# Triple Antiplatelet Therapy in DES era : Default Strategy in High Risk Population

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# Newer generation DES era…

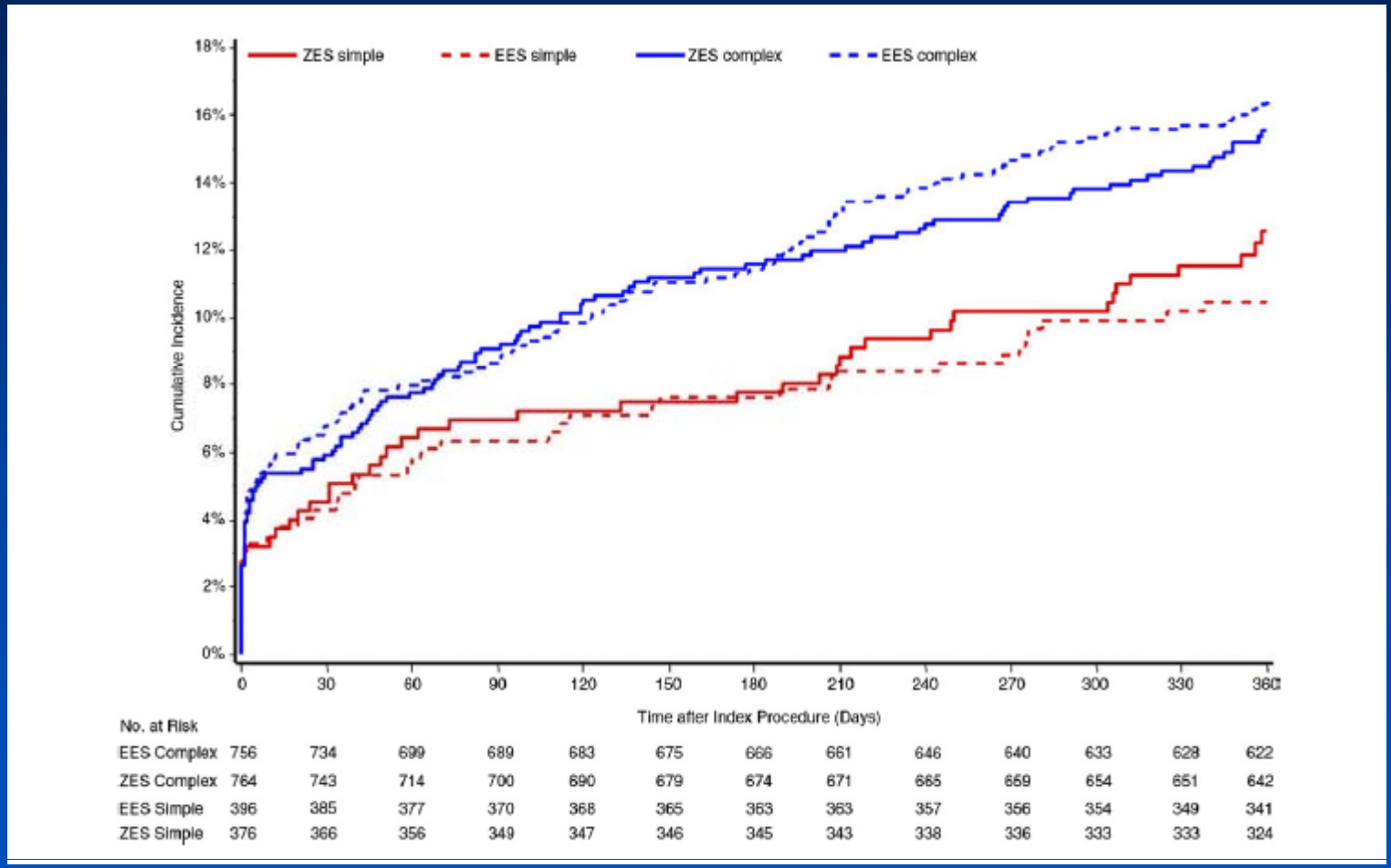
- Restenosis has not been major concern, but complex PCI patients has still substantial rate of restenosis and cardiac events.
- So, to prevent or limit these events has been still our major concern

# Complex PCI-All comer trial

| Variable | Zotarolimus-Eluting Stent (N=1140) | Everolimus-Eluting Stent (N=1152) | Difference (95% CI)† |
|---|---|---|---|
| Complexity of coronary artery disease | | | |
| No. of treated lesions per patient | 1.46±0.73 | 1.48±0.77 | −0.02 (−0.08 to 0.04) |
| SYNTAX score‡ | 14.8±9.3 | 14.6±9.2 | 0.2 (−0.6 to 1.0) |
| At least one small vessel (reference vessel diameter, ≤2.75 mm) — no./total no. (%) | 652/962 (67.8) | 656/973 (67.4) | 0.4 (−3.8 to 4.5) |
| At least one lesion length >18 mm — no./total no. (%) | 175/962 (18.2) | 206/973 (21.2) | −3.0 (−6.5 to 0.6) |
| At least one bifurcation or trifurcation — no./total no. (%) | 190/1126 (16.9) | 202/1139 (17.7) | −0.9 (−4.0 to 2.3) |
| At least one total occlusion — no./total no. (%) | 184/1127 (16.3) | 197/1145 (17.2) | −0.9 (−4.0 to 2.2) |
| At least one in-stent restenosis — no./total no. (%) | 91/1126 (8.1) | 91/1139 (8.0) | 0.1 (−2.1 to 2.3) |
| Off-label stent use — no. (%)§ | 764 (67.0) | 756 (65.6) | 1.4 (−2.5 to 5.3) |

N Engl J Med 2010;363:136-46

# PCI outcomes:
## composite endpoint




| No. at Risk | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EES Complex | 756 | 734 | 699 | 689 | 683 | 675 | 666 | 661 | 646 | 640 | 633 | 628 | 622 |
| ZES Complex | 764 | 743 | 714 | 700 | 690 | 679 | 674 | 671 | 665 | 659 | 654 | 651 | 642 |
| EES Simple | 396 | 385 | 377 | 370 | 368 | 365 | 363 | 363 | 357 | 356 | 354 | 349 | 341 |
| ZES Simple | 376 | 366 | 356 | 349 | 347 | 346 | 345 | 343 | 338 | 336 | 333 | 333 | 324 |

N Engl J Med 2010;363:136-46

# PCI outcomes:
## stent thrombosis

| | Complex Patients | | | | Simple Patients | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | ZES (n = 764) | EES (n = 756) | Difference [95% CI] | p Value | ZES (n = 376) | EES (n = 396) | Difference [95% CI] | p Value | p Value for Interaction* |
| Definite ST | | | | | | | | | |
| Acute | 0.4% | 0.1% | 0.3% [−0.3% to 0.8%] | 0.62 | 0.3% | 0.0% | 0.3% [−0.3% to 0.8%] | 0.49 | 0.98 |
| Subacute | 0.5% | 0.0% | 0.5% [0.0% to 1.1%] | 0.12 | 0.3% | 0.0% | 0.3% [−0.3% to 0.8%] | 0.49 | 1.00 |
| Early | 0.9% | 0.1% | 0.8% [0.1% to 1.5%] | 0.07 | 0.5% | 0.0% | 0.5% [−0.2% to 1.3%] | 0.24 | 0.97 |
| Late | 0.4% | 0.3% | 0.1% [−0.5% to 0.7%] | 1.00 | 0.5% | 0.0% | 0.5% [−0.2% to 1.3%] | 0.24 | 0.97 |
| Overall | 1.2% | 0.4% | 0.8% [−0.1% to 1.7%] | 0.14 | 1.1% | 0.0% | 1.1% [0.0% to 2.2%] | 0.06 | 0.96 |
| Definite or probable ST | | | | | | | | | |
| Acute | 0.5% | 0.3% | 0.3% [−0.4% to 0.9%] | 0.69 | 0.3% | 0.0% | 0.3% [−0.3% to 0.8%] | 0.49 | 0.98 |
| Subacute | 0.9% | 0.4% | 0.5% [−0.3% to 1.4%] | 0.34 | 0.3% | 0.3% | 0.0% [−0.7% to 0.7%] | 1.00 | 0.61 |
| Early | 1.3% | 0.7% | 0.7% [−0.4% to 1.7%] | 0.30 | 0.5% | 0.3% | 0.3% [−0.6% to 1.2%] | 0.62 | 0.97 |
| Late | 0.5% | 0.3% | 0.3% [−0.4% to 0.9%] | 0.69 | 0.8% | 0.0% | 0.8% [−0.1% to 1.7%] | 0.12 | 0.97 |
| Overall | 1.7% | 0.9% | 0.8% [−0.4% to 1.9%] | 0.26 | 1.4% | 0.3% | 1.1% [−0.2% to 2.4%] | 0.12 | 0.38 |
| Definite, probable, or possible ST | | | | | | | | | |
| Acute | 0.5% | 0.3% | 0.3% [−0.4% to 0.9%] | 0.69 | 0.3% | 0.0% | 0.3% [−0.3% to 0.8%] | 0.49 | 0.98 |
| Subacute | 0.9% | 0.4% | 0.5% [−0.3% to 1.4%] | 0.34 | 0.3% | 0.3% | 0.0% [−0.7% to 0.7%] | 1.00 | 0.61 |
| Early | 1.3% | 0.7% | 0.7% [−0.4% to 1.7%] | 0.30 | 0.5% | 0.3% | 0.3% [−0.6% to 1.2%] | 0.62 | 0.98 |
| Late | 1.2% | 1.3% | −0.2% [−1.3% to 1.0%] | 0.82 | 1.6% | 0.3% | 1.4% [−0.0% to 2.8%] | 0.06 | 0.09 |
| Overall | 2.4% | 2.0% | 0.4% [−1.1% to 1.9%] | 0.73 | 2.2% | 0.5% | 1.7% [0.0% to 3.3%] | 0.06 | 0.14 |

N Engl J Med 2010;363:136-46

# Comparison of Everolimus- and Sirolimus-Eluting Stents in Patients With Long Coronary Artery Lesions

A Randomized LONG-DES-III (Percutaneous Treatment of LONG Native Coronary Lesions With Drug-Eluting Stent-III) Trial

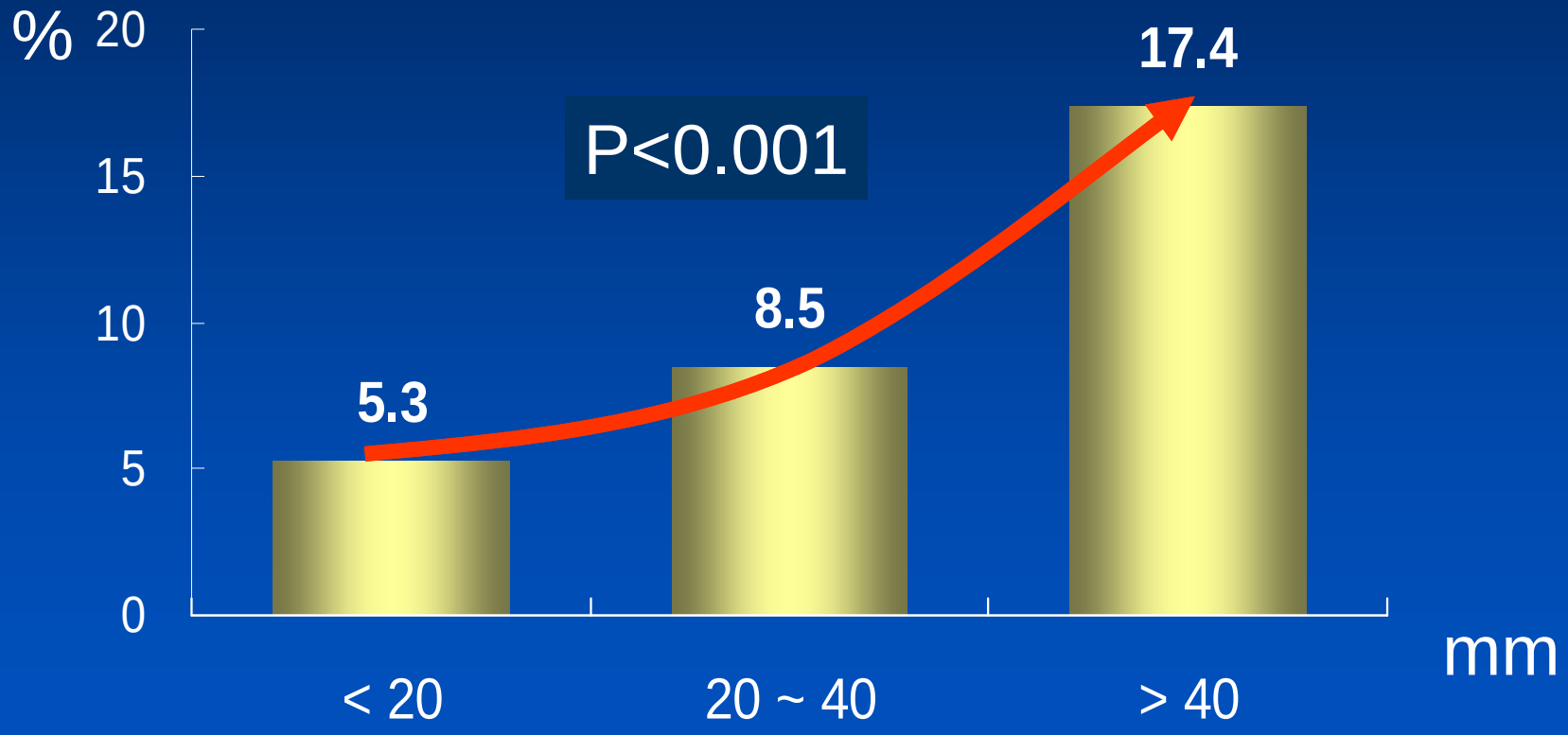
**Stent length: 46.5 mm**

**Restenosis rate:**

**Xience: 7.3%**

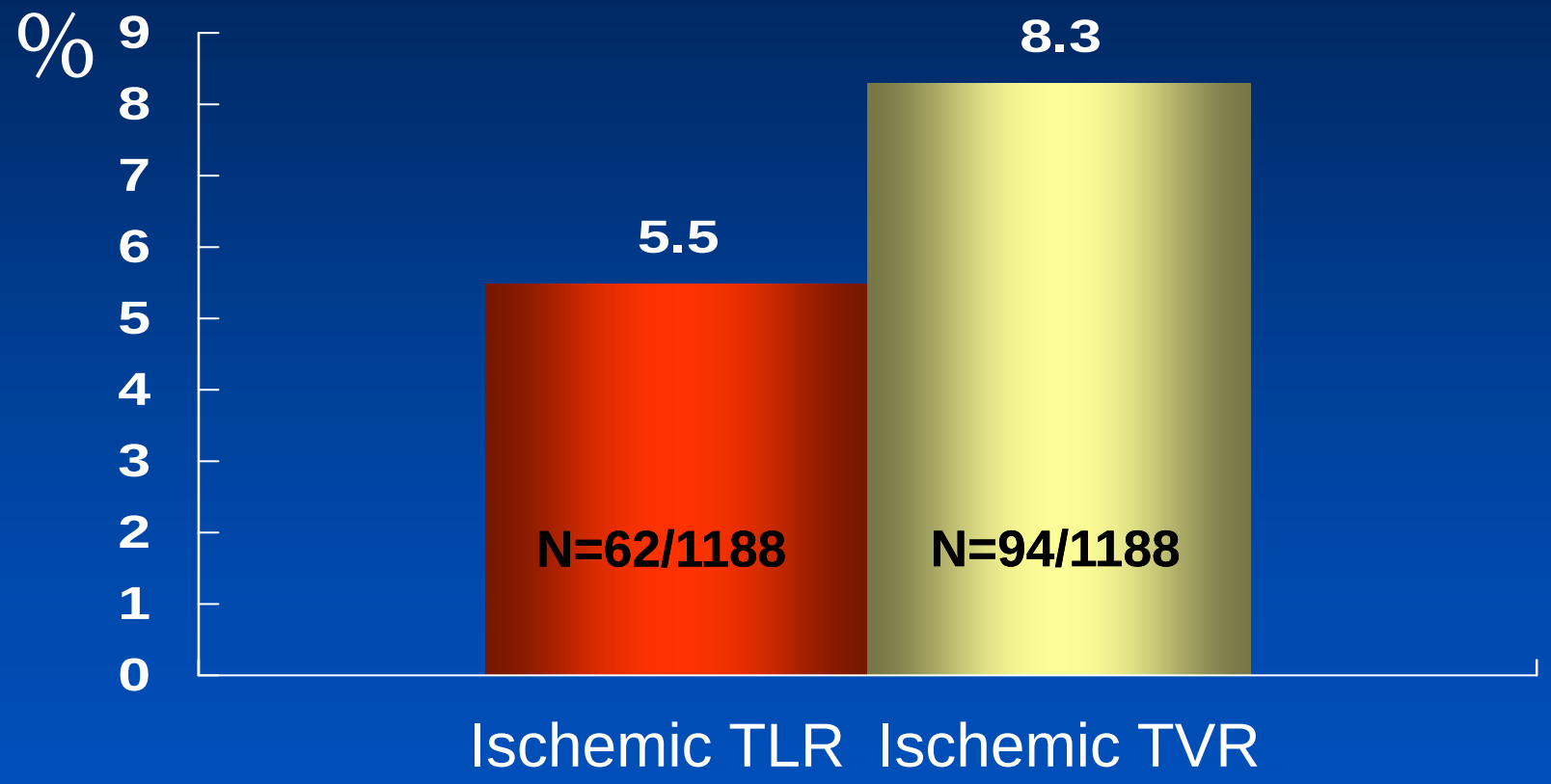
Park DW, et al. J Am Coll Cardiol Intv 2011;4:1096–103

# Stented Segment is still Independent Predictor of Restenosis




Lee CW et al. Am J Cardiol 2006;97:506-511

# Xience stents in Diabetes




Stone GW, et al. Circulation 2011;124:869-72

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**CLINICAL RESEARCH** **Interventional Cardiology**

# Randomized Trial of Optimal Treatment Strategies for In-Stent Restenosis After Drug-Eluting Stent Implantation

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*Seoul, Daejeon, Bucheon, Chuncheon, Kwangju, and Gyeongju, Korea*

# Restenosis rate:

# Xience for diffuse ISR: 14.3%

J Am Coll Cardiol. 2012;59:1093-1100

# Incidence, Predictors, Treatment, and Long-Term Prognosis of Patients With Restenosis After Drug-Eluting Stent Implantation for Unprotected Left Main Coronary Artery Disease

Jong-Young Lee, MD,* Duk-Woo Park, MD, PHD,* Young-Hak Kim, MD, PHD,*
Sung-Cheol Yun, PHD,† Won-Jang Kim, MD, PHD,* Soo-Jin Kang, MD, PHD,*
Seung-Whan Lee, MD, PHD,* Cheol-Whan Lee, MD, PHD,* Seong-Wook Park, MD, PHD,*
Seung-Jung Park, MD, PHD*

**Restenosis rate:17%**

J Am Coll Cardiol. 2011;57:1349-58

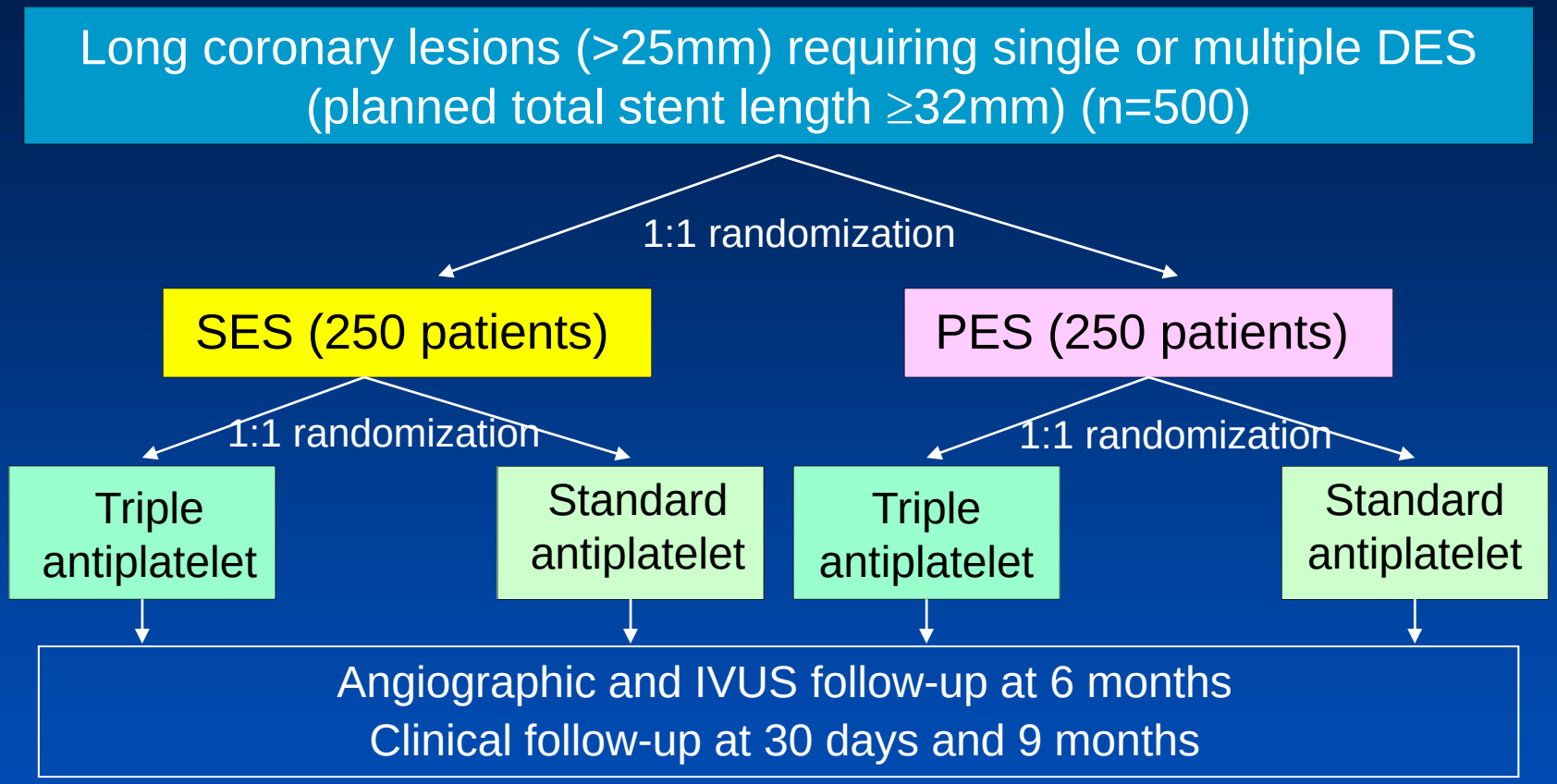
# Predictors of Restenosis

**Table 3** Univariate and Multivariate Predictors of ISR

| Variable | Univariate | p Value | Multivariate | p Value |
|---|---|---|---|---|
| Male | 0.61 (0.38–0.99) | 0.045 | 0.41 (0.24–0.69) | 0.007 |
| Diabetes mellitus | 1.82 (1.14–2.90) | 0.012 | | |
| Renal failure | 3.74 (1.36–10.25) | 0.011 | | |
| Extent of diseased vessel | | 0.022 | | |
| Left main only | 1.00 | | | |
| Plus single-vessel disease | 2.11 (0.76–5.86) | 0.15 | | |
| Plus double-vessel disease | 3.82 (1.49–9.80) | 0.005 | | |
| Plus triple-vessel disease | 2.58 (0.97–6.87) | 0.06 | | |
| Restenotic lesion | 4.20 (2.26–7.84) | <0.001 | 4.59 (2.40–8.77) | <0.001 |
| Bifurcation involvement | 2.40 (1.34–4.31) | 0.003 | 2.56 (1.27–5.19) | 0.009 |
| Complex stenting with ≥2 stents in bifurcation lesion* | 3.03 (1.64–5.55) | <0.001 | 2.50 (1.28–4.76) | 0.007 |
| Total number of stents | 2.60 (1.97–3.43) | <0.001 | 4.76 (2.94–7.67) | <0.001 |
| Total length of stents | 1.01 (1.00–1.02) | 0.003 | | |
| Maximal balloon pressure | 0.89 (0.83–0.95) | 0.001 | | |
| Maximal balloon size | 0.51 (0.27–0.98) | 0.043 | | |

Values are hazard ratio (95% confidence interval). *Compared with simple cross-over stenting of distal bifurcation lesions.
ISR = in-stent restenosis.

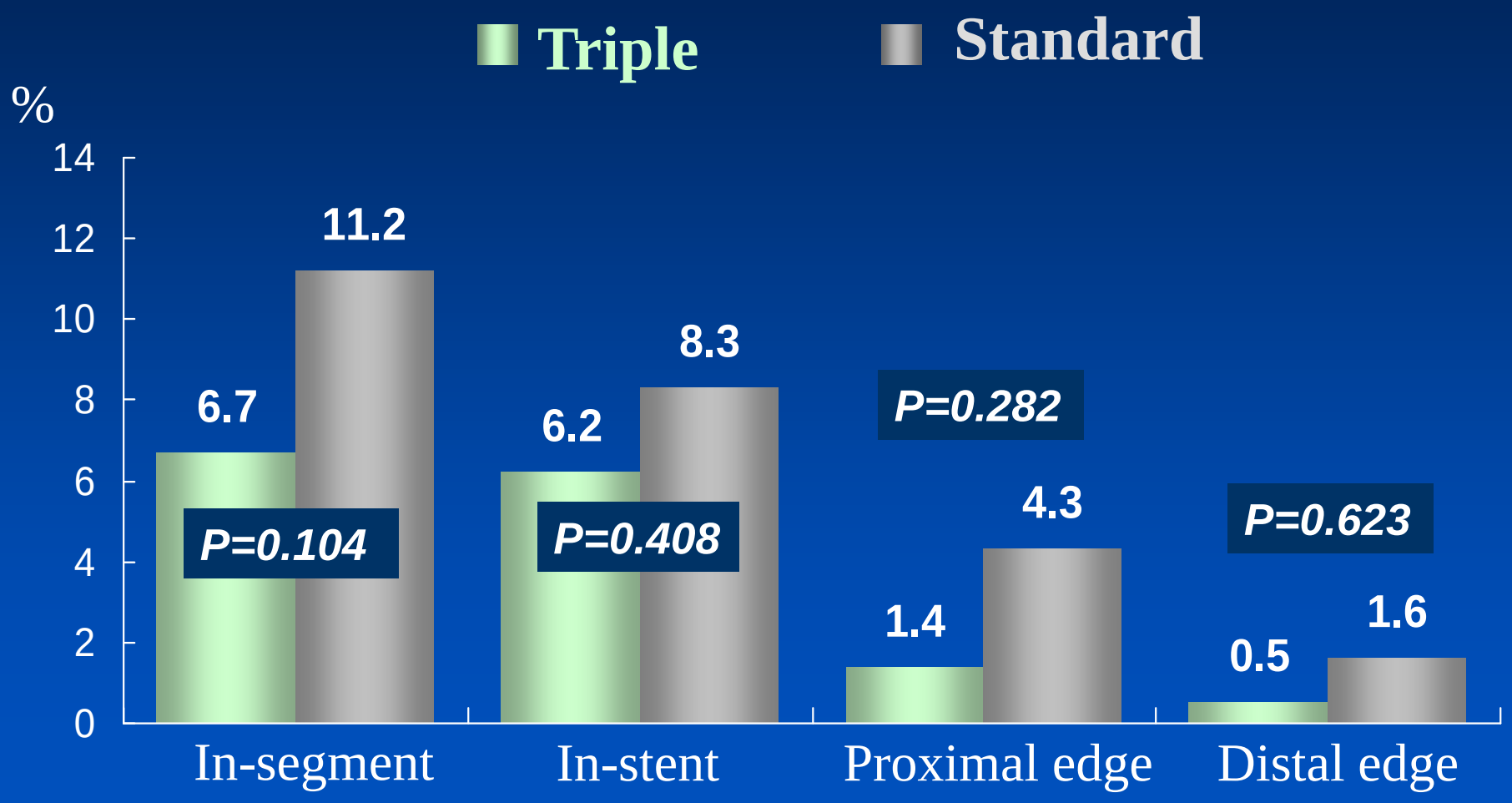
# DECLARE-LONG Trial design




* Randomization – Stratification according to DES types
* Blinding – Patients, Outcome assessors
* Pre-specified angiographic primary endpoint
* Intention-to-treat analysis

Lee SW, Park SW et al. Am J Cardiol. 2007;100:1103-8

# Angiographic Restenosis




Lee SW, Park SW et al. Am J Cardiol. 2007;100:1103-8

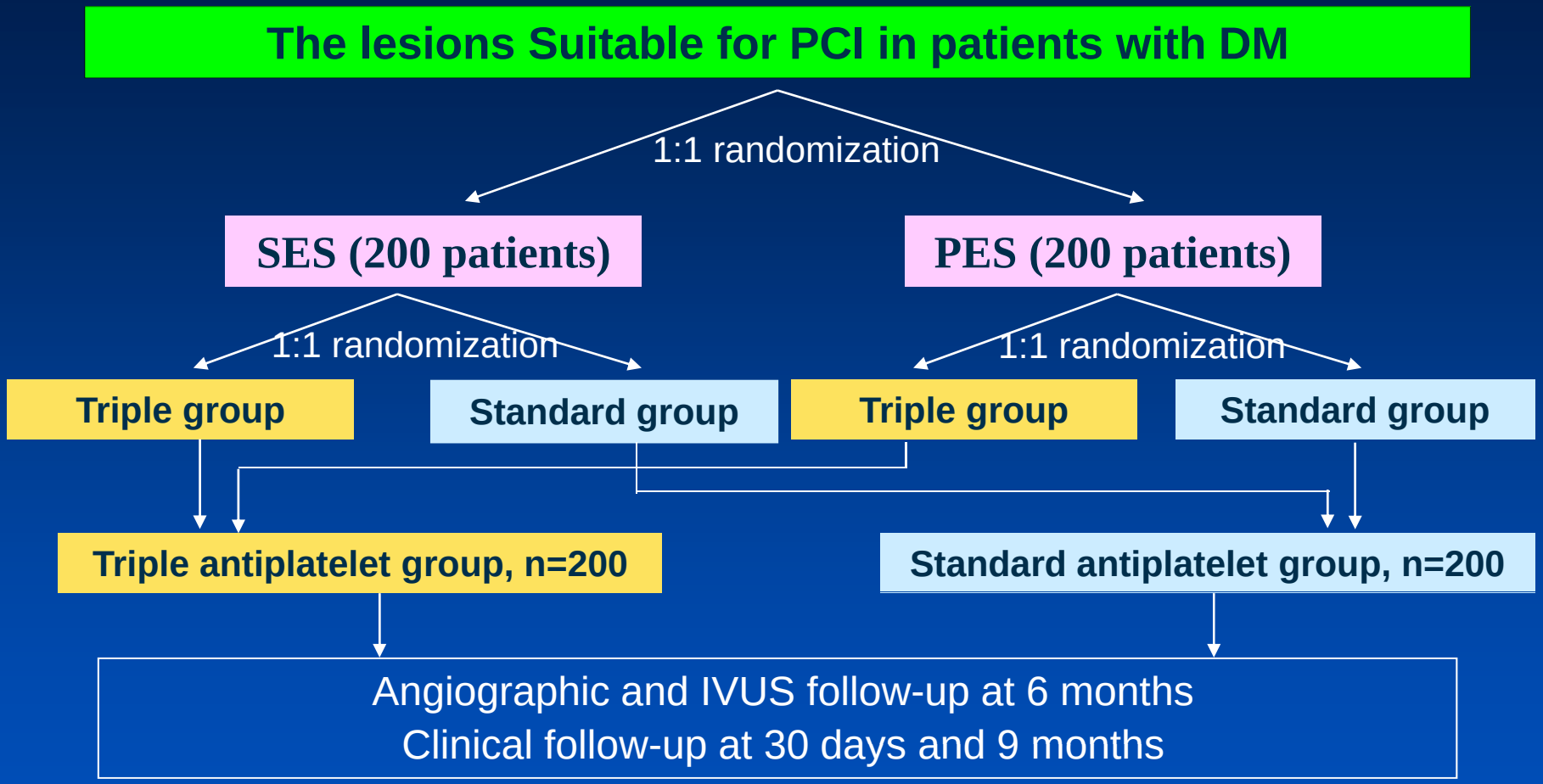
# MACE at 9-Months

DECLARE-LONG

| | Triple | Standard | P |
|---|---|---|---|
| Patients | 250 | 250 | |
| **Death** | 0 | 2 (0.8%) | 0.499 |
| Cardiac | 0 | 1 (0.4%) | |
| Non-cardiac | 0 | 1 (0.4%) | |
| **MI** | 1 (0.4%) | 1 (0.4%) | 0.652 |
| **Stent thrombosis** | 1 (0.4%) | 1 (0.4%) | 1.0 |
| Acute | 0 | 0 | |
| Subacute | 1* | 0 | |
| Late | 0 | 1** | |
| **TLR** | 7 (2.8%) | 17 (6.8%) | 0.036 |
| **Death/MI/TVR** | 9 (3.6%) | 20 (8.0%) | 0.036 |
| **Death/MI/TLR** | 8 (2.8%) | 19 (7.6%) | 0.016 |

* This patient had subacute stent thrombosis and underwent TLR.
** This patient was presented with STEMI and cardiogenic shock 3 months after the index procedure. Before emergent revascularization, this patient was dead.

# DECLARE-DIABETES Trial Design

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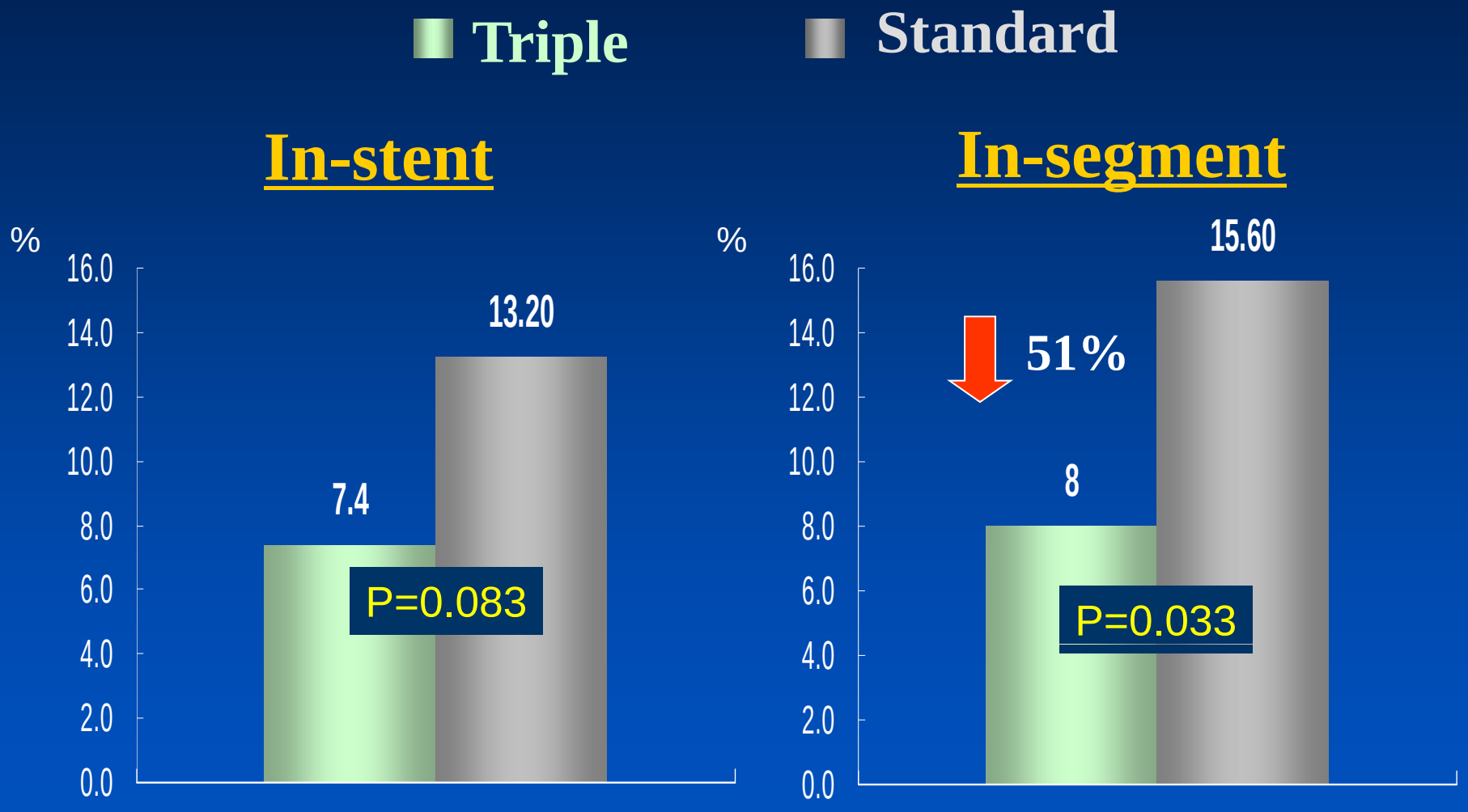
* Blinding – Patients, Outcome assessors
* Pre-specified angiographic primary endpoint
* Intention-to-treat analysis

Lee SW, Park SW et al. J Am Coll Cardiol March, 2008;51:1181-7

# Restenosis rate




Lee SW, Park SW et al. J Am Coll Cardiol March, 2008;51:1181-7

# MACE at 9-Months

DECLARE-DIABETES

| | Triple | Standard | P |
|---|---|---|---|
| Patients | 200 | 200 | |
| **Death** | 1(0.5%)* | 0 | 0.999 |
| Cardiac | 1 | 0 | |
| Non-cardiac | 0 | 0 | |
| **MI** | 1 (0.5%)* | 1 (0.5%) | 0.999 |
| **Stent thrombosis** | 0 | 1 (0.5%) | 0.999 |
| Acute | 0 | 1 | |
| Subacute | 0 | 0 | |
| Late | 0 | 0 | |
| **TLR** | 5 (2.5%) | 14 (7.0%) | 0.034 |
| **Death/MI/TVR** | 8 (4.0%) | 16 (8.0%) | 0.092 |
| **MACE (Death/MI/TLR)** | 6 (3.0%) | 14 (7.0%) | 0.066 |

* This patient was dead due to non-target vessel AMI 6 months after index procedure.

# Study Design (DECLARE-LONG II)

(Multicenter, randomized double blind clinical trial)

Long coronary lesions (≥25mm) requiring single or multiple Endeavor stent (planned total stent length ≥30mm)

**Successful stenting**

1:1 randomization

| Aspirin + clopidogrel + cilostazol* (n=250) | Aspirin + clopidogrel + placebo* (n=249) |
|---|---|

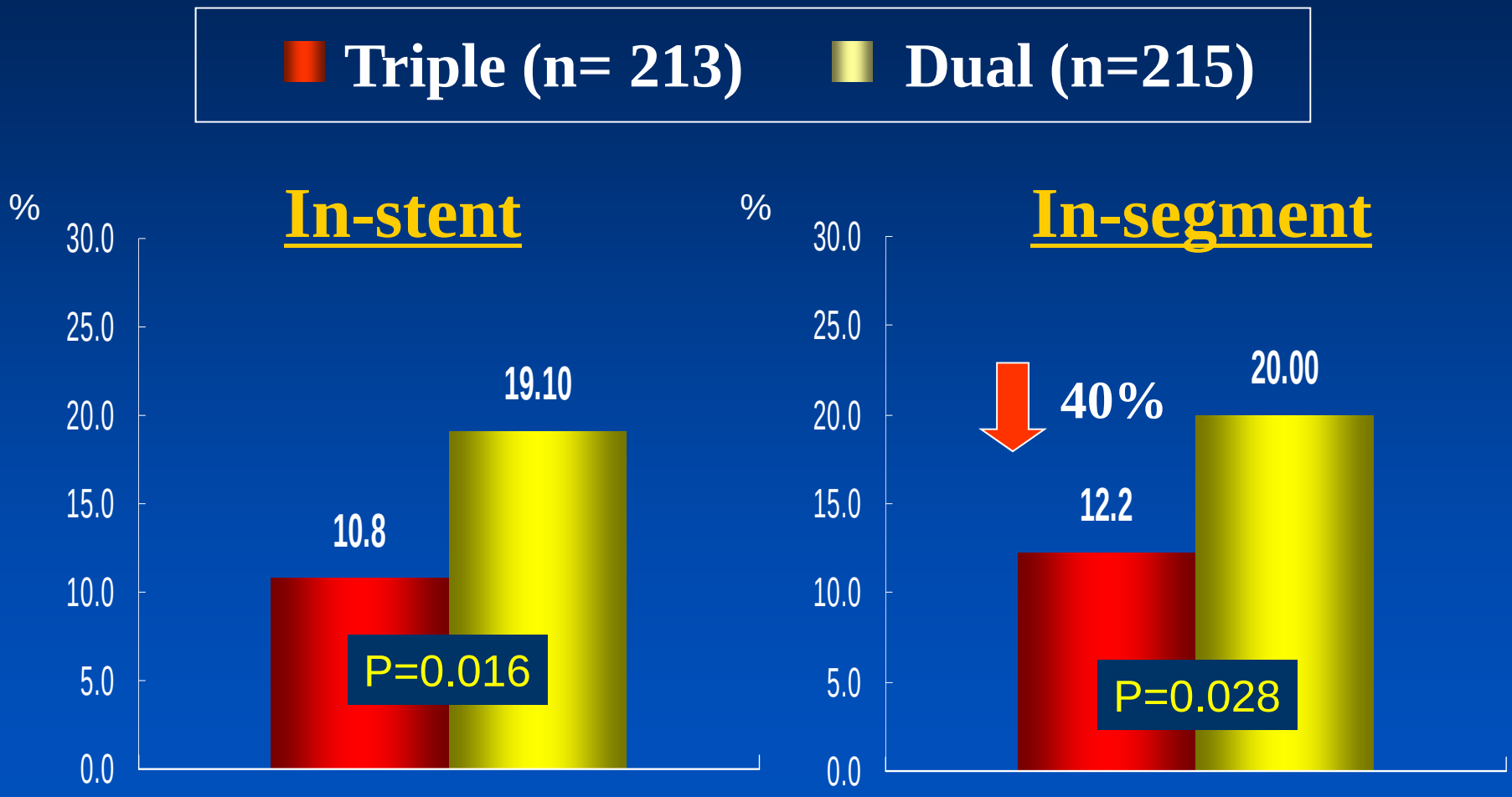
Angiographic and IVUS follow-up at 8 months
Clinical follow-up at 12 months

* aspirin plus clopidogrel plus **study drug** for 8 months

Primary endpoint:
In-stent late loss at 8 months by QCA

Drug compliance and adverse drug events monitoring: compliance questionnaire
CBC, LFT, hsCRP, HBA1c at baseline, 30 days, 90 days, 180 days, 270 days, 360 days (±1 month),
Verify now (aspirin/P2Y12): postprocedure 48 hours, 1 month
IVUS analysis

# Restenosis rate




Lee SW, et al. J Am Coll Cardiol, 2011;57:1264-70

# MACE at 12-Months

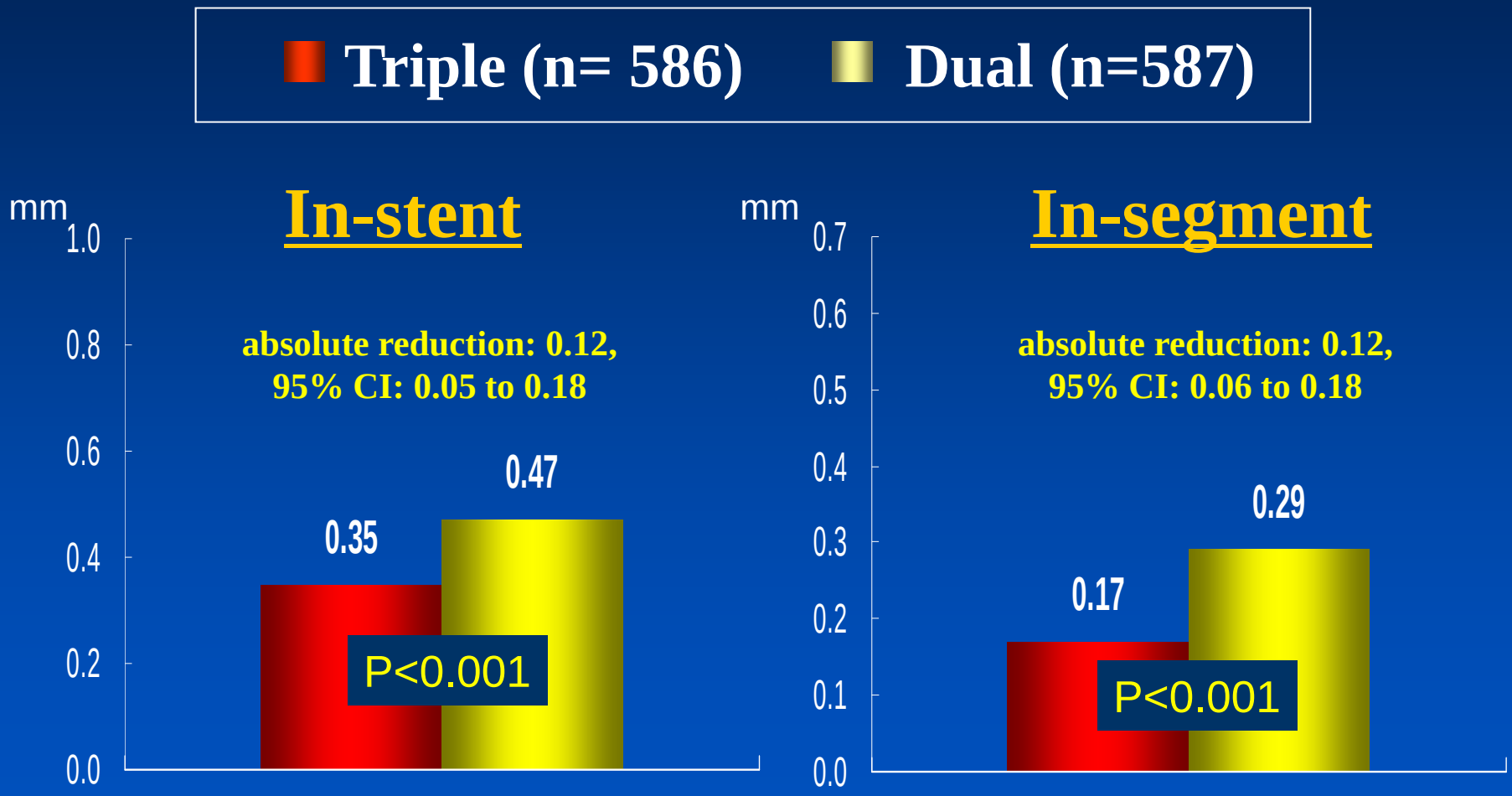
DECLARE-LONG II

| | Triple (N=250) | Standard (N=249) | *p* |
|---|---|---|---|
| Death | 6 (2.4%) | 3 (1.2%) | 0.504 |
| MI | 4 (1.6%) | 4 (1.6%) | 0.995 |
| Ischemic driven TLR | 13 (5.2%) | 25 (10.0%) | 0.042 |
| Stent thrombosis | 4 (1.6%) | 1 (0.4%) | 0.179 |
| Acute | 1 (0.4%) | 0 | |
| Subacute | 2 (0.8%) | 1 (0.4%) | |
| Late | 1 (0.4%) | 0 | |
| Ischemic driven TVR | 13 (5.2%) | 26 (10.4%) | 0.029 |
| Death/MI/ischemic driven TVR | 18 (7.2%) | 31 (12.4%) | 0.049 |
| Death/MI/ischemic driven TLR | 18 (7.2%) | 30 (12.0%) | 0.066 |

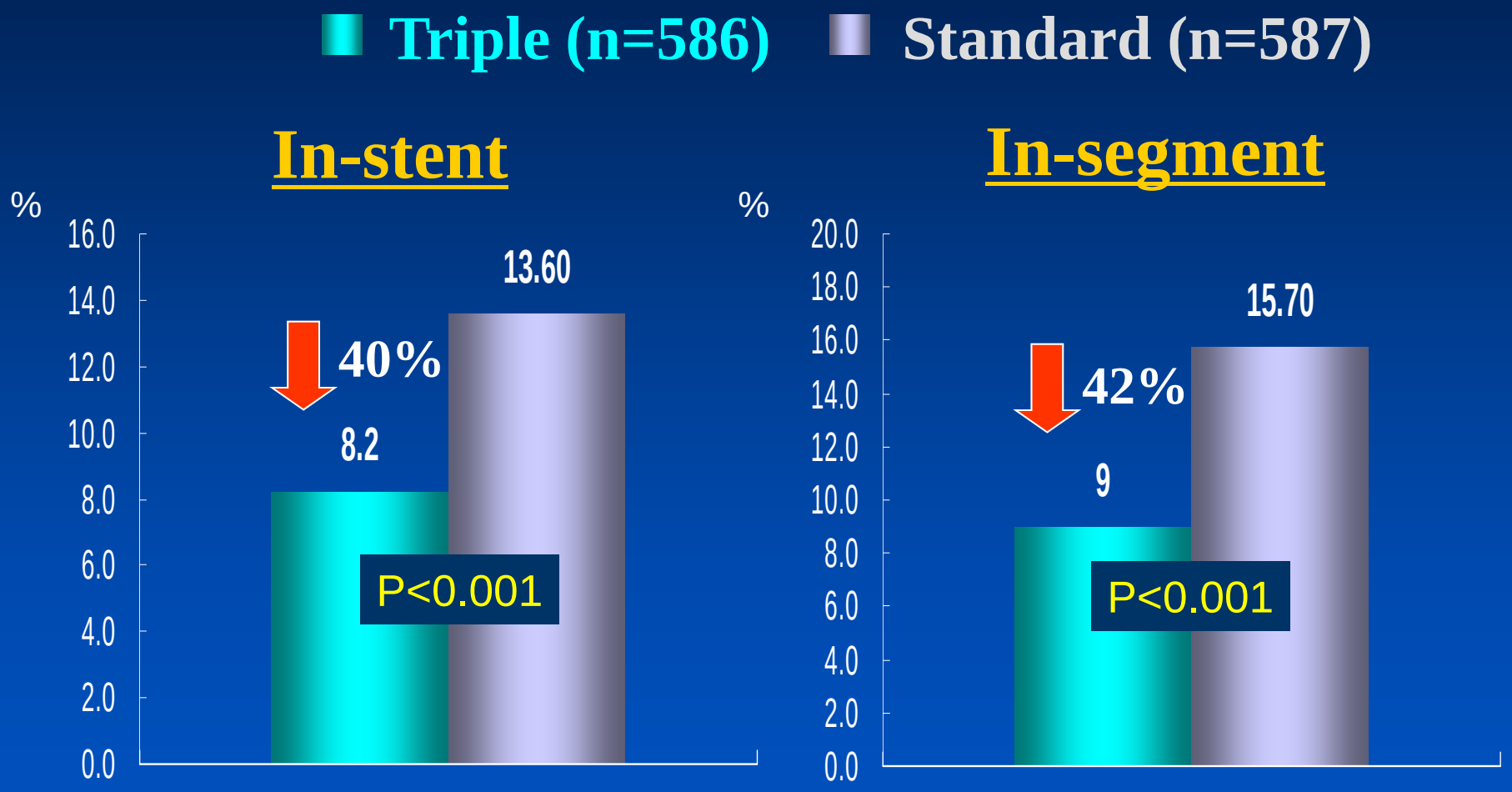
Lee SW, et al. J Am Coll Cardiol, 2011;57:1264-70

# Pooled analysis of DECLAREs

# Late loss


Triple (n= 586)
Dual (n=587)
In-stent
mm
1.0
0.8
0.6
0.4
0.2
0.0
absolute reduction: 0.12,
95% CI: 0.05 to 0.18
0.47
0.35
P<0.001
In-segment
mm
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
absolute reduction: 0.12,
95% CI: 0.06 to 0.18
0.29
0.17
P<0.001

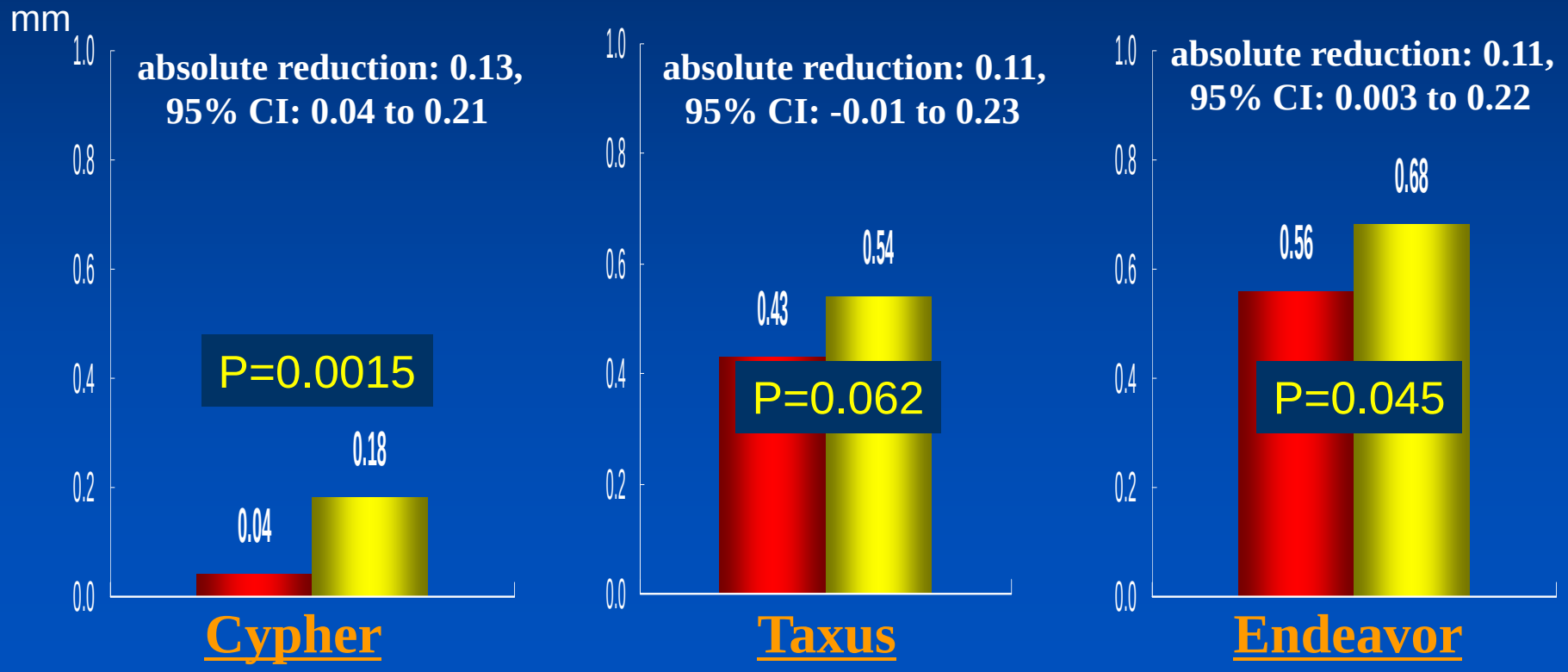
# Overall restenosis rate



# DES In-Stent Late loss

Triple (n= 586)  Dual (n=587)

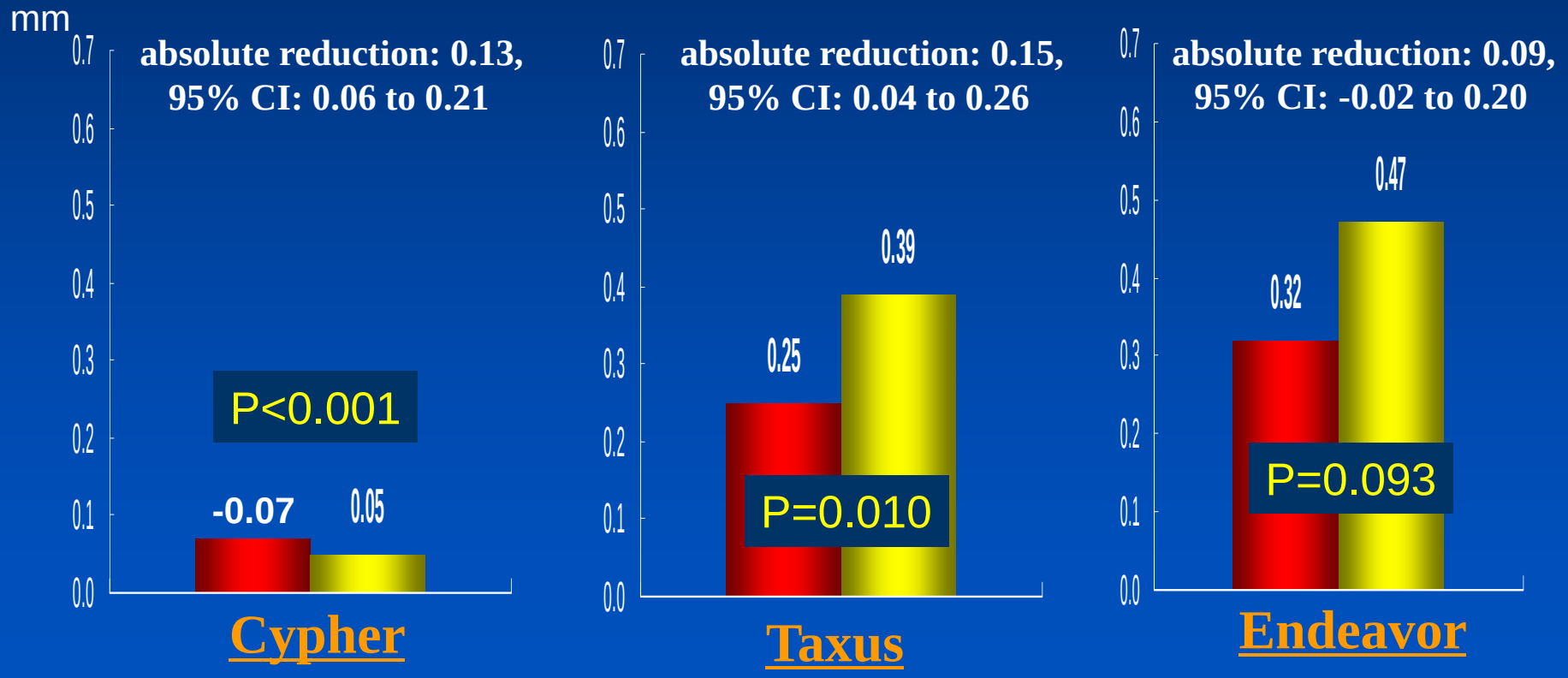
**P value for interaction=0.97**



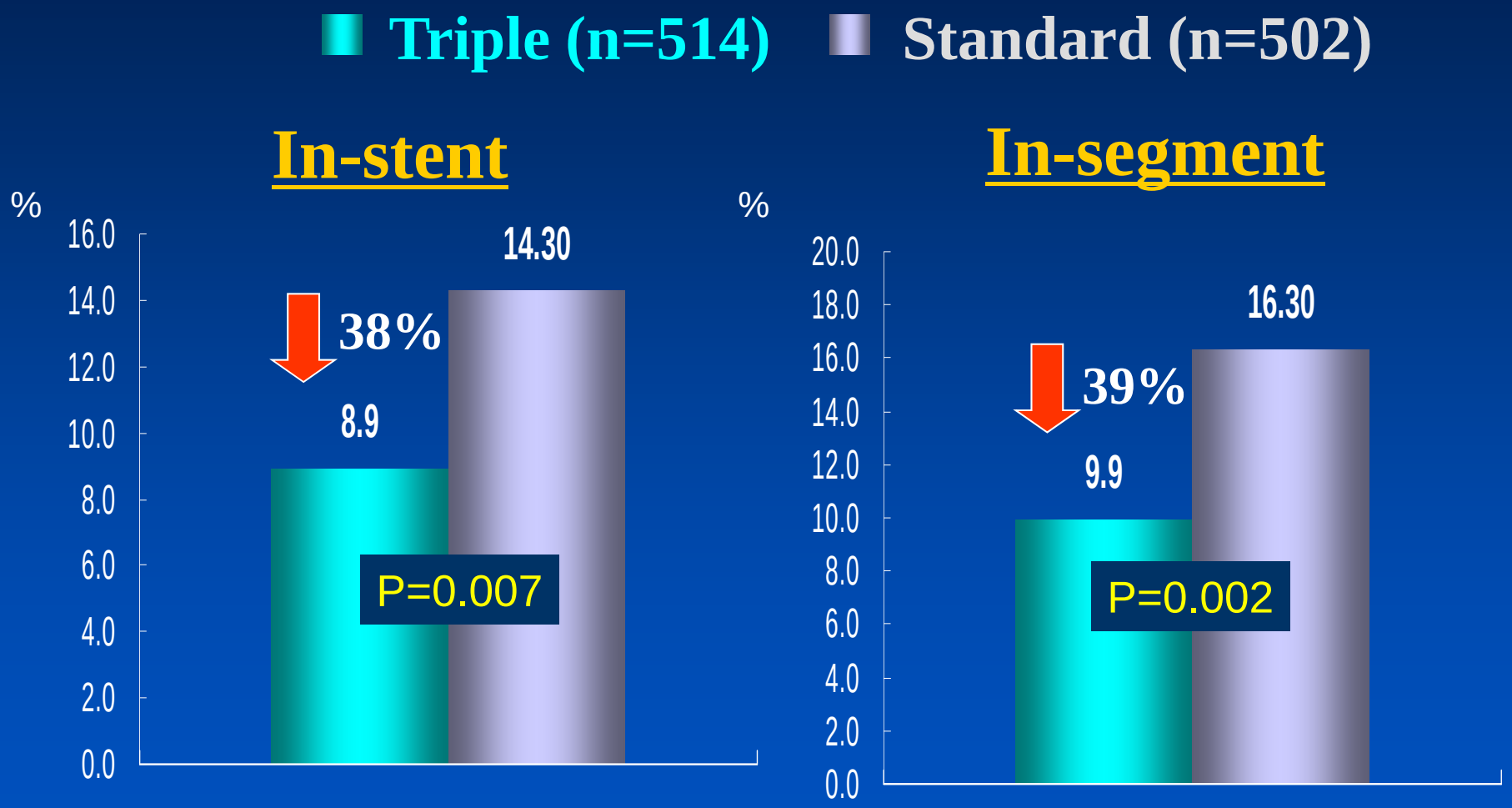
# DES In-Segment Late loss

Triple (n= 586)  Dual (n=587)

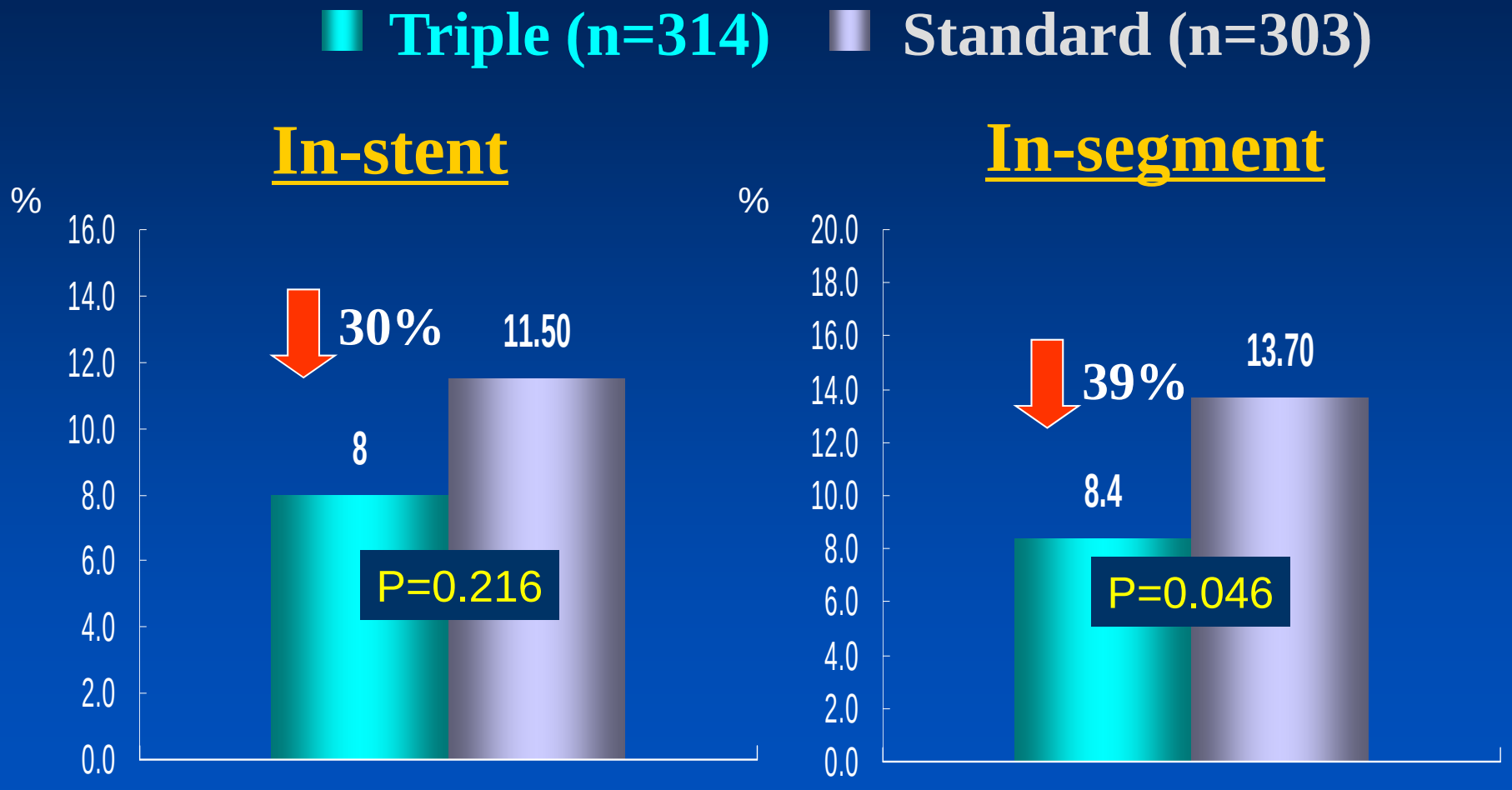
**P value for interaction=0.75**



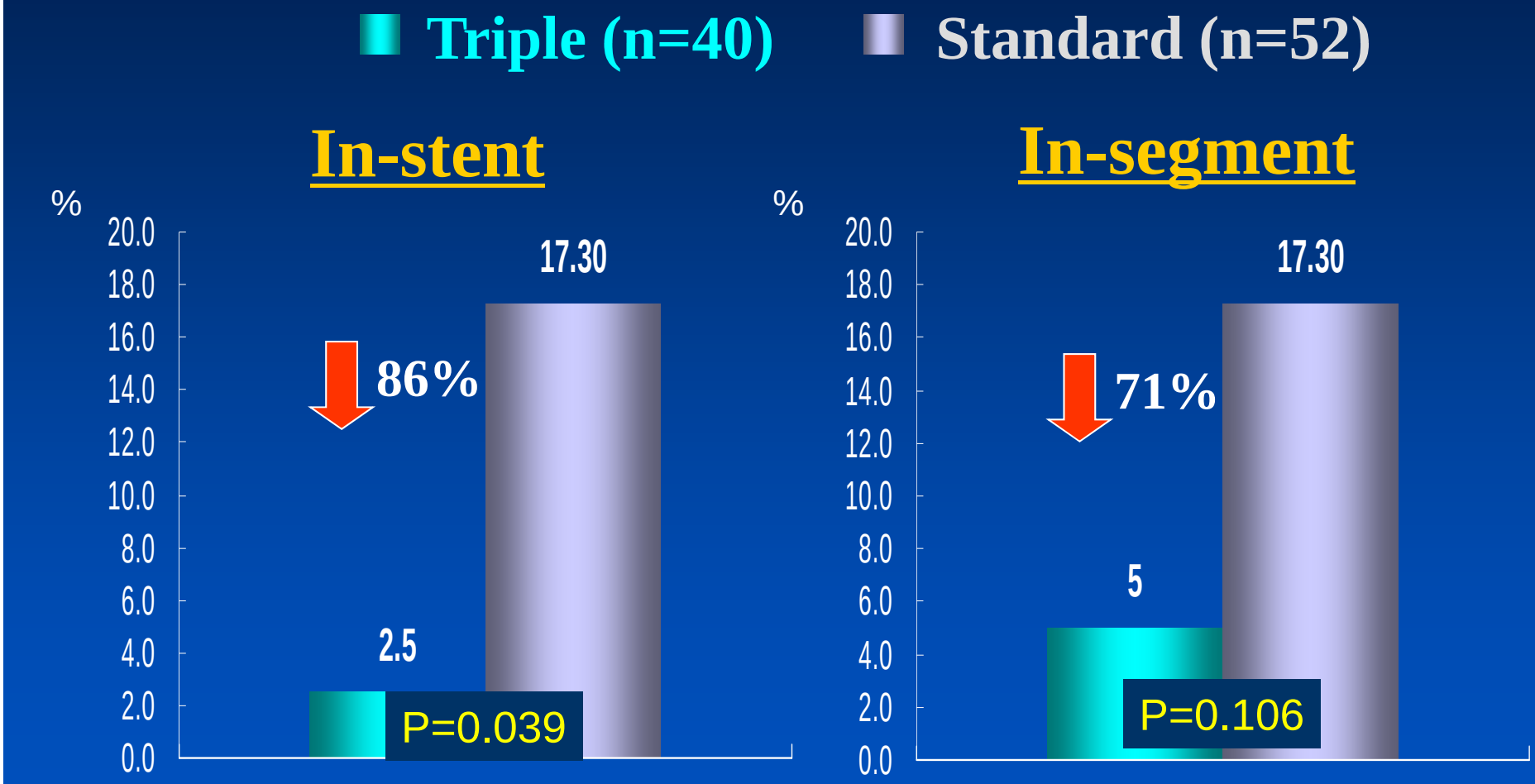
# Long lesion restenosis rate



# DM restenosis rate



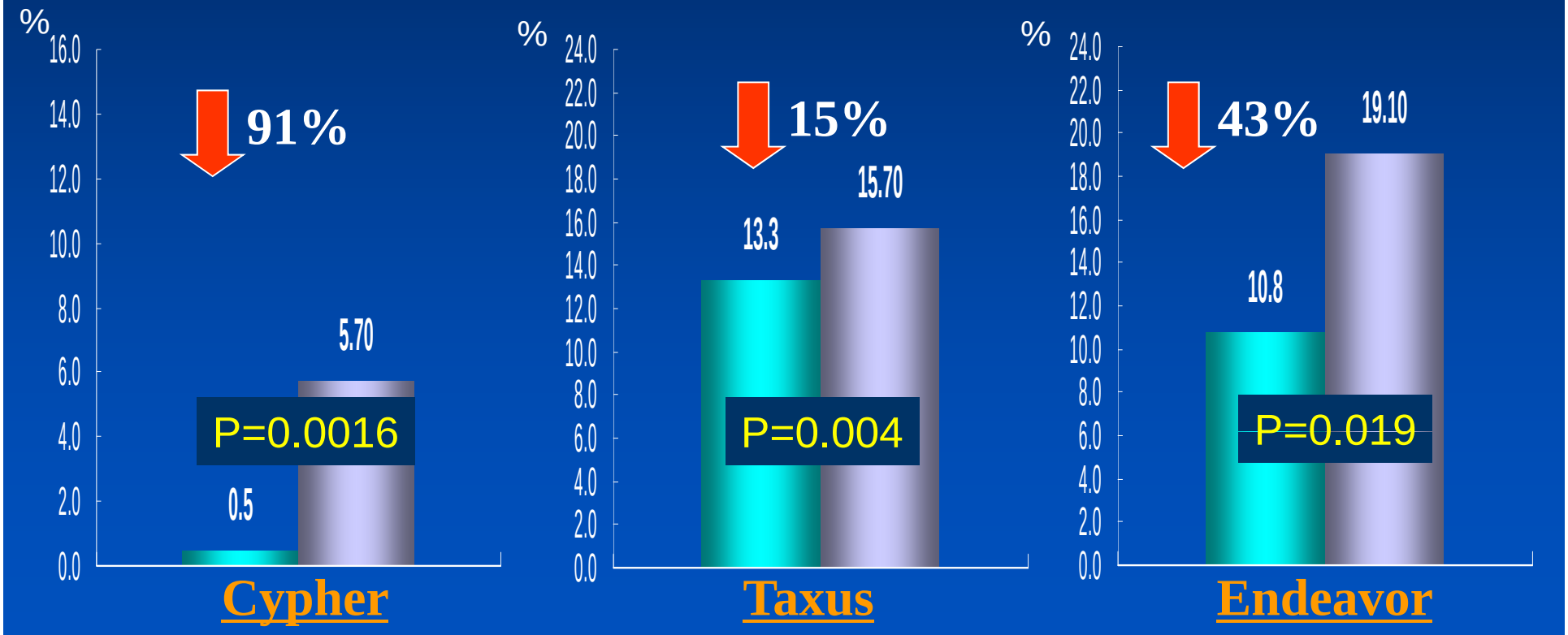
# Insulin-DM restenosis rate



# DES In-Stent Restenosis rate

Triple (n=586) Standard (n=587)

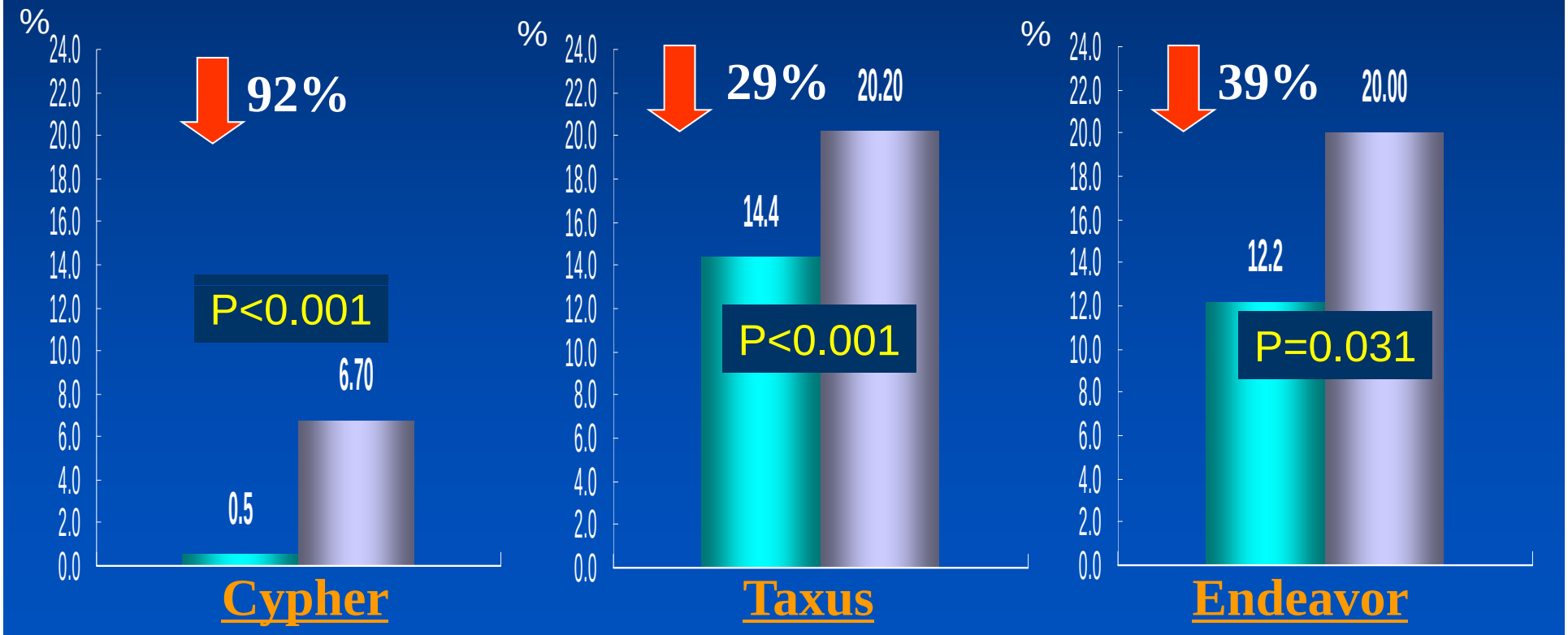
P value for interaction=0.027



# DES In-Segment Restenosis rate

**Triple (n=586)** **Standard (n=587)**

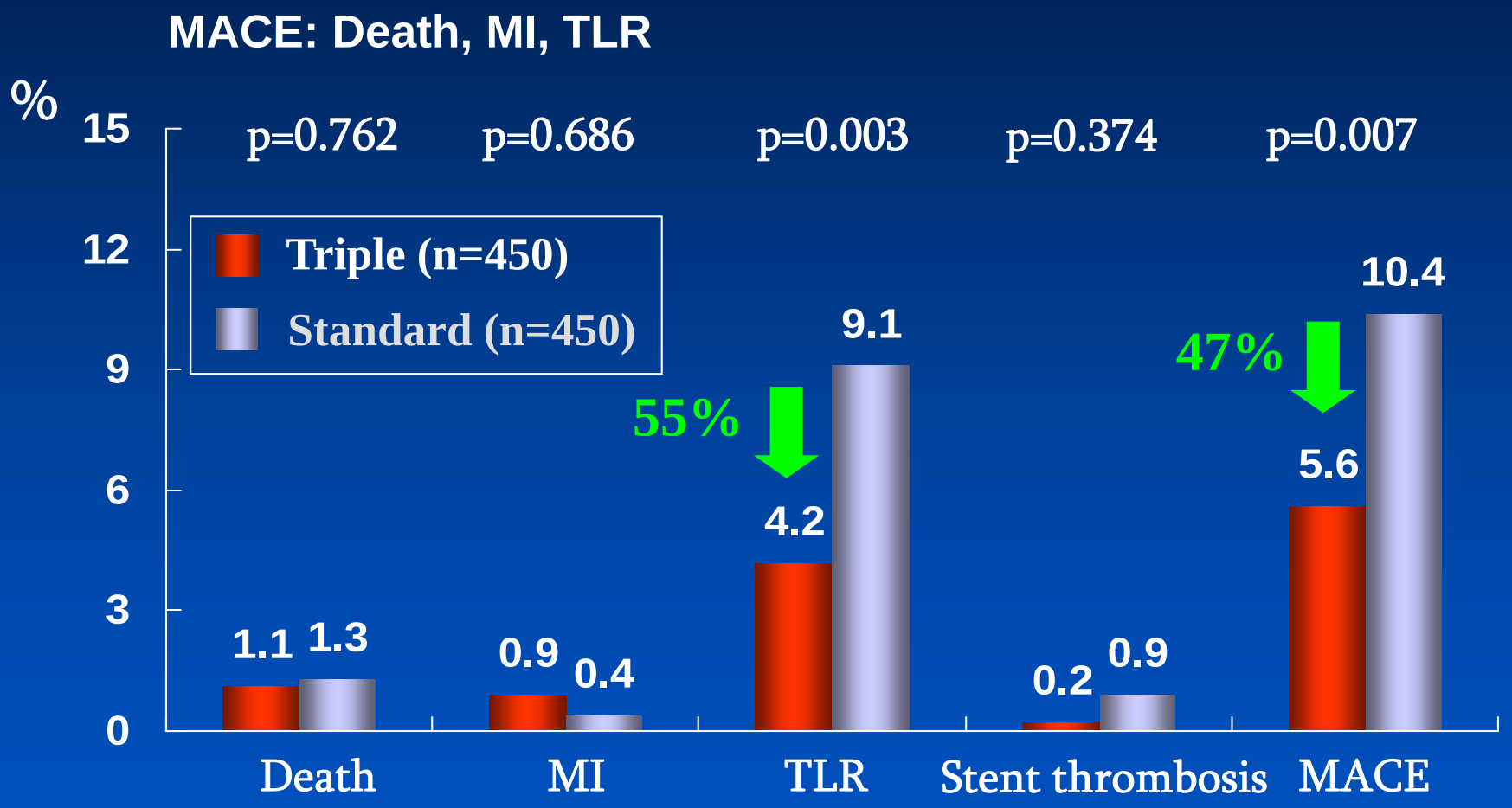
**P value for interaction=0.023**



# Independent Predictors of angiographic restenosis on multivariate analysis

| | OR | 95% CI | p |
|---|---|---|---|
| **Overall population** | | | |
| SES | 0.12 | 0.09-0.14 | <0.001 |
| Triple antiplatelet therapy | 0.49 | 0.35-0.67 | <0.001 |
| DM | 1.99 | 1.37-2.89 | <0.001 |
| Stent length | 1.03 | 1.02-1.04 | <0.001 |
| Post-procedural in-stent MLD | 0.38 | 0.17-0.87 | 0.021 |

# Two-year MACE




Lee SW, Park SW, et al. Am J Cardiol 2010:105:168

# Summary I

- Triple antiplatelet therapy for 6 or 8 months significantly reduced angiographic restenosis in patients with diabetes or long lesions.
- Triple antiplatelet therapy reduced late loss by 0.12 mm and restenosis by 40%.
- Impact of triple antiplatelet therapy on angiographic restenosis was most prominent in Cypher stent, compared with Taxus and Endeavor, which translated to very low restenosis rate (0.5%) in SES with low late loss.

# Summary II

- Insulin requiring DM patients also may have beneficial effect in triple group versus dual group.
- Several factors (triple antiplatelet therapy, SES, stent length, DM, post-MLD) served as independent predictors of angiographic restenosis.
- So, newer generation DES with triple antiplatelet therapy may reduce restenosis in high risk population of restenosis.

# Potential candidate of triple therapy in newer generation DES era

- Long lesions
- Diabetic population
- Restenotic lesion
- Bifurcation lesion……

# Triple versus Dual Antiplatelet Therapy After Successful coronary Stenting (BMS or DES)

## 1-month Stent Thrombosis

Asan Medical Center
University of Ulsan College of Medicine,
Seoul, Korea

# Major Cardiac Events at 1Mo

| | Dual (n=3,253) | Triple (n=2,858) | *p* |
|---|---|---|---|
| Stent thrombosis | 14 (0.4%) | 3 (0.1%) | 0.028 |
| Acute | 5 (0.2%) | 0 | NS |
| Subacute | 9 (0.3%) | 3 (0.1%) | NS |
| MI | 15 (0.5%) | 3 (0.1%) | 0.021 |
| Death | 9 (0.3%) | 5 (0.2%) | NS |

Lee SW, Park SW et al. J Am Coll Cardiol 2005;46:1833-7.
Lee SW, Park SW, et al. Am Heart J 2010;159:284-291

# Triple Antiplatelet Therapy (asprin, clopidogrel and cilostazol) Significantly Reduces Ischemic Events after DES implantation in a broad range of population

:*D*rug-*E*luting stenting followed by *C*ilostazol treatment *RE*duces *A*dverse *S*erious cardiac *E*vents

## The DECREASE registry

## 12-month Stent Thrombosis

**Asan Medical Center**
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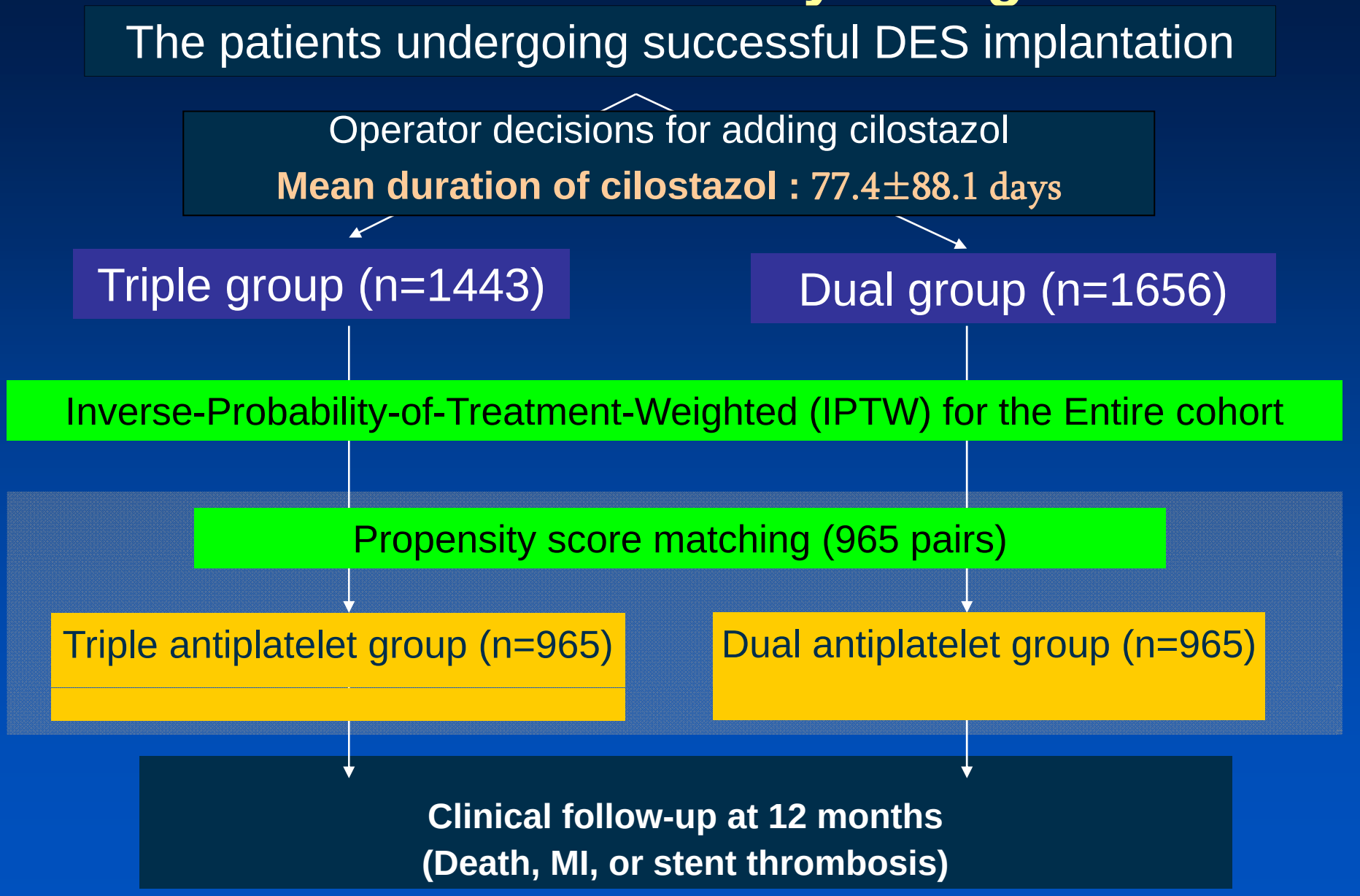
# DECREASE Study Design



# Twelve-month risk of Events after DES Implantation of Triple versus Dual antiplatelet therapy according to analytic methods

| Variables | Crude | | Inverse-probability-of-treatment weighted | | Propensity-matched (965 pairs) | |
|---|---|---|---|---|---|---|
| | Hazard Ratio (95% CI) | *P* Value | Hazard Ratio (95% CI) | *P* Value | Hazard Ratio (95% CI) | *P* Value |
| **Cardiac events** | | | | | | |
| Death | 0.925 (0.521 -1.644) | 0.7907 | 0.762 (0.401-1.448) | 0.4062 | 0.644(0.300-1.381) | 0.2584 |
| MI | 0.381 (0.138-1.048) | 0.0617 | 0.233 (0.077-0.703) | 0.0097 | 0.298 (0.082-1.086) | 0.0665 |
| Stent thrombosis | 0.286 (0.081-1.013) | 0.0524 | 0.136 (0.035-0.521) | 0.0036 | 0.124 (0.016-0.996) | 0.0496 |
| Death/MI | 0.761 (0.464-1.251) | 0.2817 | 0.591 (0.3364-1.037) | 0.0665 | 0.556 (0.287-1.075) | 0.0811 |
| **Bleeding** | | | | | | |
| Major bleeding | 0.850 (0.477-1.516) | 0.5830 | 0.969 (0.443-2.119) | 0.9372 | 0.683 (0.343-1.360) | 0.2781 |
| Minor bleeding | 1.039 (0.757-1.426) | 0.8125 | 1.062 (0.734-1.537) | 0.7504 | 1.045 (0.703-1.555) | 0.8267 |

Hazard ratios are for the triple group, as compared with the dual group.

Lee SW, Park SW, et al. Am Heart J 2010;159:284-291

# Extended Cox analysis to adjust time-varying covariate

| | Stent thrombosis | | Myocardial infarction | |
|---|---|---|---|---|
| | HR(95% CI) | P | 95% CI | P |
| **On-triple therapy** | 0.07(0.005-0.90) | <0.05 | 0.02(0.003-0.18) | <0.05 |
| **Duration of triple therapy** | 0.06(0.003-0.92) | <0.05 | 0.75(0.57-0.98) | <0.05 |
| **On-clopidogrel** | 0.86(0.15-4.80) | 0.86 | 0.11(0.03-0.37) | <0.05 |
| **Duration of clopidogrel** | 0.54(0.31-0.92) | <0.05 | 0.51(0.27-0.96) | <0.05 |

Lee SW, Park SW, et al. Am Heart J 2010;159:284-291

# Triple versus Dual Antiplatelet Therapy in Patients with STEMI Undergoing Primary Stenting with DES

## 8-month Death and MACE

Chen KY et al. Circulation;119:3207-14

## Study Groups

Prospective registry of STEMI patients:

1) Dual therapy group

(aspirin plus clopidogrel, n=2,569)

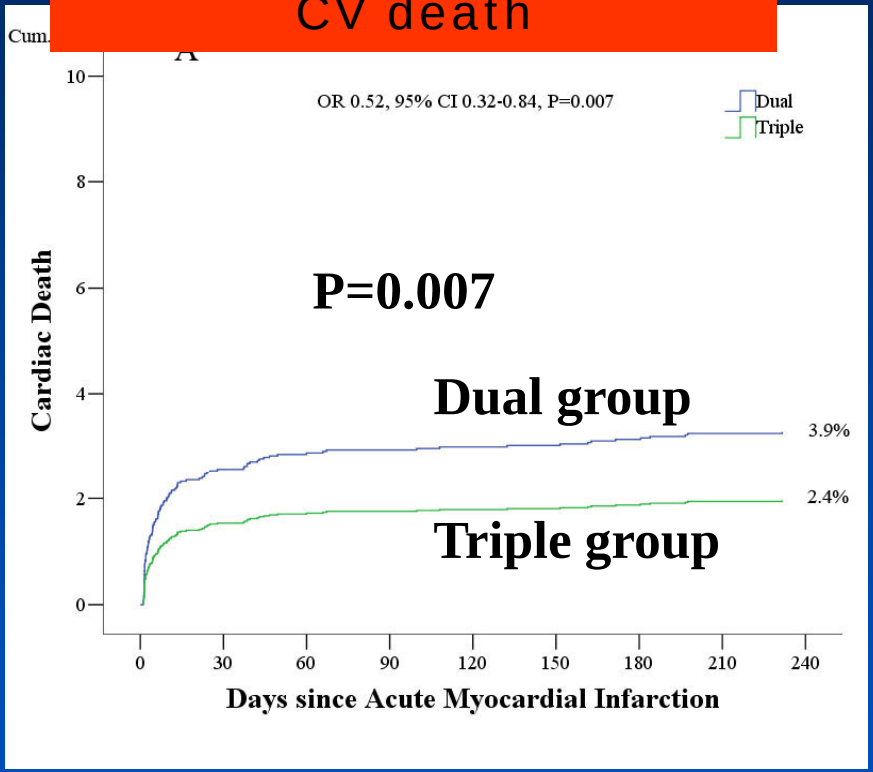
2) Triple therapy group (cilostazol for at least 1month)

(aspirin plus clopidogrel plus cilostazol, n=1,634)

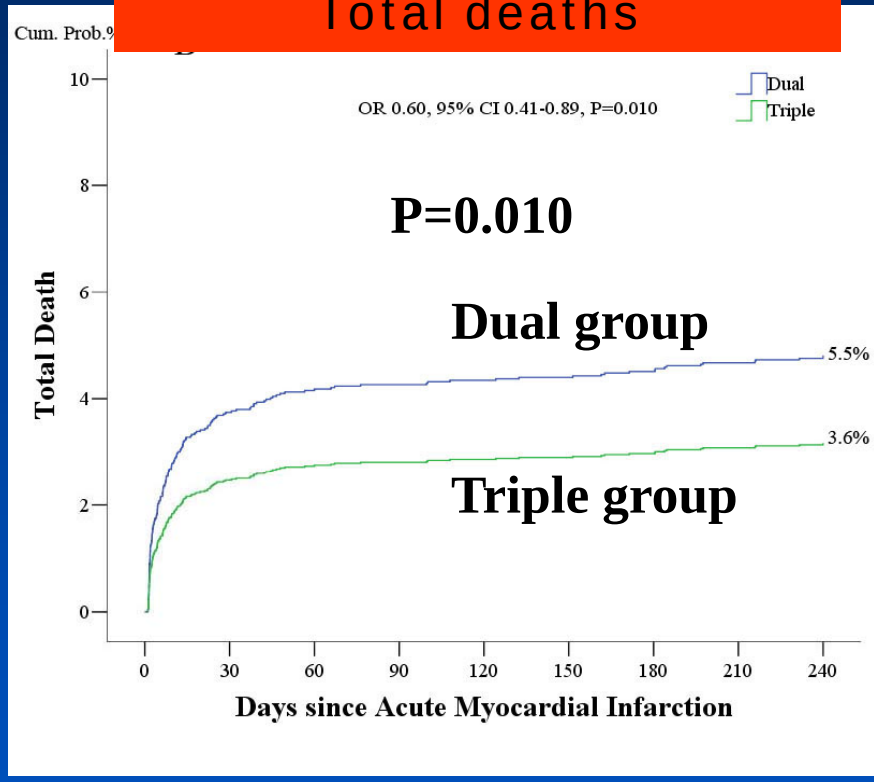
Chen KY et al. Circulation;119:3207-14

# 8-month mortality

## CV death



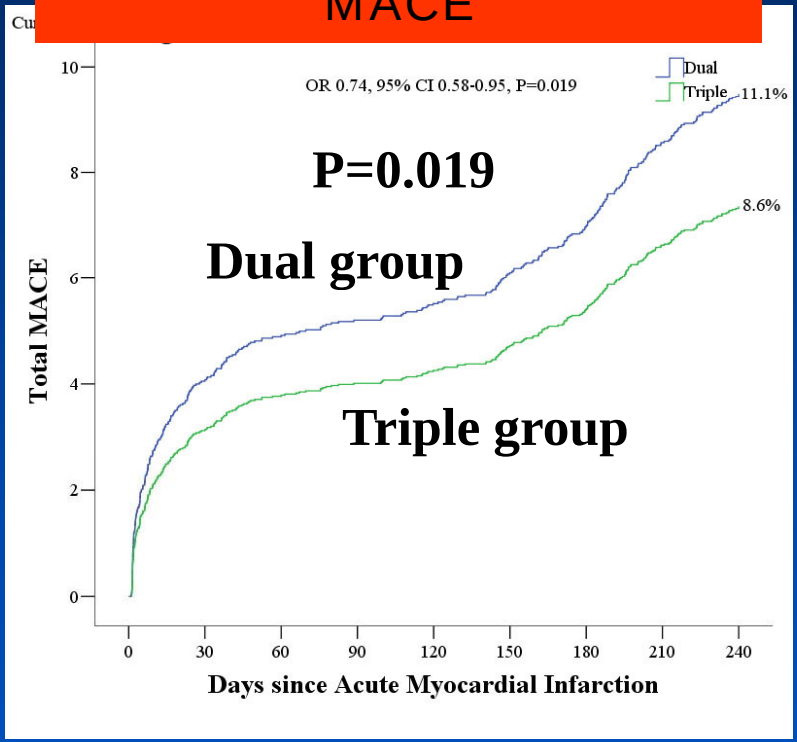

## Total deaths

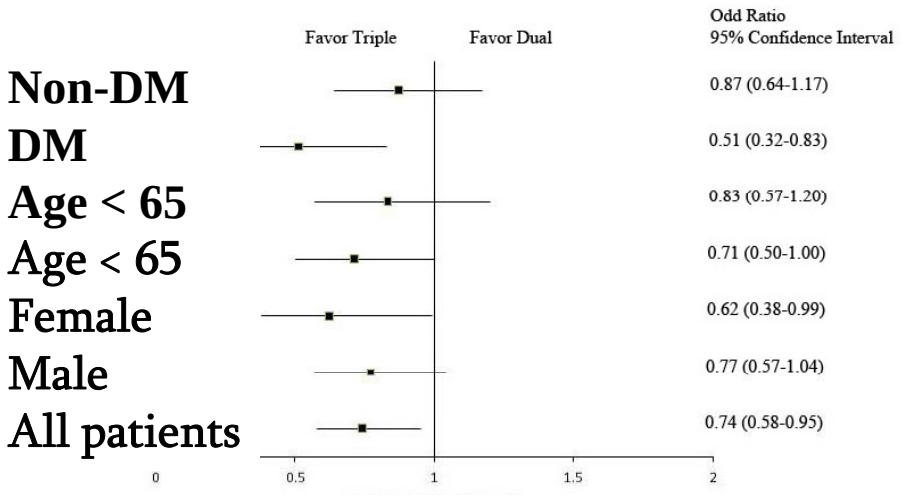



Chen KY et al. Circulation;119:3207-14

# 8-month death/MI/repeat revascularization

MACE




MACE at 8 months

Chen KY et al. Circulation;119:3207-14

# Cilostazol in addition to aspirin and clopidogrel improves long-term outcomes after PCI (BMS or DES) in patients with acute coronary syndrome: A randomized, controlled study

## 12-month MACCE

Han Y, et al. Am Heart J 2009;157:733-9

## Study Groups

Prospective randomized trial in ACS patients

1) Dual antiplatelet therapy group
(aspirin plus clopidogrel, n=608)
2) Triple antiplatelet therapy group (6 months)
(aspirin plus clopidogrel plus cilostazol, n=604)

**The primary end point : composite of cardiac death, nonfatal MI, stroke, or TVR at 1 year**

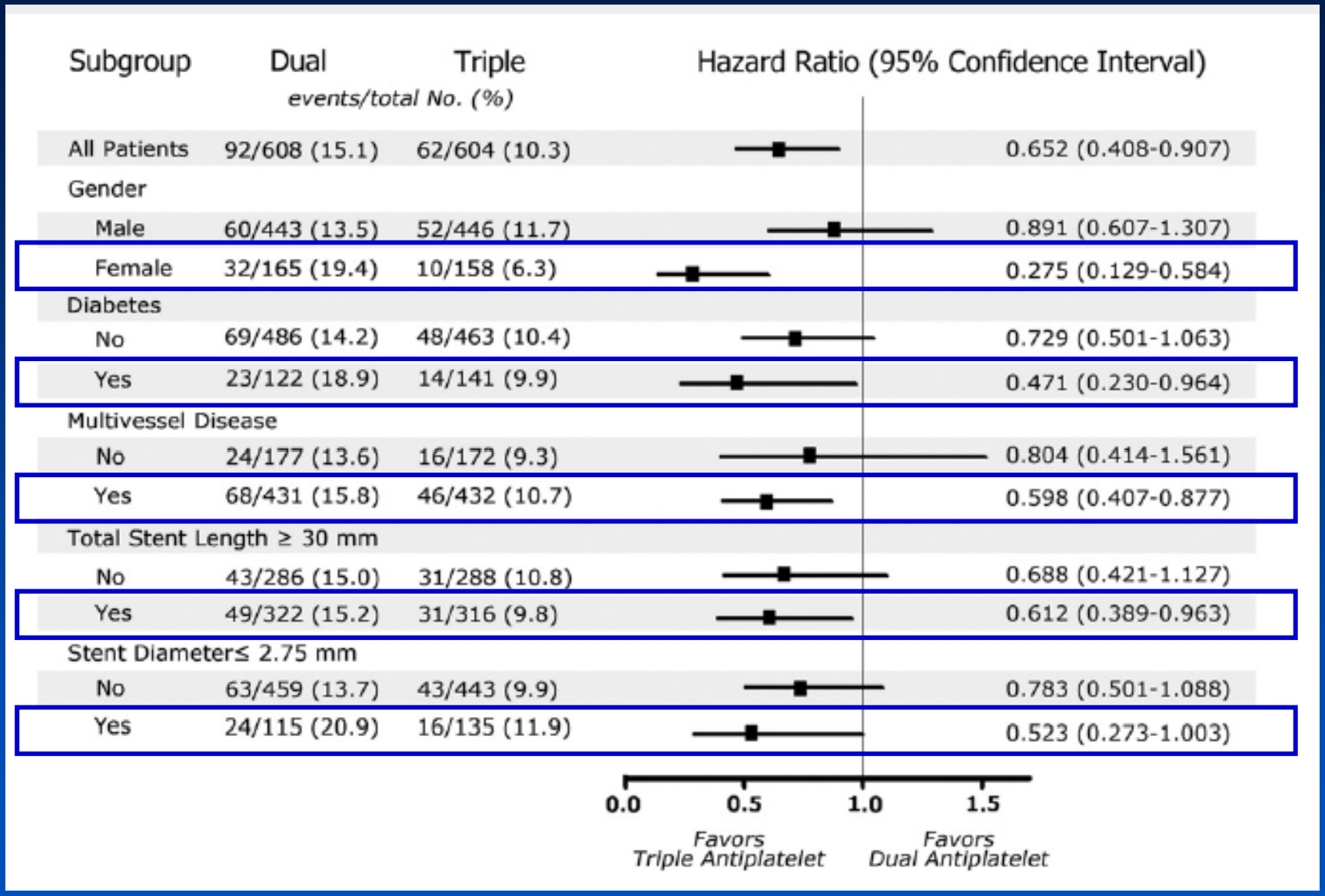
Han Y, et al. Am Heart J 2009;157:733-9

# Clinical Outcomes at 12 Months for Triple Antiplatelet Therapy

| | Dual (n=608) | Triple (n=604) | *p* |
|---|---|---|---|
| All death | 4.1% | 2.6% | 0.159 |
| CV death | 3.3% | 1.7% | 0.067 |
| MI | 0.7% | 0.3% | 0.687 |
| Stroke | 1.6% | 0.7% | 0.109 |
| Cardiac death/MI/Stroke | 5.1% | 2.6% | 0.027 |
| TVR | 10.4% | 7.8% | 0.118 |
| MACCE | 15.1% | 10.3% | 0.011 |

Han Y, et al. Am Heart J 2009;157:733-9

# Subgroup analysis




Han Y, et al. Am Heart J 2009;157:733-9

# Recommended duration of triple antiplatelet therapy

- For stent thrombosis/MI, 1 month at minimum
- For restenosis, 6 months at minimum

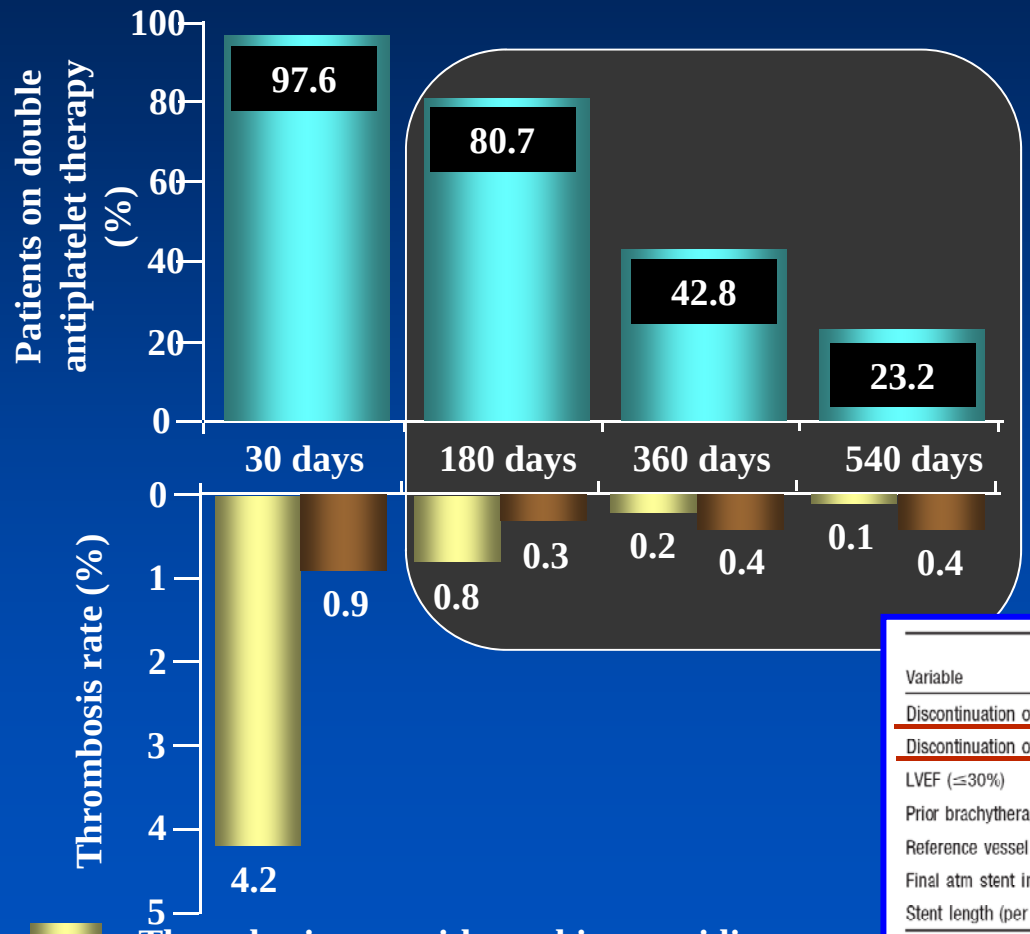
# Potential candidate of triple therapy in newer generation DES era

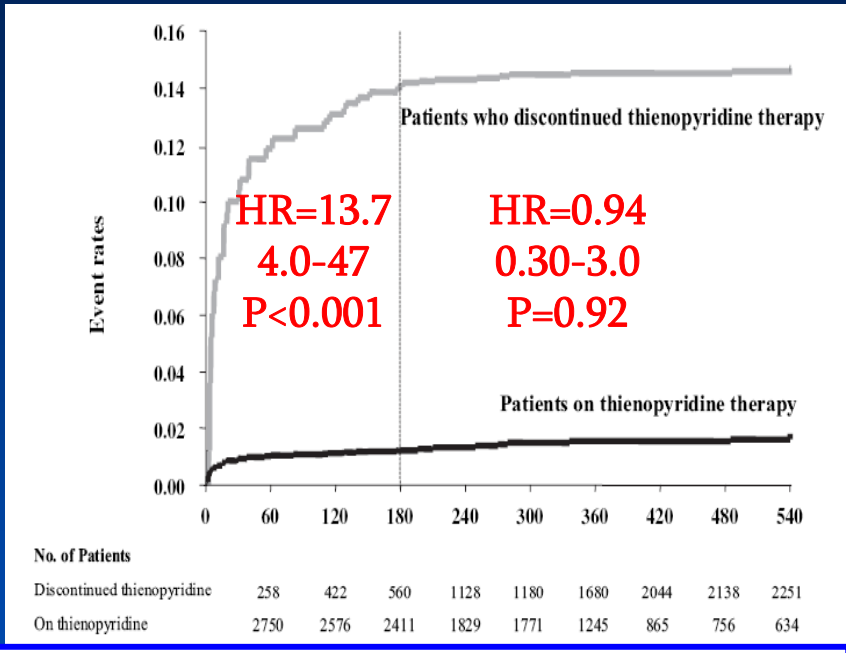
- Long lesions
- Diabetic population
- Restenotic lesion
- Bifurcation lesion
- Multi-vessel stenting
- STEMI
- ACS….

Complex PCI patients would be potential candidate of triple antiplatelet therapy even in new generation DES era

*Thank you for your attention*

# The Observational Data from Europe(Milan-Helios Group)




| No. of Patients | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Discontinued thienopyridine | 258 | 422 | 560 | 1128 | 1180 | 1680 | 2044 | 2138 | 2251 |
| On thienopyridine | 2750 | 2576 | 2411 | 1829 | 1771 | 1245 | 865 | 756 | 634 |

| Variable | No. of Patients | HR | 95% Lower Confidence Limit | 95% Upper Confidence Limit | *P* |
|---|---|---|---|---|---|
| Discontinuation of thienopyridine (0–6 months)* | 583 | 13.74 | 4.04 | 46.68 | <0.001 |
| Discontinuation of thienopyridine (6–18 months)* | 1737 | 0.94 | 0.30 | 2.98 | 0.92 |
| LVEF (≤30%) | 96 | 3.72 | 1.50 | 9.27 | 0.005 |
| Prior brachytherapy | 31 | 9.70 | 2.99 | 31.44 | <0.001 |
| Reference vessel diameter (per 1 mm)† | ... | 0.27 | 0.06 | 1.13 | 0.07 |
| Final atm stent implantation (per 1 atm)† | ... | 0.39 | 0.18 | 0.85 | 0.02 |
| Stent length (per 10 mm)† | ... | 2.75 | 1.55 | 4.88 | <0.001 |

Airoldi F et al. Circulation, 2007;116:745