MERLO 2024
JORNADAS CIENTÍFICAS Y GREMIALES
del 29 nov al 1 dic

CACI

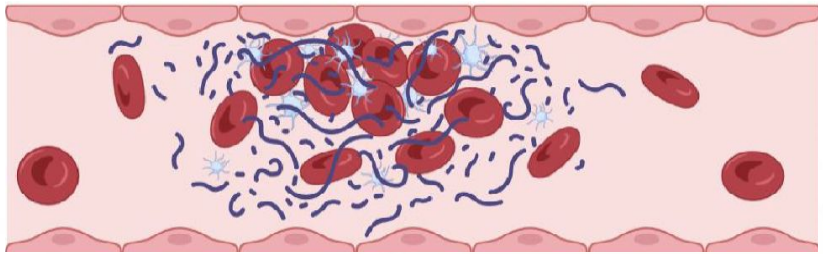
# Tratamiento antitrombótico en el Intervencionismo

Dr. Alejandro Diego Fernández
Sub Jefe Servicio de Hemodinamia y
Cardiología Intervencionista

HOSPITAL ITALIANO
de Buenos Aires

Agentes Antitrombínicos

- Heparina no fraccionada
- Enoxaparina
- Bivalirudina
- Fondaparinux



Inhibidores P2Y12

- Clopidogrel
- Prasugrel
- Ticagrelor

Antiplaquetarios Endovenosos

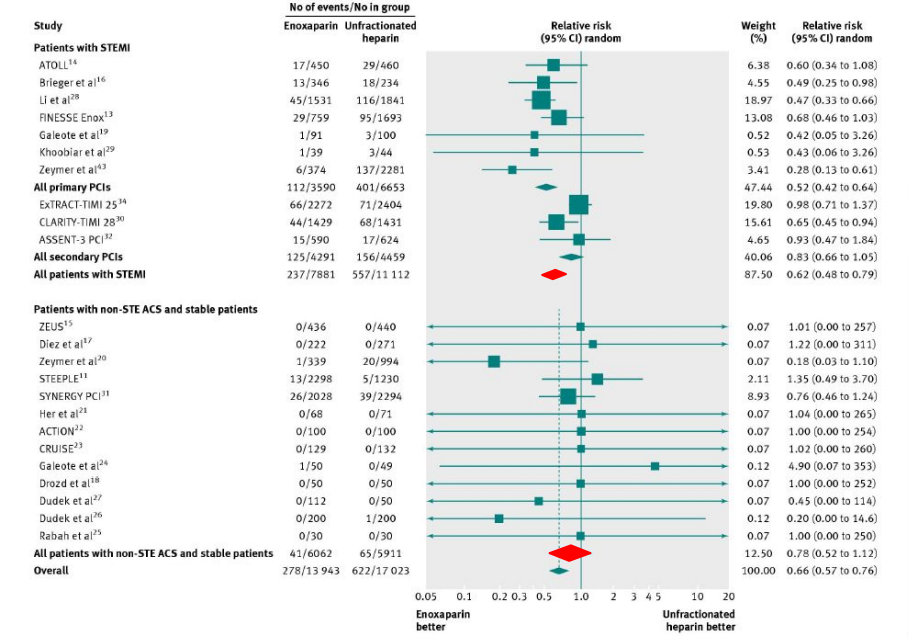
- Inhibidores GP IIb/IIIa
- Cangrelor

BMJ
*BMJ* 2012;344:e553 doi: 10.1136/bmj.e553 (Published 3 February 2012)

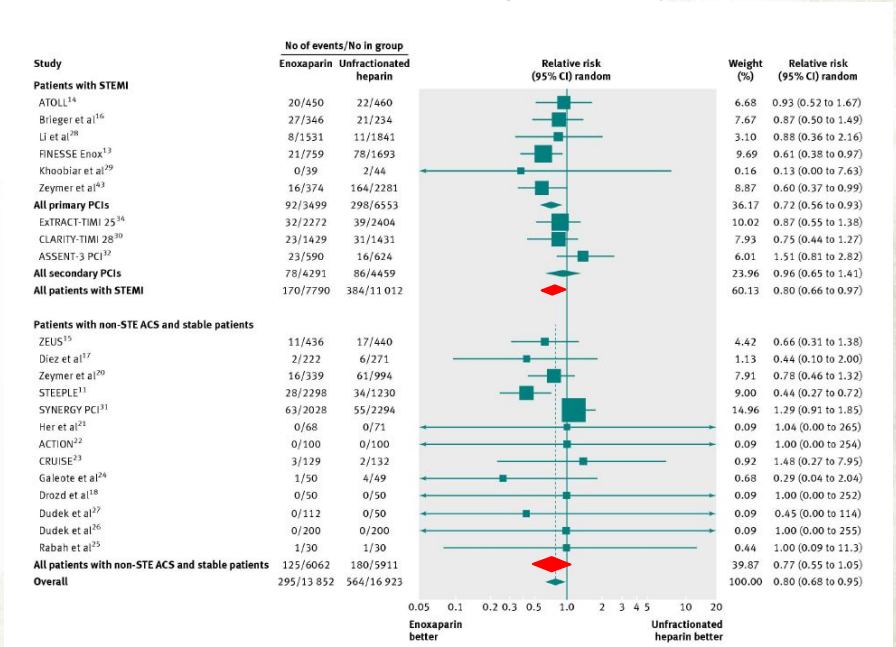

RESEARCH

# Efficacy and safety of enoxaparin versus unfractionated heparin during percutaneous coronary intervention: systematic review and meta-analysis

## Mortalidad




## Sangrado mayor

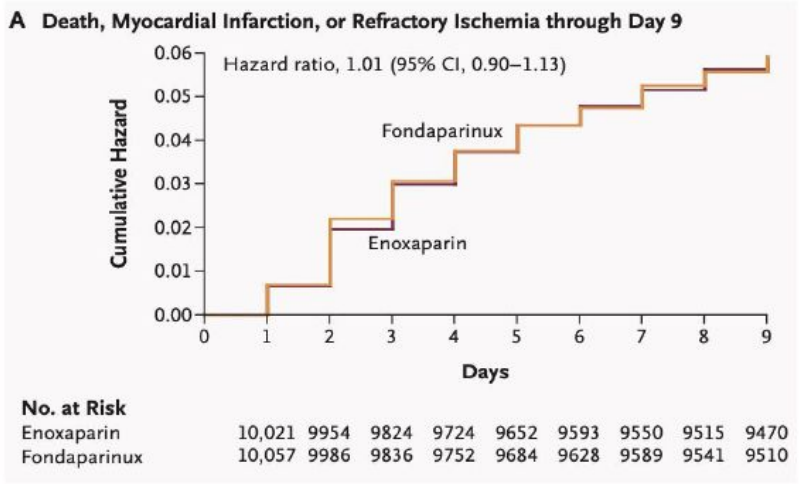


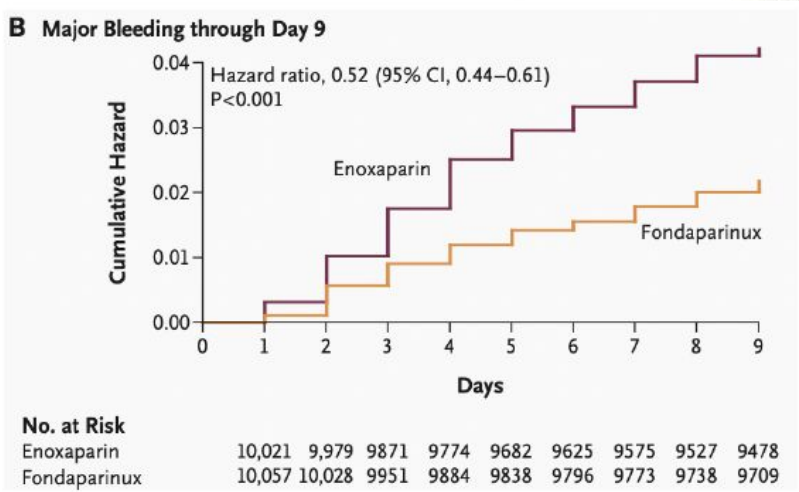

*BMJ 2012;344:e553 doi: 10.1136/bmj.e553*

## EUROMAX, BRIGHT, HEAT-PPCI, HORIZONS-AMI, MATRIX, VALIDATE-SWEDEHEART

| | Individual-patient-data pooled analysis | | BRIGHT-4 |
|---|---|---|---|
| | 6 Randomized Trials | 4 Randomized Trials* | Randomized Trial |
| Bivalirudin vs heparin | Bivalirudin ± post-PCI infusion vs heparin ± planned GPI (n = 15,254) | Bivalirudin + high-dose post-PCI infusion vs heparin without planned GPI (n = 6,244) | Bivalirudin + high-dose post-PCI infusion vs heparin without planned GPI (n = 6,016) |
| All-cause mortality | 0.78 (0.62-0.99) | 0.74 (0.48-1.12) | 0.75 (0.57-0.99) |
| Cardiac mortality | 0.69 (0.54-0.88) | 0.62 (0.39-0.97) | 0.77 (0.58-1.01) |
| Stent thrombosis | 1.43 (1.05-1.93) | 0.80 (0.41-1.57) | 0.33 (0.17-0.66) |
| MI (reinfarction) | 1.30 (1.02-1.65) | 0.89 (0.58-1.38) | 0.68 (0.37-1.26) |
| Clinically-driven TVR | 1.17 (0.92-1.48) | 0.68 (0.46-1.02) | 0.50 (0.22-1.11) |
| Stroke | 0.76 (0.49-1.18) | 0.35 (0.15-0.81) | 1.07 (0.52-2.22) |
| MACCE | 0.97 (0.84-1.13) | 0.70 (0.55-0.90) | 0.79 (0.62, 0.998) |
| Major/serious bleeding | 0.53 (0.44-0.64) | 0.49 (0.35-0.70) | 0.21 (0.08-0.54) |
| NACE | 0.74 (0.66-0.84) | 0.60 (0.48-0.74) | 0.74 (0.59-0.94) |

Stone GW, et al. JACC. 2024;84(16):1512–1524.




- En el estudio OASIS-5 (20.078 ptes. con AI/IAM) el Fondaparinux se asoció a menor riesgo de sangrado sin diferencias en el punto final de Muerte/ IAM /isquemia refractaria comparado con enoxaparina.

- En el estudio OASIS-6 (12.092 ptes. Con IAM) Fondaparinux dio resultado neutro comparado con Heparina no fraccionada en ATC primaria.

| | Class | Level |
|---|---|---|
| **STEMI** | | |
| UFH | I | C |
| Enoxaparin | IIa | A |
| Bivalirudin | IIa | A |
| Fondaparinux | III | B |
| **NSTEMI** | | |
| UFH (angio. <24h) | I | C |
| Enoxaparin (angio. <24h) | IIa | B |
| Fondaparinux (angio. > 24h) | I | B |

| | Class | Level |
|---|---|---|
| UFH | I | C |
| Bivalirudin or argatroban (HIT) | I | C |
| Bivalirudin | IIb | A |
| **NSTE-ACS or UA** | | |
| Intravenous enoxaparin | IIb | B |

Agentes Antitrombínicos

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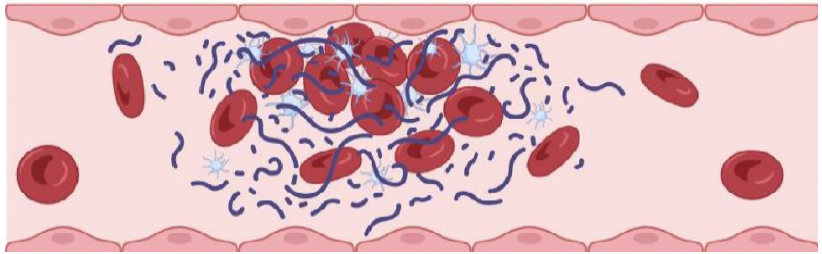
- Fondaparinux



Inhibidores P2Y12

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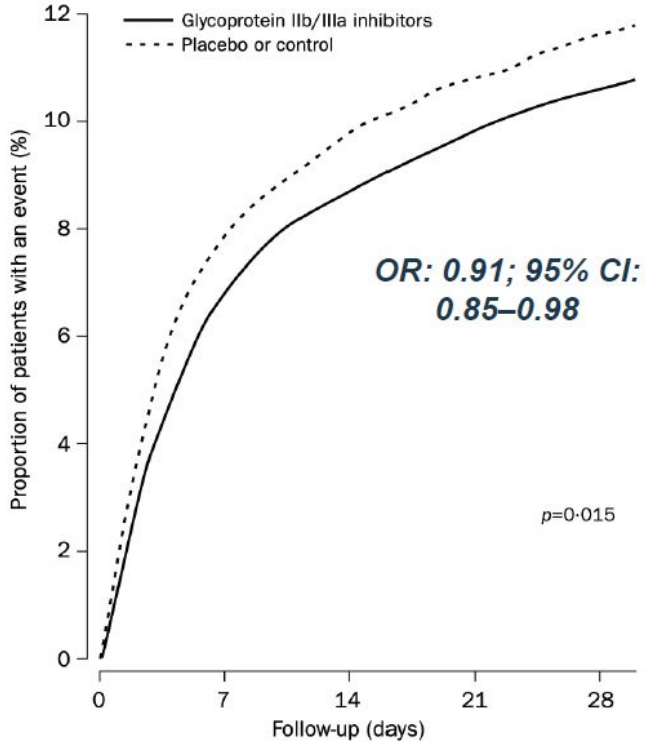
Antiplaquetarios Endovenosos

- Inhibidores GP IIb/IIIa
- Cangrelor

## GPI in ACS: a meta-analysis (6 trials, n= 31.402)

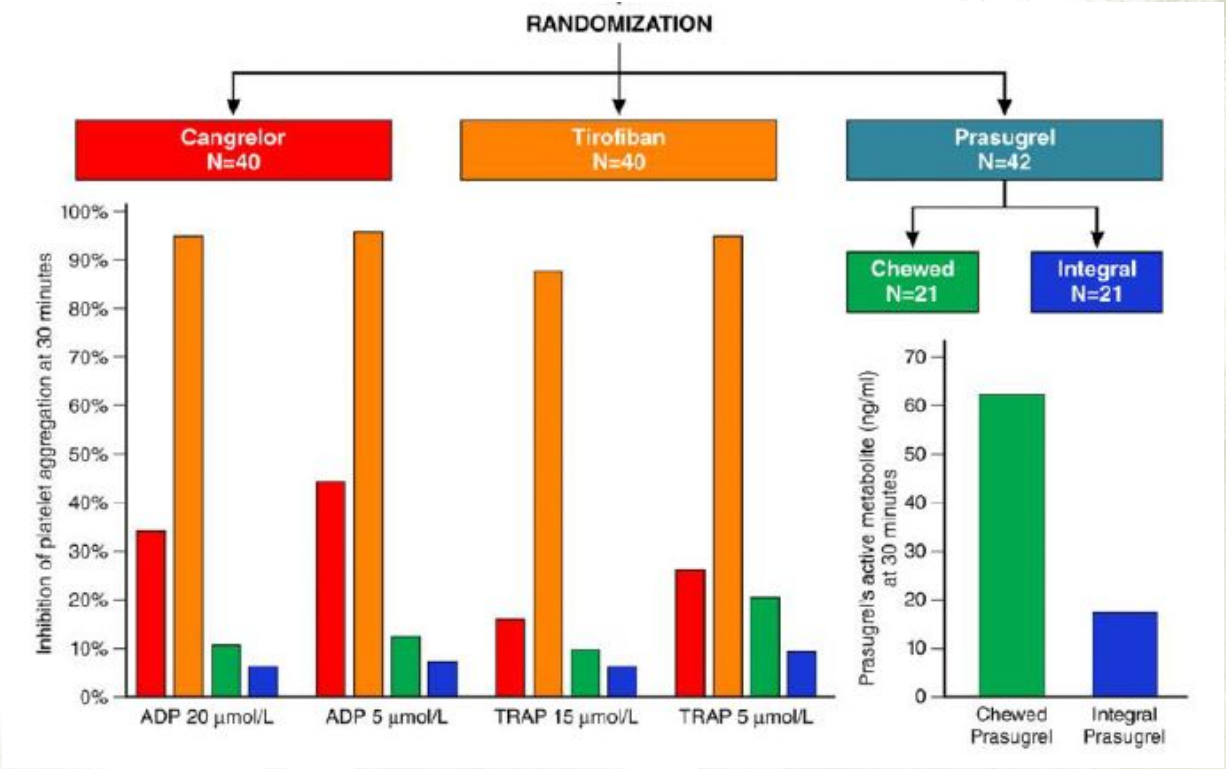



La mayoría de los estudios que evaluaron el uso de inhibidores GP IIb/IIIa se realizaron antes que existieran los inhibidores P2Y12

No existe evidencia que demuestre beneficio en el uso rutinario de inhibidores GP IIb/IIIa en pacientes programados para angioplastía

## FABOLUS FASTER trial

- Cangrelor provee menor inhibición plaquetaria que el Tirofiban
- Tanto el Cangrelor como el Tirofibal proveen mayor inhibición plaquetaria que el prasugrel
- Si bien el prasugrel masticado conduce a una mayor concentración sanguínea de metabolito activo, no mostró diferencia en la inhibición plaquetaria con respecto a la administración tradicional




Gargiulo G. et al, Circulation 2020

| | Class | Level |
|---|---|---|
| **GPI** | | |
| No-reflow or a thrombotic complication during PCI | IIa | C |
| **Cangrelor** | | |
| $P2Y_{12}$ receptor inhibitor-naïve PCI patients | IIb | A |

| | Class | Level |
|---|---|---|
| **GPI** | | |
| Large thrombus burden, no-reflow, slow-flow (ACS) | IIa | C |
| Routine use in CCS | III | B |
| **Cangrelor** | | |
| $P2Y_{12}$ receptor inhibitor-naïve PCI patients | IIb | B |

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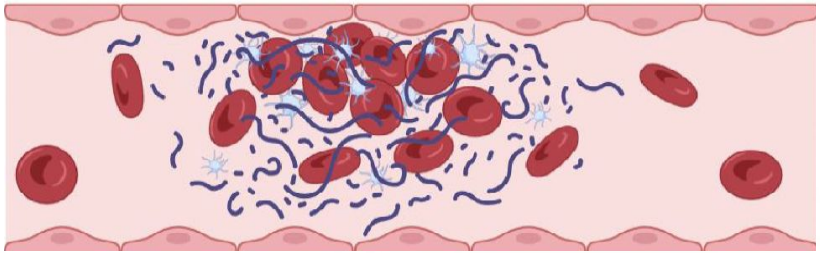

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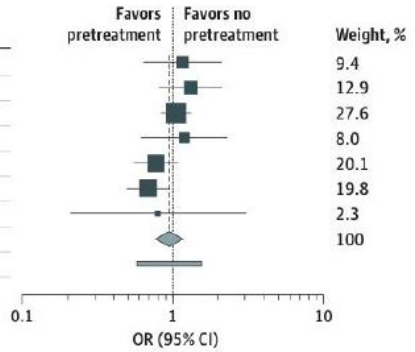
- Cangrelor

# Pre tratamiento con P2Y12 en SCA (7 trials, n= 13226)

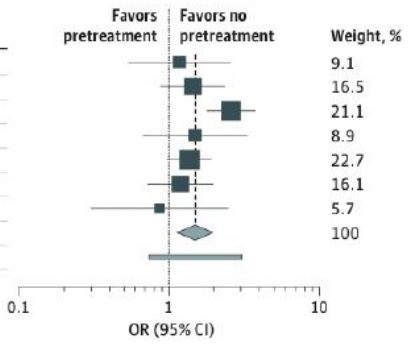
- 30-day MACE

| Source | No./total No. Pretreatment | No pretreatment | OR (95% CI) |
|---|---|---|---|
| DUBIUS,[19] 2020 | 24/711 | 21/721 | 1.16 (0.64-2.11) |
| ISAR-REACT 5,[11] 2020 | 39/1179 | 30/1186 | 1.32 (0.81-2.14) |
| ACCOAST,[9] 2013 | 157/2037 | 146/1996 | 1.06 (0.84-1.34) |
| ARMYDA-5,[17] 2010 | 21/204 | 18/205 | 1.19 (0.62-2.31) |
| CREDO,[18] 2002 | 65/1053 | 83/1063 | 0.78 (0.55-1.09) |
| PCI CURE,[5] 2001 | 59/1313 | 86/1345 | 0.69 (0.49-0.97) |
| Bonello et al,[16] 2015 | 4/106 | 5/107 | 0.80 (0.21-3.06) |
| Overall | 369/6603 | 389/6623 | 0.95 (0.77-1.17) |
| Prediction interval | | | (0.58-1.56) |
| Random-effects model ($I^2$ = 28%, $P$ = .21) | | | |




- 30-day major bleeding

| Source | No./total No. Pretreatment | No pretreatment | OR (95% CI) |
|---|---|---|---|
| DUBIUS,[19] 2020 | 14/711 | 12/721 | 1.19 (0.55-2.58) |
| ISAR-REACT 5,[11] 2020 | 40/1179 | 28/1186 | 1.45 (0.89-2.37) |
| ACCOAST,[9] 2013 | 100/2037 | 39/1996 | 2.59 (1.78-3.77) |
| ARMYDA-5,[17] 2010 | 16/204 | 11/205 | 1.50 (0.68-3.32) |
| CREDO,[18] 2002 | 83/1053 | 62/1063 | 1.38 (0.98-1.94) |
| PCI CURE,[5] 2001 | 34/1313 | 29/1345 | 1.21 (0.73-1.99) |
| Bonello et al,[16] 2015 | 7/106 | 8/107 | 0.88 (0.31-2.51) |
| Overall | 294/6603 | 190/6623 | 1.51 (1.15-1.98) |
| Prediction interval | | | (0.74-3.05) |
| Random-effects model ($I^2$ = 41%, $P$ = .12) | | | |




Dawson LP. et al, JAMA Network Open 2021

Circulation

FRONTIERS

# Demystifying the Contemporary Role of 12-Month Dual Antiplatelet Therapy After Acute Coronary Syndrome

Marco Valgimigli, MD, PhD; Antonio Landi, MD; Dominick J. Angiolillo, MD, PhD; Usman Baber, MD; Deepak L. Bhatt, MD, MPH, MBA; Marc P. Bonaca, MD MPH; Davide Capodanno, MD, PhD; David J. Cohen, MD, MSc; C. Michael Gibson, MD; Stefan James, MD, PhD; Takeshi Kimura, MD; Renato D. Lopes, MD, PhD; Shamir R. Mehta, MD; Gilles Montalescot, MD; Dirk Sibbing, MD; P. Gabriel Steg, MD; Gregg W. Stone, MD; Robert F. Storey, MD, DM; Pascal Vranckx, MD, PhD; Stephan Windecker, MD; Roxana Mehran, MD

*Circulation*. 2024;150:317–335. DOI: 10.1161/CIRCULATIONAHA.124.069012

Restenosis
32%

Angioplastia

‘80 ‘90

The New England
Journal of Medicine



Volume 331 AUGUST 25, 1994 Number 8

**A COMPARISON OF BALLOON-EXPANDABLE–STENT IMPLANTATION WITH BALLOON ANGIOPLASTY IN PATIENTS WITH CORONARY ARTERY DISEASE**

PATRICK W. SERRUYS, M.D., PETER DE JAEGERE, M.D., FERDINAND KIEMENEIJ, M.D., CARLOS MACAYA, M.D., WOLFGANG RUTSCH, M.D., GUY HEYNDRICKX, M.D., HÅKAN EMANUELSSON, M.D., JEAN MARCO, M.D., VICTOR LEGRAND, M.D., PIERRE MATERNE, M.D., JORGE BELARDI, M.D., ULRICH SIGWART, M.D., ANTONIO COLOMBO, M.D., JEAN JACQUES GOY, M.D., PAUL VAN DEN HEUVEL, M.D., JUAN DELCAN, M.D., AND MARIE-ANGÈLE MOREL, M.SC., FOR THE BENESTENT STUDY GROUP*



**A RANDOMIZED COMPARISON OF CORONARY-STENT PLACEMENT AND BALLOON ANGIOPLASTY IN THE TREATMENT OF CORONARY ARTERY DISEASE**

DAVID L. FISCHMAN, M.D., MARTIN B. LEON, M.D., DONALD S. BAIM, M.D., RICHARD A. SCHATZ, M.D., MICHAEL P. SAVAGE, M.D., IAN PENN, M.D., KATHERINE DETRE, M.D., DR.P.H., LISA VELTRI, M.S., DONALD RICCI, M.D., MASAKIYO NOBUYOSHI, M.D., MICHAEL CLEMAN, M.D., RICHARD HEUSER, M.D., DAVID ALMOND, M.D., PAUL S. TEIRSTEIN, M.D., R. DAVID FISH, M.D., ANTONIO COLOMBO, M.D., JEFFREY BRINKER, M.D., JEFFREY MOSES, M.D., ALEX SHAKNOVICH, M.D., JOHN HIRSHFELD, M.D., STEPHEN BAILEY, M.D., STEPHEN ELLIS, M.D., RANDAL RAKE, B.S., AND SHELDON GOLDBERG, M.D., FOR THE STENT RESTENOSIS STUDY INVESTIGATORS*

Aspirina
Warfarina
3 meses

## Intracoronary Stenting Without Anticoagulation Accomplished With Intravascular Ultrasound Guidance

Antonio Colombo, Patrick Hall, Shigeru Nakamura, Yaron Almagor, Luigi Maiello, Giovanni Martini, Antonio Gaglione, Steven L. Goldberg and Jonathan M. Tobis

DOI http://dx.doi.org/10.1161/01.CIR.91.6.1676
Circulation. 1995;91:1676-1688
Originally published March 15, 1995

Angioplastia

‘80 ‘90 95

Trombosis

Aspirina
Warfarina
3 meses

Aspirina
Ticlopidina
1 mes

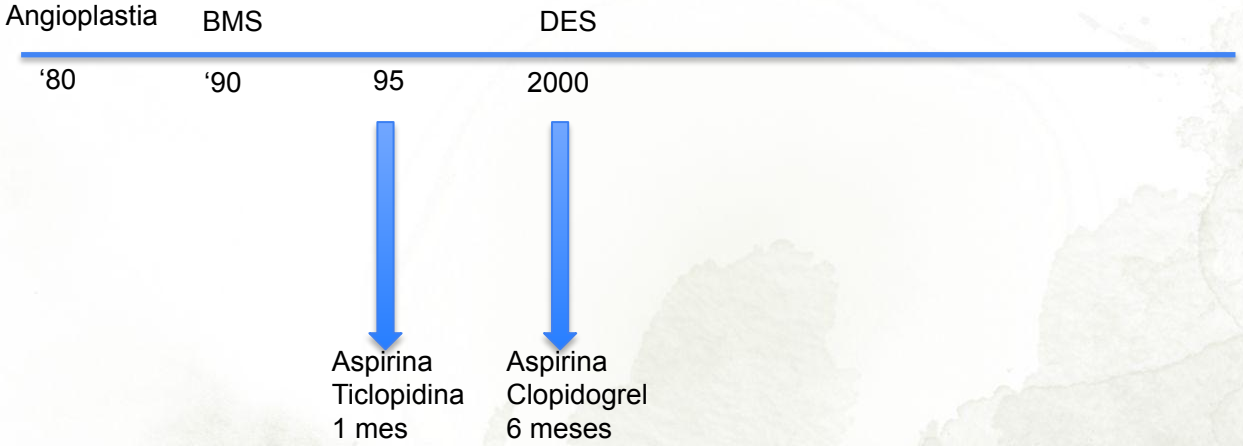
The New England
Journal of Medicine



VOLUME 346 JUNE 6, 2002 NUMBER 23

A RANDOMIZED COMPARISON OF A SIROLIMUS-ELUTING STENT WITH A STANDARD STENT FOR CORONARY REVASCULARIZATION

MARIE-CLAUDE MORICE, M.D., PATRICK W. SERRUYS, M.D., PH.D., J. EDUARDO SOUSA, M.D., JEAN FAJADET, M.D., ERNESTO BAN HAYASHI, M.D., MARCO PERIN, M.D., ANTONIO COLOMBO, M.D., G. SCHULER, M.D., PAUL BARRAGAN, M.D., GIULIO GUAGLIUMI, M.D., FERENC MOLNÀR, M.D., AND ROBERT FALOTICO, PH.D., FOR THE RAVEL STUDY GROUP*



TUESDAY

ESC Congress News

WORLD HEART FEDERATION

World Congress of Cardiology 2006

The unique meeting of the European Society of Cardiology Congress 2006 and the World Heart Federation's XVth World Congress of Cardiology

Do drug-eluting stents increase deaths?

TWO SEPARATE, independent meta-analyses, presented in Hot Line session I, suggest drug-eluting stents (DES) may increase death, Q-wave myocardial infarction (clinical surrogates of in-stent thrombosis) and cancer deaths, bringing the long-term safety of DES firmly into the spotlight. Discussant Salim Yusuf (McMaster University, Canada) hailed the data as one of the most important presentations to come out of this year's meeting.

"Six million people in the world have been implanted with DES, yet their long-term safety and efficacy is unknown," said Yusuf. "I've a feeling the data we're seeing today is only the tip of the iceberg. We need to encourage more

obtain this data from the manufacturer," said Nordmann. He speculated that the increase in cancer might be due to a rapid impairment of the immune system.

Yusuf widened the debate to include percutaneous coronary intervention (PCI). "The overuse of PCI is an insidious change in the culture of cardiology that needs to be reversed," he said. The use of PCI was established in HR, high-risk unstable angina and cardiogenic shock. However, its use in stable disease was a totally different question.

"There's no beneficial influence on mortality – PCI does nothing to prevent heart attack. All we are doing is providing short-term relief of chest pain. It's not re-stenosis that kills but the

Angioplastia BMS

'80 '90 95 2000 2006

Trombosis

Aspirina
Clopidogrel
6 meses

Aspirina
Clopidogrel
De por vida

Restenosis
2%

Angioplastia BMS DES

‘80 ‘90 95 2000 2006 2010

Trombosis

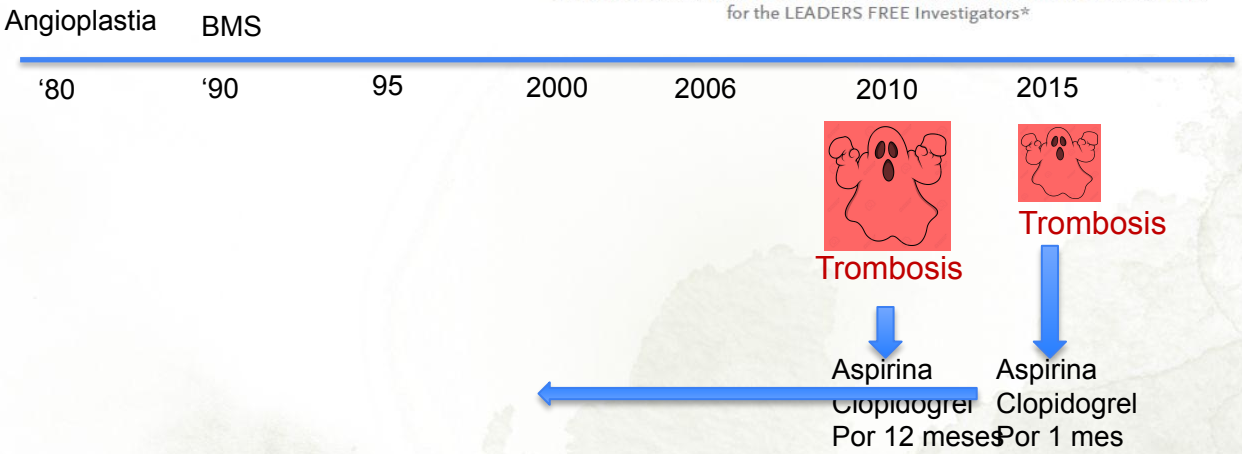
Aspirina
Clopidogrel
Por 12 meses

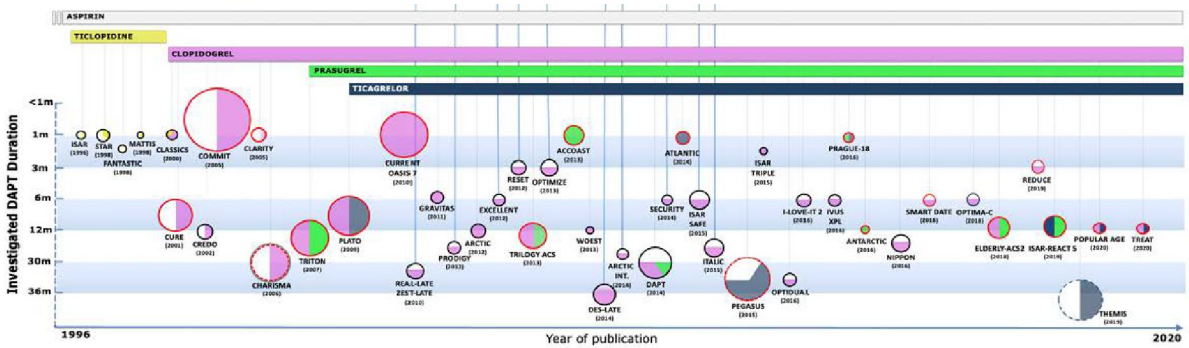
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

# Polymer-free Drug-Coated Coronary Stents in Patients at High Bleeding Risk

Philip Urban, M.D., Ian T. Meredith, M.B., B.S., Ph.D., Alexandre Abizaid, M.D., Ph.D., Stuart J. Pocock, Ph.D., Didier Carrié, M.D., Ph.D., Christoph Naber, M.D., Ph.D., Janusz Lipiecki, M.D., Ph.D., Gert Richardt, M.D., Andres Iñiguez, M.D., Ph.D., Philippe Brunel, M.D., Mariano Valdes-Chavarri, M.D., Ph.D., Philippe Garot, M.D., Suneel Talwar, M.B., B.S., M.D., Jacques Berland, M.D., Mohamed Abdellaoui, M.D., Franz Eberli, M.D., Keith Oldroyd, M.B., Ch.B., M.D., Robaayah Zambahari, M.B., B.S., M.D., John Gregson, Ph.D., Samantha Greene, B.A., Hans-Peter Stoll, M.D., and Marie-Claude Morice, M.D., for the LEADERS FREE Investigators*

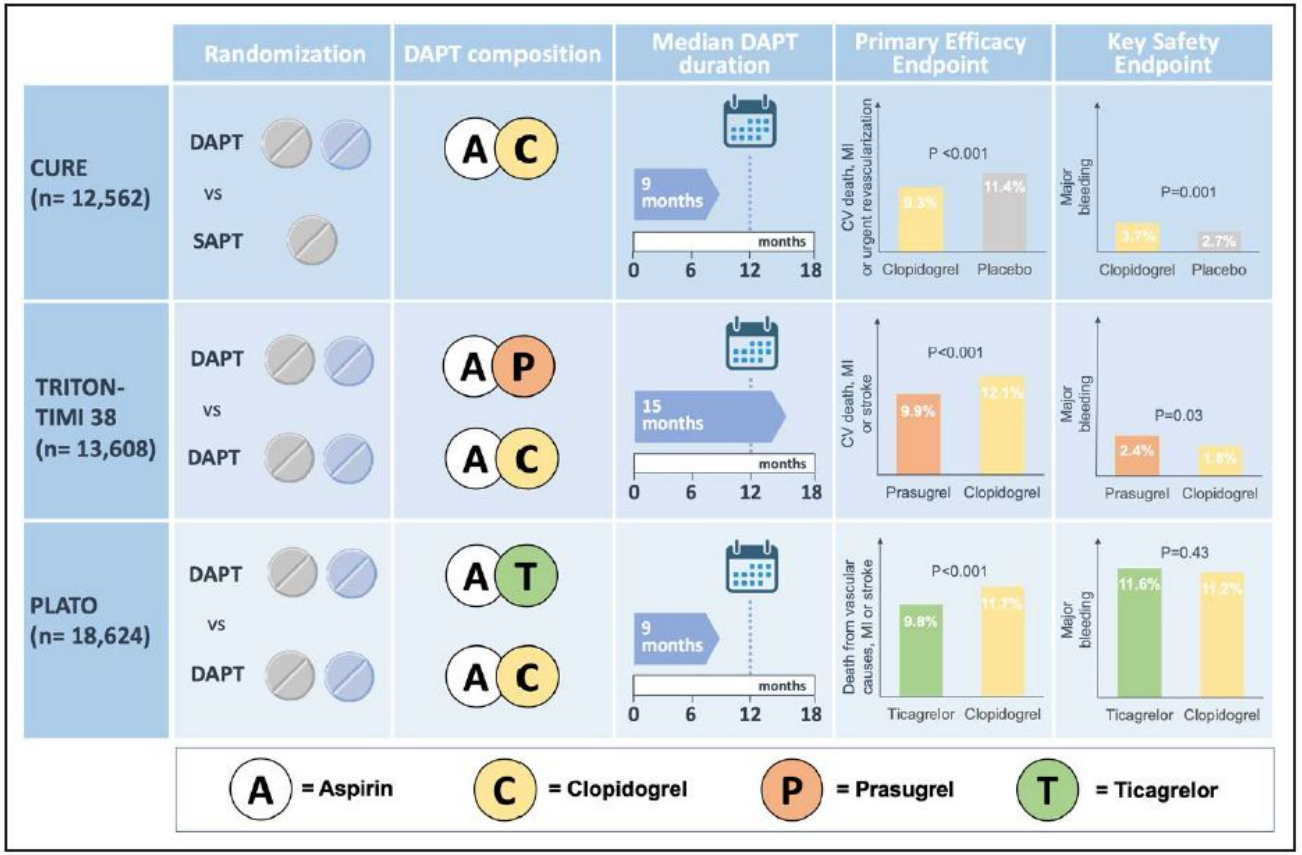





| Short-term (< 12 months) compared with 12-month DAPT | Odds ratio (95% CI) | p value |
|---|---|---|
| All-cause mortality | 0.91 (0.71 to 1.18) | 0.49 |
| Cardiovascular mortality | 0.95 (0.68 to 1.33) | 0.76 |
| Myocardial infarction | 1.11 (0.87 to 1.43) | 0.40 |
| Stroke | 0.93 (0.59 to 1.46) | 0.75 |
| ST | 1.24 (0.65 to 2.36) | 0.24 |
| Major bleeding | 0.58 (0.36 to 0.92) | 0.02 |


| | Hazard ratio (95% CI) | p value |
|---|---|---|
| Primary efficacy outcome* | 0.90 (0.77 to 1.05) | 0.18 |
| All-cause mortality | 0.80 (0.62 to 1.03) | 0.08 |
| Myocardial infarction | 0.93 (0.75 to 1.14) | 0.47 |
| Stroke | 1.10 (0.73 to 1.64) | 0.65 |
| Stent thrombosis | 0.65 (0.46 to 0.92) | 0.02 |
| BARC type 3-5 bleeding | 0.49 (0.39 to 0.63) | <0.001 |


*Circulation*. 2024;150:317–335. DOI: 10.1161/CIRCULATIONAHA.124.069012



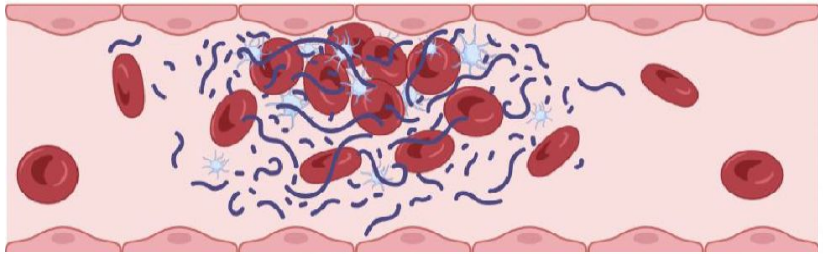

*Circulation*. 2024;150:317–335. DOI: 10.1161/CIRCULATIONAHA.124.069012

| | Class | Level |
|---|---|---|
| **Routine pre-treatment ($P2Y_{12}$ inhibitor)** | | |
| STEMI | IIb | B |
| NSTE-ACS | III | A |
| **Antiplatelet agents** | | |
| Aspirin | I | A |
| $P2Y_{12}$ inhibitor for 12 months (unless HBR) | I | A |
| Prasugrel > Ticagrelor | IIa | B |

| | Class | Level |
|---|---|---|
| **Routine pre-treatment ($P2Y_{12}$ inhibitor)** | | |
| NSTE-ACS | III | A |
| **Antiplatelet agents** | | |
| Aspirin | I | B |
| $P2Y_{12}$ inhibitor | I | B |
| Prasugrel or Ticagrelor > Clopidogrel | IIa | B |

Agentes Antitrombínicos

- Heparina no fraccionada
- Enoxaparina
- Bivalirudina
- Fondaparinux



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Antiplaquetarios Endovenosos

- Inhibidores GP IIb/IIIa
- Cangrelor

# CONCLUSIÓN

- La terapia antitrombótica peri procedimiento requiere una evaluación previa del riesgo hemorrágico y el riesgo isquémico del paciente
- La Heparina No Fraccionada es la droga de elección intra procedimiento, pudiendo considerarse la Bivalirudina en pacientes con SCA pero siempre seguida de infusión completa post procedimiento.
- La doble antiagregación debería ser discontinuada lo antes posible para minimizar el riesgo de sangrado.
- Los antiplaquetarios endovenosos solo en caso de alta carga trombótica o como emergencia en pacientes de alto riesgo vírgenes de tratamiento con P2Y12