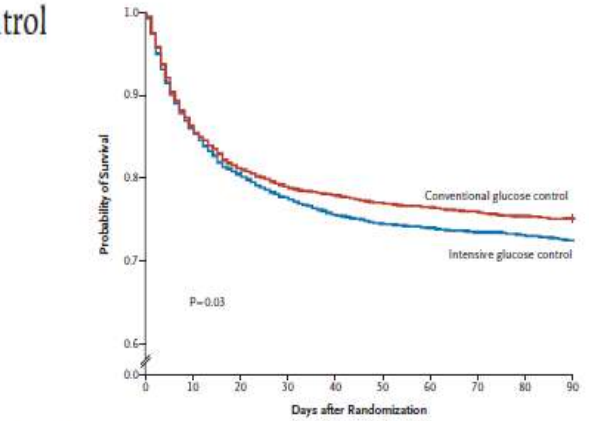


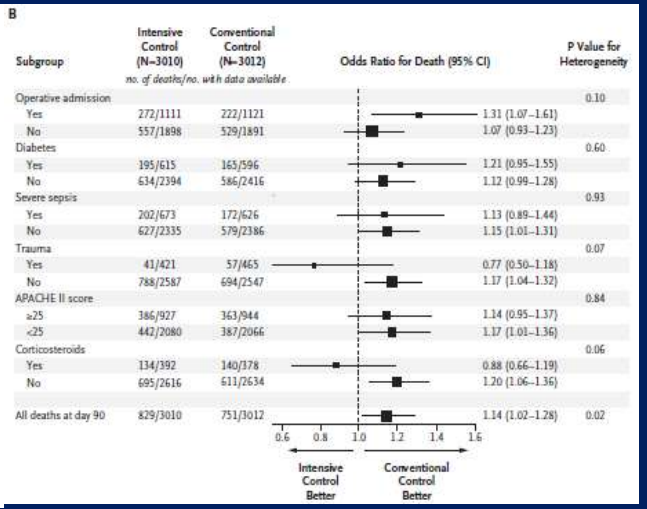
Intensive versus Conventional Glucose Control in Critically Ill Patients

The NICE-SUGAR Study Investigators*

N Engl J Med 2009;360:1283-97.

Glu <180mg/dl menor mortalidad que 80-110 mg/dl)





TTO DE LA HIPERGLUCEMIA EN ACS: INDICACIONES

- **“Control estricto pero no demasiado”**
  - **Objetivo: Glucemia < 200 mg/dl**
  - **Evitar Glucemia < 90 mg/dl**
- Pacientes con / sin DM previa
- Monitorización Glucemia
- Insulinoterapia (s.c. / infusión) ajustada a perfil glucémico

ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation

The Task Force on the management of ST-segment elevation acute myocardial infarction of the European Society of Cardiology (ESC)

European Heart Journal (2012) 33, 2569–2619

The goals of glucose control in the acute phase should be to maintain glucose concentrations ≤11.0 mmol/L (200 mg/dL) while avoiding fall of glycaemia <5 mmol/L (<90 mg/dL). In some patients, this may require a dose-adjusted insulin infusion with monitoring of glucose, as long as hypoglycaemia is avoided.	IIa	B
Routine glucose-insulin-potassium infusion is not indicated.	III	A

TTO INICIAL SCACEST: ESTATINAS

- **Evidencia inequívoca**
  - **↓Mortalidad Total, IAM no fatal, Ictus, Revascularización**

The Effect of Early, Intensive Statin Therapy on Acute Coronary Syndrome

A Meta-analysis of Randomized Controlled Trials

Eddie Hulten, MD, MPH; Jeffrey L. Jackson, MD, MPH; Kevin Douglas, MD, MPH; Susan George, MD; Todd C. Villines, MD

Arch Intern Med. 2006;166:1814-1821

Conclusions: Early, intensive statin therapy reduces death and cardiovascular events after 4 months of treatment.

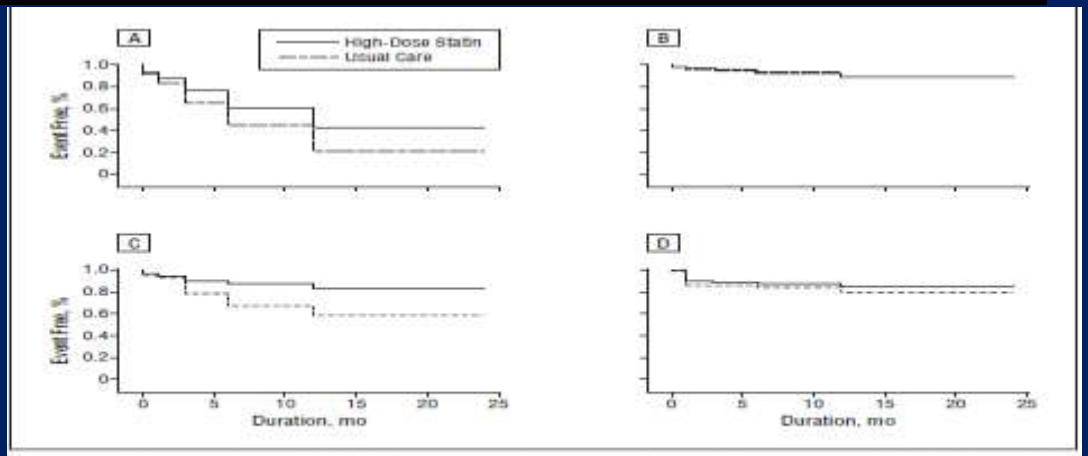


Figure 3. Pooled survival curves by outcome. This figure demonstrates the pooled survival curves for any cardiovascular event (hazard ratio [HR], 0.84; 95% confidence interval [CI], 0.76–0.94) (A); myocardial infarction (HR, 0.89; 95% CI, 0.60–1.33) (B); ischemia (unstable angina or revascularization) (HR, 0.68; 95% CI, 0.50–0.92) (C); and cardiovascular death (HR, 0.76; 95% CI, 0.66–0.87) (D).

- **TTO precoz e intensivo**
  - Independiente de los niveles de Colesterol
  - > Evidencia: Atorvastatina 80 mg/día

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It is recommended to initiate or continue high dose statins early after admission in all STEMI patients without contraindication or history of intolerance, regardless of initial cholesterol values.	I	A

European Heart Journal (2012) **33**, 2569–2619

TTO INICIAL SCACEST: HTA

- **Siempre Objetivo terapéutico en SCASEST**
  - ↑**Consumo O2:**↑Postcarga→↑Stress pared / HVI
  - ↓**Reserva Coronaria** (AS → Disfunción endotelial)
- **SCACEST: HTA e HipoTA** factores adversos
  - Mantener equilibrio aporte O_2 / demandas O_2
    - ↑TA → ↑Consumo O2
    - ↓TAD (rápido) → ↓FSC y Aporte O2

Treatment of Hypertension in the Prevention and Management of Ischemic Heart Disease

A Scientific Statement From the American Heart Association Council for High Blood Pressure Research and the Councils on Clinical Cardiology and Epidemiology and Prevention

Clive Rosendorff, MD, PhD, FAHA, Chair; Henry R. Black, MD; Christopher P. Cannon, MD, FAHA; Bernard J. Gersh, MB ChB, DPhil, FAHA; Joel Gore, MD, FAHA; Joseph L. Izzo, Jr, MD; Norman M. Kaplan, MD; Christopher M. O'Connor, MD, FAHA; Patrick T. O'Gara, MD, FAHA; Suzanne Oparil, MD, FAHA

(*Circulation.* 2007;115:2761-2788.)

impact of hypertension on STEMI outcomes is not well described. Thus, although acute treatment for STEMI may include many antihypertensive drugs, little has been published on the appropriate treatment of hypertension at the time of presentation with STEMI.

TTO INICIAL SCACEST: TA OBJETIVO

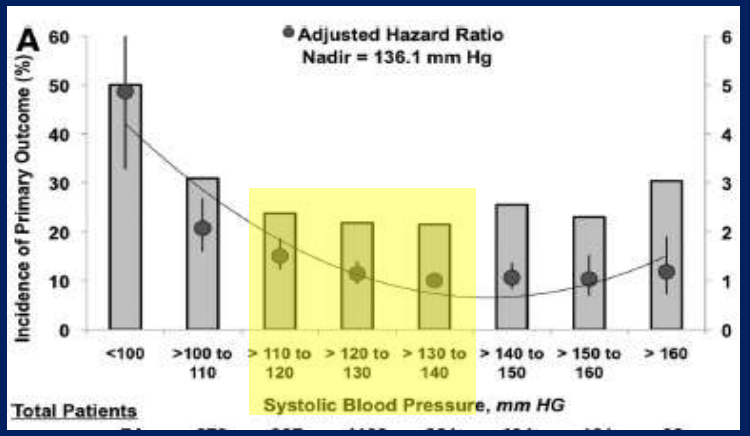
What Is the Optimal Blood Pressure in Patients After Acute Coronary Syndromes?

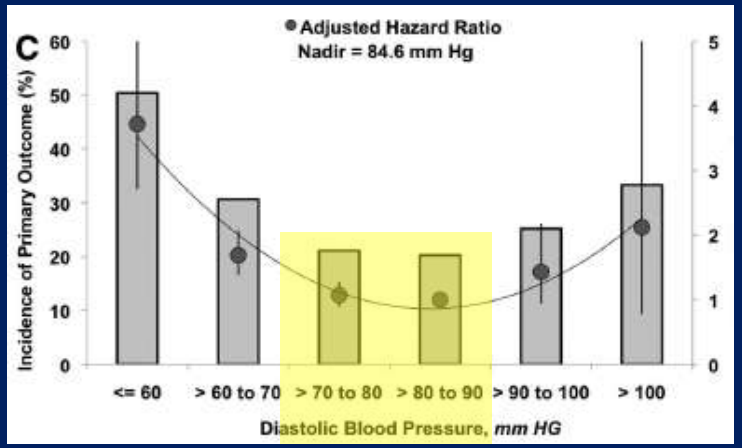
Relationship of Blood Pressure and Cardiovascular Events in the Pravastatin or Atorvastatin Evaluation and Infection Therapy–Thrombolysis in Myocardial Infarction (PROVE IT-TIMI) 22 Trial

Sripal Bangalore, MD, MHA; Jie Qin, MS; Sarah Sloan, MS; Sabina A. Murphy, MPH; Christopher P. Cannon, MD; for the PROVE IT-TIMI 22 Trial Investigators

(*Circulation*. 2010;122:2142-2151.)

Conclusions—After acute coronary syndrome, a J- or U-shaped curve association existed between BP and the risk of future cardiovascular events, with lowest event rates in the BP range of approximately 130 to 140 mm Hg systolic and 80 to 90 mm Hg diastolic and a relatively flat curve for systolic pressures of 110 to 130 mm Hg and diastolic pressures of 70 to 90 mm Hg, which suggests that too low of a pressure (especially <110/70 mm Hg) may be dangerous.





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European Heart Journal (2012) **33**, 2569–2619

- **Mayor tolerancia que GPC previas.**
  - **TA sistólica <140 mmHg (no < 110). TAD 70-90 mmHg**
  - **Evitar HipoTA** (<110/70; Diastólica: ↓FSCoronario)

TTO INICIAL SCACEST: SELECCIÓN ANTI-HTA

ISIS-4: A randomised factorial trial assessing early oral captopril, oral mononitrate, and intravenous magnesium sulphate in 58 050 patients with suspected acute myocardial infarction

*ISIS-4 (Fourth International Study of Infarct Survival) Collaborative Group**

Lancet 1995; **345:** 669–85

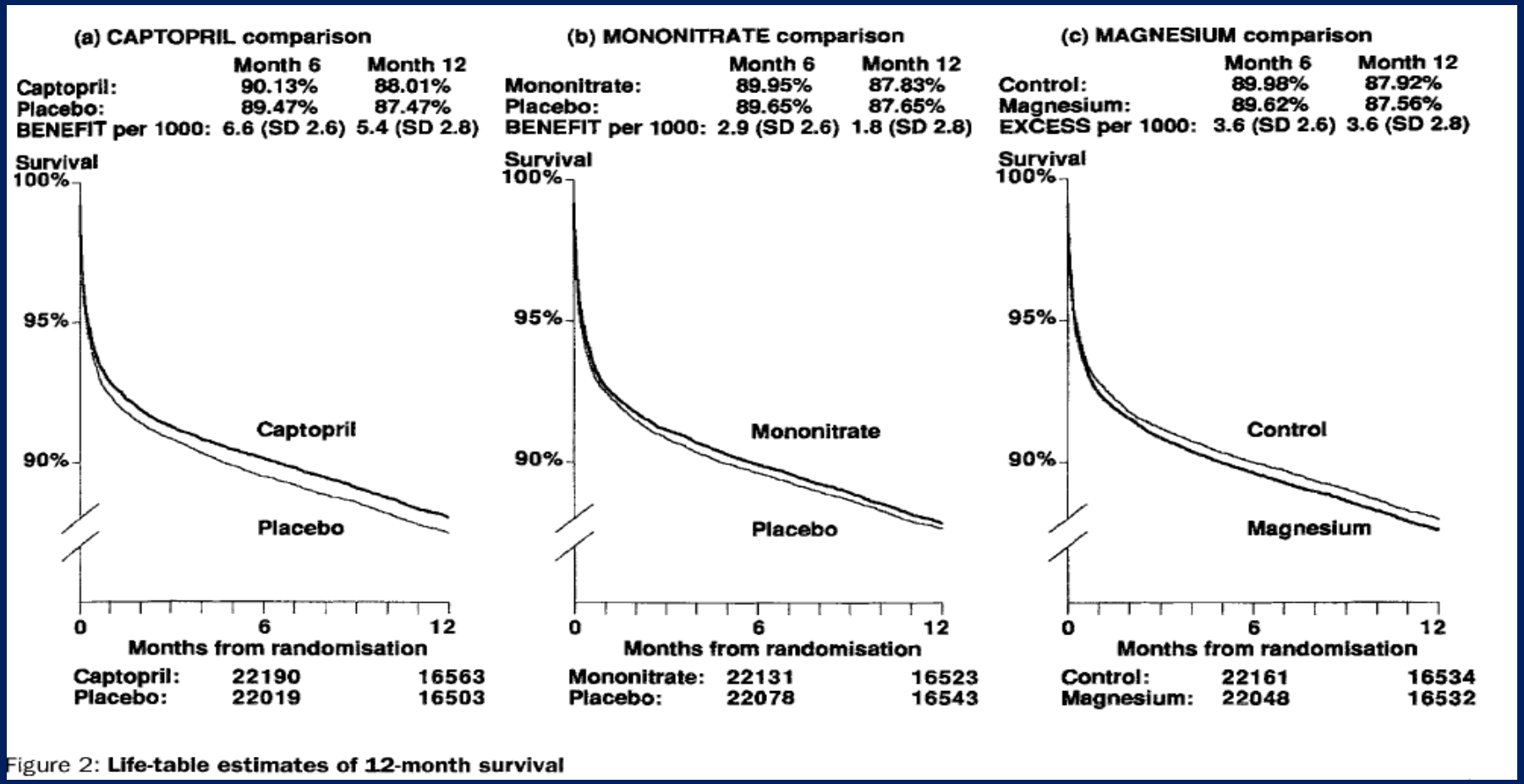


Figure 2: **Life-table estimates of 12-month survival**

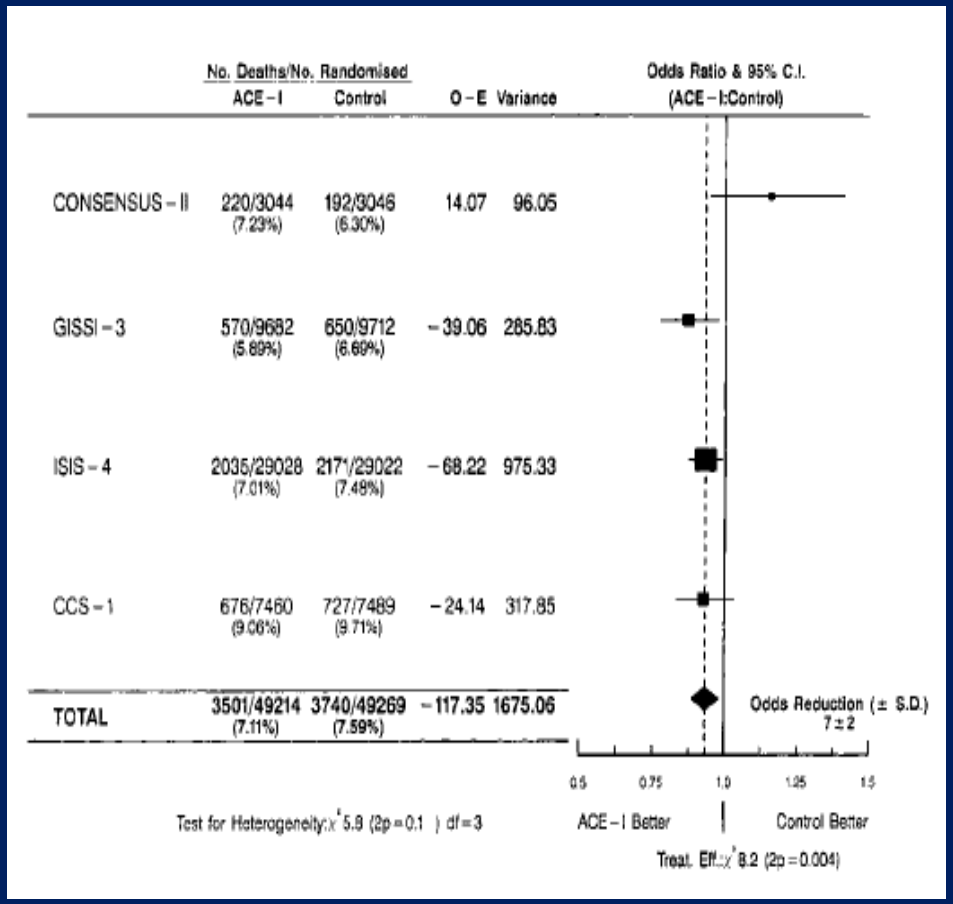
TTO INICIAL SCACEST: SELECCIÓN ANTI-HTA

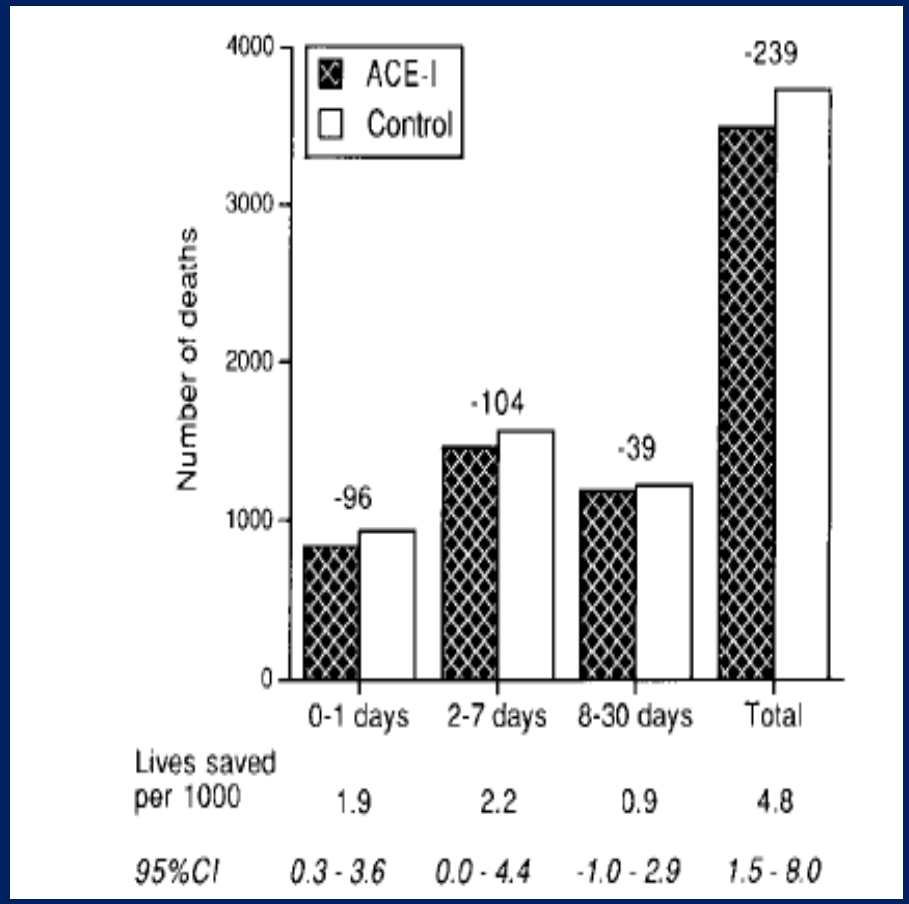
Indications for ACE Inhibitors in the Early Treatment of Acute Myocardial Infarction

Systematic Overview of Individual Data From 100 000 Patients in Randomized Trials

ACE Inhibitor Myocardial Infarction Collaborative Group*

(*Circulation*.1998;97:2202-2212.)





TTO INICIAL SCACEST: SELECCIÓN ANTI-HTA

Immediate Versus Deferred β-Blockade Following Thrombolytic Therapy in Patients With Acute Myocardial Infarction

Results of the Thrombolysis in Myocardial Infarction (TIMI) II-B Study

(*Circulation* 1991;83:422–437)

β-blockers are safe when given early after thrombolytic therapy and are associated with decreased myocardial ischemia and reinfarction in the first week but offer no benefit over late administration in improving ventricular function or reducing mortality.

Treatment of Hypertension in the Prevention and Management of Ischemic Heart Disease

A Scientific Statement From the American Heart Association Council for High Blood Pressure Research and the Councils on Clinical Cardiology and Epidemiology and Prevention

Clive Rosendorff, MD, PhD, FAHA, Chair; Henry R. Black, MD; Christopher P. Cannon, MD, FAHA; Bernard J. Gersh, MB ChB, DPhil, FAHA; Joel Gore, MD, FAHA; Joseph L. Izzo, Jr, MD; Norman M. Kaplan, MD; Christopher M. O'Connor, MD, FAHA; Patrick T. O'Gara, MD, FAHA; Suzanne Oparil, MD, FAHA

(*Circulation.* 2007;115:2761-2788.)

As in the unstable angina/NSTEMI setting, β-blockers are a logical choice in an attempt to reduce heart rate, contractility, and thereby oxygen demand.'

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European Heart Journal (2012) 33, 2569–2619

Oral treatment with beta-blockers should be considered during hospital stay and continued thereafter in all STEMI patients without contraindications.	IIa	B
Oral treatment with beta-blockers is indicated in patients with heart failure or LV dysfunction.	I	A
Intravenous beta-blockers should be considered at the time of presentation in patients without contraindications, with high blood pressure, tachycardia and no signs of heart failure.	IIa	B

TTO INICIAL SCACEST: TERAPIA HTA

- **TTO a Largo Plazo**:
  - **β-Bloqueantes, IECAS / ARA-II**
- **HTA en fase aguda:**
  - **NTG i.v.:** No ↓Mortalidad (¿ICC?). NO RECOMENDADA.
    - Intolerancia IECA y β-Bloqueantes. **ICC**
  - **β-Bloqueantes i.v.** (↑ ↑ si Taquicardia)
    - Evitar en ICC y Shock
  - **IECA** IAM extenso, ↓FEVI, ICC
  - **ARA-II:** Intolerancia IECA **(Valsartán)**
  - **ACa^{2+}:** No ↓Mortalidad global, ↑Mortalidad ↓FEVI, ICC
  - **Nitroprusiato:** Emergencia HTA +ICC

SCACEST: TRATAMIENTO INICIAL

- Objetivos
- Medidas Generales: Oxigenoterapia
- Nitratos
- Beta-bloqueantes
- IECA / ARA-II
- TTO Hiperglucemia
- HTA
- TTO Complicaciones: ICC y Arritmias
- Conclusiones

TTO INICIAL SCACEST: ICC

Treatment of mild heart failure (Killip class II)		
Oxygen is indicated to maintain a saturation >95%.	I	C
Loop diuretics, e.g. furosemide: 20–40 mg i.v., is recommended and should be repeated at 1–4 h intervals if necessary.	I	C
i.v. nitrates or sodium nitroprusside should be considered in patients with elevated systolic blood pressure.	IIa	C
An ACE inhibitor is indicated in all patients with signs or symptoms of heart failure and/or evidence of LV dysfunction in the absence of hypotension, hypovolaemia, or renal failure.	I	A
An ARB (valsartan) is an alternative to ACE inhibitors particularly if ACE inhibitors are not tolerated.	I	B
An aldosterone antagonist (epleronone) is recommended in all patients with signs or symptoms of heart failure and/or evidence of LV dysfunction provided no renal failure or hyperkalaemia.	I	B
Hydralazine and isosorbide dinitrate should be considered if the patient is intolerant to both ACE inhibitors and ARBs.	IIa	C

Treatment of moderate heart failure (Killip class III)		
Oxygen is indicated.	I	C
Ventilatory support should be instituted according to blood gasses.	I	C
Loop diuretics, e.g. furosemide: 20–40 mg i.v., are recommended and should be repeated at 1–4 h intervals if necessary.	I	C
Morphine is recommended. Respiration should be monitored. Nausea is common and an antiemetic may be required. Frequent low-dose therapy is advisable.	I	C
Nitrates are recommended if there is no hypotension.	I	C
Inotropic agents: • Dopamine	IIa	C
• Dobutamine (inotropic)	IIa	C
• Levosimendan (inotropic/vasodilator).	IIb	C
An aldosterone antagonist such as spironolactone or eplerenone must be used if LVEF ≤40%.	I	B
Ultrafiltration should be considered.	IIa	B
Early revascularization must be considered if the patient has not been previously revascularized.	I	C

TTO INICIAL SCACEST: ICC (II)

Treatment of cardiogenic shock (Killip class IV)		
Oxygen/mechanical respiratory support is indicated according to blood gasses.	I	C
Urgent echocardiography/Doppler must be performed to detect mechanical complications, assess systolic function and loading conditions.	I	C
High-risk patients must be transferred early to tertiary centres.	I	C
Emergency revascularization with either PCI or CABG in suitable patients must be considered.	I	B
Fibrinolysis should be considered if revascularization is unavailable.	IIa	C
Intra-aortic balloon pumping may be considered.	IIb	B
LV assist devices may be considered for circulatory support in patients in refractory shock.	IIb	C
Haemodynamic assessment with balloon floating catheter may be considered.	IIb	B
Inotropic/vasopressor agents should be considered: • Dopamine	IIa	C
• Dobutamine	IIa	C
• Norepinephrine (preferred over dopamine when blood pressure is low).	IIb	B

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European Heart Journal (2012) **33**, 2569–2619

TTO INICIAL SCACEST: ARRITMIAS

- **Complicación frecuente 1ª horas SCACEST**
  - **Peor pronóstico inmediato / largo plazo**
  - **Causa mayor de Mortalidad**

Long-Term Recording of Cardiac Arrhythmias With an Implantable Cardiac Monitor in Patients With Reduced Ejection Fraction After Acute Myocardial Infarction

The Cardiac Arrhythmias and Risk Stratification After Acute Myocardial Infarction (CARISMA) Study

Circulation. 2010;121:1258-1264.

Arrhythmia	Patients, n (Incidence, %)	Events, n
Sinus bradycardia (≤30 bpm, ≥8 beats)	20 (6.7)	111
Sinus arrest (≥5 s)	16 (5.4)	23
New-onset AF (≥125 bpm, ≥16 beats)	82 (27.6)	538
High-degree AV block (second to third degree; ≤30 bpm, ≥8 beats)	29 (9.8)	124
Nonsustained VT (≥125 bpm, ≥16 beats, <30 s)	39 (13.1)	64
Sustained VT (≥125 bpm, ≥30 s)	9 (3.0)	20
VF (≥125 bpm, ≥16 beats)	8 (2.7)	19
Any arrhythmia	137 (46.1)	885

Table 4. Prognostic Significance of Arrhythmias as Recorded by the ICD With Adjustment for Prespecified Variables

	Cardiac Death			All-Cause Mortality		
Arrhythmia	HR	*P*	95% CI	HR	*P*	95% CI
High degree AV block on ICM	6.75	<0.001	2.565–17.84	4.97	<0.001	2.09–11.83
Sinus bradycardia on ICM	4.15	0.012	1.37–12.62	2.60	0.07	0.92–7.28
Sinus arrest on ICM	1.33	0.79	0.16–11.08	1.01	1.00	0.13–7.93
Nonsustained VT on ICM	1.98	0.17	0.74–5.24	1.33	0.54	0.53–3.36
New-onset AF on ICM*	1.03	0.96	0.36–2.91	1.10	0.84	0.45–2.67
Sustained VT on ICM	3.61	0.12	0.71–18.26	2.83	0.19	0.60–13.41

TTO INICIAL SCACEST: FA

- **Complicación frecuente (10-25%) 1ª horas SCACEST**
- **Predictor Indepte ↓pronóstico inmediato / largo plazo**
  - **Mortalidad (hospital / Largo Plazo)**
  - **Deterioro Función Ventricular. Ictus**

Atrial fibrillation in acute myocardial infarction: a systematic review of the incidence, clinical features and prognostic implications

Joern Schmitt[†], Gabor Duray[†], Bernard J. Gersh[‡], and Stefan H. Hohnloser[†]*

European Heart Journal (2009) **30**, 1038–1045

Table 3 Prognostic implication of atrial fibrillation in acute myocardial infarction (in-hospital and long-term)

Study/author	OR [95% CI]	
	In-hospital mortality	Long-term mortality
Behar/Sprint Prognosis[20]	no	1.28 [1.12–1.46]
Madias[37]	no	n.a.
Crenshaw/GUSTO I[19]	1.3 [1.2–1.4]	n.a.
Eldar/Sprint[18]	1.32 [0.92–1.87]	1.33 [1.05–1.68]
Pedersen/TRACE[33]	1.5 [1.2–1.8]	1.3 [1.2–1.4]
Rathore[10]	1.21 [0.99–1.10]	1.34 [1.30–1.39]
Wong/GUSTO III[17]	1.63 [1.31–2.02]	1.64 [1.35–2.01]
Pizzetti/GISSI III[28]	yes	yes
Goldberg[21]	1.71 [1.27–2.31]	1.23 [0.99–1.52]
Kinjo/OACIS[22]	no	1.64 [1.05–2.55]
Lehto/OPTIMAAL[34]	3.83 [1.97–7.43]	1.82 [1.39–2.39]
Pedersen/TRACE CHF[43]	n.a.	n.a.
Stenestrand/RIKS-HIA[46]	n.a.	n.a.
McMurray/ CAPRICORN[35]	n.a.	n.a.
Pedersen/TRACE SCD[44]	n.a.	1.33 [1.19–1.49]
Kober/VALIANT[36]	n.a.	1.32 [1.20–1.45]

Mortality Associated With Atrial Fibrillation in Patients With Myocardial Infarction

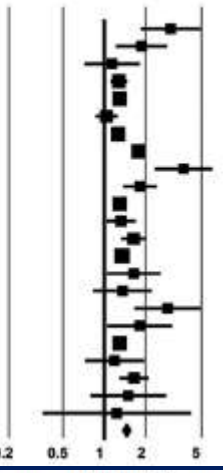
A Systematic Review and Meta-Analysis

Patricia Jabre, MD, PhD; Véronique L. Roger, MD, MPH; Mohammad H. Murad, MD, MPH; Alanna M. Chamberlain, PhD; Larry Prokop, MLS; Frédéric Adnet, MD, PhD; Xavier Jouven, MD, PhD

Circulation. 2011;123:1587-1593.

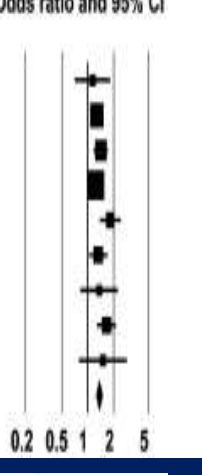
Mortality AF in AMI

Study name	Follow up	Odds ratio	Lower limit	Upper limit
Sakata,1997	8 years	3.05	1.86	5.00
Berton,2009	7 years	1.87	1.22	2.86
Asanin,2005	7 years	1.14	0.72	1.80
Behar,1992	6 years	1.28	1.12	1.46
Pedersen,1999	5 years	1.30	1.20	1.40
Goldberg,1990	5 years	1.04	0.87	1.24
Saczynski,2009	5 years	1.26	1.15	1.38
Pizzetti,2001	4 years	1.78	1.60	1.99
Bigger,1985	3 years	3.78	2.36	6.05
Lehto,2005	3 years	1.82	1.39	2.39
Kober,2006	3 years	1.30	1.19	1.43
Eldar,1998	1 year	1.33	1.05	1.68
Wong,2000	1 year	1.64	1.34	2.00
Rathore,2000	1 year	1.35	1.28	1.42
Kinjo,2003	1 year	1.64	1.05	2.56
Lau,2009	1 year	1.36	0.84	2.20
Torres,2008	6 months	2.89	1.67	5.00
Lopes,2009	3 months	1.81	1.06	3.09
Crenshaw,1997	1 month	1.30	1.20	1.40
Mahon,2000	Hosp	1.19	0.73	1.93
Mehta,2003	Hosp	1.65	1.30	2.09
Trappolini,2006	Hosp	1.50	0.80	2.81
Li,2008	Hosp	1.23	0.36	4.24
Total		**1.46**	**1.35**	**1.58**



Mortality New-AF after AMI

Study name	Follow up	Odds ratio	Lower limit	Upper limit
Asanin,2005	7 years	1.14	0.72	1.80
Behar,1992	6 years	1.28	1.12	1.46
Pedersen,1999	5 years	1.42	1.19	1.69
Saczynski,2009	5 years	1.26	1.15	1.38
Lehto,2005	3 years	1.82	1.39	2.39
Eldar,1998	1 year	1.33	1.05	1.68
Lau,2009	1 year	1.36	0.84	2.20
Mehta,2003	Hosp	1.65	1.30	2.09
Trappolini,2006	Hosp	1.50	0.80	2.81
Total		**1.37**	**1.26**	**1.49**



These subsequent increases in mortality suggest that AF can no longer be considered a nonsevere event during MI

TTO INICIAL SCACEST: FA (II)

- **ACO si CHA_2DS_2-VASc≥1 (+HAS-BLED)**
  - **Precauciones Stent Farmacoactivos y Doble APL**
- **Control FC:** β-bloqueantes (Digoxina en ICC)
- **Control Ritmo** (FA reciente comienzo o ACO previa)
  - **CVE sincronizada:** TTO elección
  - **Evitar I-C. Amio ↓ efectiva. Vernakalant no autorizado**

Guidelines for the management of atrial fibrillation

The Task Force for the Management of Atrial Fibrillation of the European Society of Cardiology (ESC)

ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation

The Task Force on the management of ST-segment elevation acute myocardial infarction of the European Society of Cardiology (ESC)

Rhythm control should be considered in patients with atrial fibrillation secondary to a trigger or substrate that has been corrected (e.g. ischaemia).	IIa	C
Acute rate control of atrial fibrillation		
Intravenous beta-blockers or non-dihydropyridine CCB (e.g. diltiazem, verapamil)[2] are indicated if there are no clinical signs of acute heart failure.	I	A
Amiodarone or i.v. digitalis is indicated in case of rapid ventricular response in the presence of concomitant acute heart failure or hypotension.	I	B
Cardioversion		
Immediate electrical cardioversion is indicated when adequate rate control cannot be achieved promptly with pharmacological agents in patients with atrial fibrillation and on-going ischaemia, severe haemodynamic compromise or heart failure.	I	C
Intravenous amiodarone is indicated for conversion to sinus rhythm in stable patients with recent onset atrial fibrillation and structural heart disease.	I	A
Digoxin (LoE A), verapamil, sotalol, metoprolol (LoE B) and other beta-blocking agents (LoE C) are ineffective in converting recent onset atrial fibrillation to sinus rhythm and should not be used for rhythm control (although beta blockers or digoxin may be used for rate control).	III	A B C

Adaptar Guías Clínicas a la Práctica Diaria SUH

Grupo Arritmias Cardiacas SEMES

SOCIEDAD ESPAÑOLA DE CARDIOLOGÍA

Sección de Electrofisiología y Arritmias

DOCUMENTO DE CONSENSO

Manejo de los pacientes con fibrilación auricular en los servicios de urgencias hospitalarios (actualización 2012)*

ALFONSO MARTÍN MARTÍNEZ[1], IGNACIO FERNÁNDEZ LOZANO[2], BLANCA COLL-VINENT PUIG[1], LUIS TERCEDOR SÁNCHEZ[2], CARMEN DEL ARCO GALÁN[1], FERNANDO ARRIBAS YNSAURRIAGA[2], CORAL SUERO MÉNDEZ[1], LLUIS MONT GIRBAU[2]

[1]Grupo de Arritmias Cardiacas. Sociedad Española de Medicina de Urgencias y Emergencias, España.
[2]Sección de Electrofisiología y Arritmias. Sociedad Española de Cardiología, España.

*Documento de consenso del Grupo de Arritmias Cardiacas de la Sociedad Española de Medicina de Urgencias y Emergencias (SEMES) y de la Sección de Electrofisiología y Arritmias de la Sociedad Española de Cardiología (SEC).

Emergencias 2012; 24: 300-324

www.arritmias-semes.org

www.arritmias.org

TTO INICIAL SCACEST: TV / FV

2 ESCENARIOS CLÍNICOS

1. **TV / FV Largo Plazo (cicatriz)**
   - **Responsables MSC (1ª causa Muerte) : TVMS / FV**
   - **Prevención MSC:** Evitar cicatriz y Disfunción VI
     - β-Bloqueantes, IECA
     - Reperfusión
     - DAI

2. **TV /FV fase aguda SCACEST:**
   - **TV Polimorfas, FV (TVMS)**
   - **DD RIVA:** reperfusión, FC< 120 lpm
   - **Considerar procesos tratables subyacentes**
     - Persistencia de isquemia miocárdica
     - Fallo bomba, HipoK+, T ácido-base, Fármacos
   - **EV, TVNS (<30'): No precisan TTO / Profilaxis.**

TTO INICIAL SCACEST: TV / FV

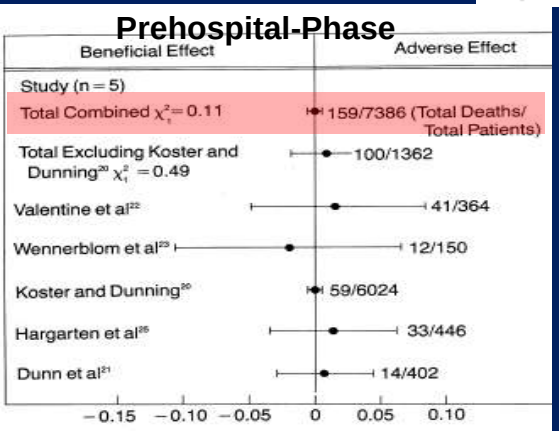
PREVENCIÓN PRECOZ ARRITMIAS VENTRICULARES EN EL SCACEST

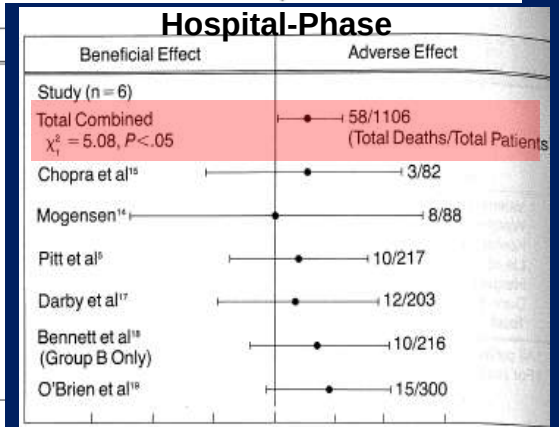
- β-Bloqueantes: oral, en ingreso hospitalario
- IECA: oral, 1ª 24h del SCACEST
- NO INDICADOS FAA: PROARRITMIA, ↓EFECTIVIDAD
  - Lidocaina: ↑mortalidad. FAA I-C: ↑mortalidad.
  - Amiodarona: ↓Efecto
  - Sotalol: no ventajas sobre β-Bloqueantes, Proarritmia

Meta-analytic Evidence Against Prophylactic Use of Lidocaine in Acute Myocardial Infarction

Louis K. Hine, MD, MPH; Nan Laird, PhD; Peg Hewitt, MS; Thomas C. Chalmers, MD

Arch Intern Med. 1989;149:2694-2698





ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation

The Task Force on the management of ST-segment elevation acute myocardial infarction of the European Society of Cardiology (ESC)

European Heart Journal (2012) 33, 2569–2619

4.4.9 Magnesium, glucose–insulin–potassium, lidocaine

There is no benefit in the routine administration of magnesium, glucose–insulin–potassium, or lidocaine in patients with STEMI.

TTO INICIAL SCACEST: TERAPIA TV

- Taquicardia QRS ancho + SCACEST = TV
- Considerar **procesos tratables subyacentes**
- **TTO ELECCIÓN: CVE SINCRONIZADA**
  - **FAA:** Eficacia controvertida
    - Procainamida + efectiva . ¿Amio en ↓FEVI ?
  - NUNCA Ca^{2+} Antagonistas.
- TV RECURRENTE: β-Bloqueantes Amiodarona
- TV POLIMORFICA: CVE →β-Bloqueantesiv + MP

ACC/AHA/ESC 2006 Guidelines for Management of Patients With Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death

A Report of the American College of Cardiology/American Heart Association Task Force and the European Society of Cardiology Committee for Practice Guidelines (Writing Committee to Develop Guidelines for Management of Patients With Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death)

Developed in Collaboration With the European Heart Rhythm Association and the Heart Rhythm Society

Circulation. 2006;114:e385-e484.

ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation

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Direct current cardioversion is indicated for sustained VT and VF.	I	C
Sustained monomorphic VT that is recurrent or refractory to direct current cardioversion: should be considered to be treated with i.v. amiodarone.[d]	IIa	C
may be treated with i.v. lidocaine or sotalol.[e]	IIb	C
Transvenous catheter pace termination should be considered if VT is refractory to cardioversion or frequently recurrent despite antiarrhythmic medication.	IIa	C
Repetitive symptomatic salvoes of non-sustained monomorphic VT should be considered for either conservative management (watchful waiting) or treated with i.v. beta-blocker,[e] or sotalol,[e] or amiodarone.[d]	IIa	C
Polymorphic VT		
• must be treated by i.v. beta-blocker[e]	I	B
• or i.v. amiodarone[d]	I	C
• urgent angiography must be performed when myocardial ischaemia cannot be excluded	I	C
• may be treated with i.v. lidocaine	IIb	C
• must prompt assessment and correction of electrolyte disturbances consider magnesium.	I	C
• should be treated with overdrive pacing using a temporary transvenous right ventricular lead or isoproterenol infusion.	IIa	C

TTO INICIAL SCACEST: FV / Parada Cardiaca

- **DESFIBRILACIÓN PRECOZ!!**
- **Maniobras RCP avanzada.**
- **PREVENCIÓN RECURRENCIAS**
  - **β-Bloqueantes iv si TA suficiente**
    - **¿Amiodarona iv???**
- **Hipotermia:** ↑Supervivencia y estado Neurológico
- **Coronariografía** post-PCR si sospecha SCACEST

Efficacy of therapeutic hypothermia after out-of-hospital cardiac arrest due to ventricular fibrillation☆

Guillaume Belliard[a], Emmanuel Catez[a], Cyril Charron[a], Vincent Caille[a], Philippe Aegerter[b], Olivier Dubourg[c], François Jardin[a], Antoine Vieillard-Baron[a,*]

Resuscitation (2007) 75, 252–259

ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation

The Task Force on the management of ST-segment elevation acute myocardial infarction of the European Society of Cardiology (ESC)

Therapeutic hypothermia is indicated early after resuscitation of cardiac arrest patients who are comatose or in deep sedation.	I	B
Immediate angiography with a view to primary PCI is recommended in patients with resuscitated cardiac arrest whose ECG shows STEMI.	I	B
Immediate angiography with a view to primary PCI should be considered in survivors of cardiac arrest without diagnostic ECG ST-segment elevation but with a high suspicion of ongoing infarction.	IIa	B

Part 9: Post–Cardiac Arrest Care

2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care

Mary Ann Peberdy, Co-Chair*; Clifton W. Callaway, Co-Chair*; Robert W. Neumar; Romergryko G. Geocadin; Janice L. Zimmerman; Michael Donnino; Andrea Gabrielli; Scott M. Silvers; Arno L. Zaritsky; Raina Merchant; Terry L. Vanden Hoek; Steven L. Kronick

(*Circulation*. 2010;122[suppl]:S768–S786.)

MILD THERAPEUTIC HYPOTHERMIA TO IMPROVE THE NEUROLOGIC OUTCOME AFTER CARDIAC ARREST

THE HYPOTHERMIA AFTER CARDIAC ARREST STUDY GROUP*

(N Engl J Med 2002;346:549-56.)

THE COCHRANE COLLABORATION®

Hypothermia for neuroprotection in adults after cardiopulmonary resuscitation (Review)

Arrich J, Holzer M, Havel C, Müllner M, Herkner H

Conventional cooling methods to induce mild therapeutic hypothermia seem to improve survival and neurologic outcome after cardiac arrest. Our review supports the current best medical practice as recommended by the International Resuscitation Guidelines.

TTO INICIAL SCACEST:BRADIARRITMIAS

- **TTO ELECCIÓN: REPERFUSIÓN**
  - Implante MP nunca debe retrasar Reperfusión.
- **SOLO TTO BRADIARRITMIAS / T CONDUCCIÓN SINTOMÁTICOS** (↓TA, ICC)
  - Parada Sinusal / Bradi, BAV (Mobitz II / 3º).
  - Transitorios (IAM inferior), no siempre MP permanente
- **Atropina (?, no BAV 3º), MP transvenoso**
- **NO Isoproterenol** (↑Consumo O2 miocárdico, Proarritmia)

Guidelines for cardiac pacing and cardiac resynchronization therapy

The Task Force for Cardiac Pacing and Cardiac Resynchronization Therapy of the European Society of Cardiology. Developed in Collaboration with the European Heart Rhythm Association

European Heart Journal (2007) 28, 2256–2295

ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation

The Task Force on the management of ST-segment elevation acute myocardial infarction of the European Society of Cardiology (ESC)

European Heart Journal (2012) 33, 2569–2619

In cases of sinus bradycardia associated with hypotension, AV block II (Mobitz 2) or AV block III with bradycardia that causes hypotension or heart failure:		
• intravenous atropine is indicated	I	C
• temporary pacing is indicated in cases of failure to respond to atropine.	I	C
• urgent angiography with a view to revascularization is indicated if the patient has not received prior reperfusion therapy.	I	C

TTO INICIAL SCACEST: CONCLUSIONES

1. **Objetivos: Mantener Oxigenación miocárdica y Prevenir complicaciones** (Disfunción VI, Arritmias, ICC).

2. **Medidas Generales**
   - **O2: si Sat O2<95%, Disnea, ICC (objetivo: 95-98%)**
   - **Mórfico titulado si dolor. No BZD sistemáticamente.**

3. **Nitratos:** HTA, ICC, Dolor (no rutinario)

4. **β-Bloqueantes: administración sistemática todos pacientes sin contraindicación (oral)**
   - **↑Supervivencia, ↓Disfunción VI y Arritmias ventriculares**
   - **Precoz iv: HTA, Taquiarritmias**

5. **IECA: administración sistemática 1ª 24h**
   - **Especialmente: ICC, ↓FEVI, HTA, IAM anterior**
   - **↑Supervivencia, ↓Disfunción VI y Arritmias ventriculares**
   - **ARA-II si intolerancia (¿Valsartán?).**

TTO INICIAL SCACEST: CONCLUSIONES (II)

6. ESTATINAS: (↓ Mortalidad / MACE)

- **TTO sistemático, precoz, intensivo** (¿Atorvastatina 80mg/día?)

7. TTO Hiperglucemia (Predictora Morbi-mortalidad)

- **"Control estricto pero no demasiado"**
- **Insulinoterapia ajustada a perfil glucémico.**
- **Objetivo: <200 mg/dl (Evitar <90 mg/dl) Pacientes con/sin DM**

8. TTO HTA (HTA e HipoTA: ↓Pronóstico)

- **Objetivo: TAS 110-140 mmHg, TAD 70-90 mmHg**
  - **Evitar ↓rápido TA, no <110/70**
  - **NTG i.v.** (ICC) **Nitroprusiato:** Emergencia HTA +ICC
  - **β-Bloqueantes orales (i.v.** ↑ ↑ si Taquicardia)
  - **IECA** IAM extenso, ↓FEVI, ICC (**ARA-II:** Intolerancia IECA)

TTO INICIAL SCACEST: CONCLUSIONES (III)

8. TTO ARRITMIAS (↑**Frecuente**, ↓↓**Pronóstico**)

FA: Predictor Independiente Morbi-Mortalidad

- **ACO** (CHA_2DS_2-VASc≥1), **Control FC** (β-bloqueantes)
  Control Ritmo (CVE sincronizada)

TV: No indicado TTO EV, RIVA ni Profilaxis con FAA

- **Considerar procesos tratables subyacentes**
- **TTO ELECCIÓN: CVE SINCRONIZADA**
- **TV RECURRENTE: β-Bloqueantes Amiodarona**
- **TV POLIMORFICA: CVE →β-Bloqueantes iv + MP**

FV: Desfibrilación precoz, RCP, β-bloq/ Amio, Hipotermia

Bradi / T Conducción: TTO sintomáticos (↓TA, ICC)

- **Atropina, MP transitorio. Evitar Isoproterenol.**

Incrementar y Difundir Evidencia Manejo Fase Aguda → Contribuir mejorar Pronóstico y QoL