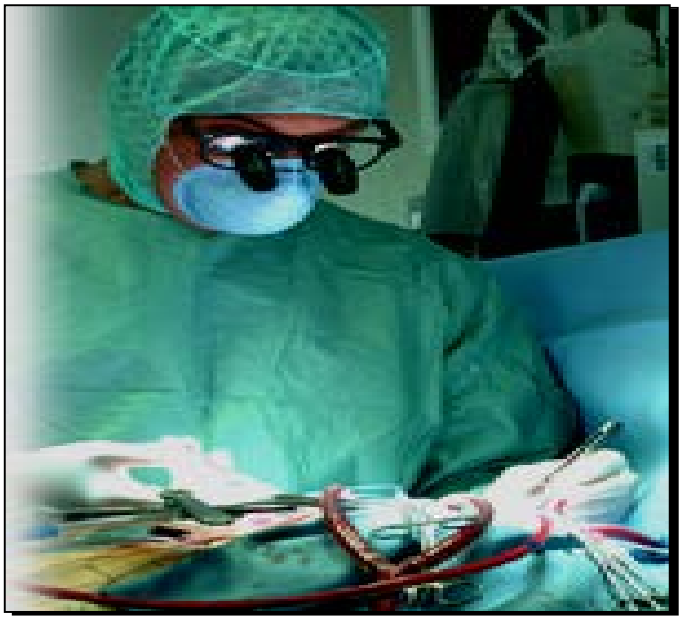
Dabigatran: nuove conferme di sicurezza. Da Recruit a ReDual-PCI



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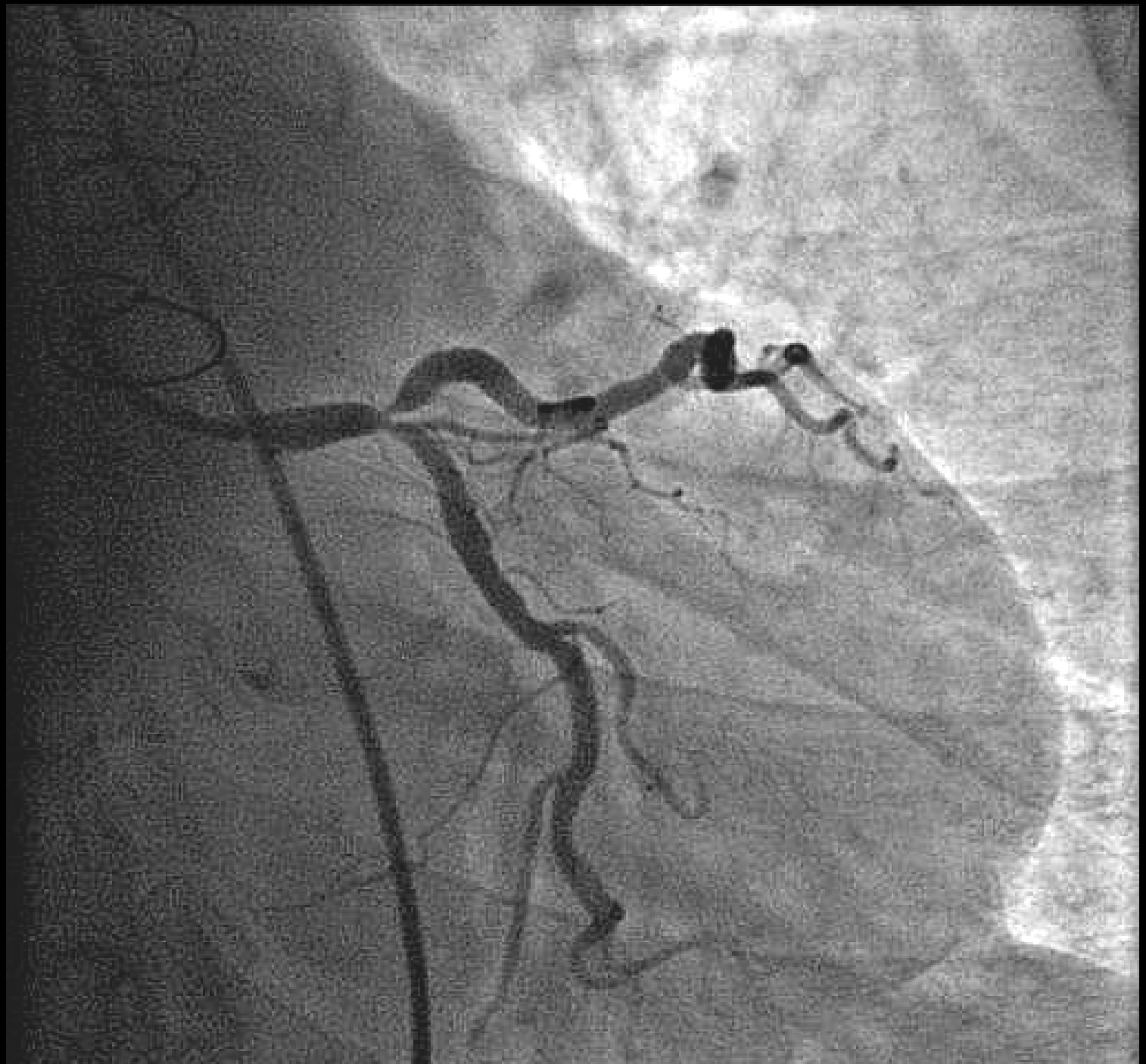
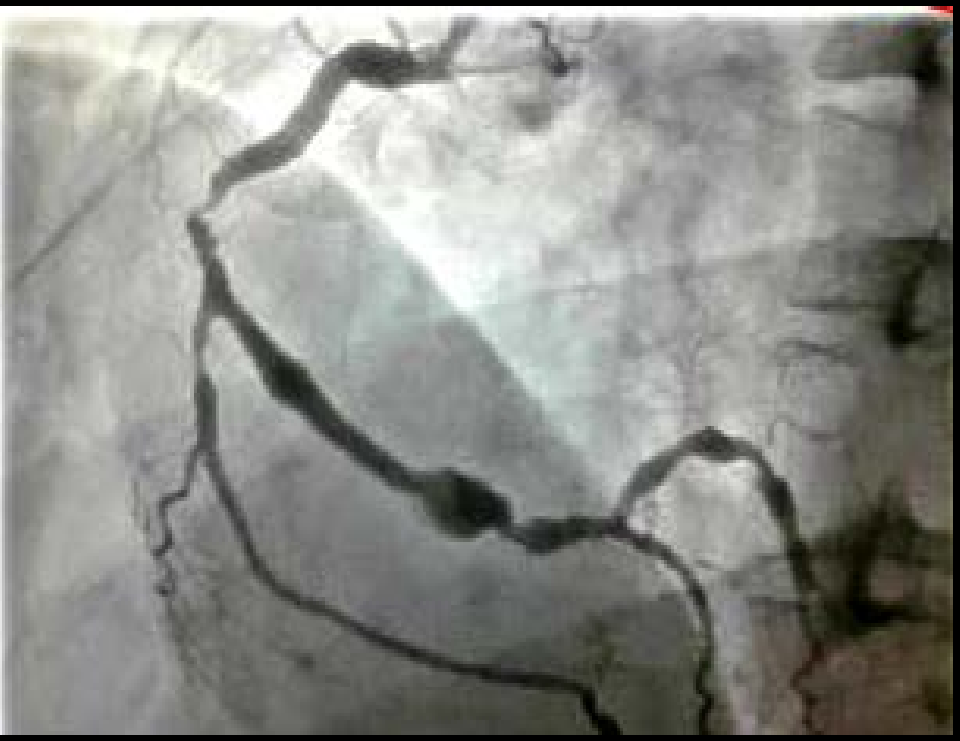
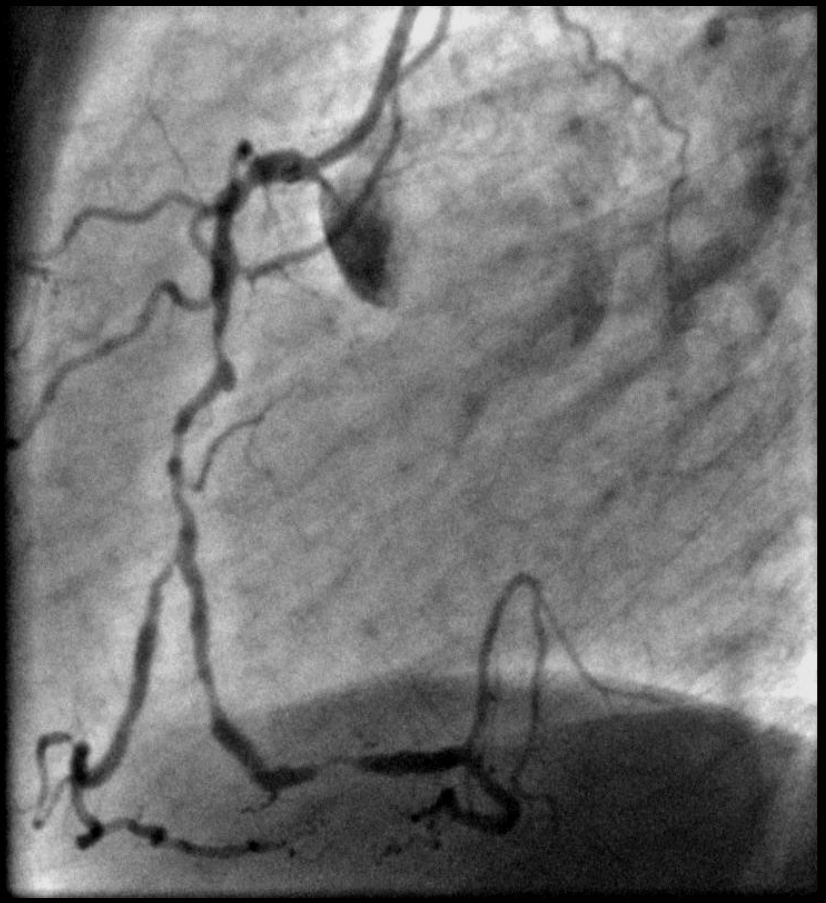
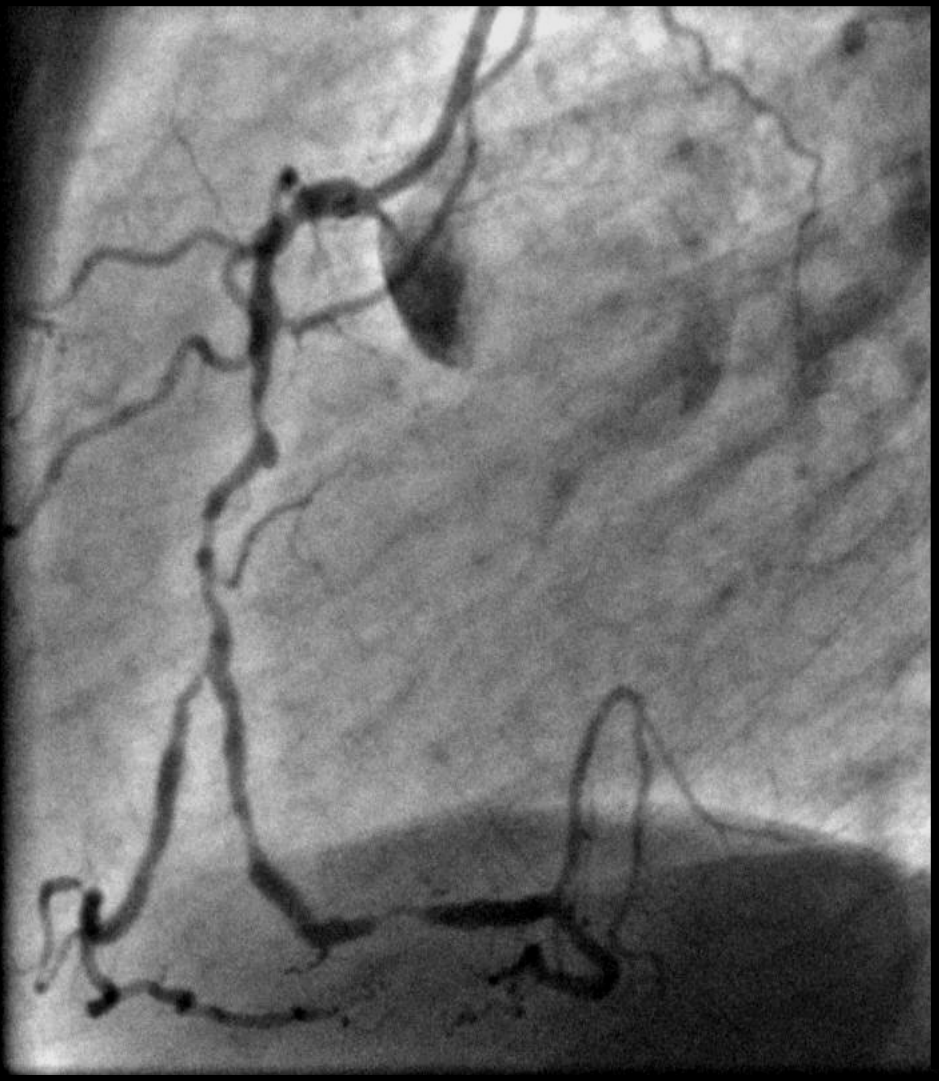
Sant'Ambrogio

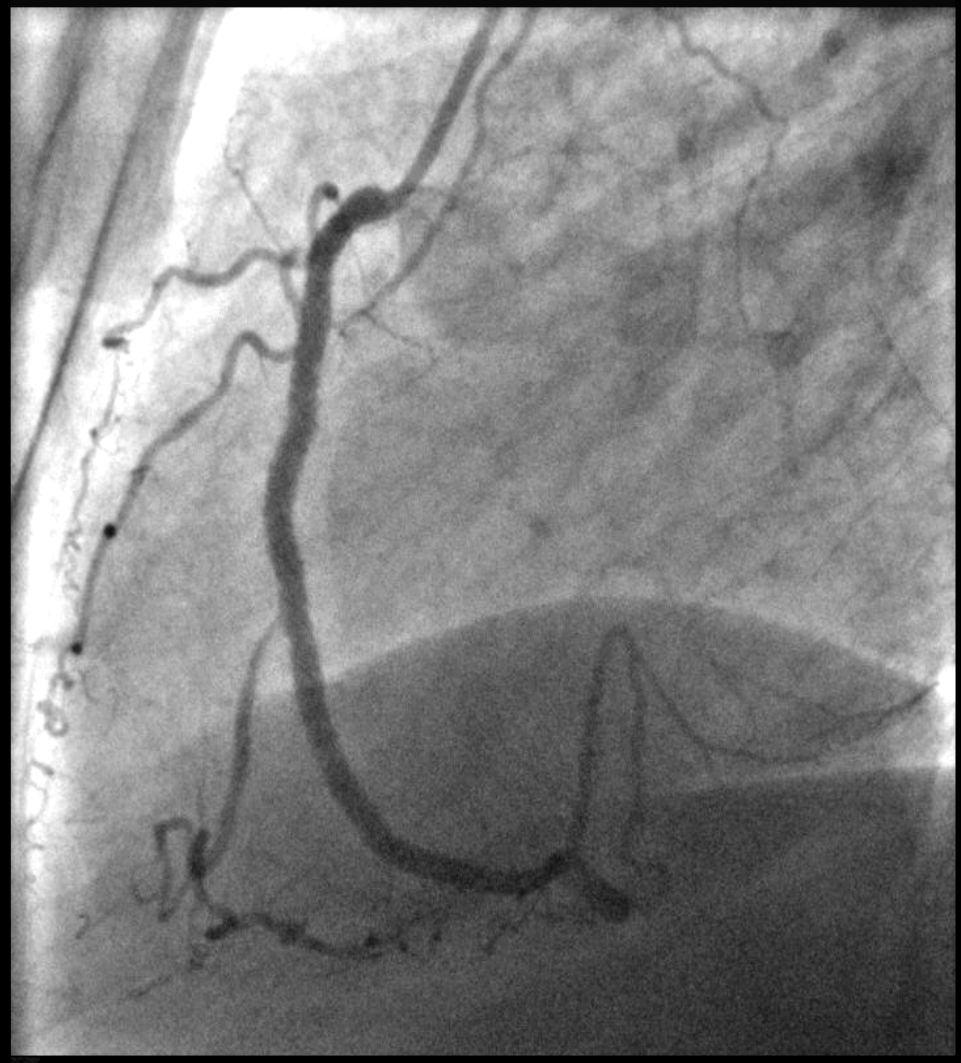
UNIVERSITAS STUDIORUM MEDIOLANENSIS



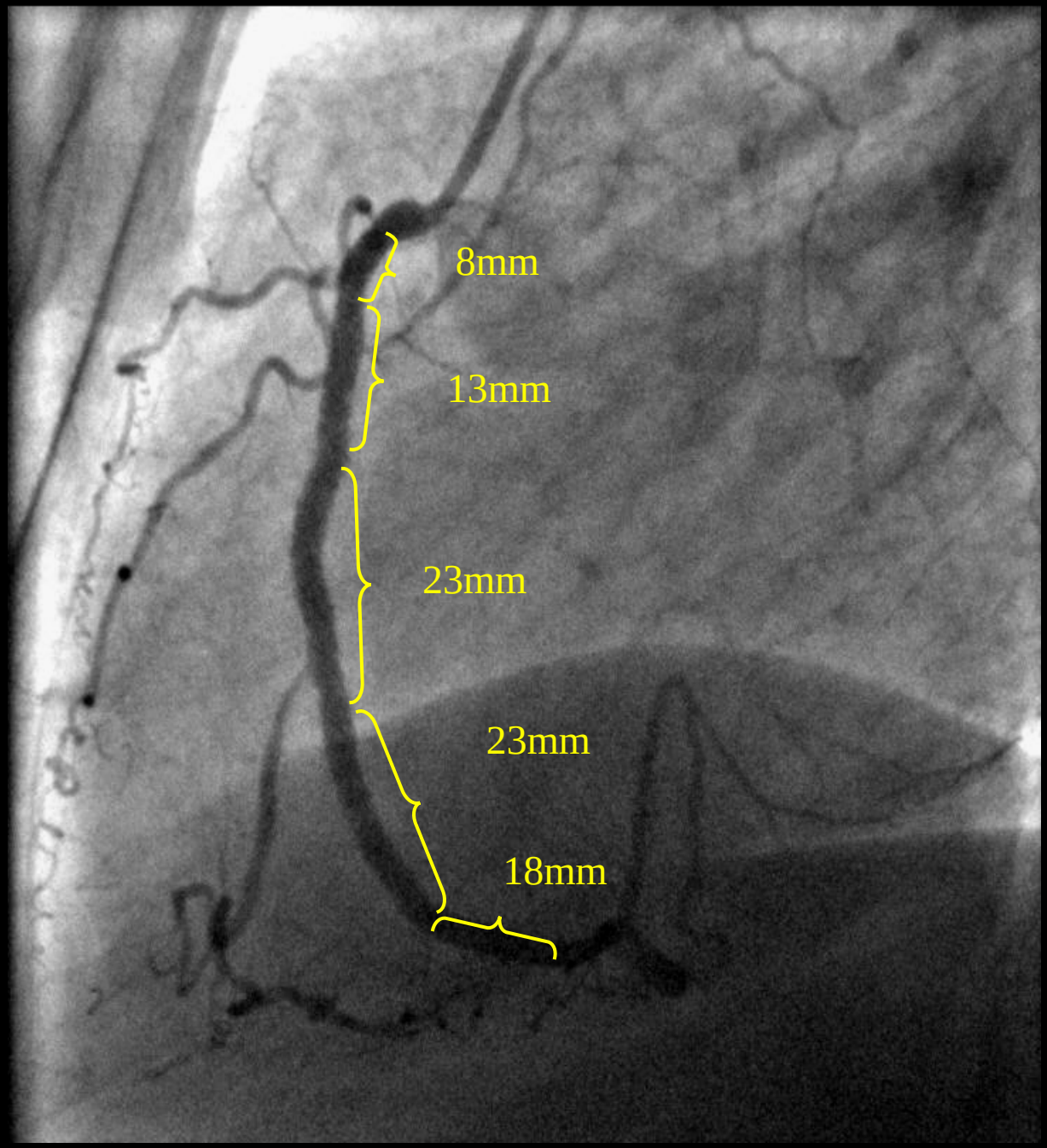








5 stents
(sirolimus)



Safety of Short-Term Discontinuation of Antiplatelet Therapy in Patients With Drug-Eluting Stents

Mark J. Eisenberg, MD, MPH; Pierre R. Richard, BSc;
Danielle Libersan, PhD; Kristian B. Filion, MSc

Conclusions

Our study was designed to examine the safety of short-term discontinuation of antiplatelet therapy in patients with DES. We found that very few cases of LST occurred within 10 days of stopping a thienopyridine if ASA was maintained. These data suggest that it may potentially be feasible for patients with DES to stop their thienopyridine therapy for a short period of time if required for invasive or surgical procedures. Although there is still a risk for LST with this strategy, short-term cessation of thienopyridine therapy may be relatively safe if ASA is maintained.

(*Circulation*. 2009;119:000-000.)

Safety of Short-Term Discontinuation of Antiplatelet Therapy in Patients With Drug-Eluting Stents

Mark J. Eisenberg, MD, MPH; Pierre R. Richard, BSc;
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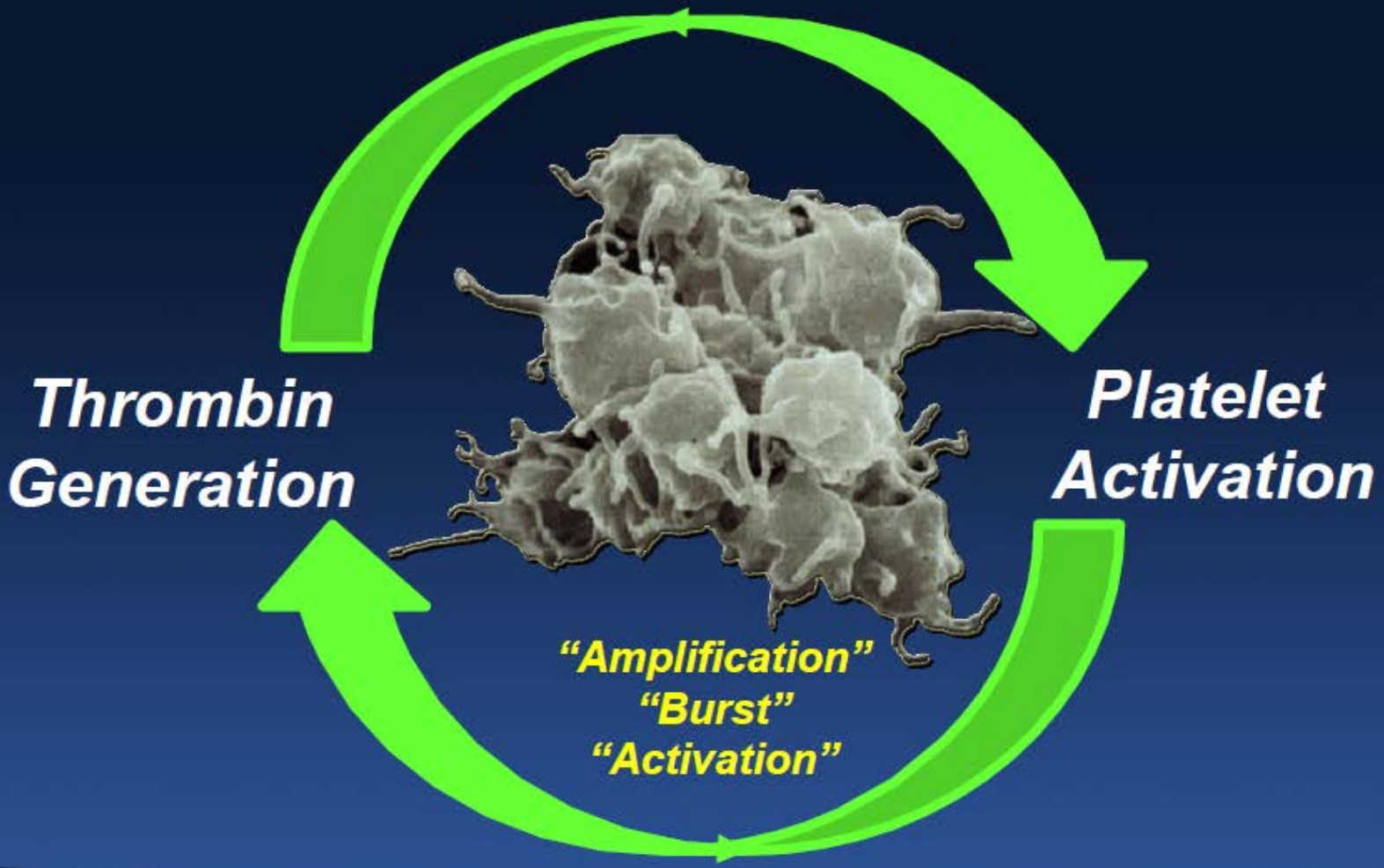
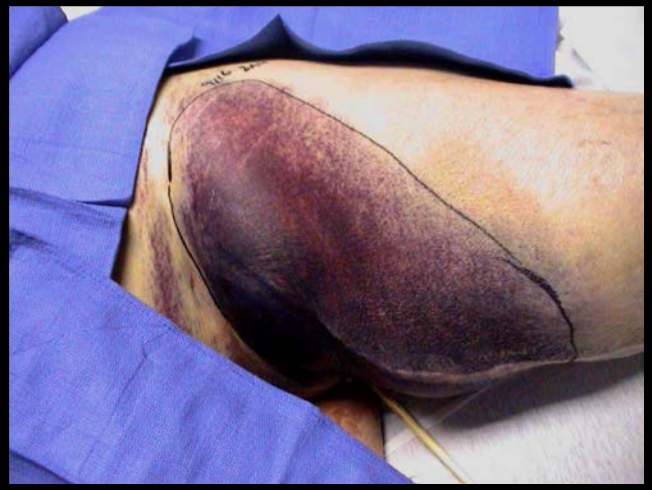
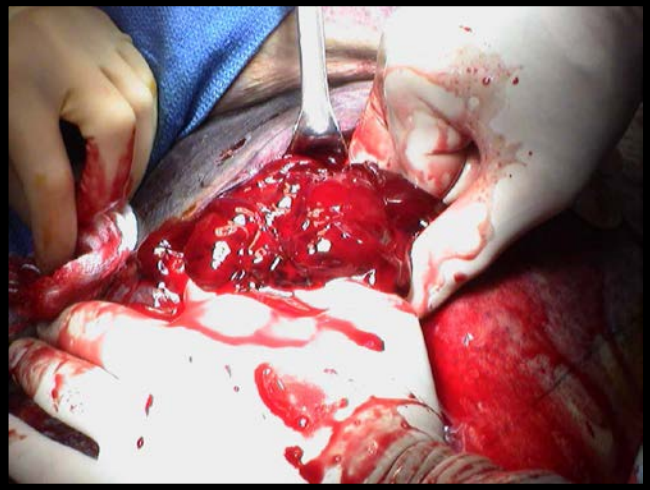
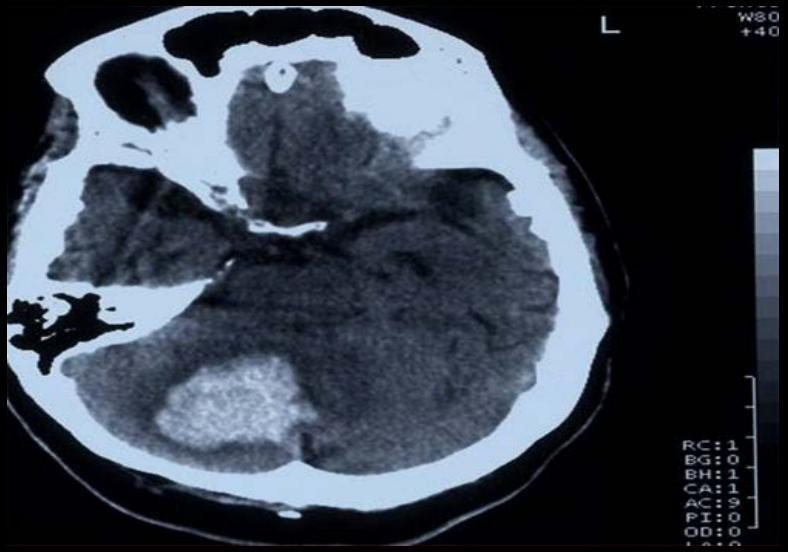
(*Circulation*. 2009;119:000-000.)

Positive Feedback Loop: Thrombin Begets Platelet Activation Which Begets Thrombin

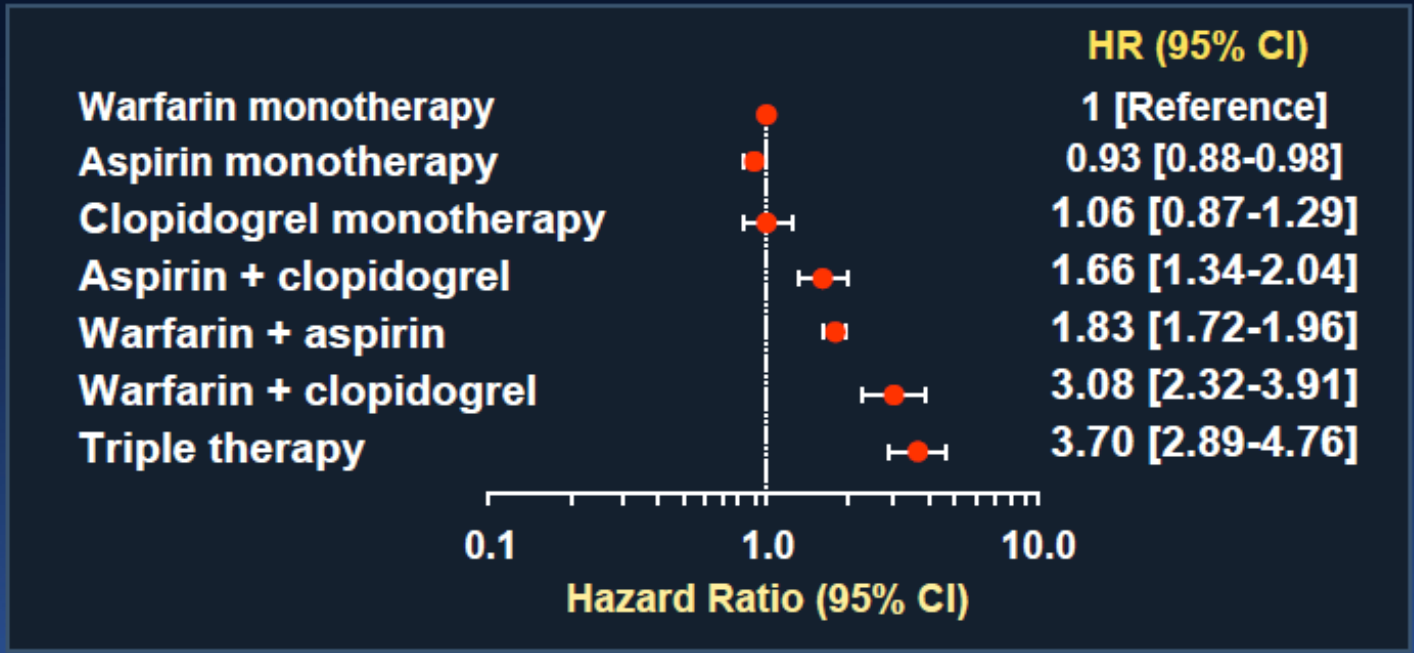







L
W80
+40
RC:1
BG:0
BH:1
CA:1
AC:9
PI:0
OD:0

Bleeding Associated with Warfarin, Aspirin, Clopidogrel in Patients with AF n=82,854



Hansen et al, *Arch Intern Med*, 2010;170:1433-1441

WOEST

2012

573 pts Randomisation 1:1

Double therapy group:

OAC + 75mg Clopidogrel qd

1 month minimum after BMS

1 year after DES

Triple therapy group:

OAC + 75mg Clopidogrel qd + 80mg Aspirin qd

1 month minimum after BMS

1 year after DES

Follow up: 1 year

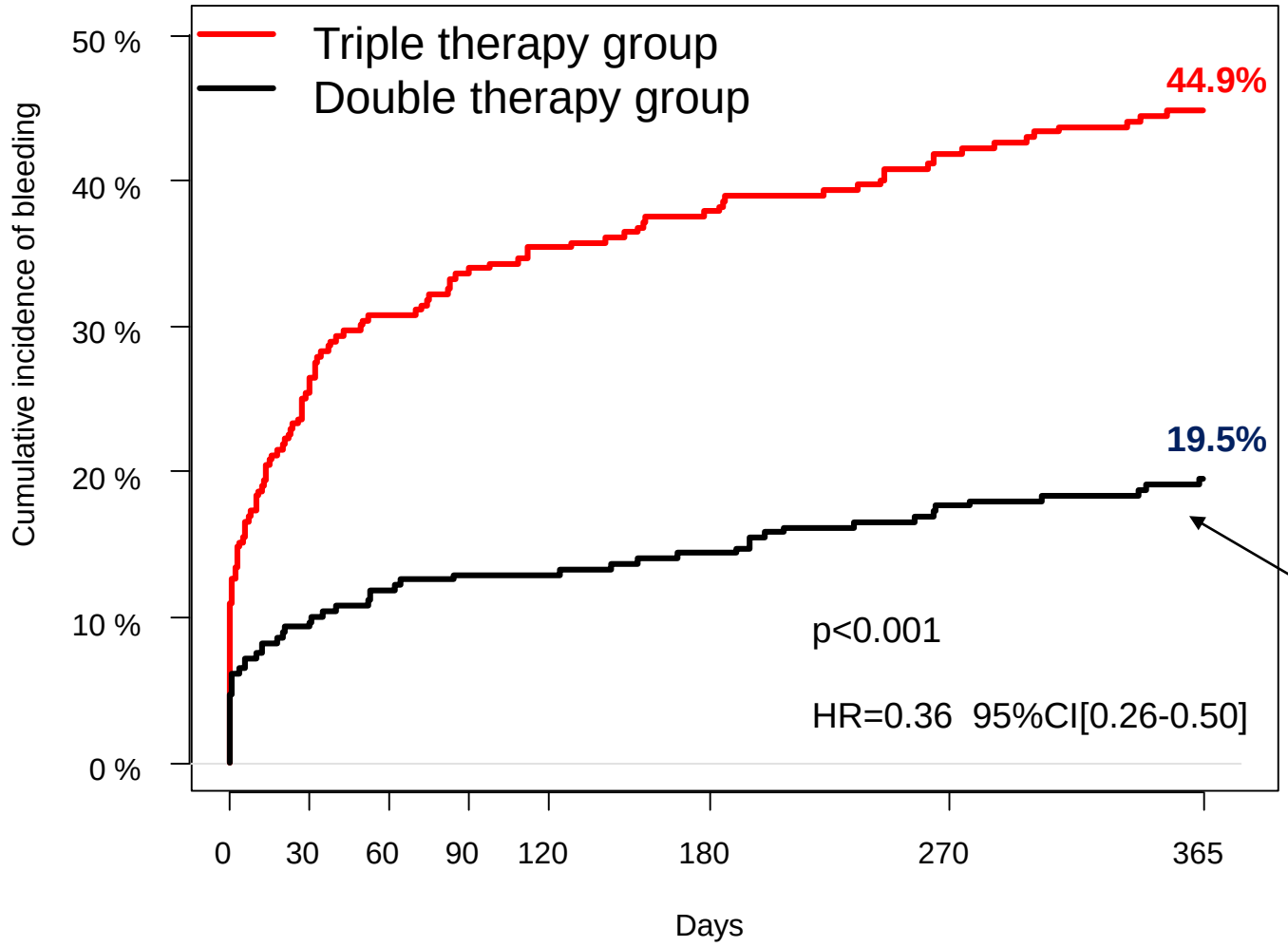
Primary Endpoint: The occurence of all bleeding events (TIMI criteria)

Secondary Endpoints:

- Combination of stroke, death, myocardial infarction, stent thrombosis and target vessel revascularisation
- All individual components of primary and secondary endpoints

WOEST

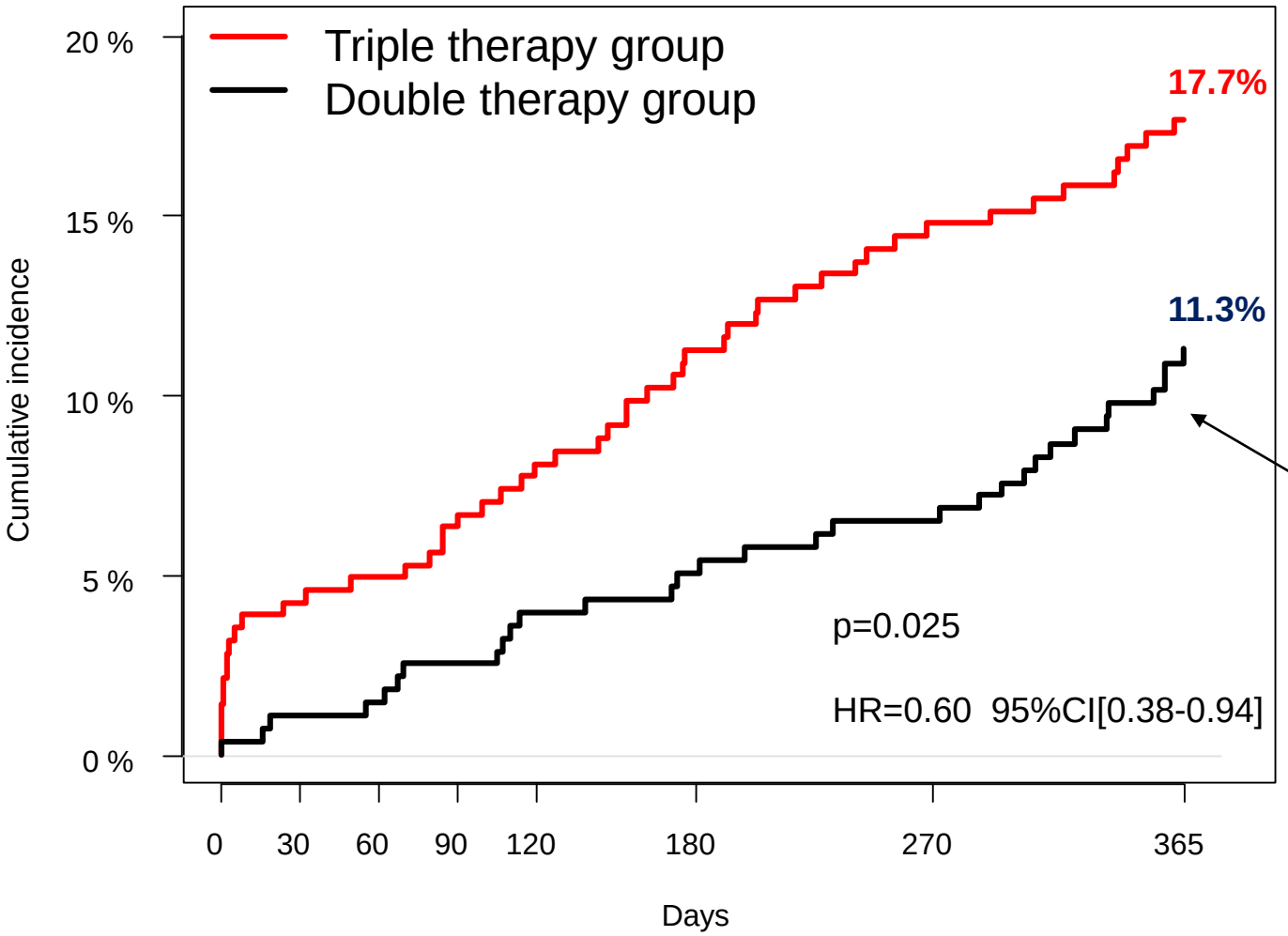
Primary Endpoint: Total number of TIMI bleeding events



No aspirin

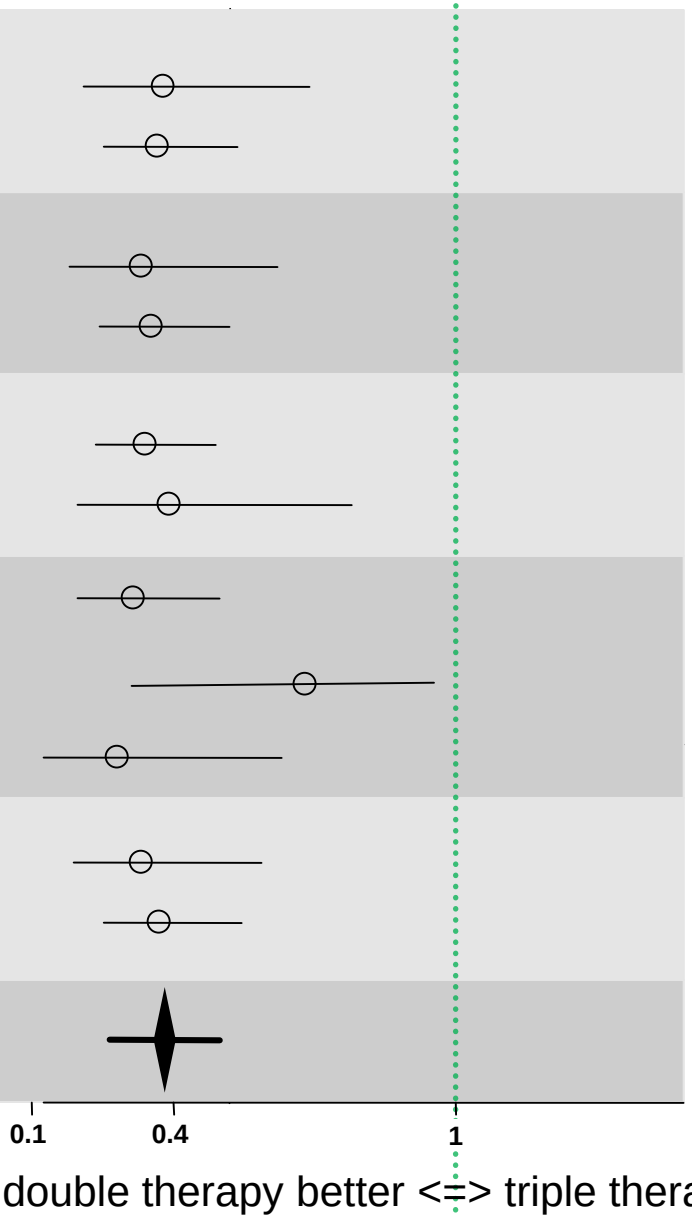
WOEST

Secondary Endpoint (Death, MI,TVR, Stroke, ST)



WOEST

Factor	Group	Triple	Double	P-value for interaction
age	<75 years	79	82	
	>75 years	200	194	0.9157
gender	female	50	65	
	male	234	214	0.8217
ACS	no	195	207	
	yes	86	69	0.7210
indication OAC	AF/AFlut	162	164	
	Mechanical valve	25	24	0.1116
	Other	47	48	0.7761
Stent type	BMS	90	94	
	DES	194	184	0.7894
Overall		**284**	**279**	



Bleeding Complications of Triple Antithrombotic Therapy after Percutaneous Coronary Interventions

Nadeen N. Faza, Amgad Mentias, Akhil Parashar, Pulkit Chaudhury, Amr F. Barakat, Shikhar Agarwal, Siddharth Wayangankar, Stephen G. Ellis, E. Murat Tuzcu, and Samir R. Kapadia*

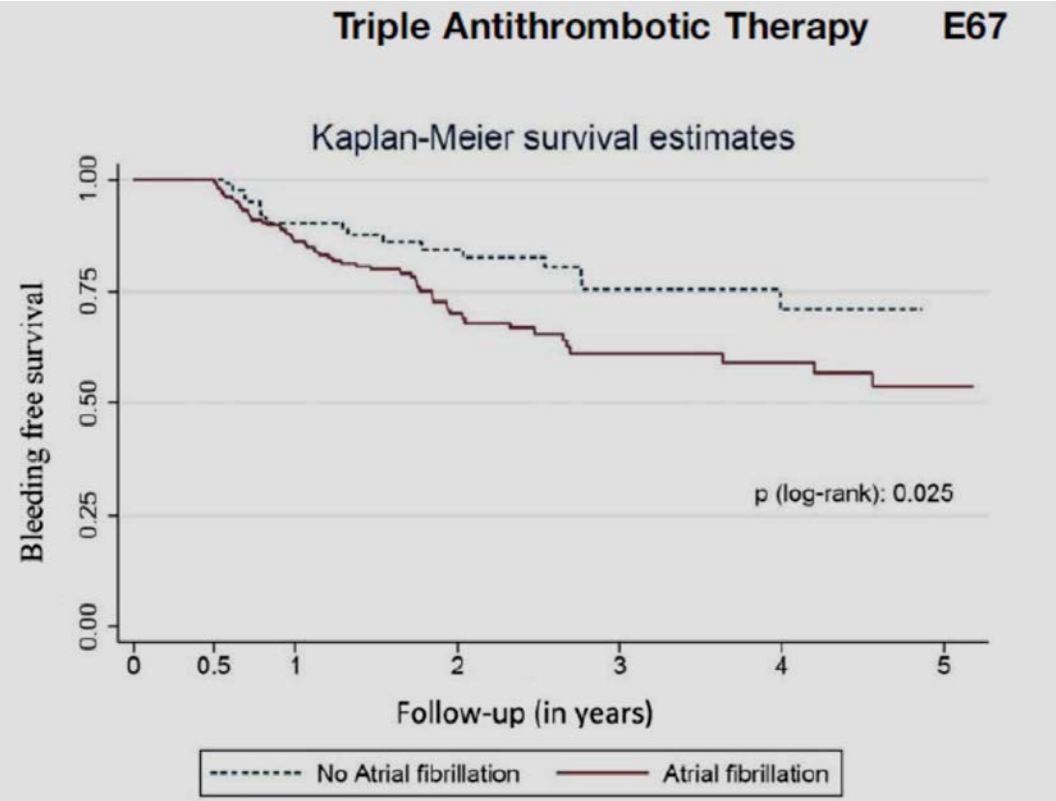


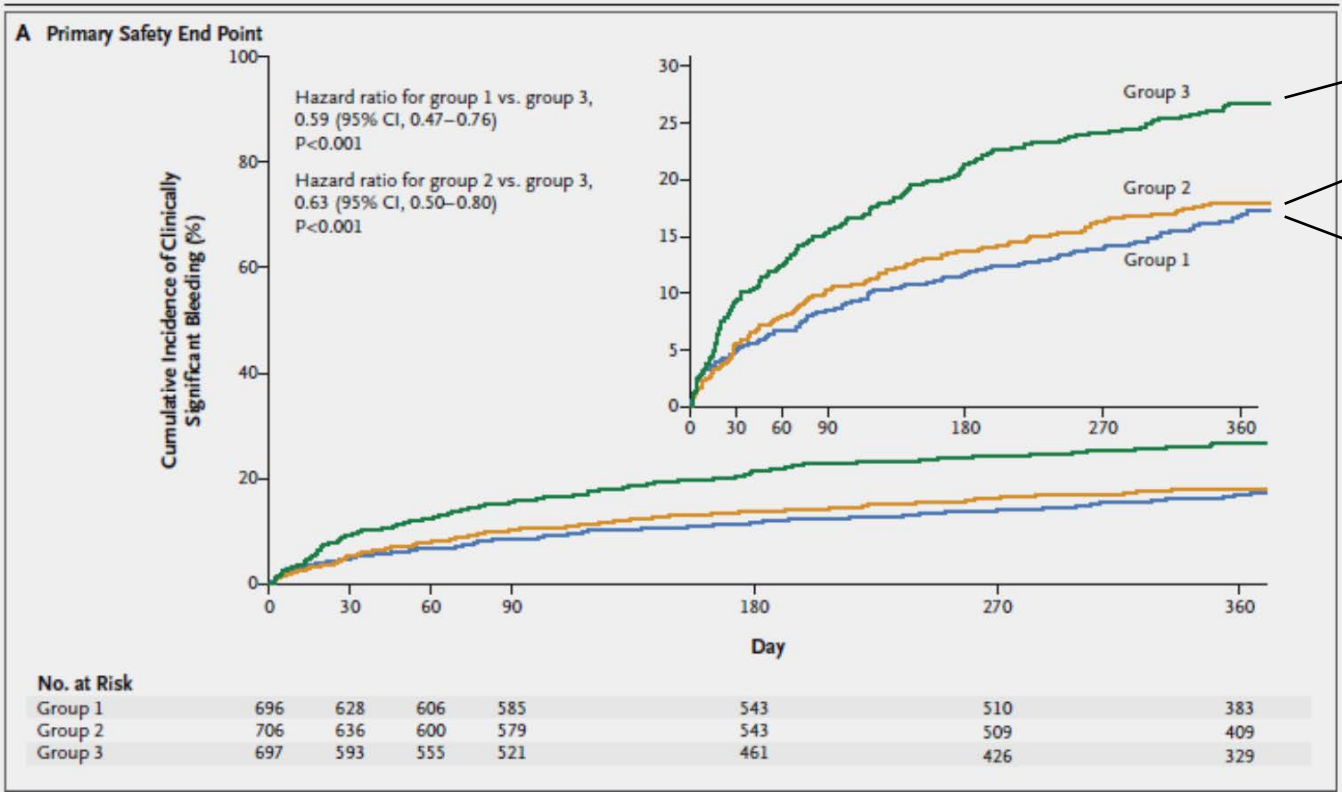
Fig. 3. Kaplan Meier analysis with the landmark point set at six months after index PCI.

The NEW ENGLAND JOURNAL of MEDICINE

Prevention of Bleeding in Patients with Atrial Fibrillation Undergoing PCI

C. Michael Gibson, M.D., Roxana Mehran, M.D., Christoph Bode, M.D., Jonathan Halperin, M.D., Freek W. Verheugt, M.D., Peter Wildgoose, Ph.D., Mary Birmingham, Pharm.D., Juliana Ianus, Ph.D., Paul Burton, M.D., Ph.D., Martin van Eickels, M.D., Serge Korjian, M.D., Yazan Daaboul, M.D., Gregory Y.H. Lip, M.D., Marc Cohen, M.D., Steen Husted, M.D., Eric D. Peterson, M.D., M.P.H., and Keith A. Fox, M.B., Ch.B.

Pioneer Trial



TAO+DAPT

VERY LOW RIVA+DAPT

LOW RIVA+P2Y12

The NEW ENGLAND JOURNAL of MEDICINE

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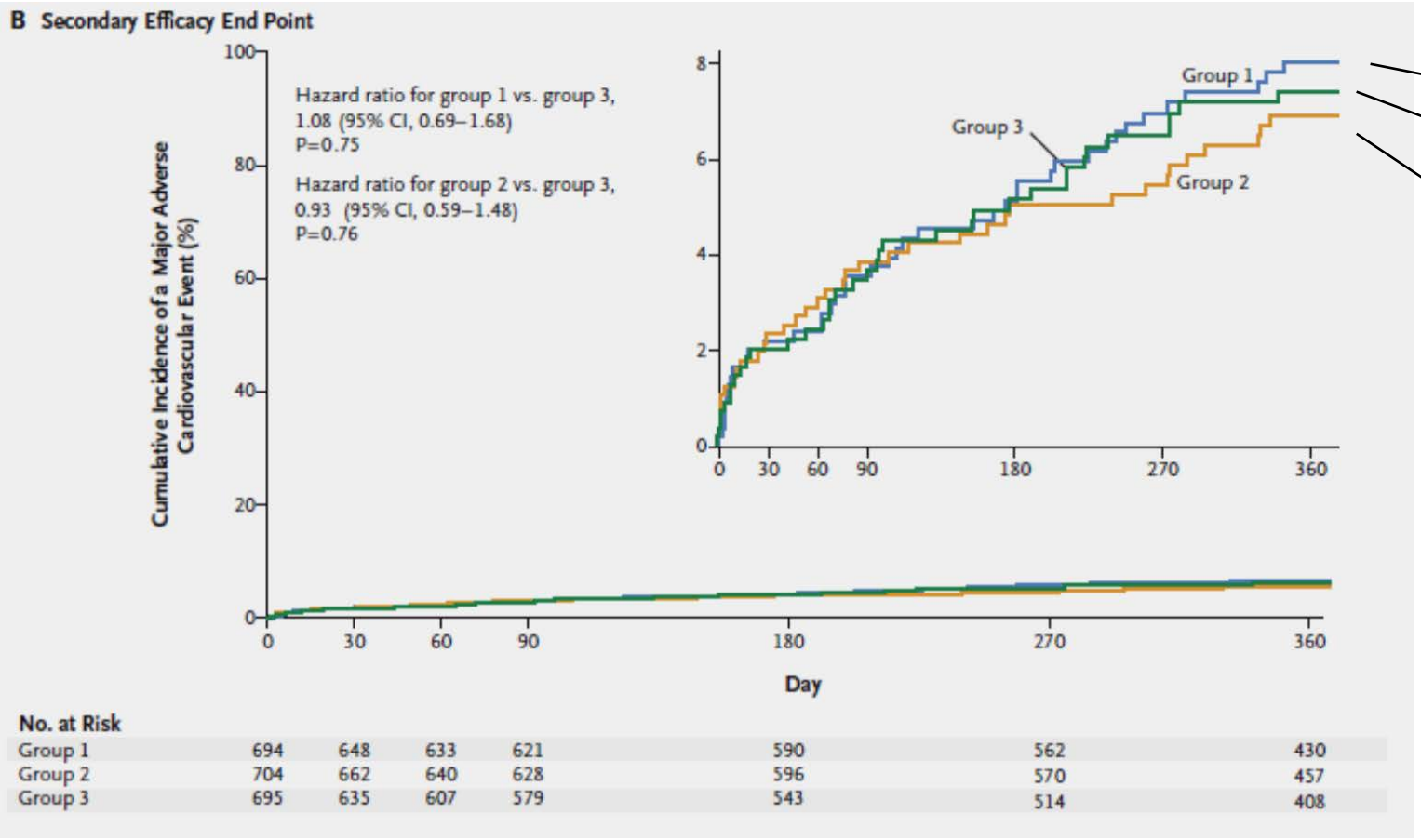

LOW RIVA+P2Y12

TAO+DAPT

VERY LOW RIVA+DAPT

EDITORIALS

Atrial Fibrillation and PCI — Do We Still Need Aspirin?

Sanjit S. Jolly, M.D., and Madhu K. Natarajan, M.D.

The treatment of patients with atrial fibrillation who undergo percutaneous coronary intervention (PCI) is a common clinical dilemma. Approximately 10 to 15% of patients undergoing PCI have a history of atrial fibrillation.[1] Patients with atrial fibrillation are at increased risk for stroke, and warfarin has been shown to be superior to dual antiplatelet therapy (DAPT) with clopidogrel plus aspirin for the prevention of stroke.[2] However, DAPT has been shown to be markedly superior to aspirin plus warfarin for the prevention of stent thrombosis.[3] This has led to the adoption of triple therapy with DAPT plus warfarin in patients with atrial fibrillation undergoing PCI.

The challenge is that triple therapy is associated with high rates of bleeding.[1] A potential solution is to eliminate aspirin, and this solution was tested in the WOEST trial (What Is the Optimal Antiplatelet and Anticoagulant Therapy in Patients with Oral Anticoagulation and Coronary Stenting), which showed a lower rate of bleeding with clopidogrel plus warfarin than with triple therapy.[4] Although this finding is intriguing, 573 patients were involved in the WOEST trial, and larger trials would be needed to ensure the safety of stopping aspirin after PCI.

Novel oral anticoagulant drugs have been shown to have at least similar efficacy to warfarin for stroke prevention and to be safer (associated with lower rates of intracranial hemorrhage) than warfarin in patients with atrial fibrillation.[5] Specifically, rivaroxaban, an oral factor Xa inhibitor, administered at a dose of 20 mg daily was proven to be noninferior to warfarin for stroke prevention.[5] In addition, in a randomized trial involving patients with acute coronary syndromes, rivaroxaban administered at a dose of 2.5 or 5 mg twice daily was superior to placebo for the prevention of death from cardiovascular causes, myocardial infarction, or stroke and the prevention of stent thrombosis, but the rate of major bleeding with rivaroxaban plus background DAPT (clopidogrel plus aspirin) was three times as high as the rate with placebo plus background DAPT.[6] It is important to note that these doses of rivaroxaban are not approved for use in the United States.

In this issue of the *Journal*, Gibson et al.[7] report the results of the PIONEER AF-PCI trial (Open-Label, Randomized, Controlled, Multicenter Study Exploring Two Treatment Strategies of Rivaroxaban and a Dose-Adjusted Oral Vitamin K Antagonist Treatment Strategy in Subjects with Atrial Fibrillation who Undergo Percutaneous Coronary Intervention), in which triple therapy with DAPT plus a vitamin K antagonist (warfarin) was shown to be associated with a significantly higher rate of bleeding than either therapy with a single $P2Y_{12}$ inhibitor plus low-dose rivaroxaban (15 mg once daily) or therapy with DAPT plus very-low-dose rivaroxaban (2.5 mg twice daily). There were no significant differences among the three groups in the rate of death from cardiovascular causes, myocardial infarction, or stroke or the rate of stent thrombosis; however, the trial was not powered to assess these outcomes. Ischemic stroke occurred in 7 patients receiving a $P2Y_{12}$ inhibitor plus low-dose rivaroxaban, in 6 receiving DAPT plus very-low-dose rivaroxaban, and in 2 receiving DAPT plus warfarin. These differences were not statistically significant; however, the confidence intervals were wide.

PIONEER AF-PCI was designed primarily to

EDITORIALS

Atrial Fibrillation and PCI — Do We Still Need Aspirin?

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BEWARE!

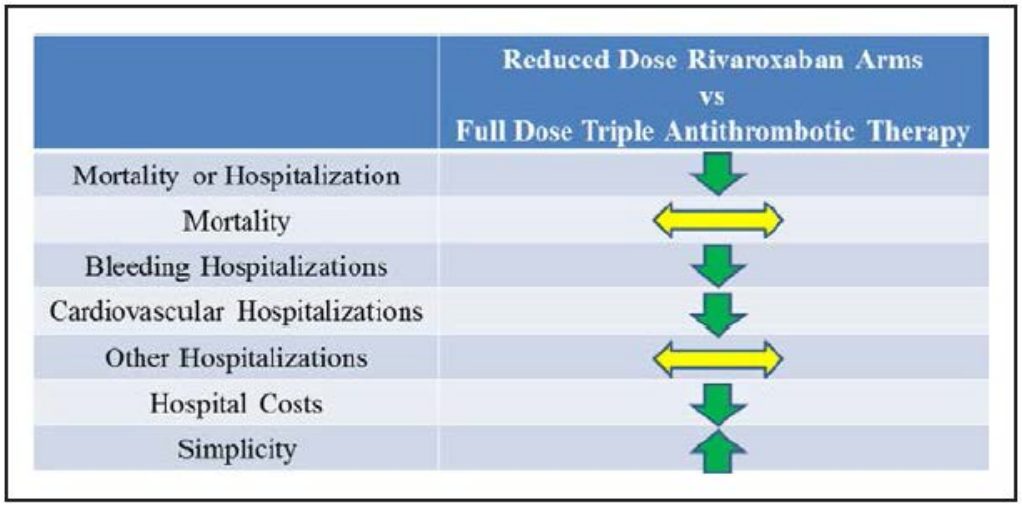
According to the results of PIONEER AF-PCI, the elimination of aspirin from triple therapy or the use of very-low-dose rivaroxaban with DAPT resulted in a lower rate of bleeding than did the use of triple therapy. However, the efficacy of these strategies for the prevention of stroke or stent thrombosis is still uncertain.

EDITORIAL

0 PIONEERs!

The Beginning of the End of Full-Dose Triple Therapy with Warfarin?

Deepak L. Bhatt, MD, MPH



Circulation. 2017;135:334–337. DOI: 10.1161/CIRCULATIONAHA.116.025923

EDITORIAL

O PIONEERs!

The Beginning of the End of Full-Dose Triple Therapy with Warfarin?

Deepak L. Bhatt, MD, MPH

For the time being, in patients not in clinical trials, full-dose oral triple therapy with dual antiplatelet agents and full-dose anticoagulation should be avoided as a routine practice.

Circulation. 2017;135:334–337. DOI: 10.1161/CIRCULATIONAHA.116.025923

Atrial Fibrillation and PCI — Do We Still Need Aspirin?

Sanjit S. Jolly, M.D., and Madhu K. Natarajan, M.D.

Table 1. Major Randomized Trials Comparing Anticoagulation Strategies for Patients with Atrial Fibrillation Undergoing PCI.*

Trial	No. of Participants	Control	Intervention	Primary Outcome	ClinicalTrials.gov No.
REDUAL-PCI	2800	Aspirin, $P2Y_{12}$ inhibitor, and vitamin K antagonist	Dabigatran (either 110 mg twice daily or 150 mg twice daily) plus $P2Y_{12}$ inhibitor	Major bleeding and clinically relevant nonmajor bleeding, defined according to ISTH criteria	NCT02164864
ENTRUST-AF-PCI	1500	Aspirin, $P2Y_{12}$ inhibitor, and vitamin K antagonist	Edoxaban (60 mg once daily) plus $P2Y_{12}$ inhibitor	Major bleeding and clinically relevant nonmajor bleeding, defined according to ISTH criteria	NCT02866175
AUGUSTUS	4600	Either aspirin or vitamin K antagonist (2-by-2 factorial design)	Either apixaban (5 mg twice daily) or placebo	Major bleeding and clinically relevant nonmajor bleeding, defined according to ISTH criteria	NCT02415400

RE-DUAL PCI

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ORIGINAL ARTICLE

Dual Antithrombotic Therapy with Dabigatran after PCI in Atrial Fibrillation

Christopher P. Cannon, M.D., Deepak L. Bhatt, M.D., M.P.H.,

August 2017

A Enrollment, Randomization, and Treatment

2845 Patients were assessed for eligibility

2725 Underwent randomization

981 Were assigned to receive dual therapy with dabigatran at a dose of 110 mg

763 Were assigned to receive dual therapy with dabigatran at a dose of 150 mg

981 Were assigned to receive triple therapy with warfarin

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August 2017

RE-DUAL PCI

Italy: L. Bolognese, M.T. Cardillo, F. Crea, C. Cuccia, C. Mauro, M. Menichelli, G. Colonna, A. Montinaro, C. Moretti, G. Musumeci, M. Senni, C. Tamburino, N. Maddestra, F. Romeo, M. Tespili, S. Berti, D. Nassiacos, and A. Picchi.

RE-DUAL PCI tested the safety and efficacy of two regimens of dual therapy with dabigatran without ASA vs triple therapy with warfarin

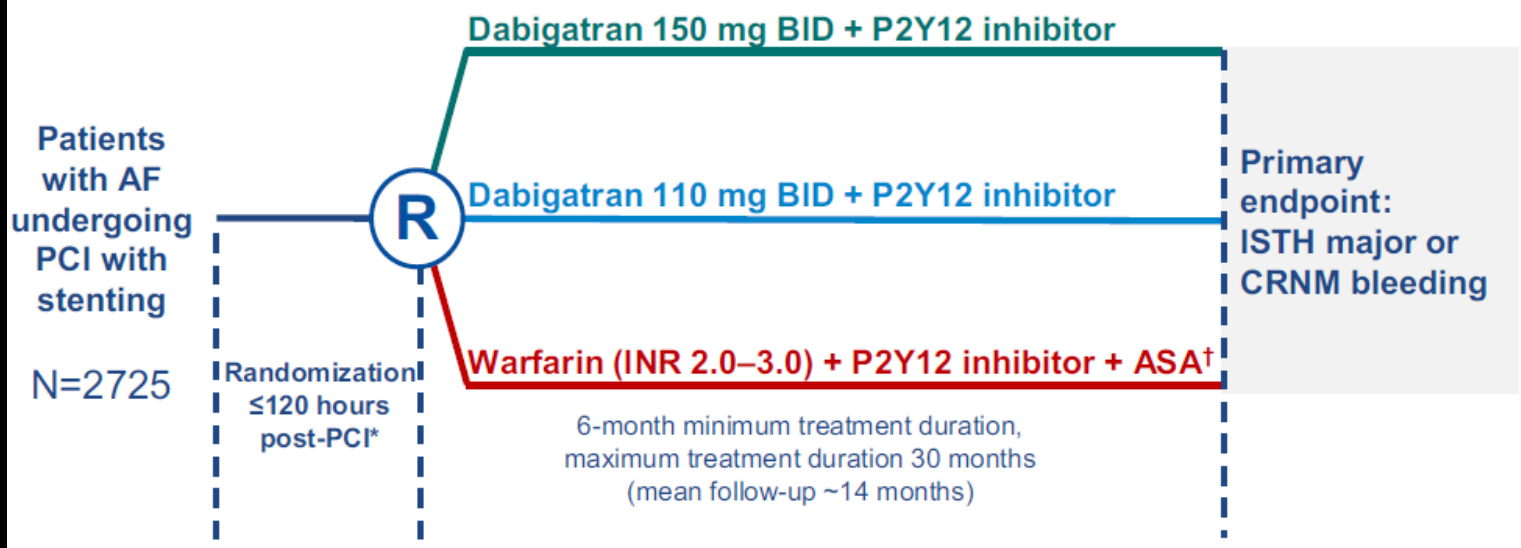

Table 1. Baseline Characteristics of the Patients.*

Characteristic	Dual Therapy with Dabigatran, 110 mg (N=981)	Triple Therapy with Warfarin (N=981)	Dual Therapy with Dabigatran, 150 mg (N=763)	Corresponding Triple Therapy with Warfarin† (N=764)
Age — yr	71.5±8.9	71.7±8.9	68.6±7.7	68.8±7.7
Elderly age group — no. (%)‡	225 (22.9)	225 (22.9)	8 (1.0)	8 (1.0)
Male sex — no. (%)	728 (74.2)	750 (76.5)	592 (77.6)	594 (77.7)
Diabetes mellitus — no./total no. (%)	362/981 (36.9)	371/980 (37.9)	260/763 (34.1)	303/763 (39.7)
Previous stroke — no./total no. (%)	74/981 (7.5)	100/980 (10.2)	52/763 (6.8)	77/763 (10.1)
CHA_2DS_2-VASc score§	3.7±1.6	3.8±1.5	3.3±1.5	3.6±1.5
HAS-BLED score¶	2.7±0.7	2.8±0.8	2.6±0.7	2.7±0.8
Creatinine clearance — ml/min‖	76.3±28.9	75.4±29.1	83.7±31.0	81.3±29.6
Previous myocardial infarction — no. (%)	237 (24.2)	268 (27.3)	194 (25.4)	211 (27.6)
Previous PCI — no./total no. (%)	326/981 (33.2)	347/980 (35.4)	239/763 (31.3)	272/763 (35.6)
Previous CABG — no./total no. (%)	97/981 (9.9)	111/980 (11.3)	79/763 (10.4)	87/763 (11.4)
Indication for PCI — no. (%)				
Stable angina or positive stress test	433 (44.1)	429 (43.7)	320 (41.9)	339 (44.4)
Acute coronary syndrome	509 (51.9)	475 (48.4)	391 (51.2)	369 (48.3)
Staged procedure	156 (15.9)	168 (17.1)	138 (18.1)	134 (17.5)
Other	43 (4.4)	62 (6.3)	65 (8.5)	50 (6.5)

† The corresponding triple-therapy group included only patients who had been eligible to be assigned to the 150-mg dual-therapy group (i.e., did not include elderly patients outside the United States).

‡ Elderly was defined as 80 years of age or older (≥70 years of age in Japan). Stratification according to age group was performed with the use of an interactive voice-response system.

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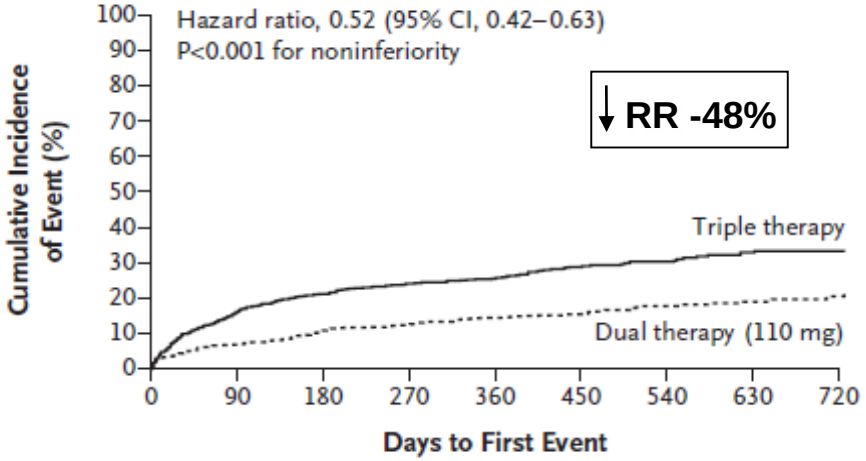
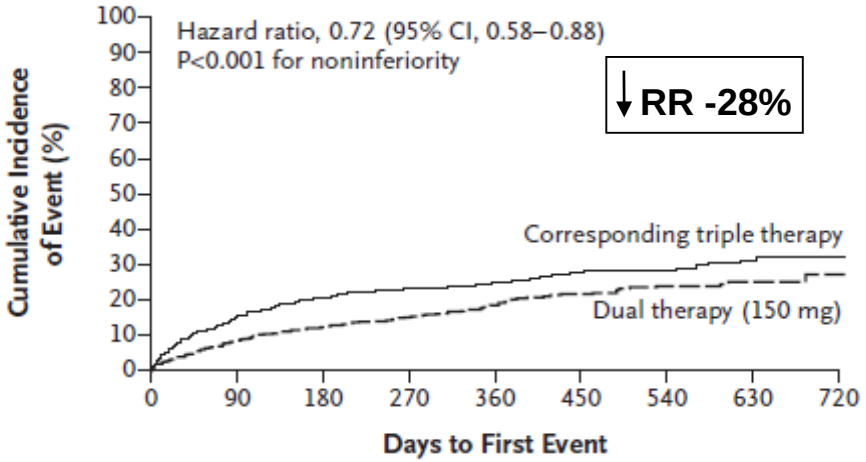
A **Primary End Point in Dual-Therapy Group (110 mg) vs. Triple-Therapy Group**



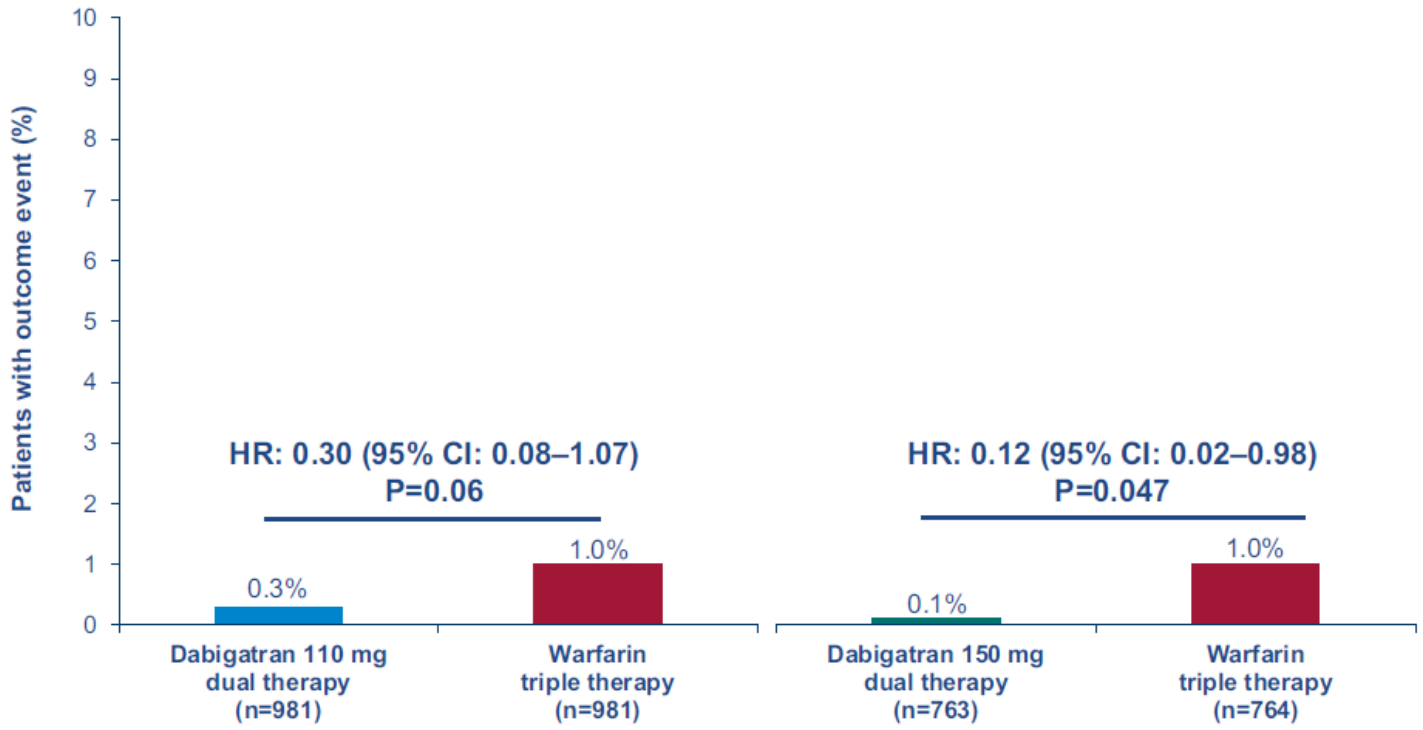
No. at Risk									
Dual therapy (110 mg)	981	898	834	671	538	384	258	162	86
Triple therapy	981	800	719	580	453	302	205	124	63

B **Primary End Point in Dual-Therapy Group (150 mg) vs. Triple-Therapy Group**



No. at Risk									
Dual therapy (150 mg)	763	694	640	514	404	278	182	113	65
Corresponding triple therapy	764	630	562	446	349	222	152	88	47

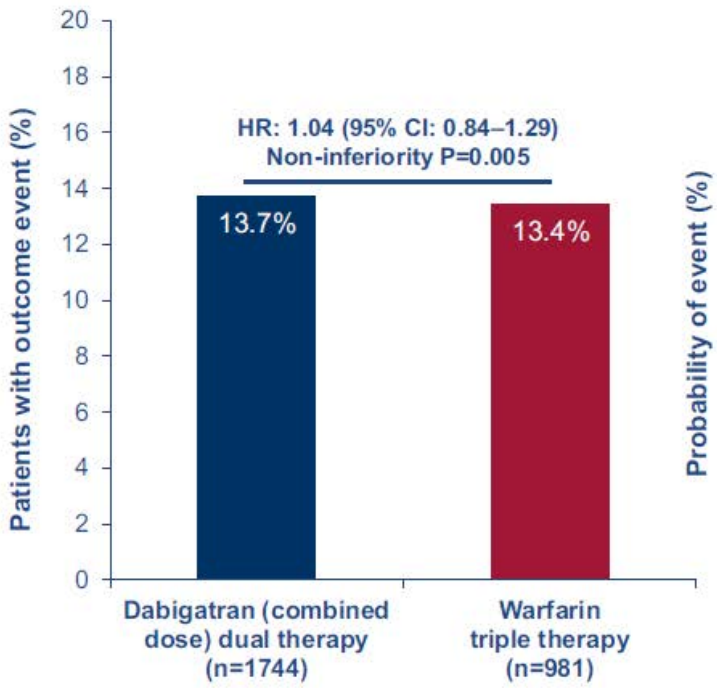
Intracranial haemorrhage: fewer events with dabigatran dual therapy

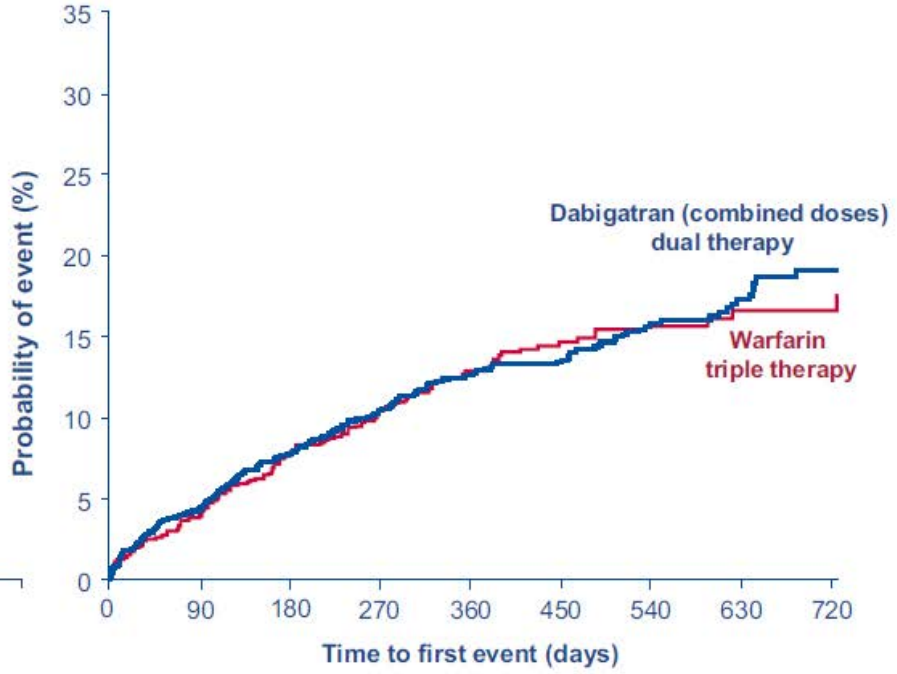


Cannon et al. N Engl J Med 2017

Dabigatran dual therapy was non-inferior to warfarin triple therapy in the composite efficacy endpoint

Composite endpoint of death or thromboembolic event (MI, stroke or systemic embolism) or unplanned revascularization (PCI/CABG)





CABG, coronary artery bypass grafting; PCI, percutaneous coronary intervention; Cannon et al. N Engl J Med 2017; Cannon et al ESC 2017

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ORIGINAL ARTICLE

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Christopher P. Cannon, M.D., Deepak L. Bhatt, M.D., M.P.H.,

Table 3. Efficacy End Points.*

End Point	Dual Therapy with Dabigatran (Combined) vs. Triple Therapy with Warfarin				Dual Therapy with Dabigatran (110 mg) vs. Triple Therapy with Warfarin				Dual Therapy with Dabigatran (150 mg) vs. Triple Therapy with Warfarin			
	Combined Dual-Therapy Groups (N=1744)	Triple-Therapy Group (N=981)	Hazard Ratio (95% CI)	P Value†	110-mg Dual-Therapy Group (N=981)	Triple-Therapy Group (N=981)	Hazard Ratio (95% CI)	P Value†	150-mg Dual-Therapy Group (N=763)	Corresponding Triple-Therapy Group (N=764)	Hazard Ratio (95% CI)	P Value†
	no. (%)				*no. (%)*				*no. (%)*			
Composite efficacy end point: thromboembolic events, death, or unplanned revascularization	239 (13.7)	131 (13.4)	1.04 (0.84–1.29)	0.74 (0.005 for noninferiority)	149 (15.2)	131 (13.4)	1.13 (0.90–1.43)	0.30	90 (11.8)	98 (12.8)	0.89 (0.67–1.19)	0.44
Thromboembolic events or death	168 (9.6)	83 (8.5)	1.17 (0.90–1.53)	0.25 (0.11 for noninferiority)	108 (11.0)	83 (8.5)	1.30 (0.98–1.73)	0.07	60 (7.9)	60 (7.9)	0.97 (0.68–1.39)	0.88
Death					55 (5.6)	48 (4.9)	1.12 (0.76–1.65)	0.56	30 (3.9)	35 (4.6)	0.83 (0.51–1.34)	0.44
Myocardial infarction					44 (4.5)	29 (3.0)	1.51 (0.94–2.41)	0.09	26 (3.4)	22 (2.9)	1.16 (0.66–2.04)	0.61
Stroke					17 (1.7)	13 (1.3)	1.30 (0.63–2.67)	0.48	9 (1.2)	8 (1.0)	1.09 (0.42–2.83)	0.85
Definite stent thrombosis					15 (1.5)	8 (0.8)	1.86 (0.79–4.40)	0.15	7 (0.9)	7 (0.9)	0.99 (0.35–2.81)	0.98

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Dual Antithrombotic Therapy with Dabigatran after PCI in Atrial Fibrillation

Christopher P. Cannon, M.D., Deepak L. Bhatt, M.D., M.P.H.,

Table 3. Efficacy End Points.*

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CONCLUSIONS

Among patients with atrial fibrillation who had undergone PCI, the risk of bleeding was lower among those who received dual therapy with dabigatran and a $P2Y_{12}$ inhibitor than among those who received triple therapy with warfarin, a $P2Y_{12}$ inhibitor, and aspirin. Dual therapy was noninferior to triple therapy with respect to the risk of thromboembolic events. (Funded by Boehringer Ingelheim; RE-DUAL PCI ClinicalTrials.gov number, NCT02164864.)

Triple Therapy for Atrial Fibrillation after PCI

Jonathan P. Piccini, M.D., M.H.S., and W. Schu[illegible].D.

RE-DUAL PCI

EDITORIALS

EDITORIALS

Atrial Fibrillation and PCI — Do We Still Need Aspirin?

Sanjit S. Jolly, M.D., and Madhu K. Natarajan, M.D.

The treatment of patients with atrial fibrillation who undergo percutaneous coronary intervention (PCI) is a common clinical dilemma. Approximately 10 to 15% of patients undergoing PCI have a history of atrial fibrillation.[1] Patients with atrial fibrillation are at increased risk for stroke, and warfarin has been shown to be superior to dual antiplatelet therapy (DAPT) with clopidogrel plus aspirin for the prevention of stroke.[2] However, DAPT has been shown to be markedly superior to aspirin plus warfarin for the prevention of stent thrombosis.[3] This has led to the adoption of triple therapy with DAPT plus warfarin in patients with atrial fibrillation undergoing PCI.

The challenge is that triple therapy is associated with high rates of bleeding.[1] A potential solution is to eliminate aspirin, and this solution was tested in the WOEST trial (What Is the Optimal Antiplatelet and Anticoagulant Therapy in Patients with Oral Anticoagulation and Coronary Stenting), which showed a lower rate of bleeding with clopidogrel plus warfarin than with triple therapy.[4] Although this finding is intriguing, 573 patients were involved in the WOEST trial, and larger trials would be needed to ensure the safety of stopping aspirin after PCI.

Novel oral anticoagulant drugs have been shown to have at least similar efficacy to warfarin for stroke prevention and to be safer (associated with lower rates of intracranial hemorrhage) than warfarin in patients with atrial fibrillation.[5] Specifically, rivaroxaban, an oral factor Xa inhibitor, administered at a dose of 20 mg daily was proven to be noninferior to warfarin for stroke prevention.[5] In addition, in a randomized trial involving patients with acute coronary syndromes, rivaroxaban administered at a dose of 2.5 or 5 mg twice daily was superior to placebo for the prevention of death from cardiovascular causes, myocardial infarction, or stroke and the prevention of stent thrombosis, but the rate of major bleeding with rivaroxaban plus background DAPT (clopidogrel plus aspirin) was three times as high as the rate with placebo plus background DAPT.[6] It is important to note that these doses of rivaroxaban are not approved for use in the United States.

In this issue of the *Journal*, Gibson et al.[7] report the results of the PIONEER AF-PCI trial (Open-Label, Randomized, Controlled, Multicenter Study Exploring Two Treatment Strategies of Rivaroxaban and a Dose-Adjusted Oral Vitamin K Antagonist Treatment Strategy in Subjects with Atrial Fibrillation who Undergo Percutaneous Coronary Intervention), in which triple therapy with DAPT plus a vitamin K antagonist (warfarin) was shown to be associated with a significantly higher rate of bleeding than either therapy with a single $P2Y_{12}$ inhibitor plus low-dose rivaroxaban (15 mg once daily) or therapy with DAPT plus very-low-dose rivaroxaban (2.5 mg twice daily). There were no significant differences among the three groups in the rate of death from cardiovascular causes, myocardial infarction, or stroke or the rate of stent thrombosis; however, the trial was not powered to assess these outcomes. Ischemic stroke occurred in 7 patients receiving a $P2Y_{12}$ inhibitor plus low-dose rivaroxaban, in 6 receiving DAPT plus very-low-dose rivaroxaban, and in 2 receiving DAPT plus warfarin. These differences were not statistically significant; however, the confidence intervals were wide.

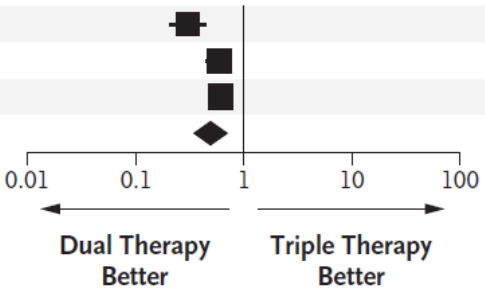
PIONEER AF-PCI was designed primarily to

Triple Therapy for Atrial Fibrillation after PCI

Jonathan P. Piccini, M.D., M.H.S., and W. Schuyler Jones, M.D.

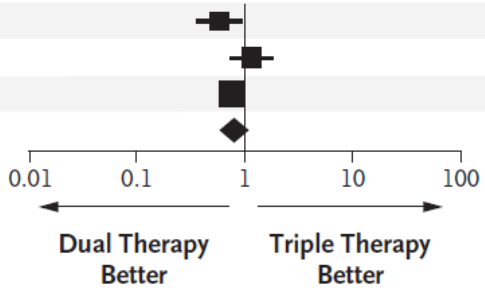
A Safety: Major and Minor Bleeding Events

Trial	Dual Therapy	Triple Therapy	Odds Ratio (95% CI)	z Score	Relative Weight	P Value
	no. of events/total no.					
WOEST	54/279	126/284	0.30 (0.21–0.44)	−6.22	29.1	<0.001
PIONEER AF-PCI	109/696	167/697	0.59 (0.45–0.77)	−3.86	34.1	<0.001
RE-DUAL PCI	305/1744	196/764	0.61 (0.50–0.75)	−4.68	36.8	<0.001
Overall			0.49 (0.34–0.72)	−3.70		<0.001
I^2=82.06						



B Efficacy: Major Adverse Cardiovascular Events

Trial	Dual Therapy	Triple Therapy	Odds Ratio (95% CI)	z Score	Relative Weight	P Value
	no. of events/total no.					
WOEST	31/279	50/284	0.58 (0.36–0.95)	−2.18	25.5	0.03
PIONEER AF-PCI	41/694	36/695	1.15 (0.72–1.82)	0.59	27.0	0.55
RE-DUAL PCI	239/1744	131/764	0.77 (0.61–0.97)	−2.23	47.47	0.03
Overall			0.80 (0.58–1.09)	−1.40		0.16
I^2=51.17						



Triple Therapy for Atrial Fibrillation after PCI

Jonathan P. Piccini, M.D., M.H.S., and W. Schuyler Jones, M.D.

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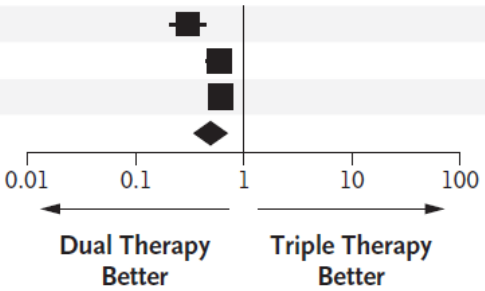

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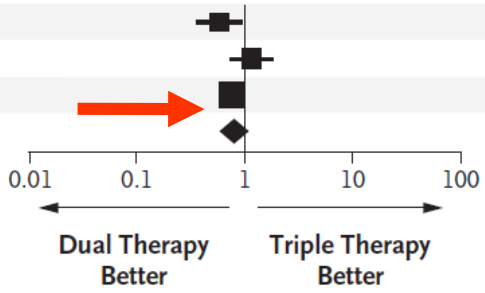


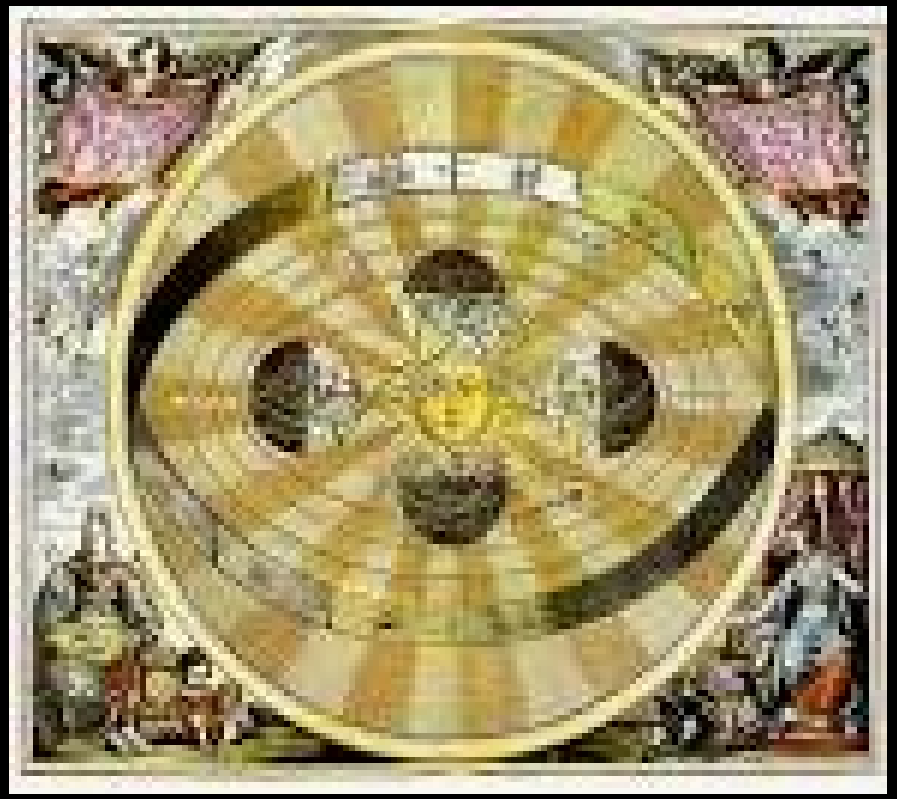
Triple Therapy for Atrial Fibrillation after PCI

Jonathan P. Piccini, M.D., M.H.S., and W. Schuyler Jones, M.D.

However, the consistency across these three major trials and the significantly lower risk of bleeding with dual therapy make it hard to argue that triple therapy should be used routinely. The aggregate evidence suggests that the net clinical benefit of dual therapy should give cardiologists confidence to drop aspirin when they are using a contemporary PCI strategy with drug-eluting stents. Moving forward, the key questions will be: What combination of drugs should be included in dual therapy, and how will we test this strategy?

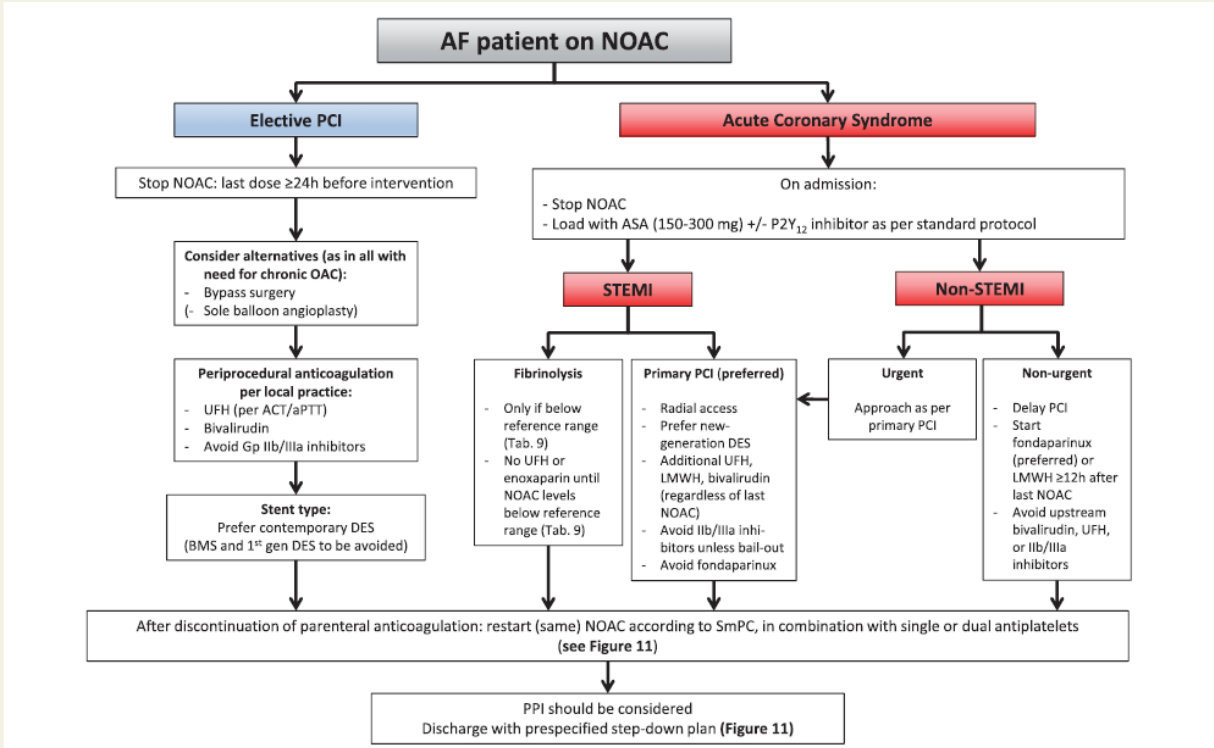
Sistema Tolemaico

Sistema Copernicano



Sistema Tolemaico

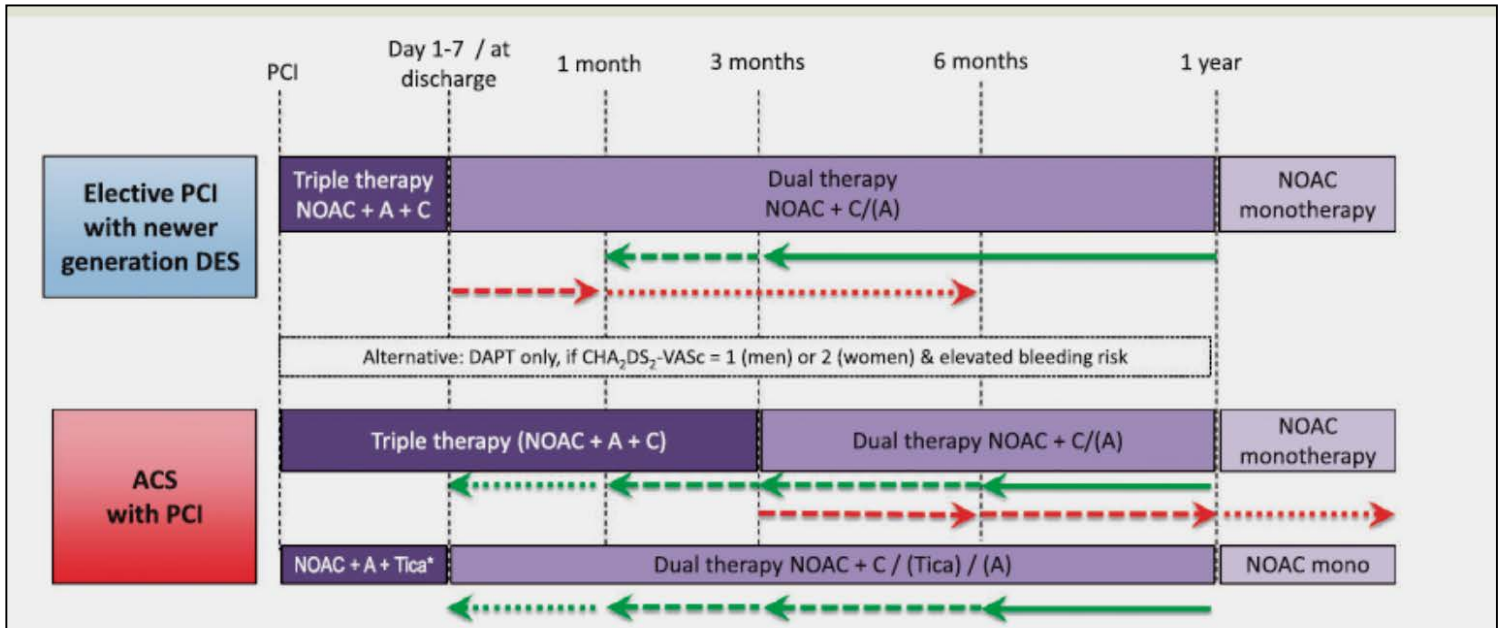
Sistema Copernicano


AF patient on NOAC
Elective PCI
Acute Coronary Syndrome
Stop NOAC: last dose ≥24h before intervention
On admission:
- Stop NOAC
- Load with ASA (150-300 mg) +/- P2Y12 inhibitor as per standard protocol
Consider alternatives (as in all with need for chronic OAC):
- Bypass surgery
(- Sole balloon angioplasty)
STEMI
Non-STEMI
Periprocedural anticoagulation per local practice:
- UFH (per ACT/aPTT)
- Bivalirudin
- Avoid Gp IIb/IIIa inhibitors
Fibrinolysis
- Only if below reference range (Tab. 9)
- No UFH or enoxaparin until NOAC levels below reference range (Tab. 9)
Primary PCI (preferred)
- Radial access
- Prefer new-generation DES
- Additional UFH, LMWH, bivalirudin (regardless of last NOAC)
- Avoid IIb/IIIa inhibitors unless bail-out
- Avoid fondaparinux
Urgent
Approach as per primary PCI
Non-urgent
- Delay PCI
- Start fondaparinux (preferred) or LMWH ≥12h after last NOAC
- Avoid upstream bivalirudin, UFH, or IIb/IIIa inhibitors
Stent type:
Prefer contemporary DES
(BMS and 1st gen DES to be avoided)
After discontinuation of parenteral anticoagulation: restart (same) NOAC according to SmPC, in combination with single or dual antiplatelets (see Figure 11)
PPI should be considered
Discharge with prespecified step-down plan (Figure 11)

ESC European Society of Cardiology
European Heart Journal (2018) **00**, 1–64
doi:10.1093/eurheartj/ehy136

SPECIAL ARTICLE

The 2018 European Heart Rhythm Association Practical Guide on the use of non-vitamin K antagonist oral anticoagulants in patients with atrial fibrillation



TAKE HOME MESSAGE

No published data …not existing data

ESC European Society of Cardiology
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doi:10.1093/eurheartj/ehy136

TAKE HOME MESSAGGE

While awaiting the results of trials with apixaban and edoxaban the 150 mg dabigatran dual therapy appears to be the preferred choice over triple therapy for the majority of patients based on both the results from RE-LY[28] and RE-DUAL PCI[141]; dual therapy using 110 mg dabigatran or rivaroxaban 15 mg (10 mg in renal insufficiency) appears as a viable alternative for patients with estimated high bleeding risk—provided that dabigatran or rivaroxaban *per se* appear as a good choice for this individual patient based on age (see **chapter 18.1**), comorbidities (e.g. renal insufficiency; see **chapter 6**), interactions (see **chapter 5**), and others.

TAKE HOME MESSAGE

Patients with A.F. that underwent PCI

(Nao+PY12 i)

Safety	→ OK	**REDUAL,PIONEER**
Efficacy	→ OK	**REDUAL**

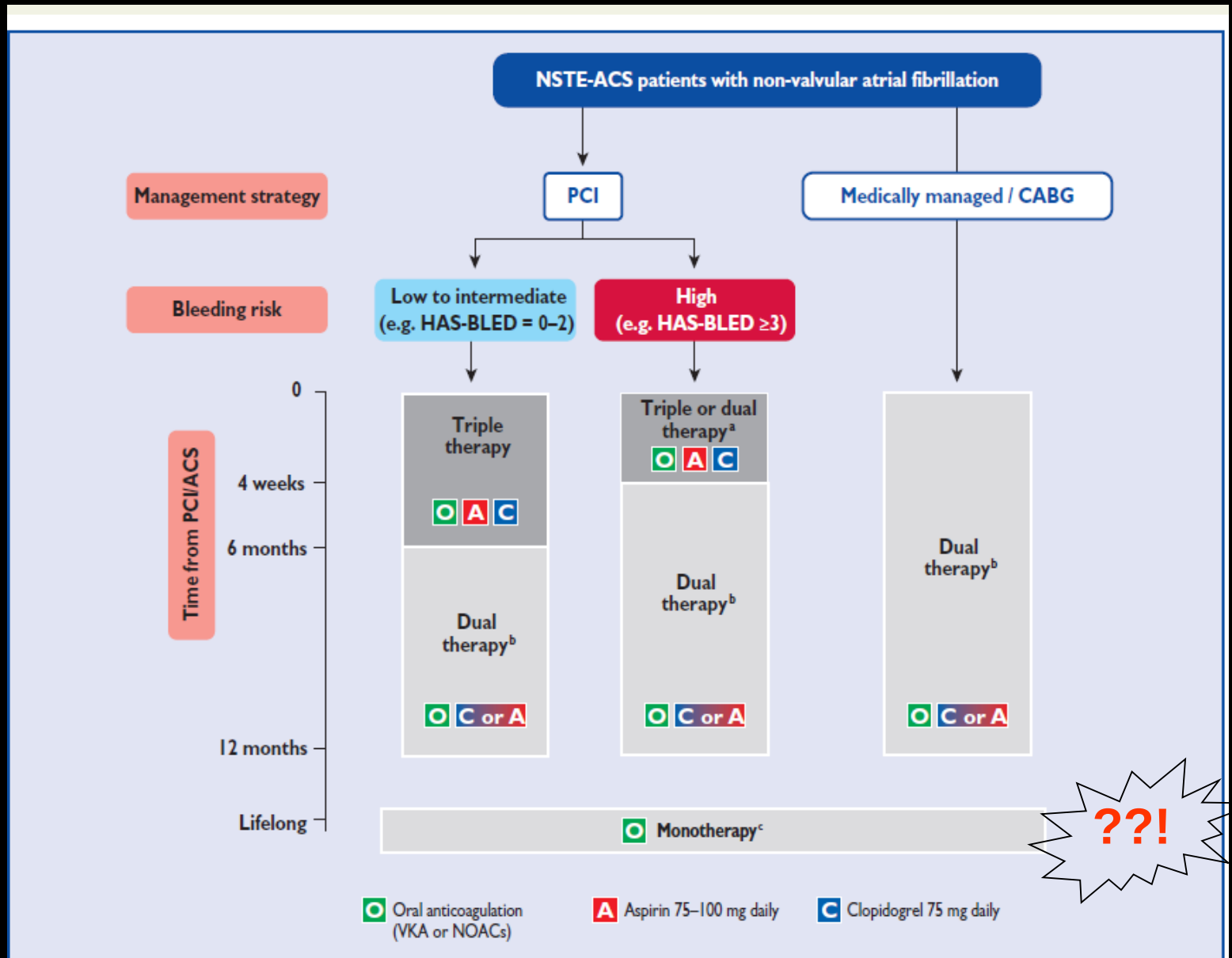
TAKE HOME MESSAGE

..until now the only DOAC that showed reduction of bleeding events and total cardiovascular events is Dabigatran..

Cannon C.P.

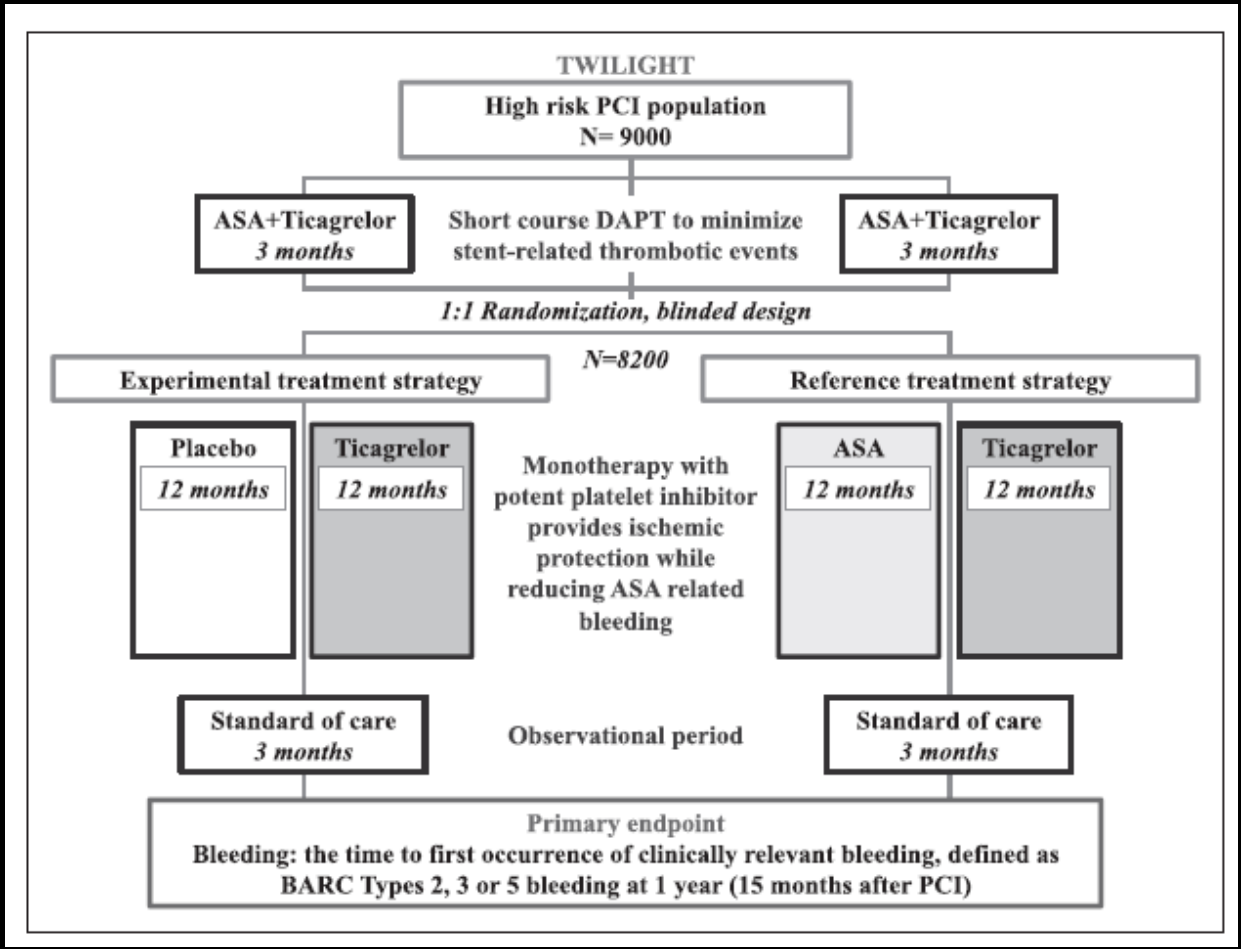
ESC 2017 Barcelona

TAKE HOME MESSAGE



A Critical Appraisal of Aspirin in Secondary Prevention

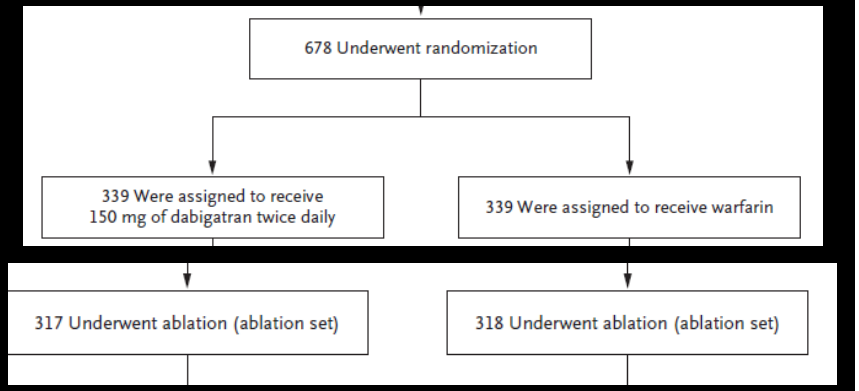
Is Less More?

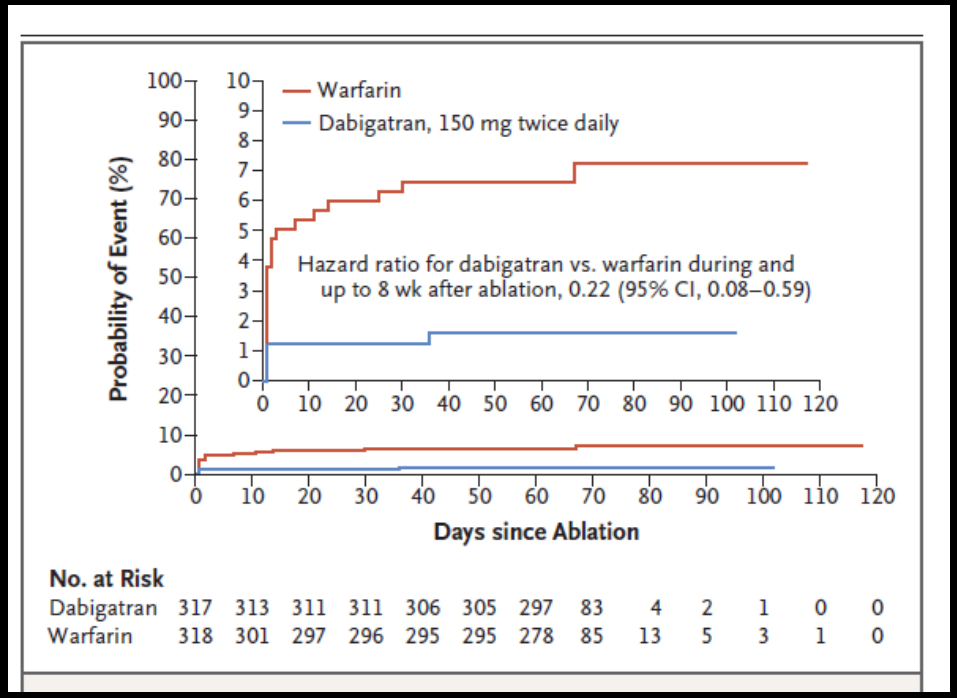


Circulation. 2016;134:1881–1906. DOI: 10.1161/CIRCULATIONAHA.116.023952

Uninterrupted Dabigatran versus Warfarin for Ablation in Atrial Fibrillation

Hugh Calkins, M.D., Stephan Willems, M.D., Edward P. Gerstenfeld, M.D., Atul Verma, M.D., Richard Schilling, M.D., Stefan H. Hohnloser, M.D., Ken Okumura, M.D., Ph.D., Harvey Serota, M.D., Matias Nordaby, M.D., Kelly Guiver, M.Sc., Branislav Biss, M.D., Marc A. Brouwer, M.D., Ph.D., and Massimo Grimaldi, M.D., Ph.D., for the RE-CIRCUIT Investigators*





Grazie per l’attenzione