Cardiovascular Outcomes Through Statin Treatment

: Evidence based Outcomes

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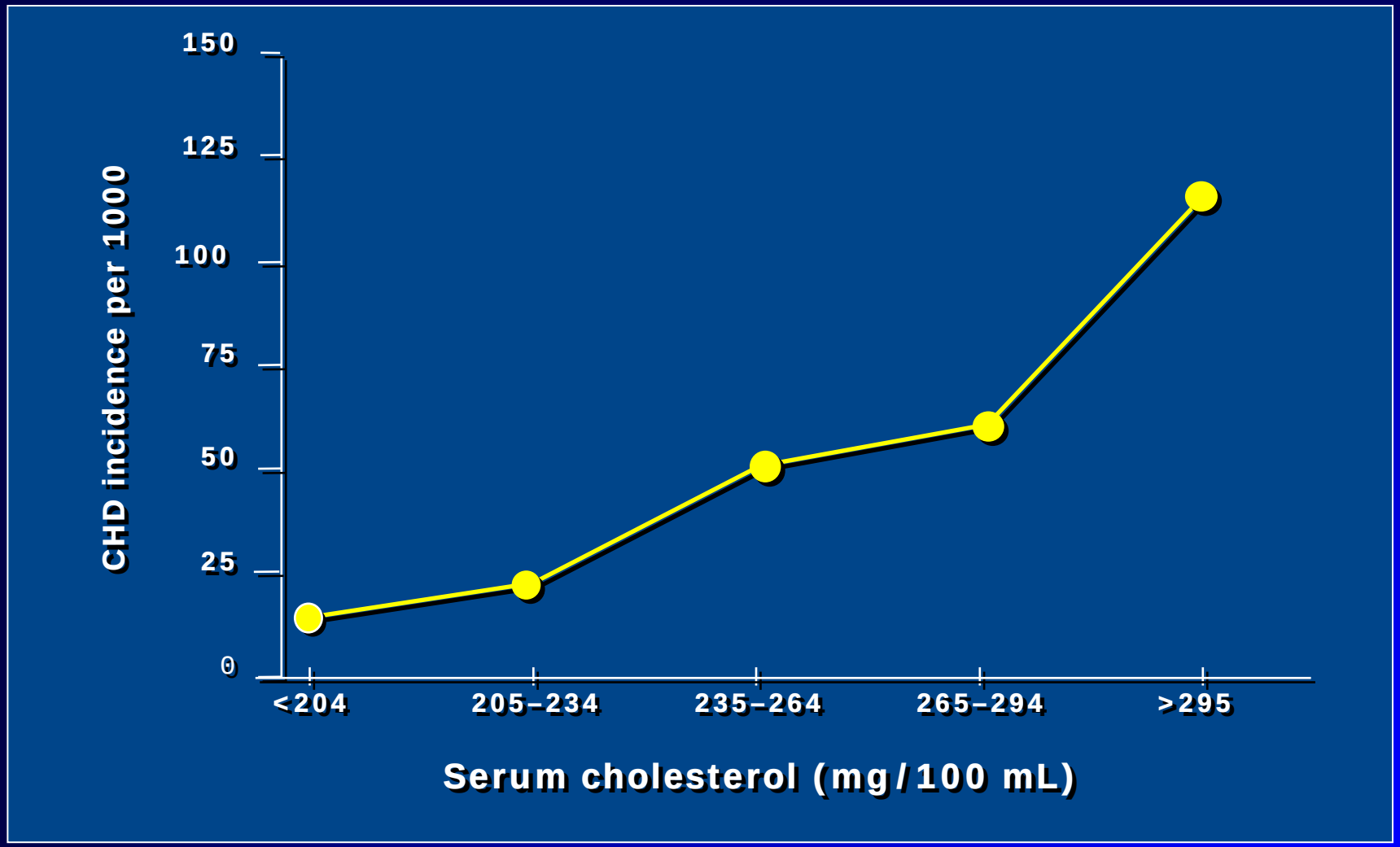
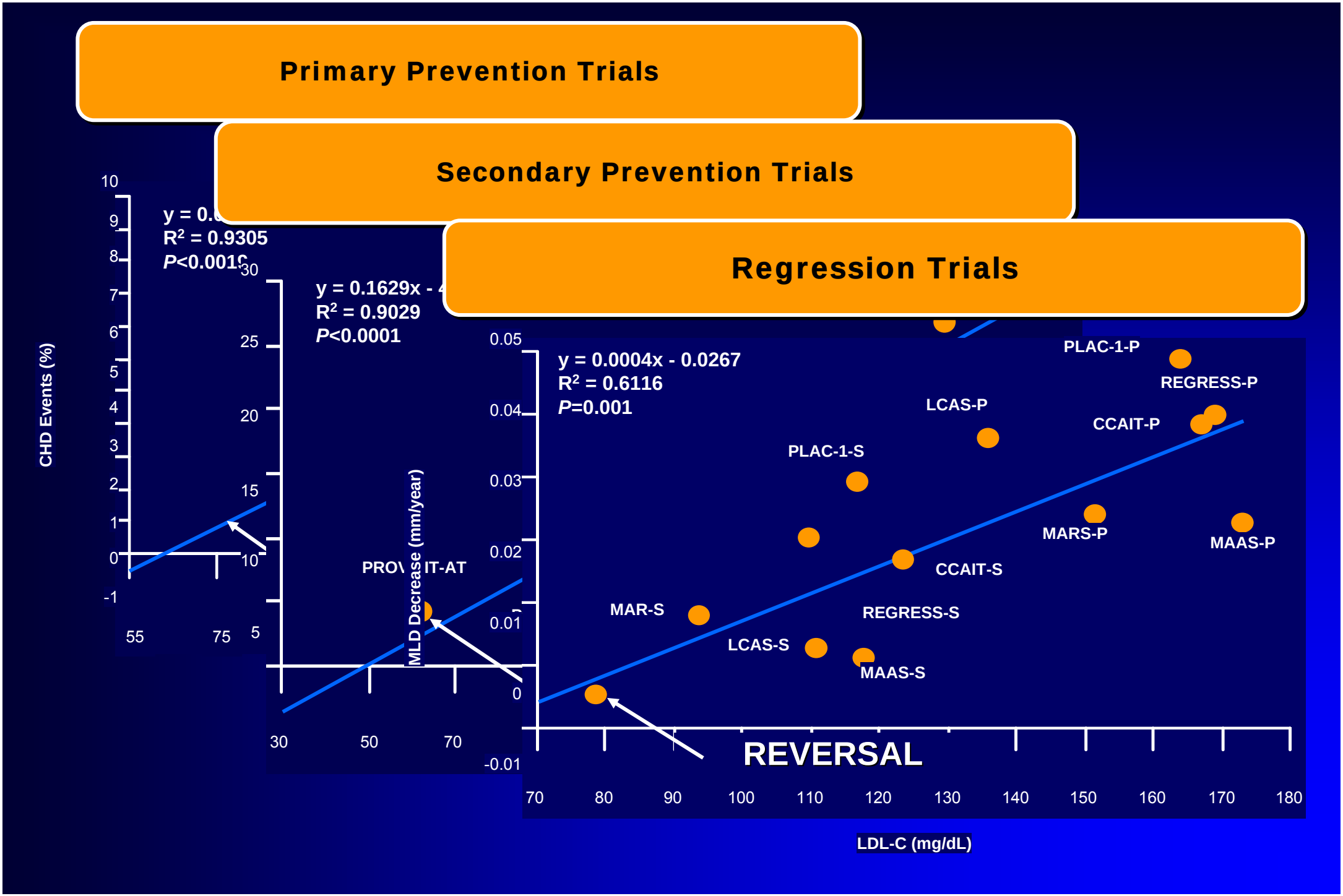
The Framingham Study: Relationship Between Cholesterol and CHD Risk

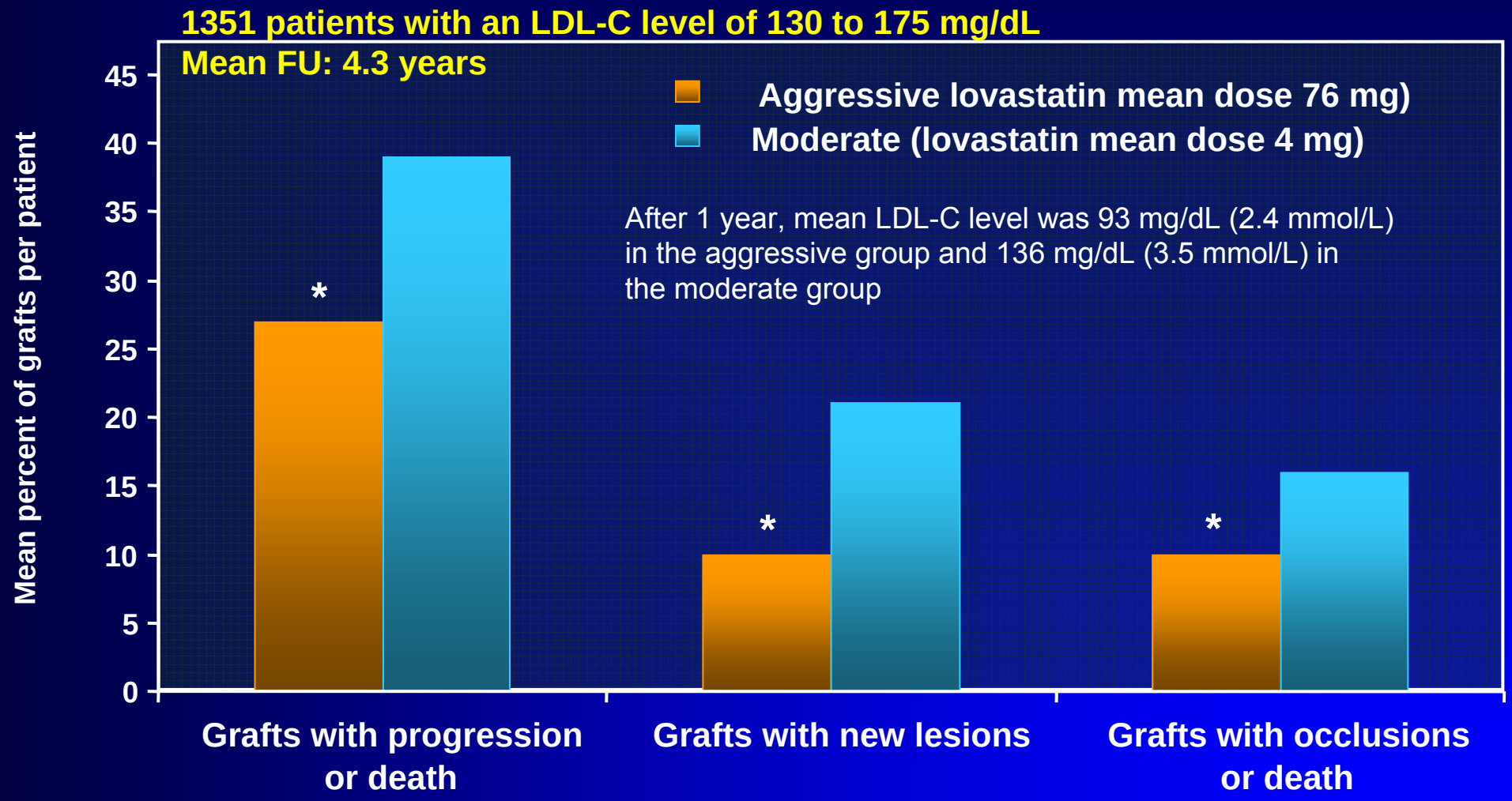


Castelli WP. *Am J Med* 1984;76:4–12


Primary Prevention Trials
Secondary Prevention Trials
Regression Trials
y = 0.0004x - 0.0267
R² = 0.6116
P=0.001
y = 0.1629x -
R² = 0.9029
P<0.0001
y = 0.0
R² = 0.9305
P<0.001
PLAC-1-P
REGRESS-P
LCAS-P
CCAIT-P
PLAC-1-S
MARS-P
MAAS-P
CCAIT-S
MAR-S
REGRESS-S
LCAS-S
MAAS-S
REVERSAL
PROV IT-AT
CHD Events (%)
MLD Decrease (mm/year)
LDL-C (mg/dL)
0.05
0.04
0.03
0.02
0.01
0
-0.01
70
80
90
100
110
120
130
140
150
160
170
180
30
25
20
15
10
5
50
70
10
9
8
7
6
5
4
3
2
1
0
-1
55
75

Why lower ?

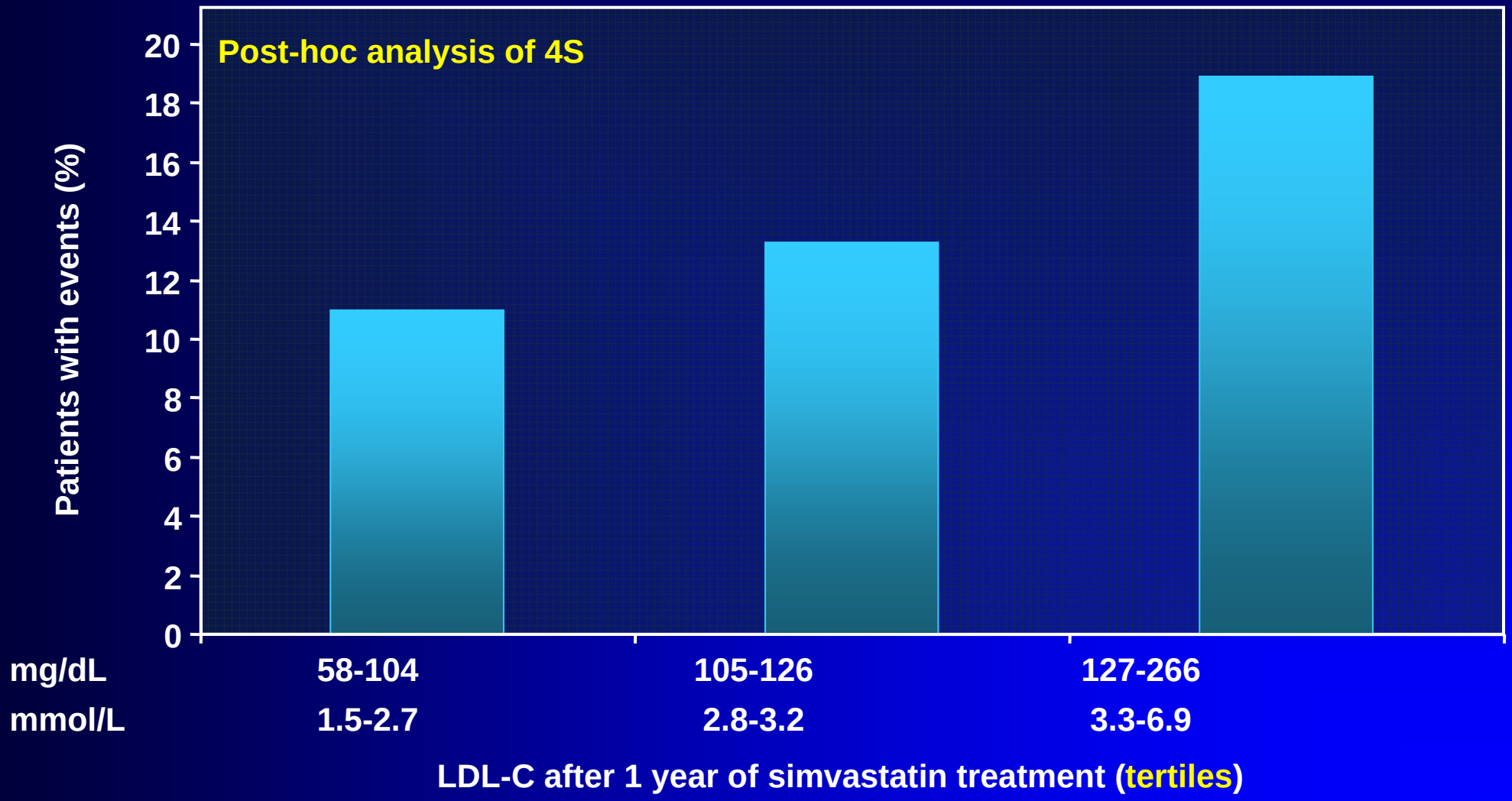
Post CABG Trial: Aggressive Lipid Lowering Had More Favorable Outcomes Than Moderate Lipid Lowering



*$P \leq .001$ vs moderate therapy group

The Post CABG Trial Investigators. *N Engl J Med.* 1997;336:153-163.

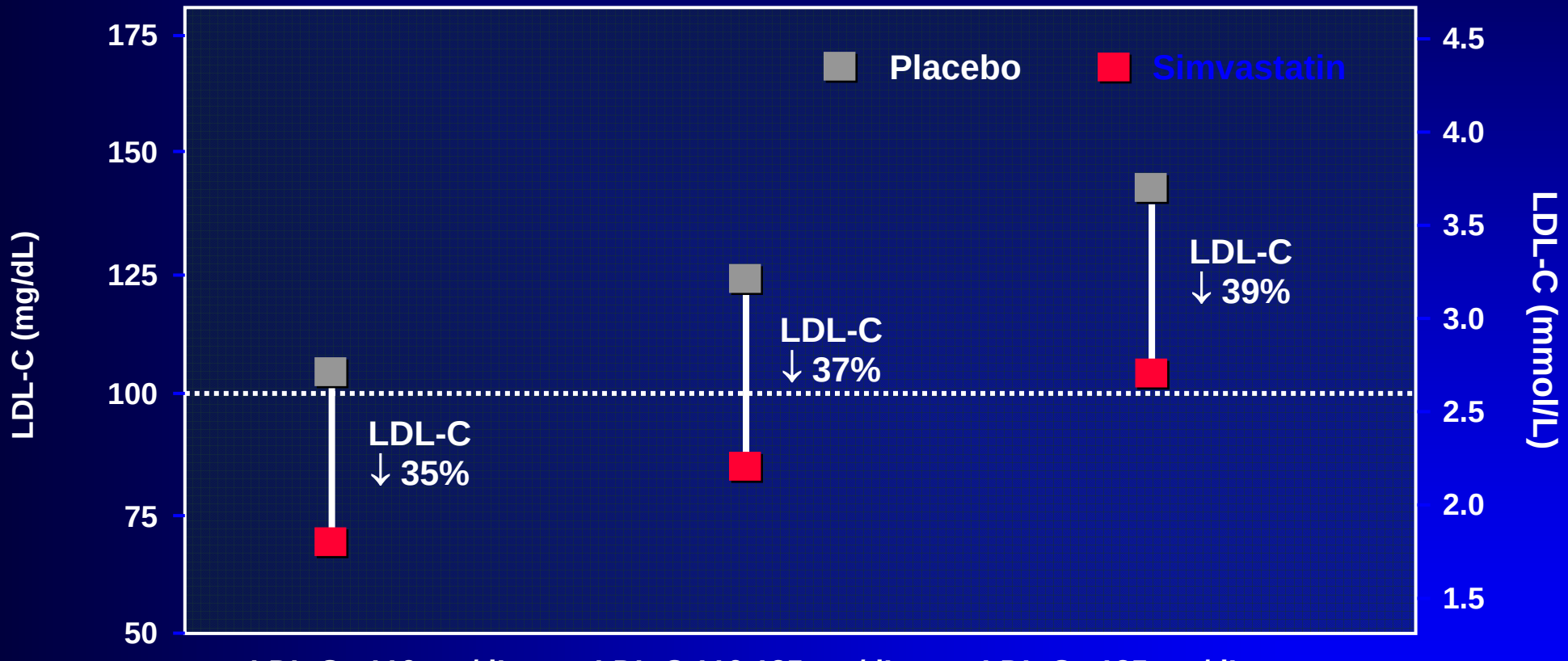
4S: Lower Cardiac Event Rates With Lower On-Treatment LDL-C



Pedersen T. *Eur Heart J.* 1998;19(suppl M):M15-M21.

HPS: Decrease in Major Vascular Events Regardless of Baseline Cholesterol

HPS LDL-C Subgroup Analysis



	LDL-C <116 mg/dL (<3.0 mmol/L)	LDL-C 116-135 mg/dL (3.0-3.5 mmol/L)	LDL-C >135 mg/dL (>3.5 mmol/L)
RR reduction (major vascular events):	21%	26%	19%

HPS Collaborative Group. *Lancet*. 2002;360:7-22.

Prove the lower is the better

:Atorvastatin landmark studies


Atorvastatin
Landmark Program
Key to Clinical Sections:
Efficacy/Safety
Clinical End Point
Regression/Surrogate
Non-Cardiovascular
Safety
TREADMILL
Pediatrics Study
NASDAC
MIRACL
CHALLENGE
AVERT
ASSET
ASAP
ACCESS
Vascular Basis
REVERSAL
CARDS
ATGOAL
ASCOT–LLA
4D
SPARKS
SAGE
BONES
BELLES
ASPEN
ALLIANCE
TNT
SPARCL
IDEAL
LEADe
Completed
2003
2004
2005
2006

Intensive Lipid lowering : Consistent Clinical Benefits at On-Treatment LDL-C <100 with Atorvastatin

Study	Patient population	Follow-up LDL-C, mg/dL (mmol/L)		1º end point reduction (%)	*P*-value
		Atorvastatin	Comparator		
2º prevention					
PROVE-IT	ACS	62 (1.6)	95 (2.5) pravastatin	16*	.005
MIRACL	ACS	72 (1.9)	135 (3.5) placebo	16*	.048
ALLIANCE	CHD	95 (2.5)	110 (2.8) usual care	17†	.02
AVERT	CHD	77 (2.0)	119 (3.1) angioplasty	36§	.048
1º prevention					
ASCOT	Hypertension	87 (2.3)	133 (3.5) placebo	36‡	.0005
CARDS	Diabetes	68 (1.8)	119 (3.1) placebo	37†	.001

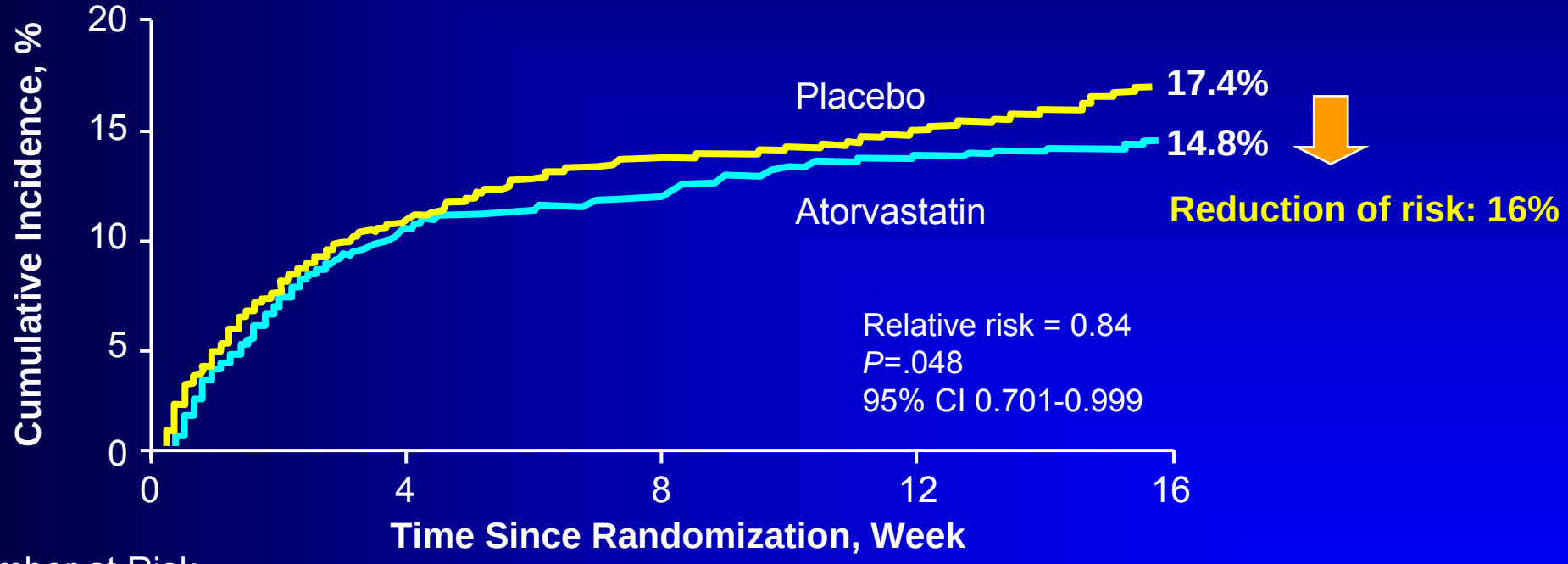
LDL-C values for PROVE-IT are medians; all other LDL-C values are means

* All-cause mortality + major CV event; † Major CV event; ‡ Nonfatal MI + fatal CHD; § Ischemic event

PROVE-IT: Cannon CP, et al. *N Engl J Med*. 2004;350:1495-1504; **MIRACL**: Schwartz GG, et al. *JAMA*. 2001;285:1711-1718; **ALLIANCE**: Koren MJ, et al. *J Am Coll Cardiol*. 2004;44:1772-1779; **AVERT**: Pitt B, et al. *N Engl J Med*. 1999;341:70-76; **ASCOT**: Sever PS, et al. *Lancet*. 2003;361:1149-1158; **CARDS**: Colhoun HM, et al. *Lancet*. 2004;364:685-696.

MIRACL: Myocardial Ischemia Reduction With Aggressive Cholesterol Lowering

Treatment With Atorvastatin 80 mg/dL Reduces Recurrent Ischemia Events in First 16 Weeks



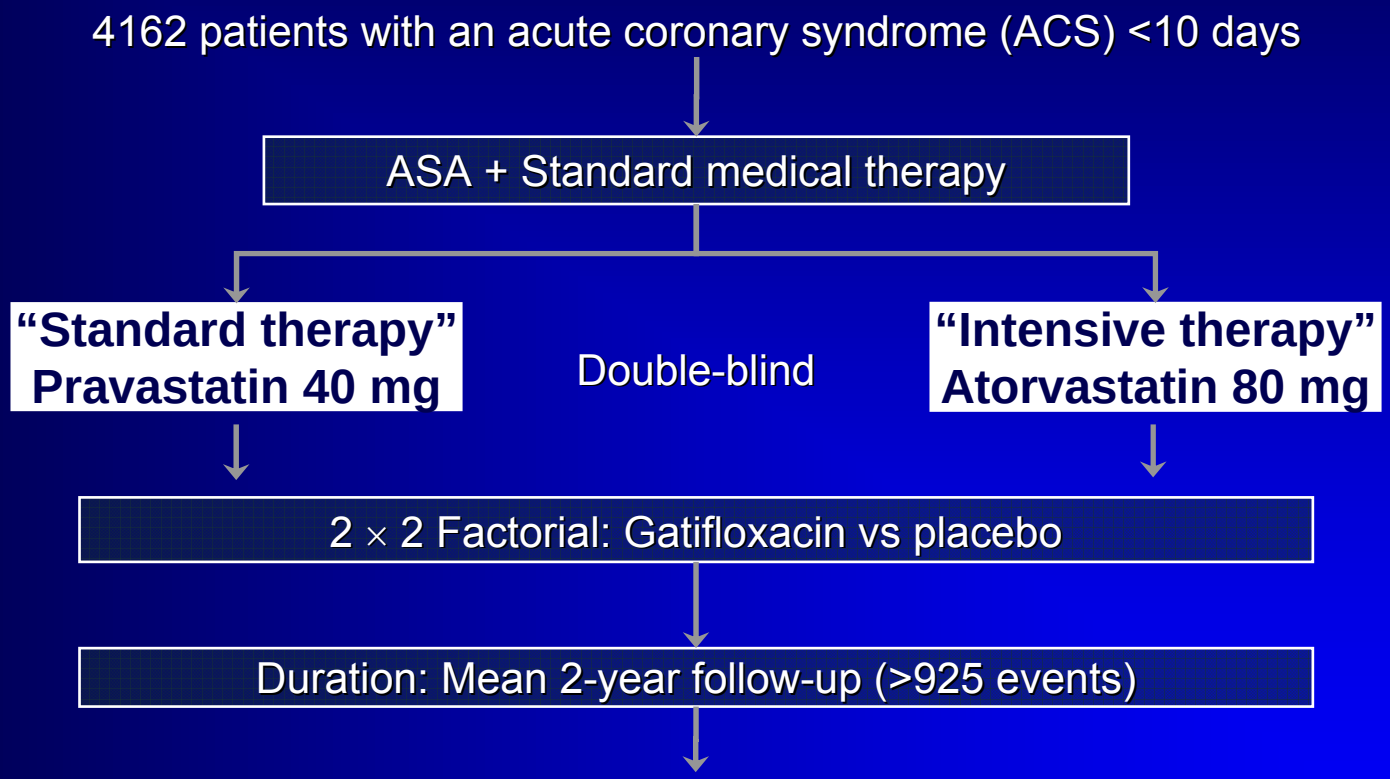
Number at Risk

Atorvastatin	1538	1381	1351	1323	518
Placebo	1548	1384	1338	1318	473

Schwartz GG, et al. *JAMA* 2001;285:1711-1718.

PROVE-IT: Intensive Therapy Vs Standard Lipid-Lowering Therapy

Study Design

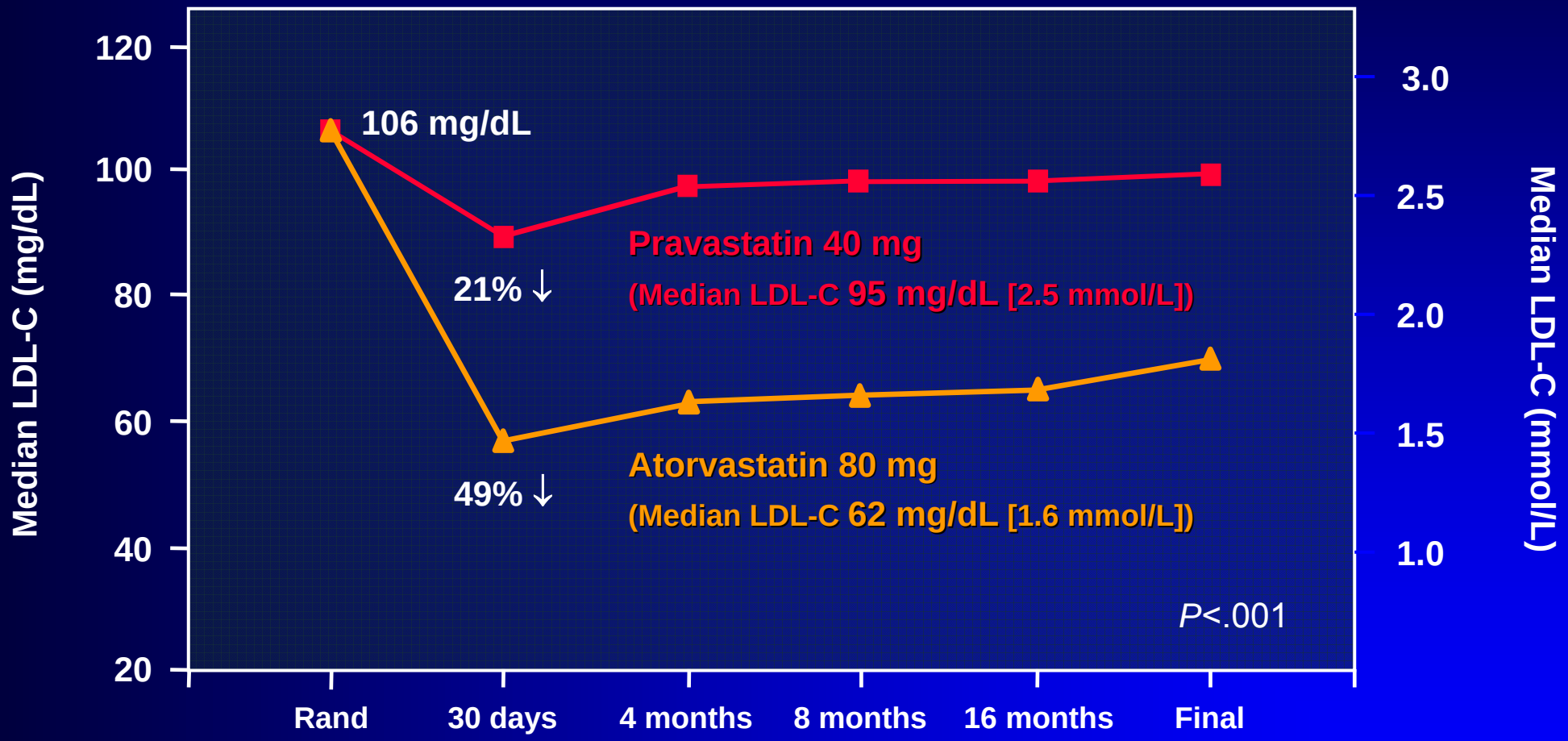


Primary end point: Composite of death, MI, documented unstable angina requiring hospitalization, revascularization (>30 days after randomization), or stroke

ASA = acetylsalicylic acid.

Cannon CP, et al. *Am J Cardiol*. 2002;89:860-861.
Cannon CP, et al. *N Engl J Med*. 2004;350:1495-1504.

PROVE-IT: Changes From Baseline LDL-C



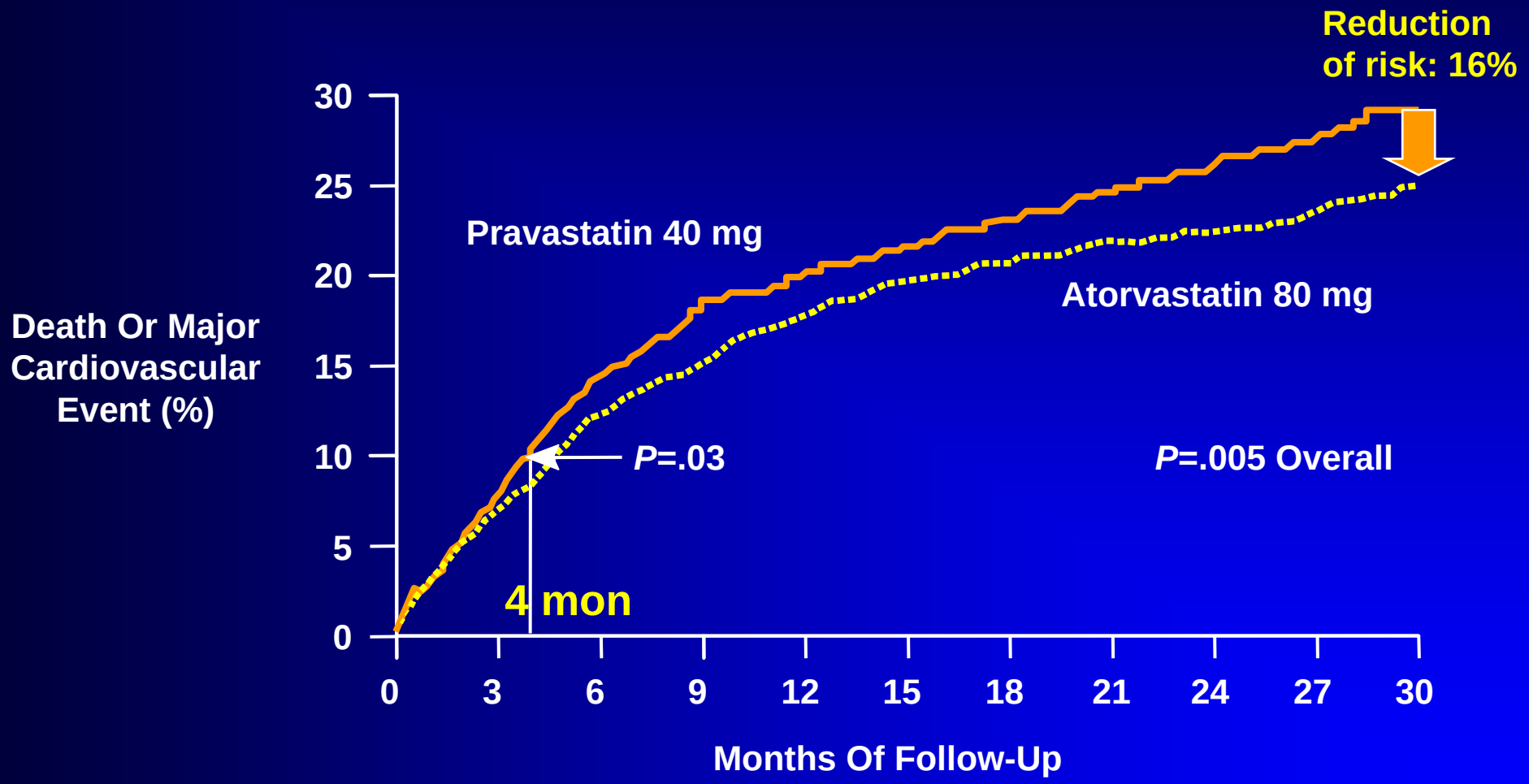
Note: Median changes in LDL-C may differ from prior trials:

- 25% of patients on statins prior to acute coronary syndrome event
- Acute coronary syndrome response lowers LDL-C from true baseline

Cannon CP, et al. *N Engl J Med*. 2004;350:1495-1504.

PROVE IT: A Major Cardiovascular Event Or Death From Any Cause

Primary End Point



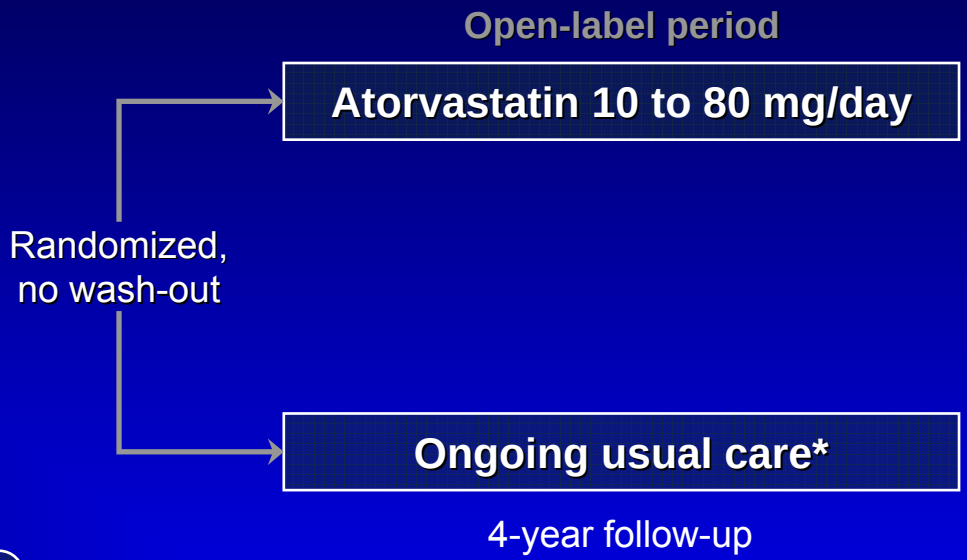
Adapted from Cannon et al. *N Engl J Med*. 2004;350:1495, with permission.

Ray and Cannon. *Am J Cardiol*. 2005;96(suppl):54F.

ALLIANCE: Aggressive Lipid Lowering Vs Usual Care

Study Design

- 2442 patients enrolled in 16 MCOs or VAs in the US
- History of CHD
- LDL-C:
  - 130 to 250 mg/dL (3.4 to 6.5 mmol/L) not on lipid-lowering therapy
  - 110 to 200 mg/dL (2.8 to 5.2 mmol/L) receiving lipid-lowering therapy



Primary end point:

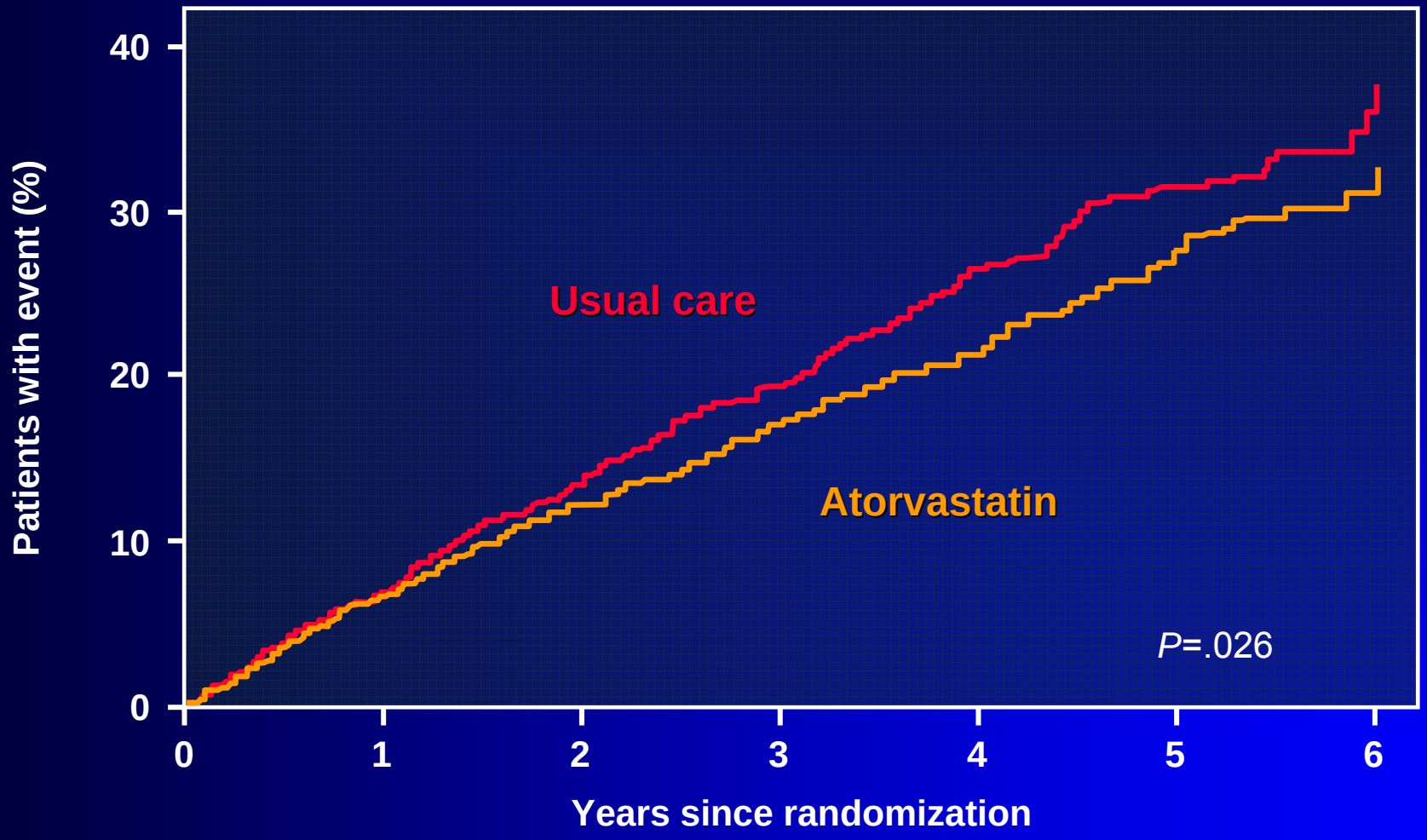
- Time to occurrence of composite end point:
  - cardiac death
  - nonfatal MI
  - resuscitated cardiac arrest
  - cardiac revascularization
  - unstable angina requiring hospitalization

*Usual care is the lipid treatment program prescribed by the patient's primary physician and could include diet, behavior modification, and antihyperlipidemic medication (including atorvastatin after 1997)

MCOs = managed health care organization;
VA = Veterans Administration.

Koren MJ, et al. *J Am Coll Cardiol*. 2004;44:1772-1779.

ALLIANCE: Time to Primary Cardiovascular Outcome

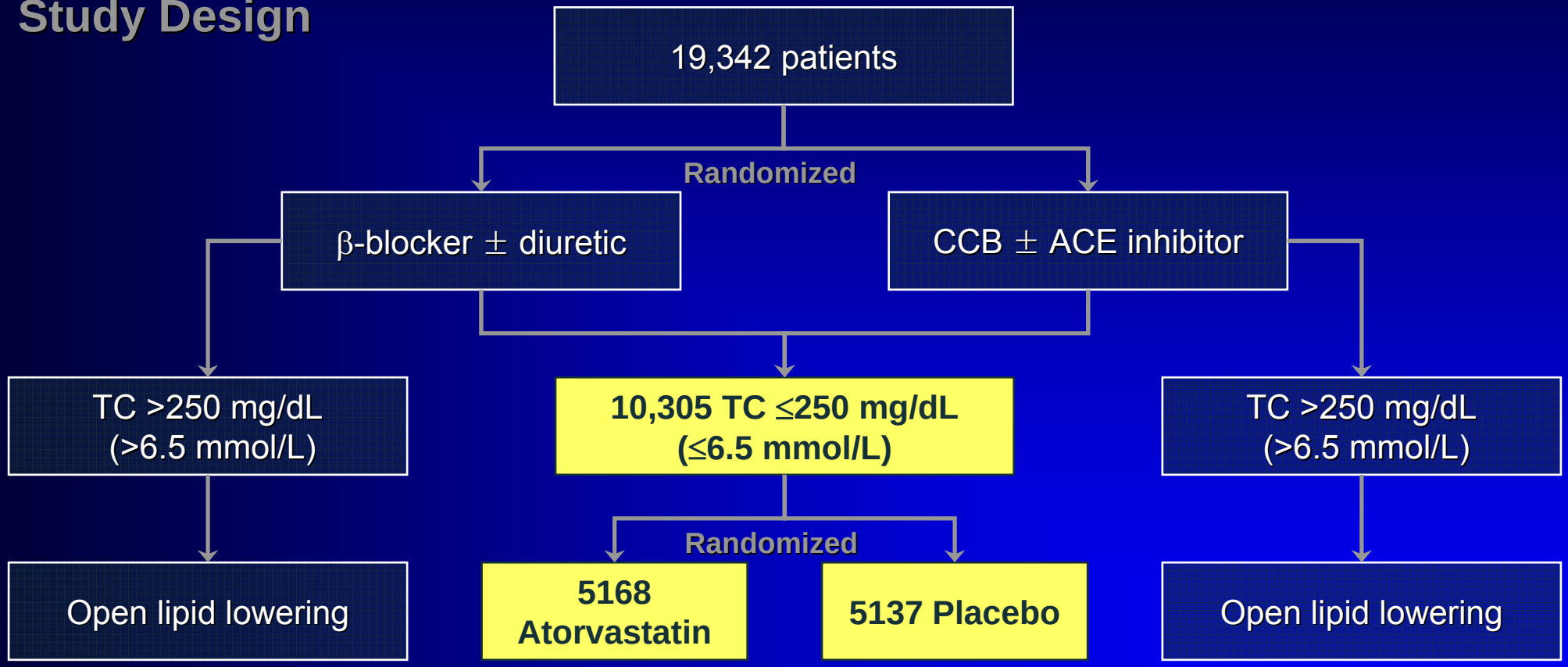


Relative risk reduction = 17%

Koren MJ, et al. *J Am Coll Cardiol*. 2004;44:1772-1779.

ASCOT: Primary Prevention in Patients at Modest Risk of CHD

Study Design



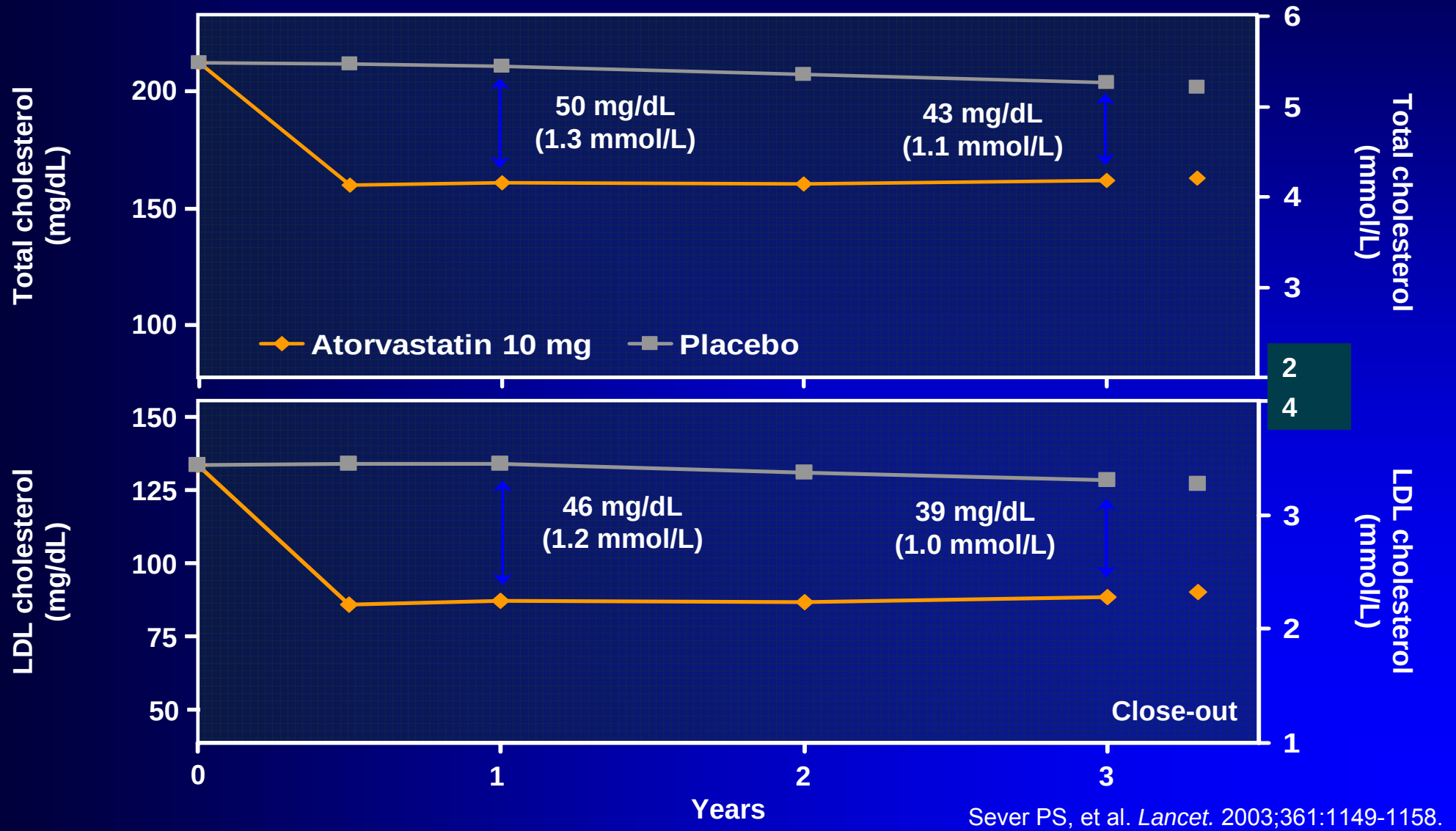
Primary end point: Composite of fatal CHD and nonfatal MI

Highlighted boxes indicate patients enrolled in lipid-lowering arm

CCB = calcium channel blockers;
ACE = angiotensin converting enzyme.

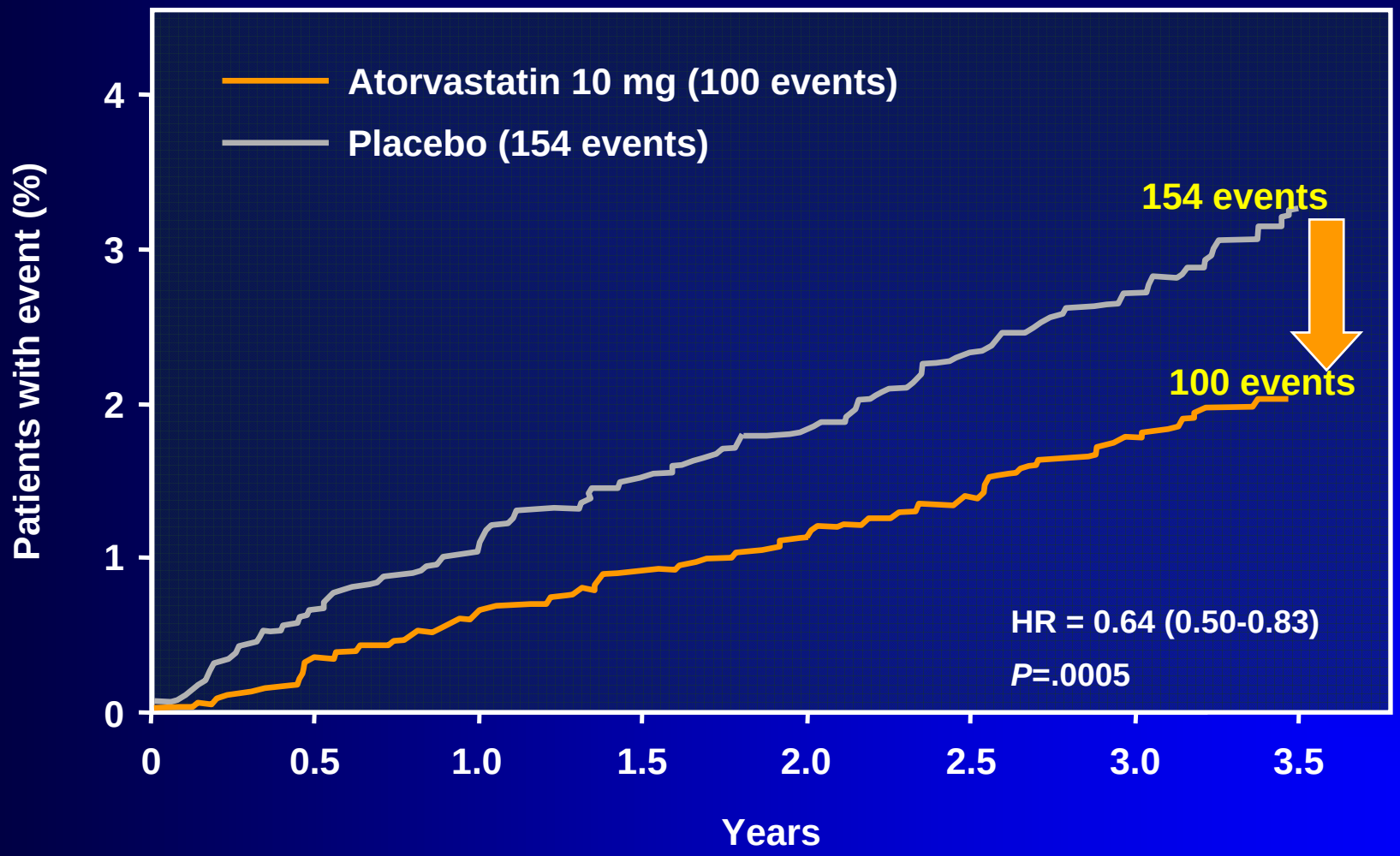
Sever PS, et al. *J Hypertens.* 2001;19:1139-1147.
Sever PS, et al. *Lancet.* 2003;361:1149-1158.

ASCOT: Reductions in Total and LDL Cholesterol



Sever PS, et al. *Lancet.* 2003;361:1149-1158.

ASCOT: Incidence of Nonfatal MI and Fatal CHD



Relative risk reduction = 36%

Sever PS, et al. *Lancet*. 2003;361:1149-1158.

REVERSAL and ARBITER: Vascular Benefits With Atorvastatin at On-Treatment LDL-C <100 mg/dL

Study	Mean follow-up LDL-C, mg/dL (mmol/L)		Atherosclerosis change	*P*-value
	Atorvastatin	Comparator		
REVERSAL	79 (2.0)	110 (2.8) pravastatin	Percent change in TAV -0.4% vs 2.7%	.02
ARBITER	76 (2.0)	110 (2.8) pravastatin	Change in mean carotid IMT -0.034 mm vs 0.025 mm	.03

TAV = total atheroma volume; IMT = intima media thickness.

REVERSAL: Nissen SE, et al. *JAMA*. 2004;291:1071-1080.
ARBITER: Taylor AJ, et al. *Circulation*. 2002;106:2055-2060.

REVERSAL: Reversing Atherosclerosis With Aggressive Lipid Lowering

Study Design

Patient population:

- Patients requiring diagnostic coronary angiography for a clinical indication
- Age 30-75 years
- LDL-C 125-210 mg/dL (3.2-5.4 mmol/L)
- Triglycerides <600 mg/dL (<6.8 mmol/L)

2-week placebo run-in

Randomization
654 patients

Double-blind period

- **Atorvastatin 80 mg/day**
- **Pravastatin 40 mg/day**

18-month follow-up

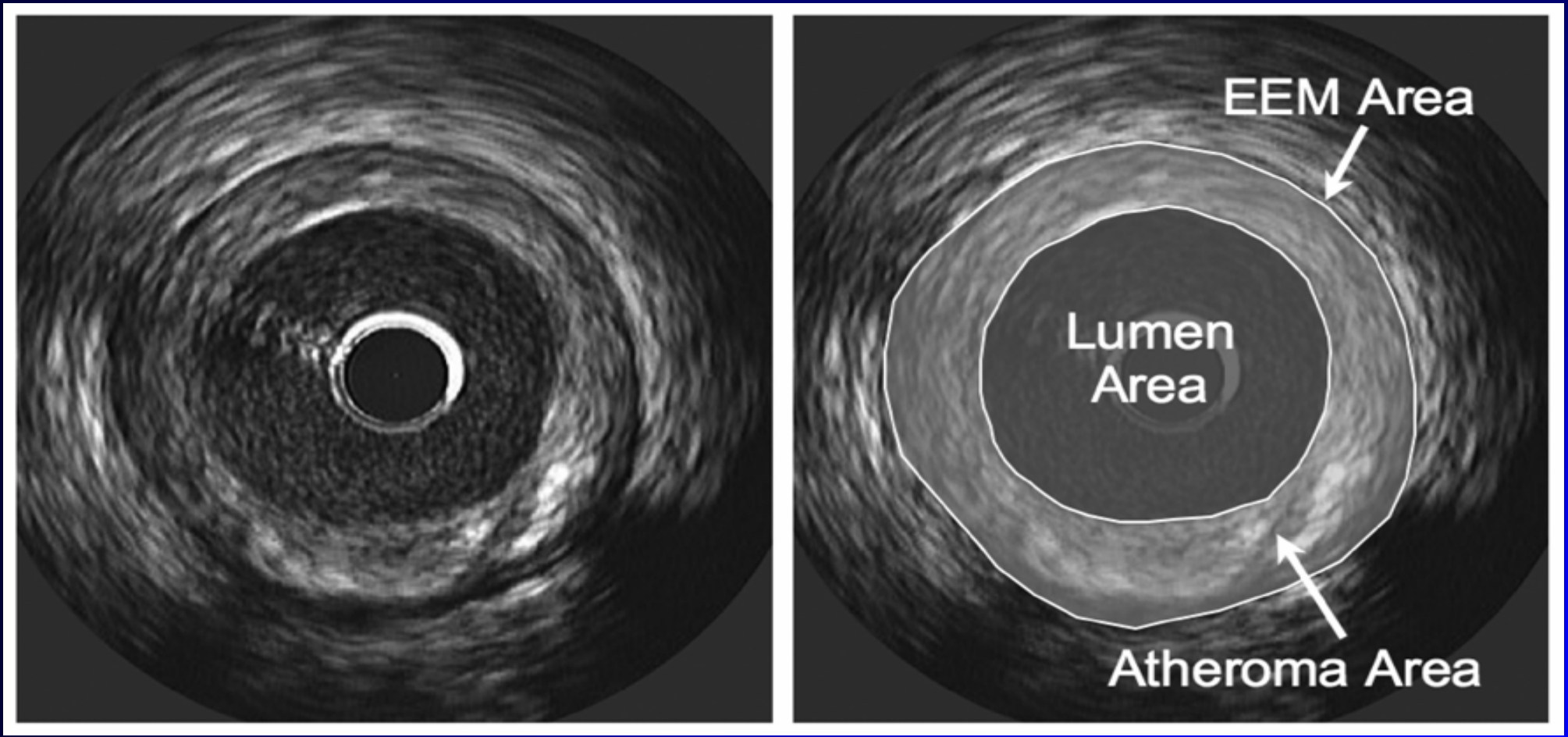
Primary end point:

- Percent change from baseline in total atheroma volume of the target coronary artery as measured by IVUS

IVUS = intravascular ultrasound.

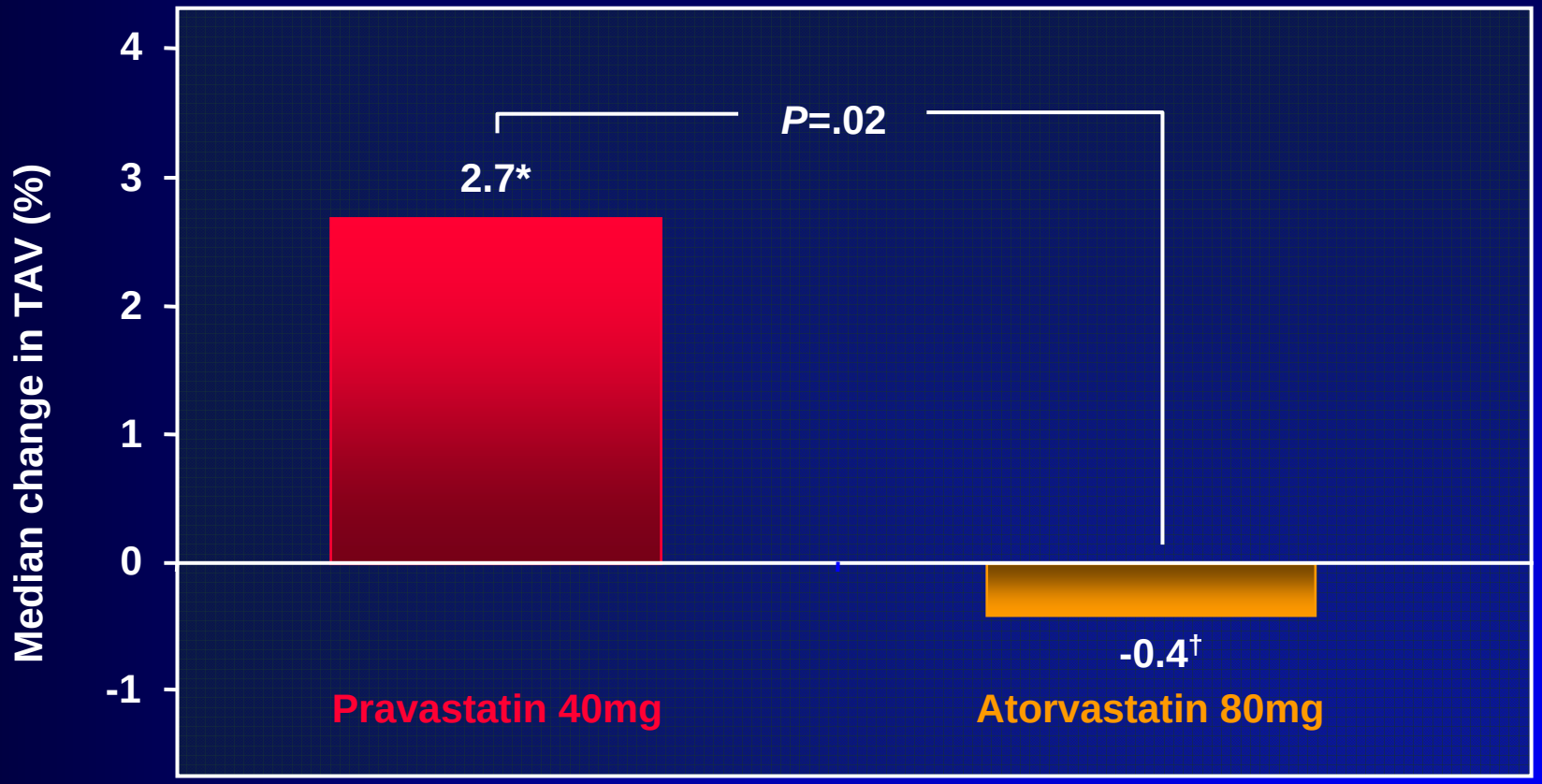
Nissen SE, et al. *JAMA*. 2004;291:1071-1080.

REVERSAL: Method For Measurement Of Intravascular Ultrasound Images



Reproduced from Nissen et al. *Am J Cardiol*. 2005;96(suppl):61F, with permission.

REVERSAL: Percent Change in Total Atheroma Volume



Significant atherosclerotic progression from baseline

No significant change from baseline; atherosclerotic progression was stopped

*Progression vs baseline (*P*=.001)
†No change vs baseline (*P*=.98)

TAV = total atheroma volume.

Nissen SE, et al. *JAMA*. 2004;291:1071-1080.

NCEP ATP III (Updated) and ADA: Treatment Thresholds and Goals in Patients with Diabetes

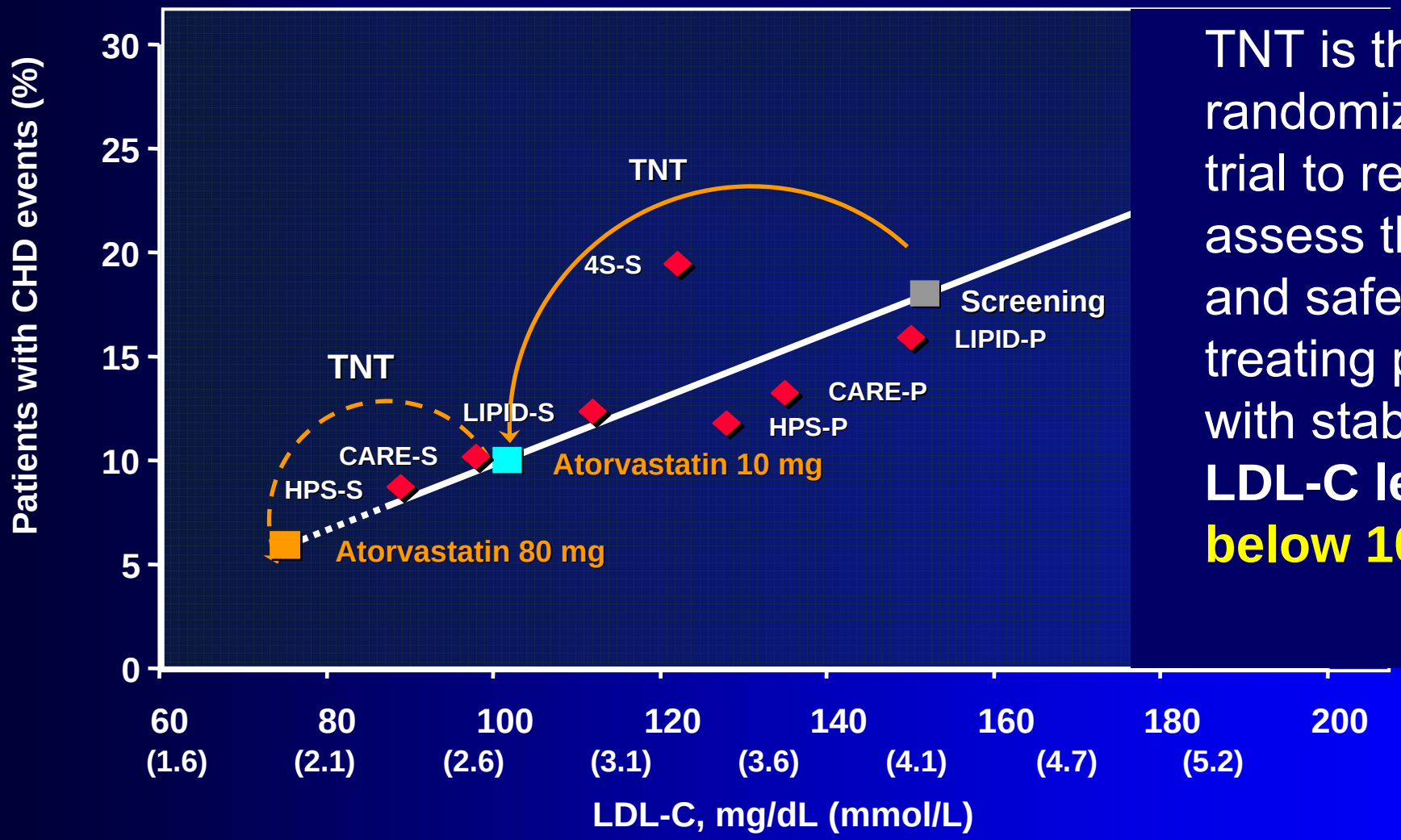
	Drug Therapy	LDL-C Goal (mg/dL)
NCEP ATP III		
CHD or CHD risk equivalent *(High risk)*	≥100*	<100 (Optional: <70*)
ADA		
With overt CVD	All patients with diabetes	30-40% reduction <100 <70 an option
Without overt CVD	>40 y 30% to 40% LDL-C reduction, regardless of baseline level	<100
	<40 y + CVD risk factors or long duration of diabetes	<100

*Updated guidelines, per NCEP ATP III White Paper (Grundy et al)

American Diabetes Association. *Diabetes Care*. 2005;28(suppl 1):S4-S36. Grundy SM, et al. *Circulation*. 2004;110:227-239.

More evidences for benefit of treating to “new target”

The Treating to New Targets (TNT) : Rationale

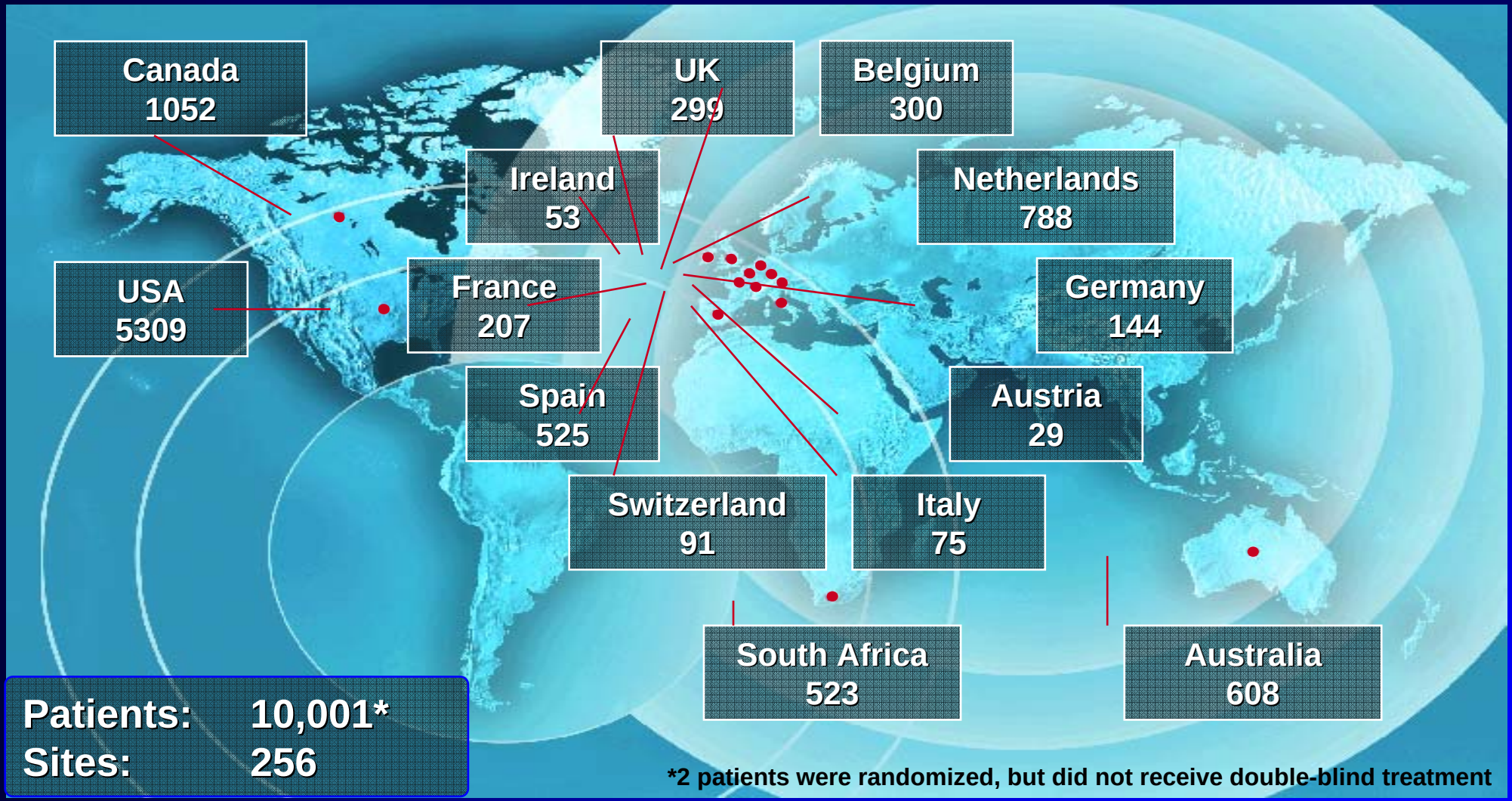


TNT is the first randomized clinical trial to respectively assess the efficacy and safety of treating patients with stable CHD to **LDL-C levels well below 100 mg/dL**

Kastelein JJP. *Atherosclerosis.* 1999;143(suppl 1):S17-S21.

Patients and Sites

A total of 10,001 patients from 256 sites in 14 countries worldwide were randomized



*2 patients were randomized, but did not receive double-blind treatment

LaRosa JC, et al. *N Engl J Med*. 2005;352:1425-1435.

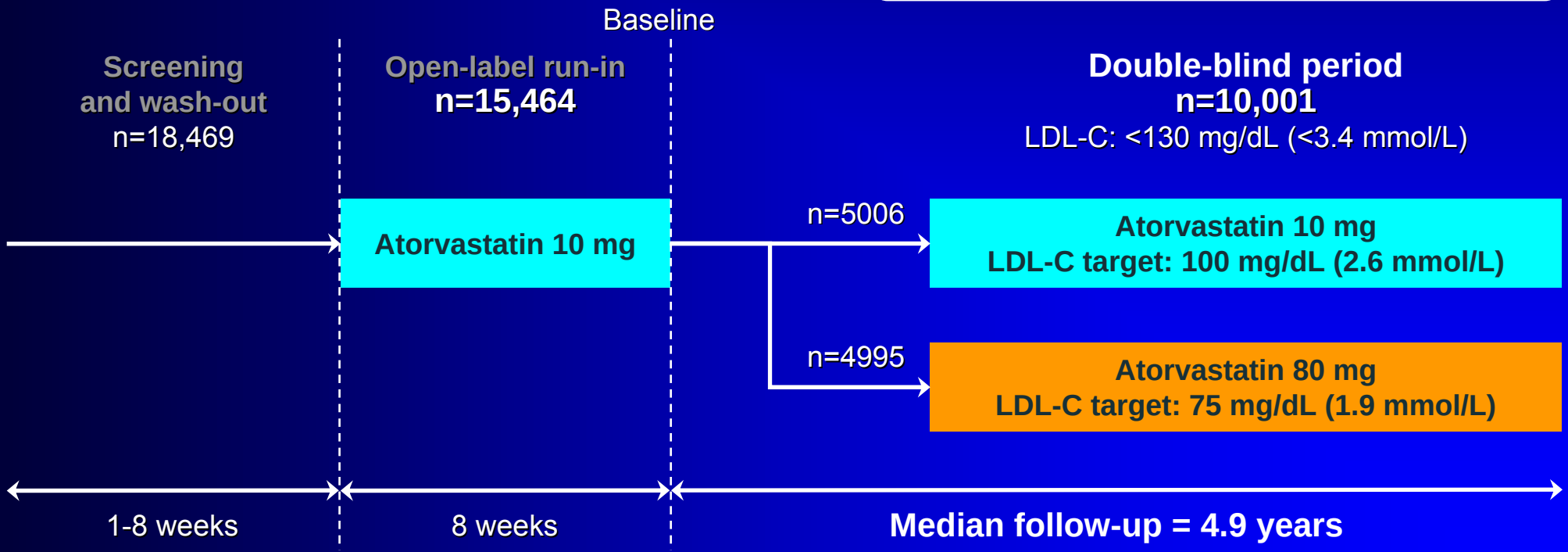
Study Design

Patient population:

- CHD
- LDL-C: 130-250 mg/dL (3.4-6.5 mmol/L)
- Triglycerides ≤600 mg/dL (≤6.8 mmol/L)

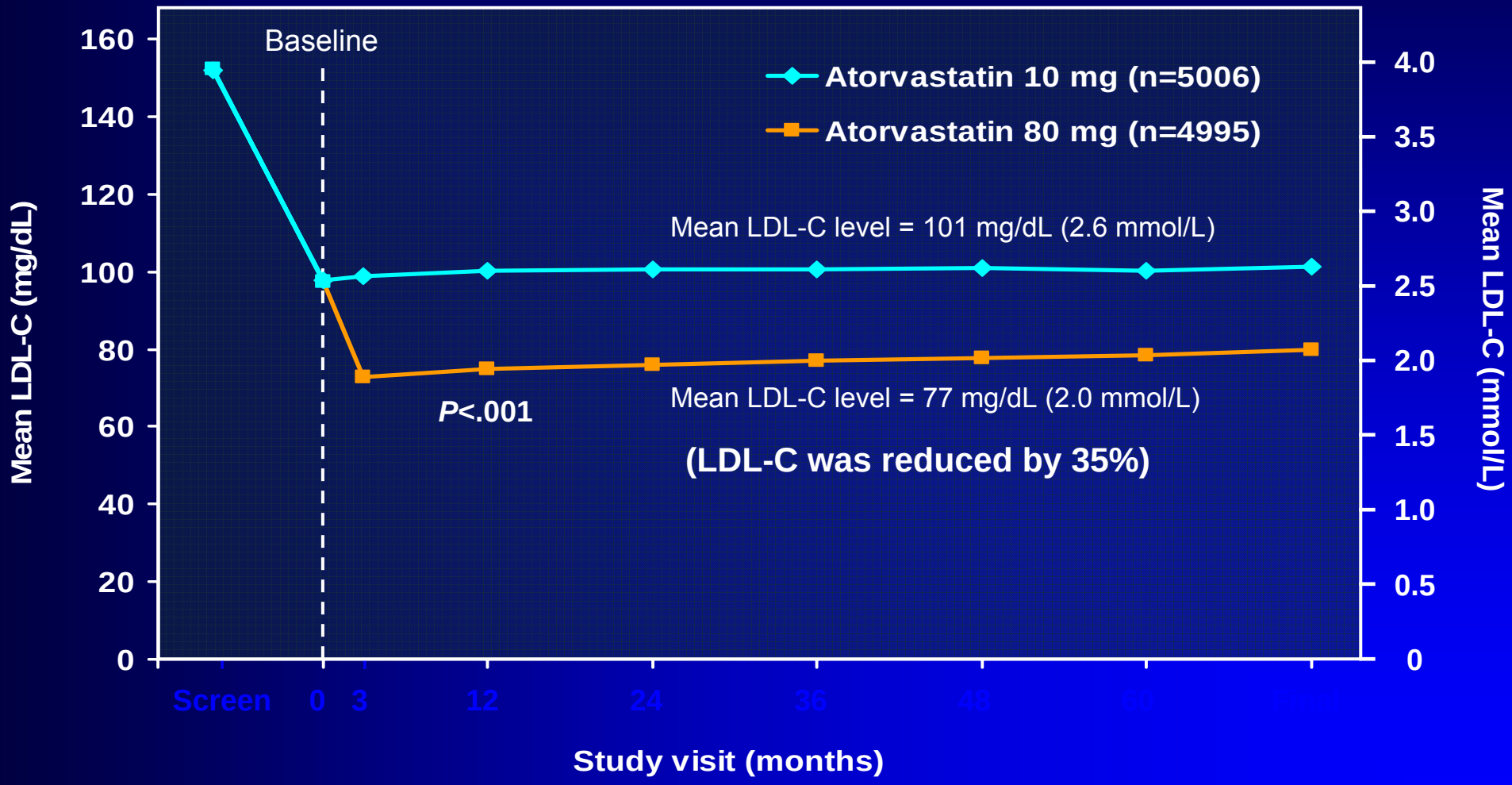
Primary efficacy outcome measure:

- Time to occurrence of a major CV event:
  - CHD death
  - Nonfatal, non–procedure-related MI
  - Resuscitated cardiac arrest
  - Fatal or nonfatal stroke



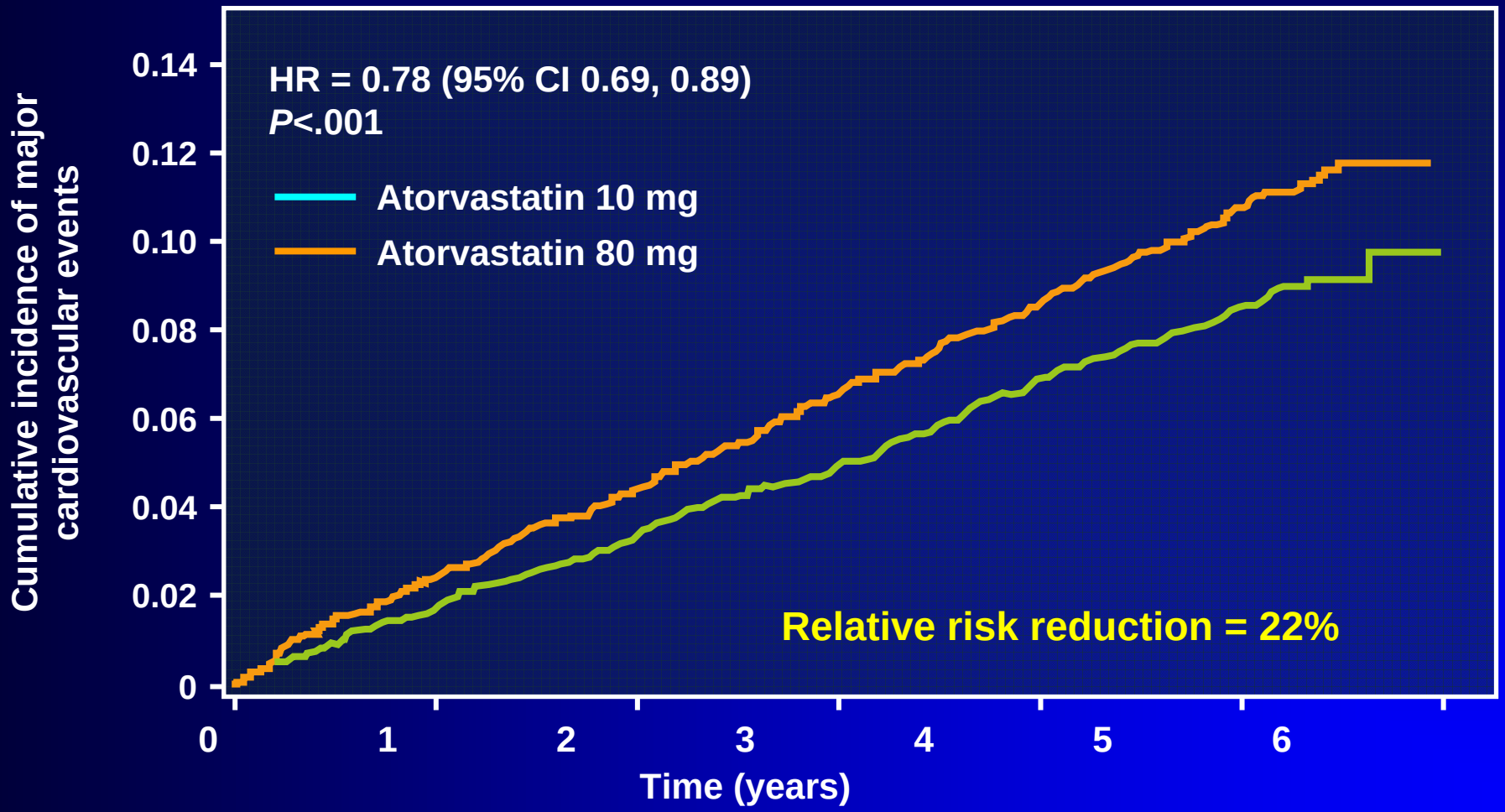
LaRosa JC, et al. *N Engl J Med*. 2005;352:1425-1435.

Changes in LDL-C By Treatment Group



LaRosa JC, et al. *N Engl J Med*. 2005;352:1425-1435.

Primary Efficacy Outcome Measure: Major Cardiovascular Events*

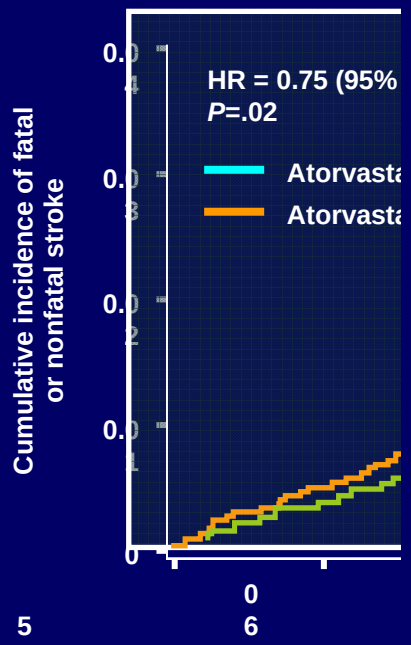


*CHD death, nonfatal non–procedure-related MI, resuscitated cardiac arrest, fatal or nonfatal stroke

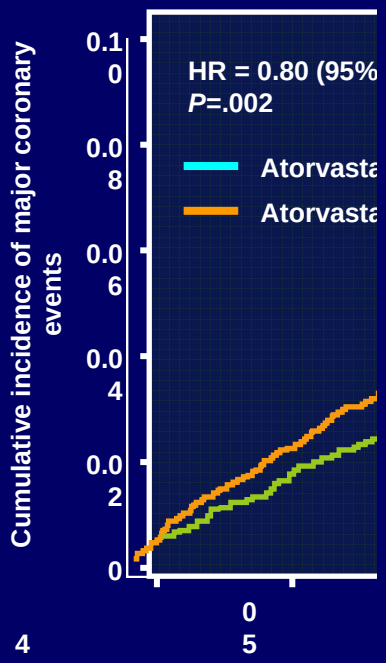
LaRosa JC, et al. *N Engl J Med*. 2005;352:1425-1435.

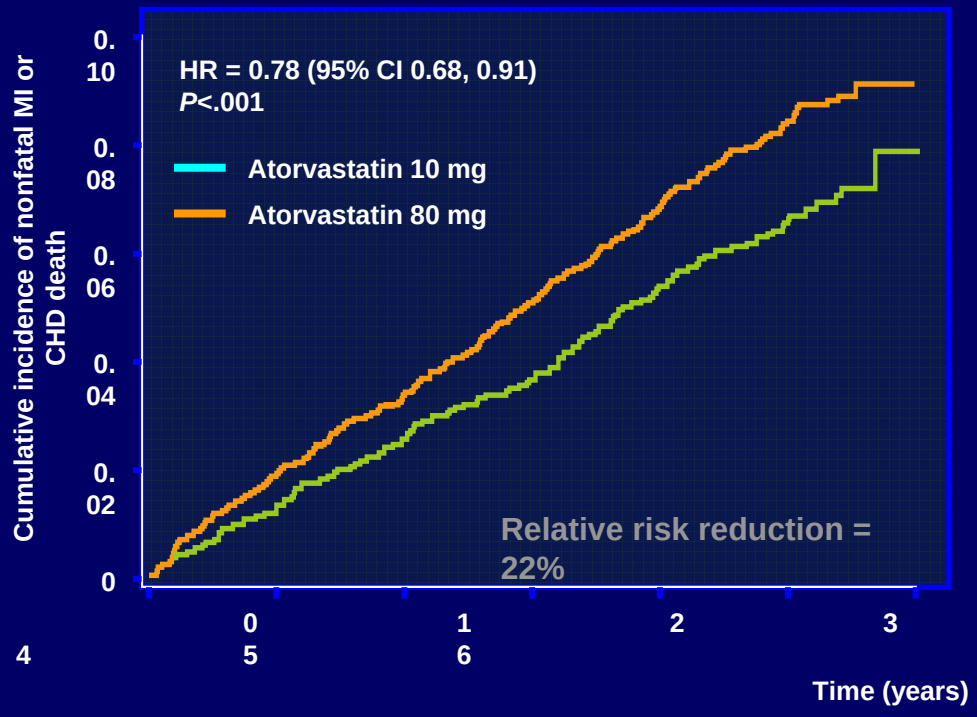
Stroke (Fatal or Nonfatal)

Secondary Efficacy Outcome Measure



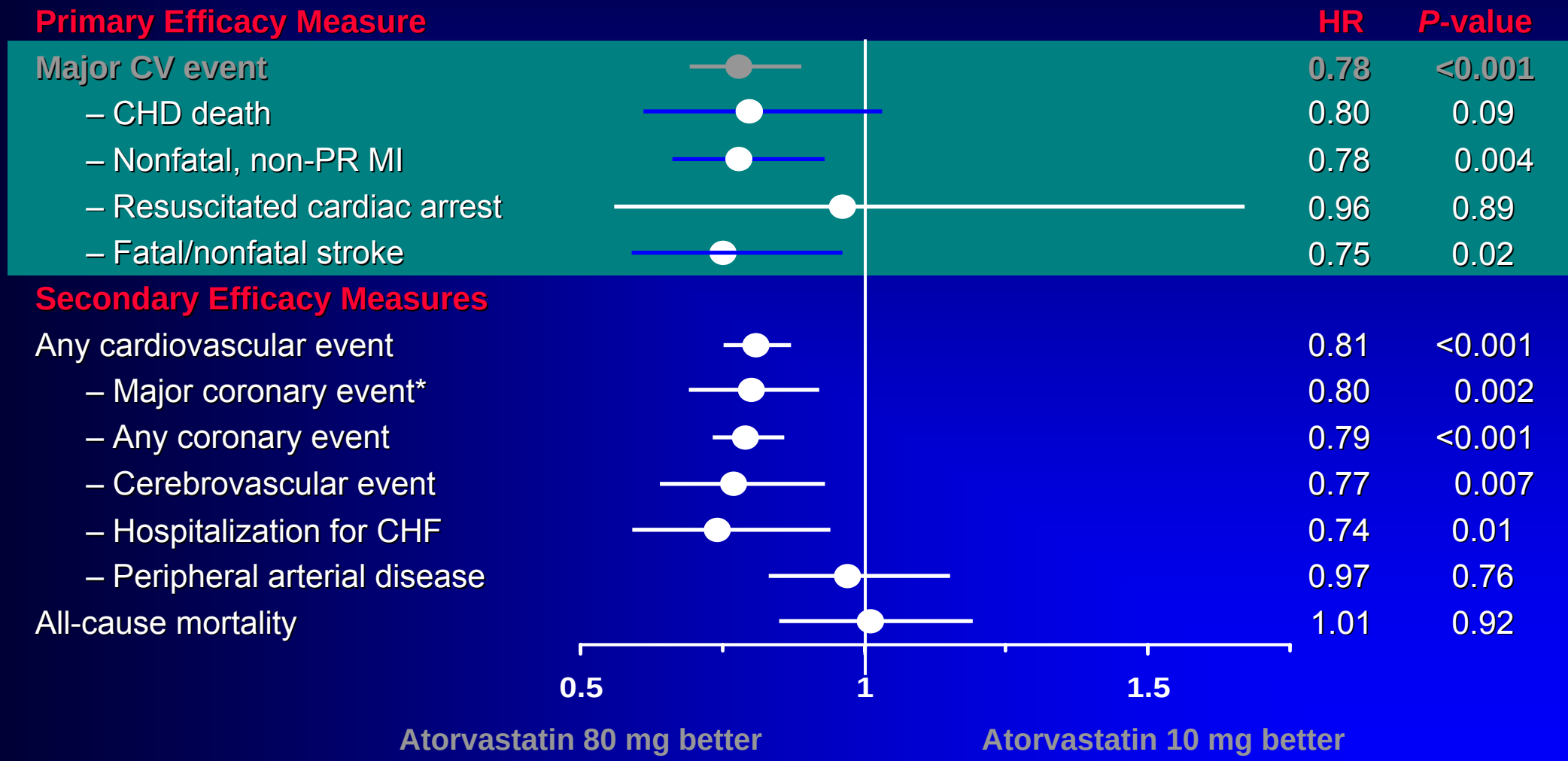
Nonfatal MI or CHD Death





LaRosa JC, et al. *N Engl J Med*. 2005;352:1425-1435.

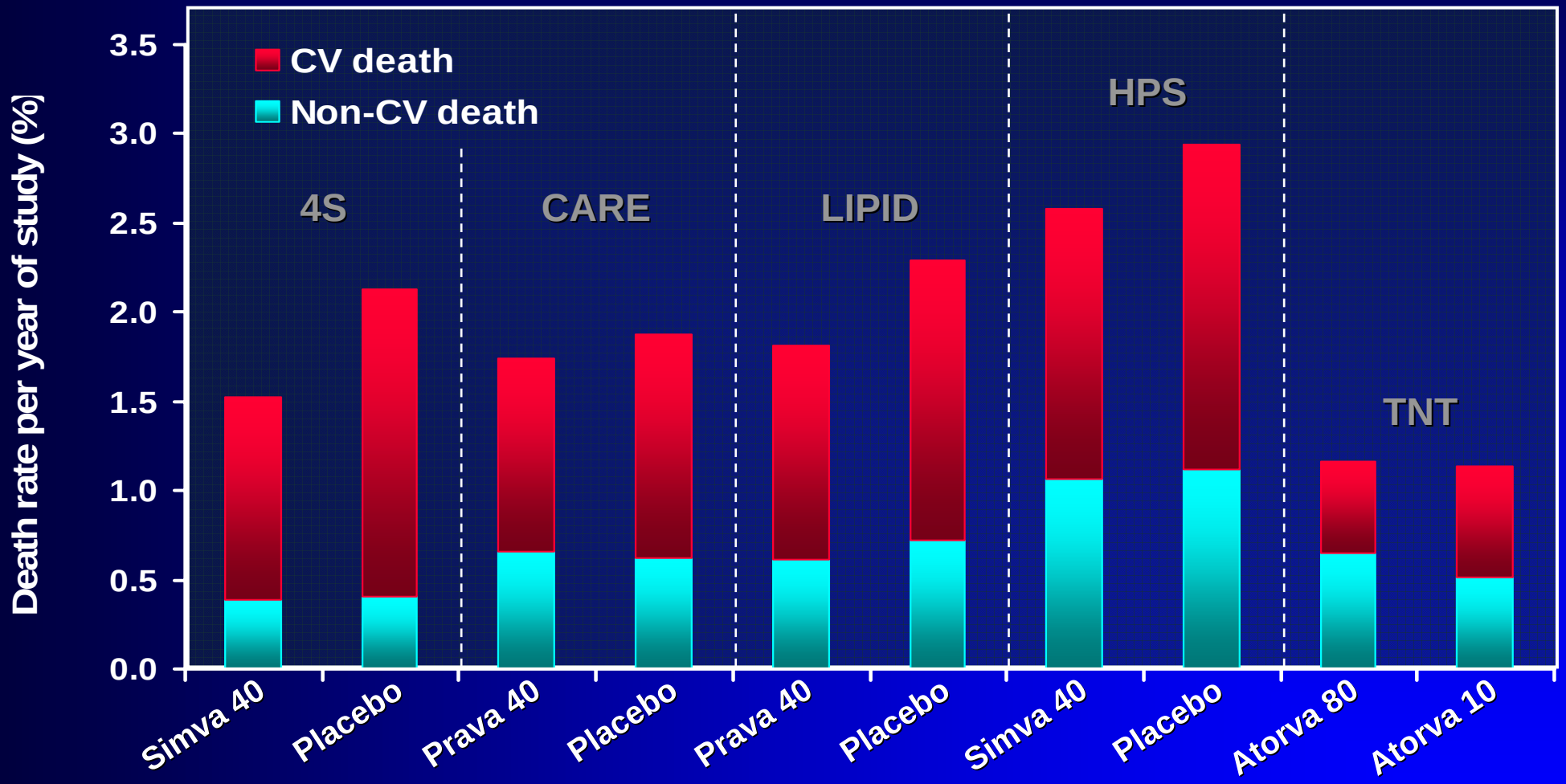
Primary and Secondary Efficacy Outcome Measures: Hazard Ratios



*CHD death, nonfatal non–procedure-related MI resuscitated cardiac arrest.

LaRosa JC, et al. *N Engl J Med*. 2005;352:1425-1435.

All-Cause, Non-CV, and CV Mortality in Secondary Prevention Studies



4S: Scandinavian Simvastatin Survival Study Group. *Lancet*. 1994;344:1383-1389; **CARE:** Sacks FM, et al. *N Engl J Med*. 1996;335:1001-1009; **LIPID:** The LIPID Study Group. *N Engl J Med*. 1998;339:1349-1357; **HPS:** HPS Collaborative Group. *Lancet*. 2002;360:7-22; **TNT:** LaRosa JC, et al. *N Engl J Med*. 2005;352:1425-1435.

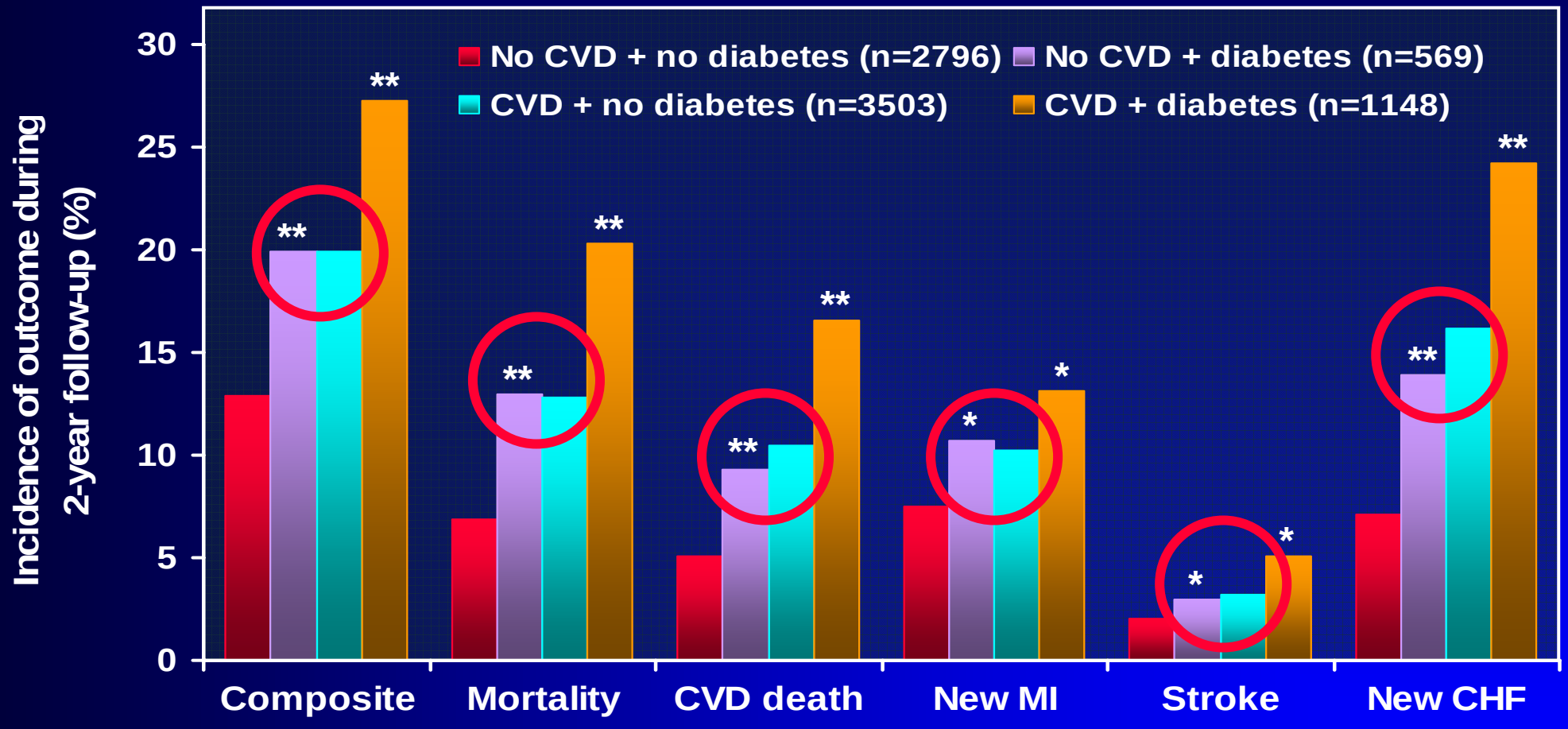
Conclusions of TNT

- Treatment with atorvastatin 80 mg to an **LDL-C of 77 mg/dL** provided significant clinical benefit to patients with stable CHD currently perceived to be well controlled at levels around 100 mg/dL (2.6 mmol/L)
- Benefits observed with atorvastatin 80 mg included highly significant reductions in the risk of **coronary events and stroke**
- This improved clinical outcome was achieved **without significant additional safety risk**

LaRosa JC, et al. *N Engl J Med*. 2005;352:1425-1435.

Subgroup Analysis in Patients With Diabetes

Diabetes and CVD: What We Knew

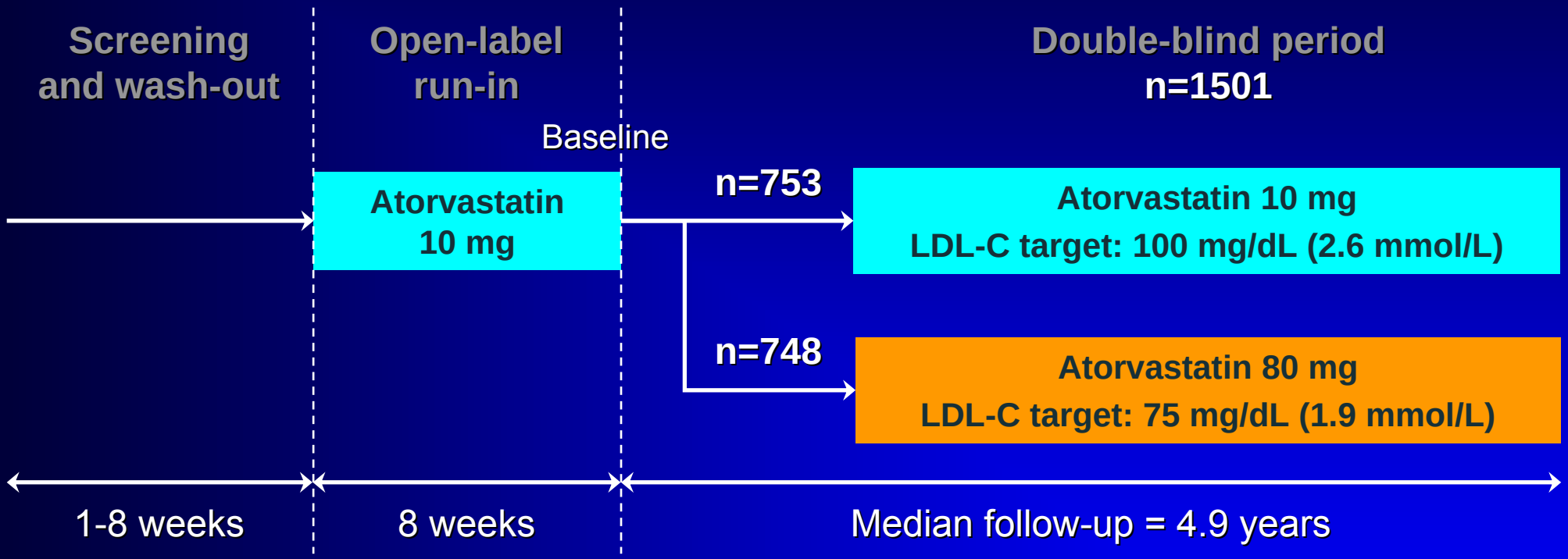


OASIS registry: Prospectively collected from patients hospitalized with unstable angina or non–Q-wave MI

*P<.01, **P<.001 vs patients without diabetes

Malmberg K, et al. *Circulation*. 2000;102:1014-1019.

TNT Study Design:
Post-hoc Analysis of Patients With Diabetes



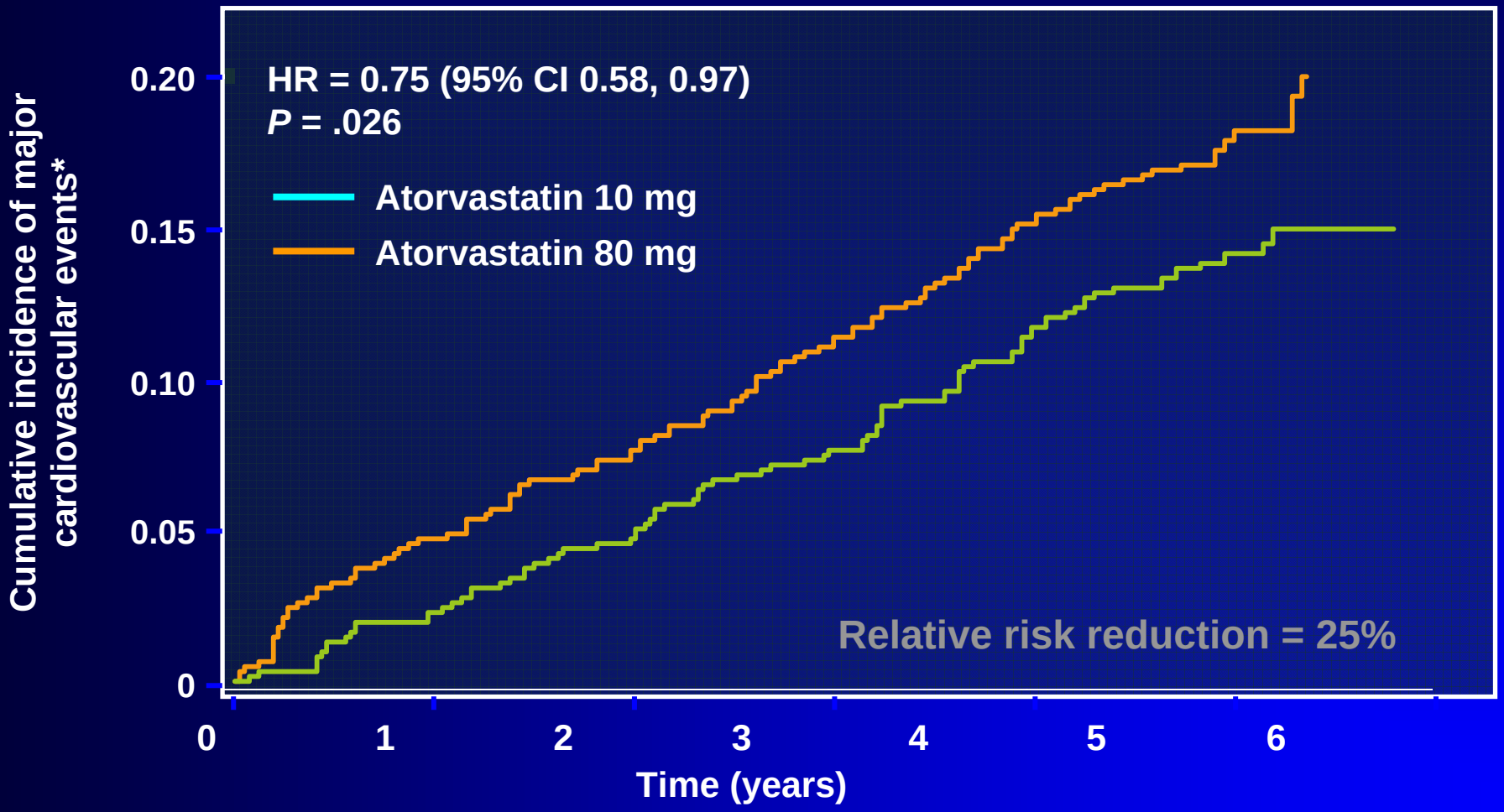
Diabetes criteria:

- Cohort includes patients with previous history of diabetes at screening

Shepherd J, et al. *Diabetes Care*. 2006;29:1220-1226.

Diabetes Subgroup

Time to First Major Cardiovascular Event in Patients With Diabetes

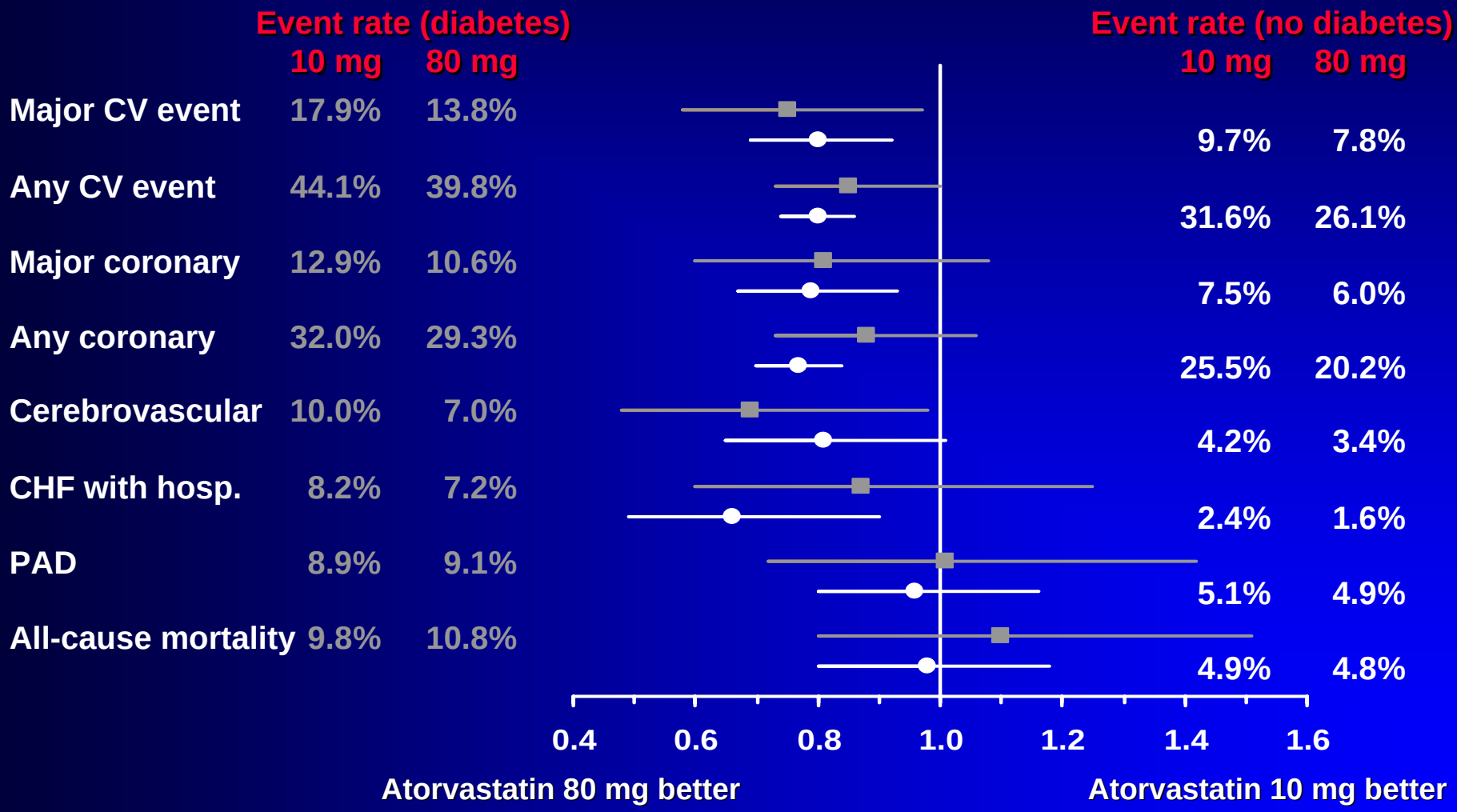


*CHD death, nonfatal non–procedure-related MI, resuscitated cardiac arrest, fatal or nonfatal stroke

Shepherd J, et al. *Diabetes Care*. 2006;29:1220-1226.

Diabetes Subgroup

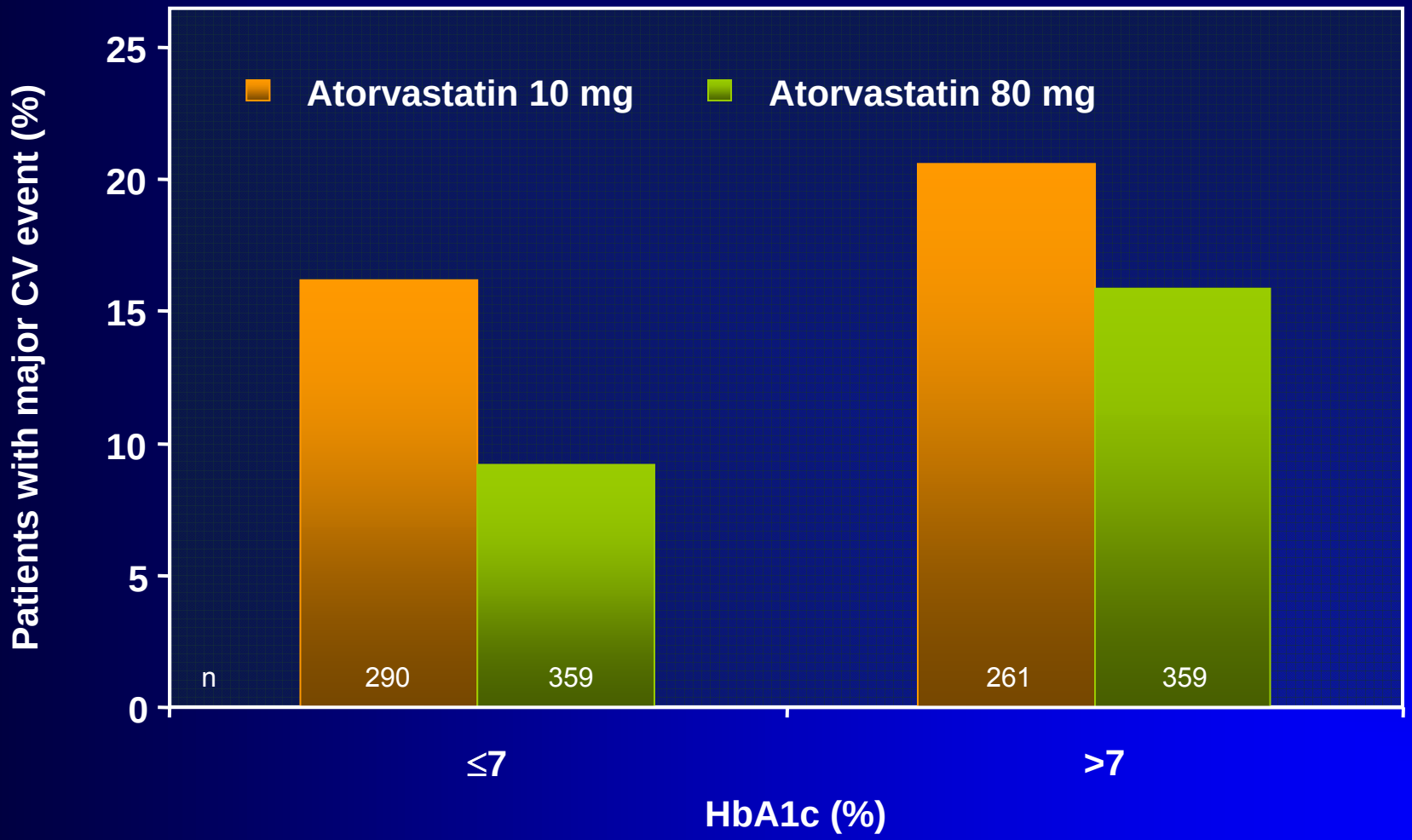
Hazard Ratios in Patients With and Without Diabetes: Secondary Efficacy Outcomes



Shepherd J, et al. *Diabetes Care*. 2006;29:1220-1226.

Diabetes Subgroup

Major Cardiovascular Event Rate in Patients With Diabetes by Glycemic Control



*P=.30 for heterogeneity.

HbA1c = glycosylated hemoglobin.

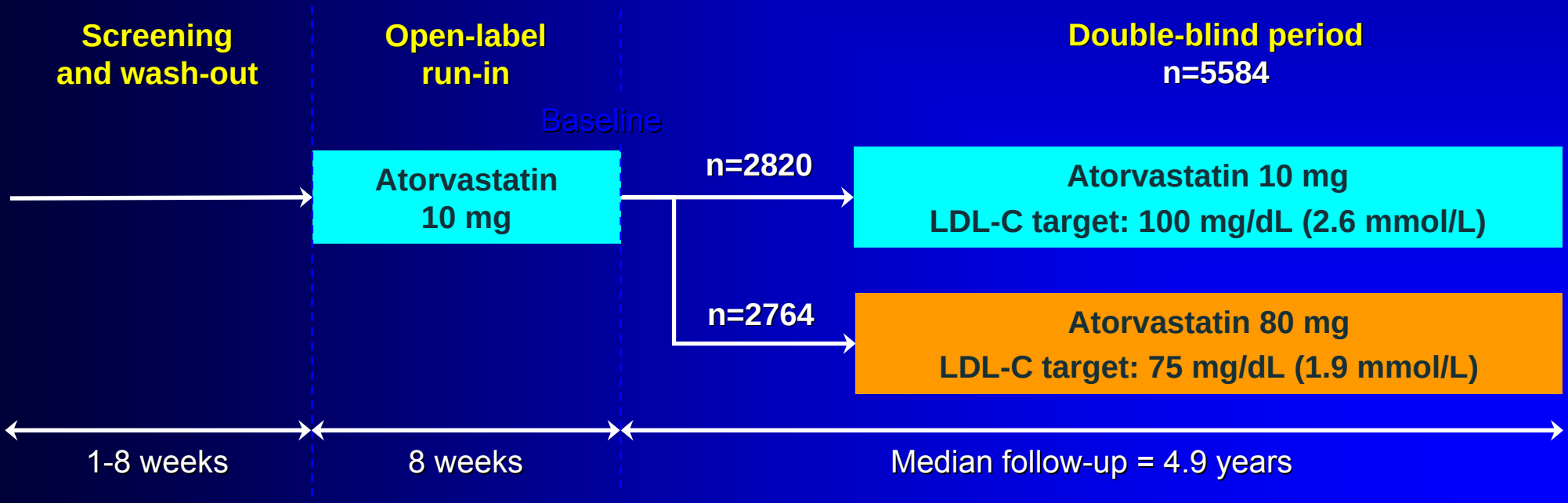
Shepherd J, et al. *Diabetes Care*. 2006;29:1220-1226.

Subgroup Analysis in Patients With Metabolic Syndrome

TNT Study Design: Post-hoc Analysis of Patients With Metabolic Syndrome

Metabolic syndrome was based on the updated NCEP ATP III definition,[1] and was defined as ≥3 of the following prior to open-label run-in:

- Waist circumference: Men ≥40 inches (102 cm); Women ≥35 inches (88 cm)*
- Triglycerides ≥150 mg/dL (≥1.7 mmol/L)
- HDL-C: Men <40 mg/dL (<1.0 mmol/L); Women <50 mg/dL (<1.3 mmol/L)
- Blood pressure ≥130/≥85 mm Hg
- Fasting glucose ≥100 mg/dL (≥5.6 mmol/L)

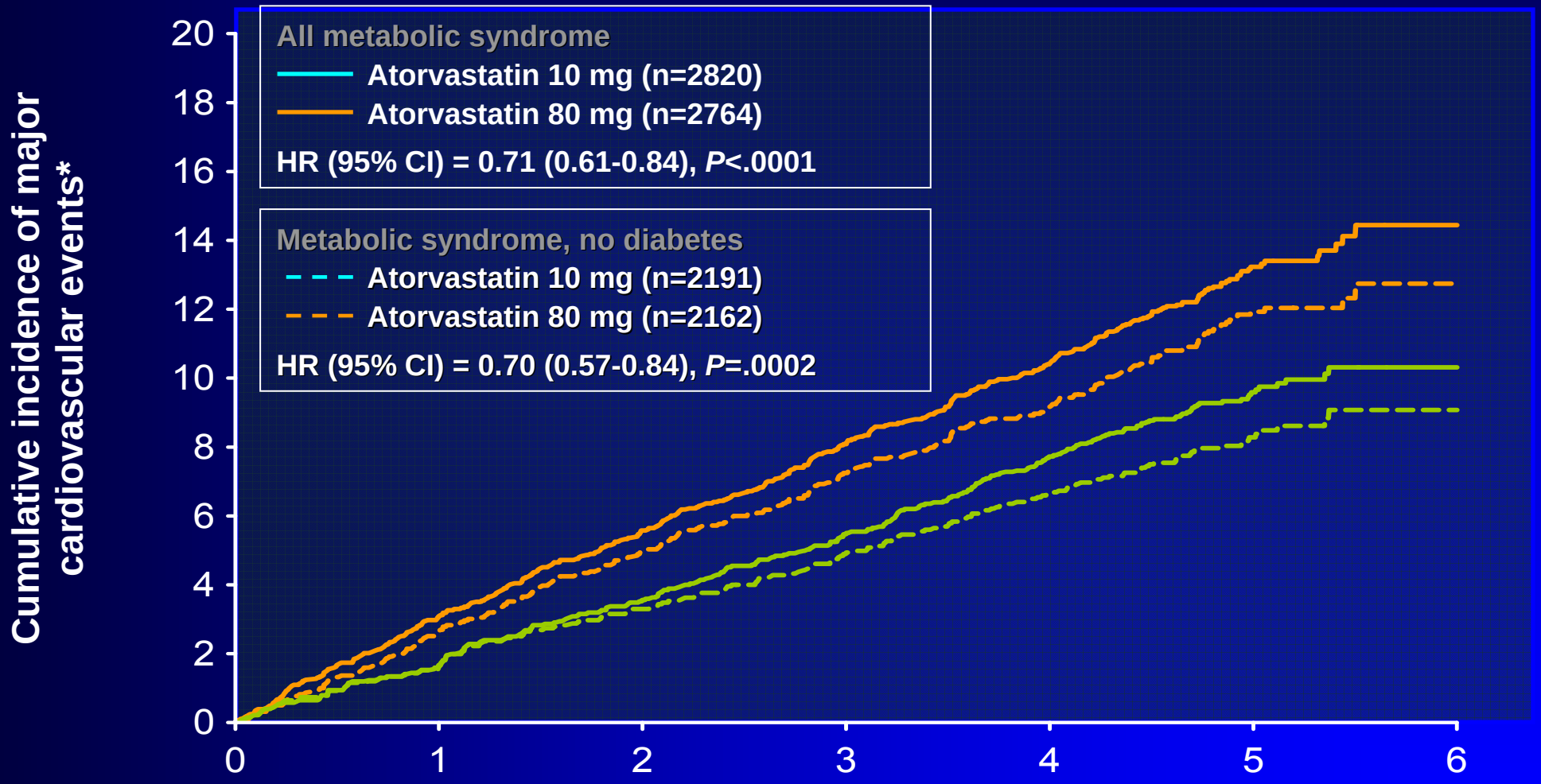


*BMI ≥28 substituted for waist circumference

[1]Grundy SM, et al. *Circulation*. 2005;112:2735-2752.

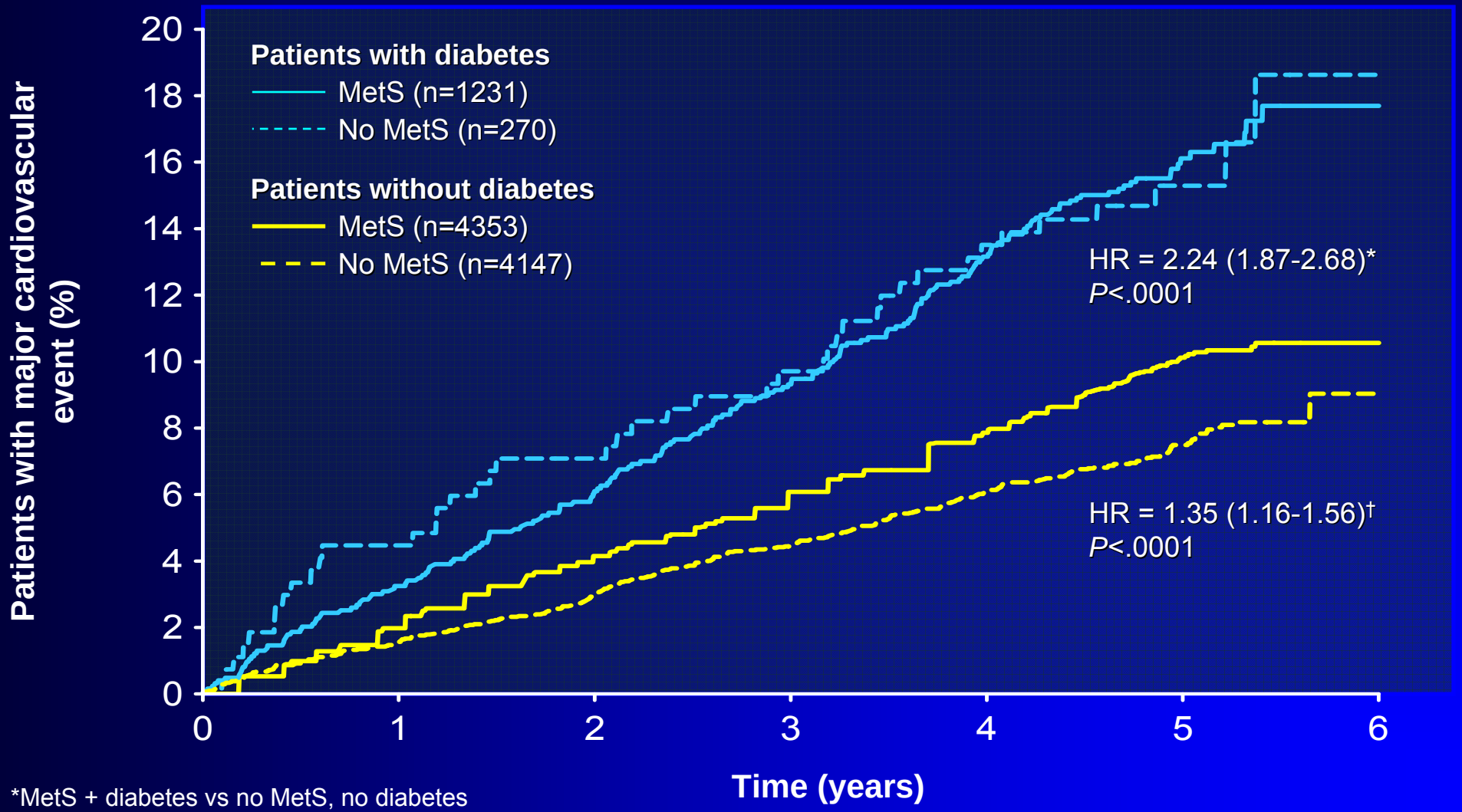
Metabolic Syndrome Subgroup

Time to First Major Cardiovascular Event in Patients with Metabolic Syndrome (MetS)



*Coronary heart disease death, nonfatal non–procedure-related myocardial infarction, resuscitated cardiac arrest, fatal or nonfatal stroke

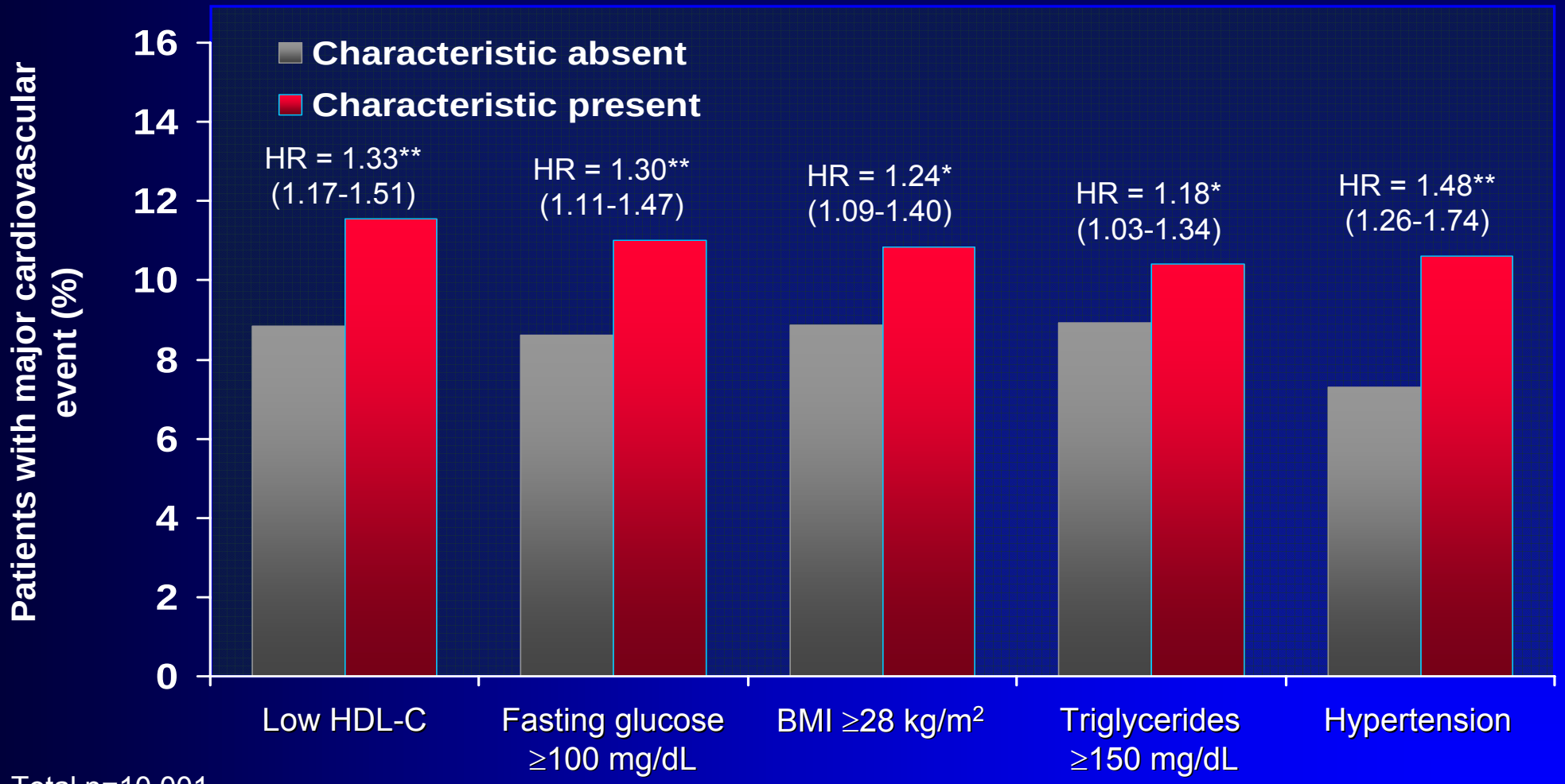
Time to First Major Cardiovascular Event By Metabolic Syndrome Status



*MetS + diabetes vs no MetS, no diabetes
†MetS, no diabetes vs no MetS, no diabetes

Deedwania P, et al. *Lancet* 2006;368:919-928.

Univariate Effects of Individual Characteristics of MetS on Risk of Major Cardiovascular Events



Total n=10,001

*P<.05, **P<.0001

MetS = metabolic syndrome.

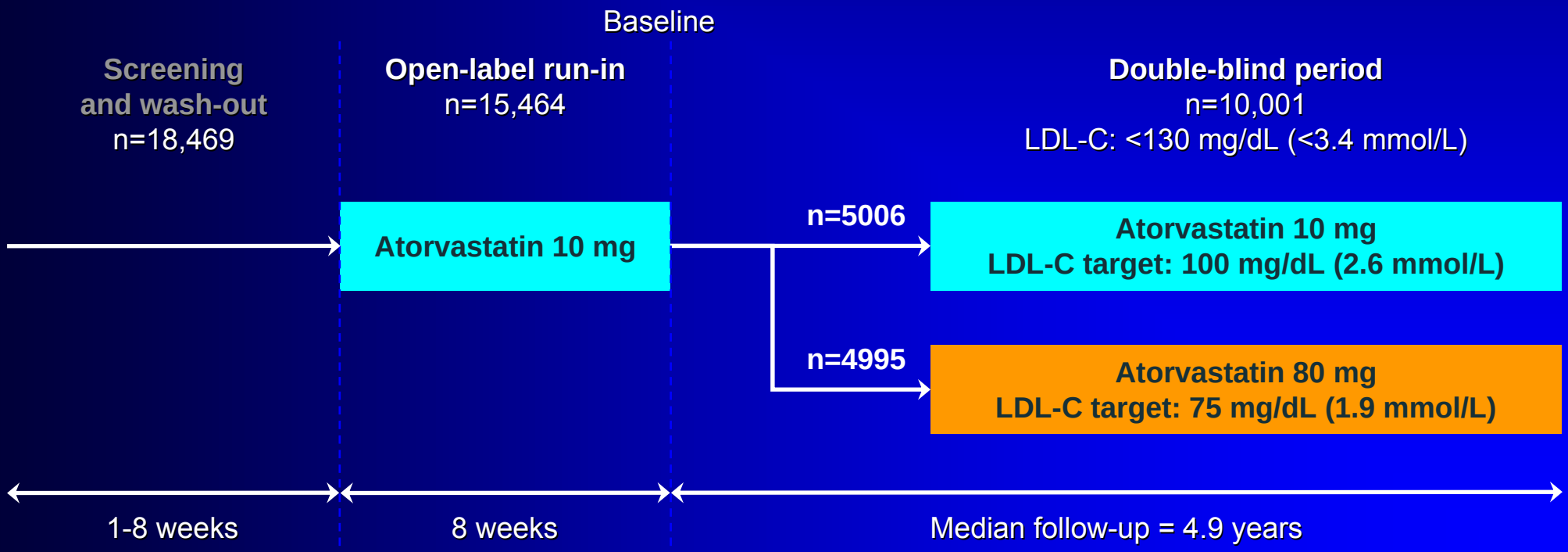
Deedwania P, et al. *Lancet* 2006;368:919-928.

Analysis of Effects on Cerebrovascular Events

TNT Study Design: Analysis of Cerebrovascular Events

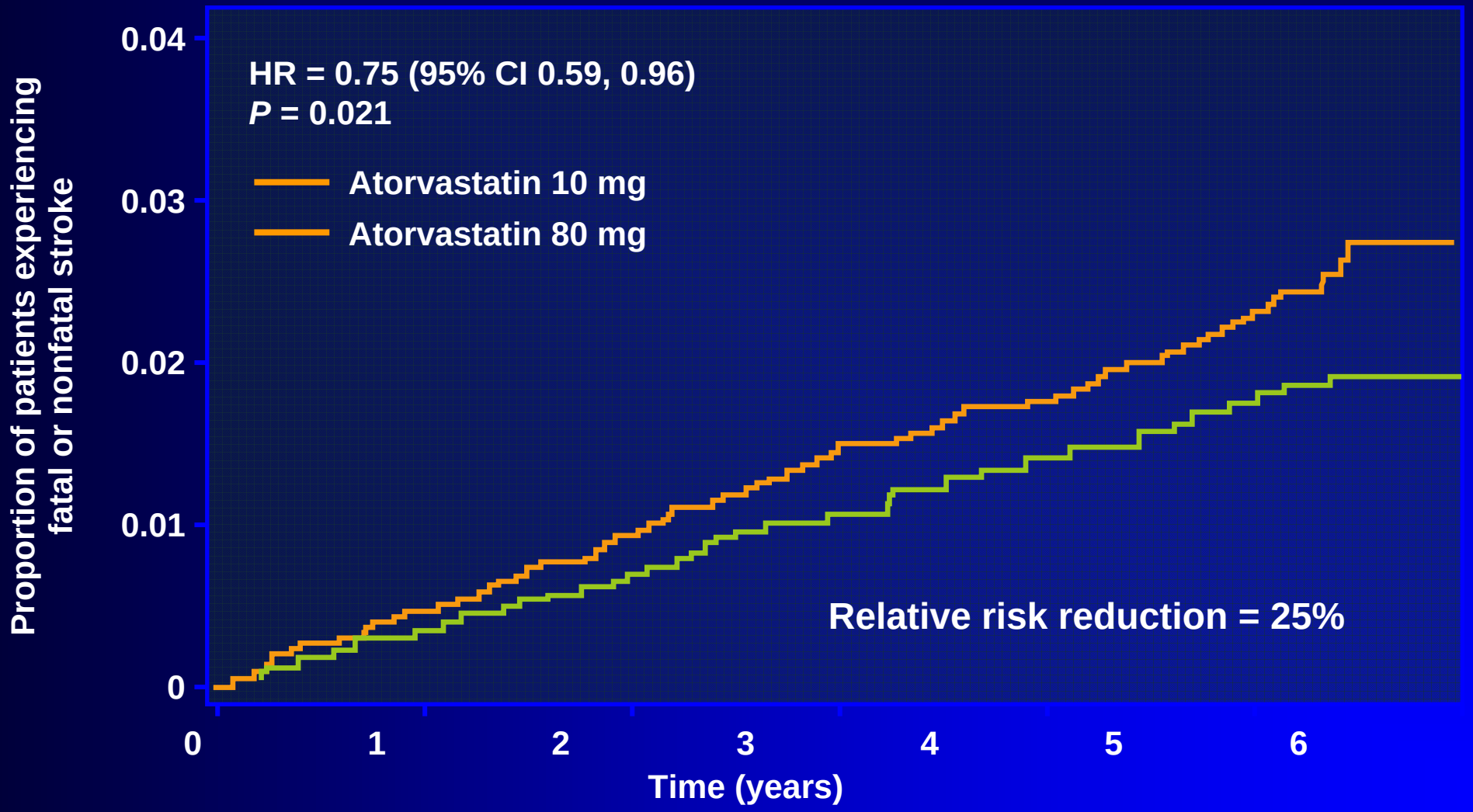
Predefined secondary end point:

- Time to occurrence of a cerebrovascular event, defined as fatal or nonfatal stroke, or transient ischemic attack (TIA)
  - Strokes were classified as ischemic, hemorrhagic, embolic, or unknown*



*Using Systolic Hypertension in the Elderly Program criteria.

Time to First Stroke (Fatal or Nonfatal)



Waters D, et al. *J Am Coll Cardiol* 2006;48:1793-1799.

Current guidelines HF

- ✓ 54,960 Medicare hospitalized pt
- ✓ discharge Dx of HF with age >65
- ✓ ischemic: 58%, EF < 40%: 48%,
- ✓ Use of statin: 17 %

By Follow the ATP-III guideline in HF patients

- **Wait for the results of ongoing trials**

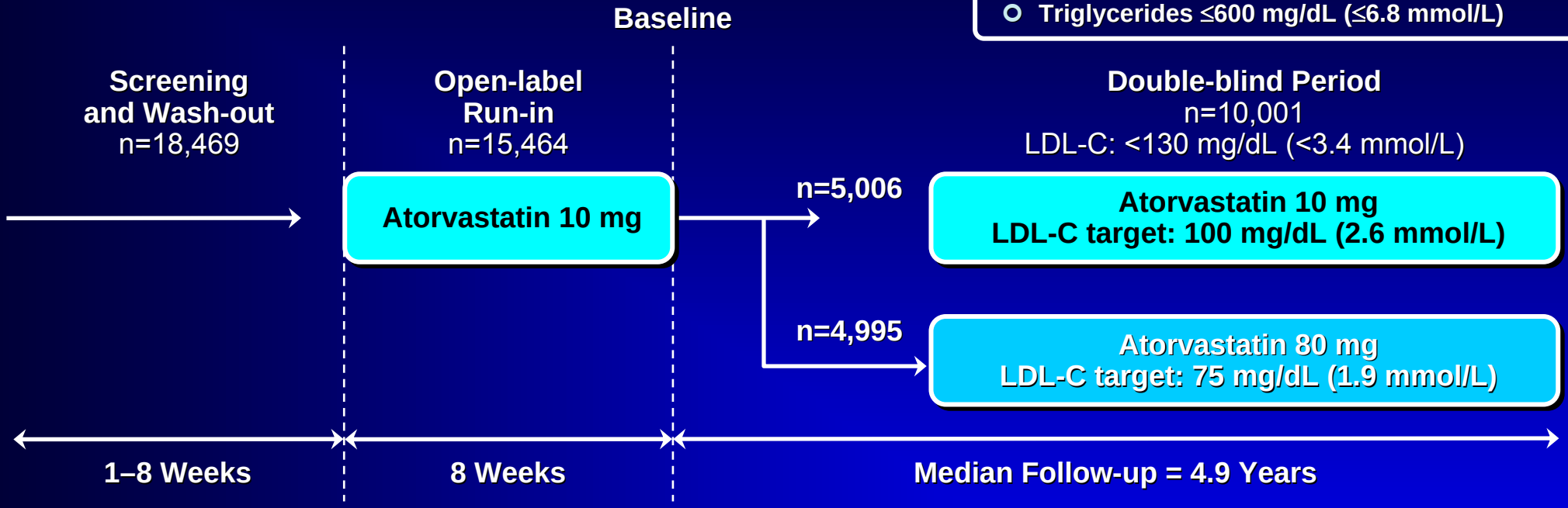
Effect of High-Dose Atorvastatin on Hospitalization for HF

Subgroup Analysis of the Treating to New Targets (TNT) Study

TNT: Study Design

Patient Population

- CHD
- LDL-C: 130-250 mg/dL (3.4-6.5 mmol/L)
- Triglycerides ≤600 mg/dL (≤6.8 mmol/L)



Primary Efficacy Outcome Measure

- Time to occurrence of a major CV event:
  - CHD death
  - Nonfatal, non–procedure-related MI
  - Resuscitated cardiac arrest
  - Fatal or nonfatal stroke

Secondary Efficacy Outcome Measure

- Any cardiovascular event:
  - Major coronary event*
  - Any coronary event
  - Cerebrovascular event
  - Hospitalization for CHF
  - Peripheral arterial disease
- All cause mortaliry

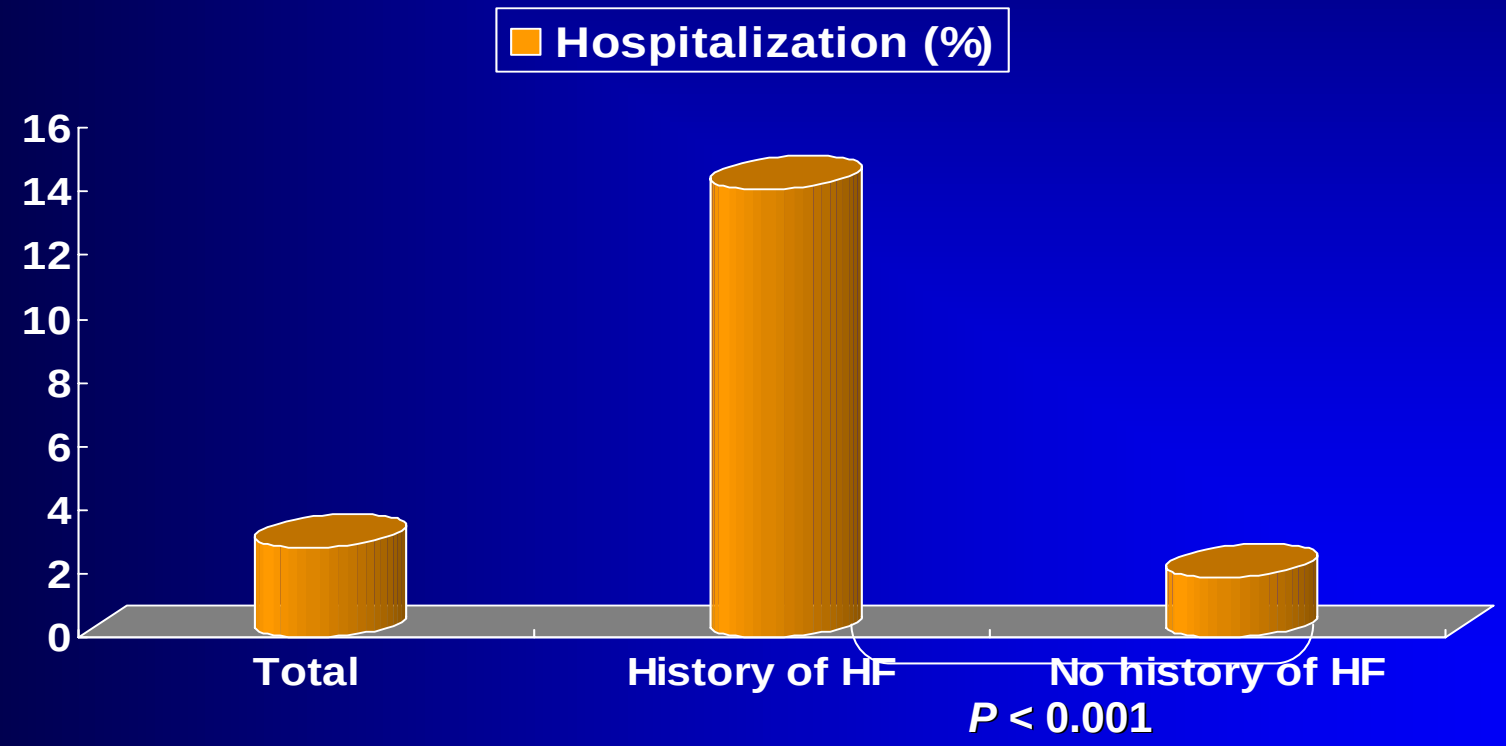
*CHD death, nonfatal non-procedure-related MI, resuscitated cardiac arrest

Baseline Patient Characteristics (2)

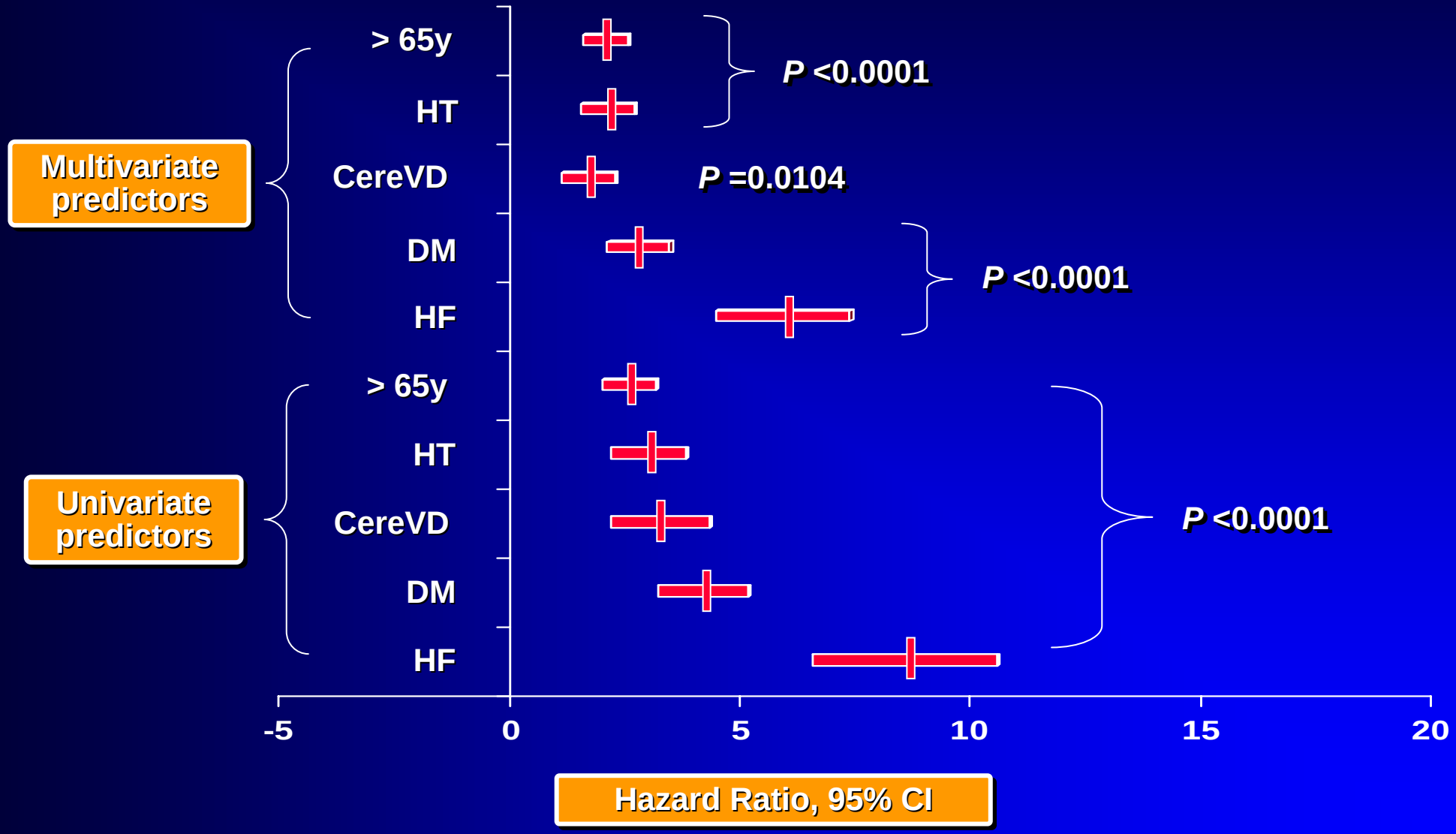
	History of HF (n=781)	No history of HF (n=9,220)	*P* value
Comorbidities (%)			
▪ Hypertension	67	53	<0.0001
▪ Diabetes Mellitus	27	14	<0.0001
▪ Peripheral arterial disease	24	11	<0.0001
▪ Prior MI	74	57	<0.0001
▪ Stroke	11	5	<0.0001
Medications (%)			
▪ ACE-I	61	26	<0.0001
▪ ARB	10	5	<0.0001
▪ Diuretics	54	12	<0.0001

Hospitalization for HF

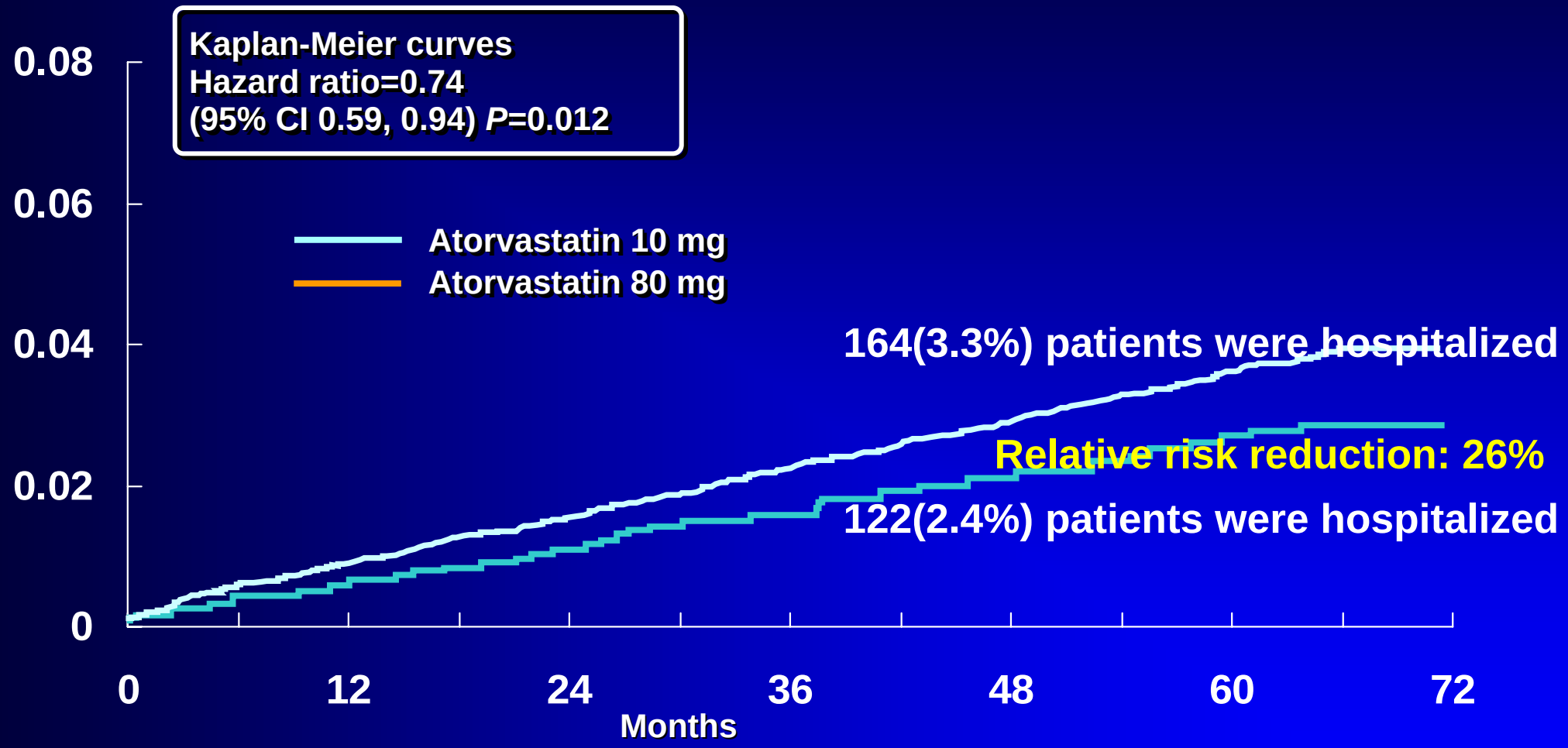
	Total	Pt with history of HF	Pt without history of HF
n	10,001	781	9,220
Hospitalization (%)	2.86	14.1	1.9



Predictors of Hospitalization for HF

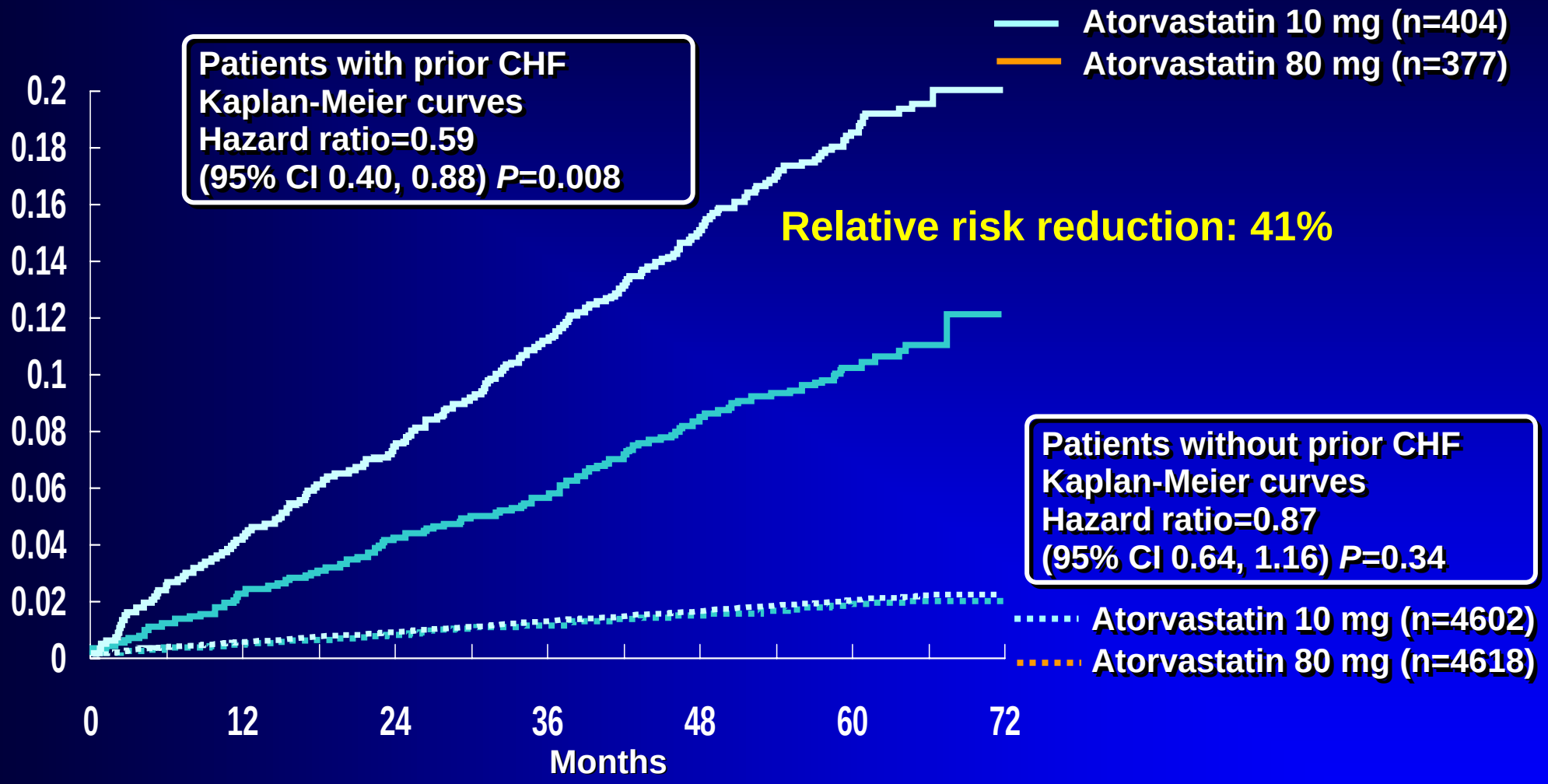


Effect of study treatment on HF hospitalization



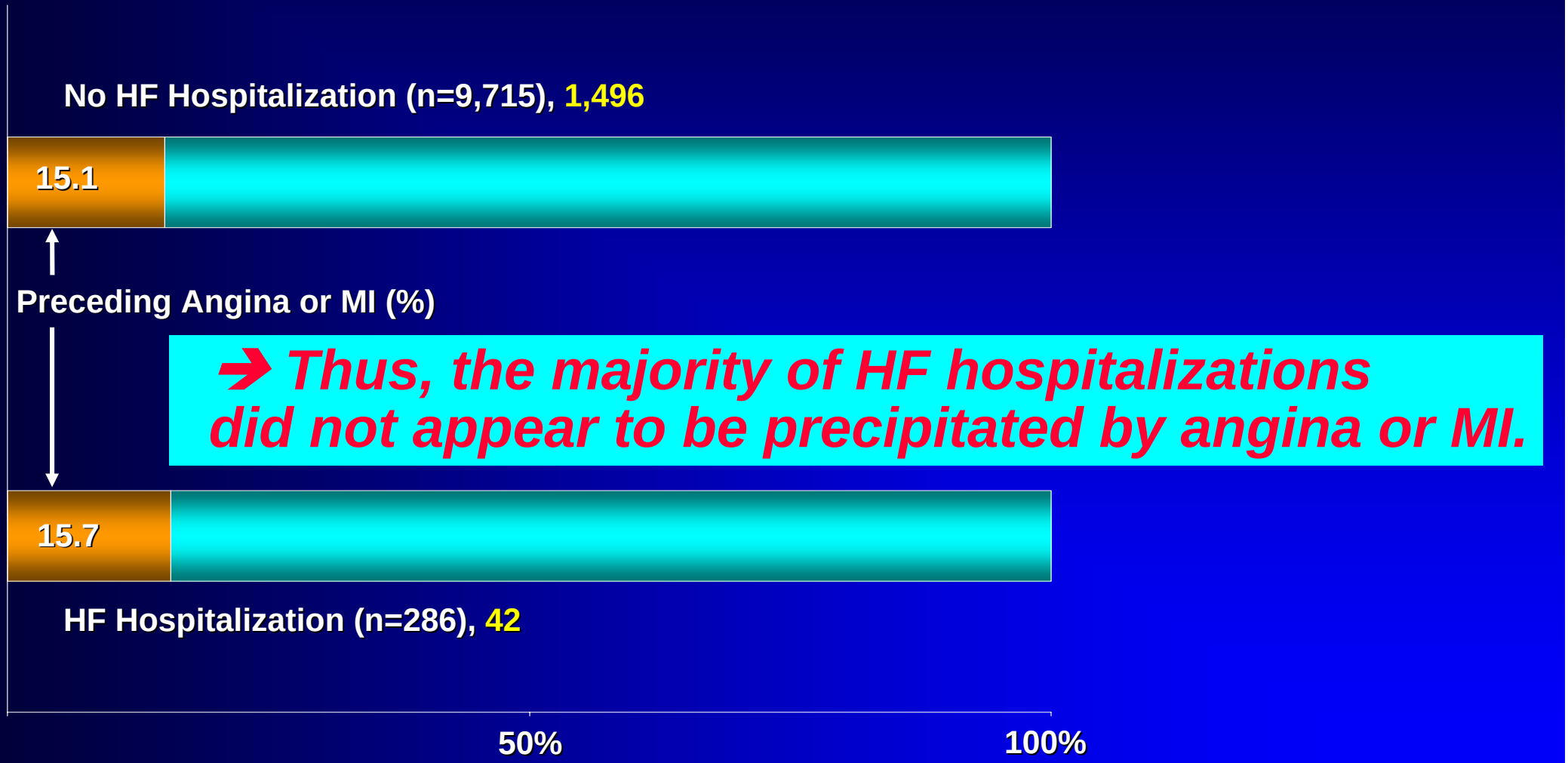
Proportion of patients in the 10- and 80-mg arms of TNT hospitalized with HF during follow-up

Effect of study treatment on HF hospitalization



Proportion of patients with and without a history of HF in the 10- and 80-mg arms of TNT experiencing hospitalization for HF during follow-up

Relationship between HF hospitalization and preceding ischemic coronary event



➔ *Thus, the majority of HF hospitalizations did not appear to be precipitated by angina or MI.*

Summary of TNT substudy

- Patients with stable CHD and diabetes experienced a 25% reduction in risk of major CV events with atorvastatin 80 mg vs atorvastatin 10 mg
- A similar reduction in risk was observed in metabolic syndrome patients without diabetes, with atorvastatin 80 mg yielding a significant 30% relative risk reduction vs atorvastatin 10 mg
- Intensive lipid lowering with atorvastatin 80 mg/day reduced the incidence of both first stroke and first cerebrovascular event by an additional 20-25% compared with the 10 mg/day dose.
- In the TNT trial, treatment with atorvastatin 80 mg/day significantly reduced the risk of hospitalization due to HF compared with 10 mg in patients with stable CHD

ARMYDA-ACS trial

Randomized Trial of Atorvastatin for Reduction of Myocardial Damage During Coronary Intervention

Results From the ARMYDA (Atorvastatin for Reduction of MYocardial Damage during Angioplasty) Study

Vincenzo Pasceri, MD, PhD; Giuseppe Patti, MD; Annunziata Nusca, MD; Christian Pristipino, MD; Giuseppe Richichi, MD; Germano Di Sciascio, MD; on behalf of the ARMYDA Investigators

Background—Small myocardial infarctions after percutaneous coronary intervention have been associated with higher risk of cardiac events during follow-up. Observational studies have suggested that statins may lower the risk of procedural myocardial injury. The aim of our study was to confirm this hypothesis in a randomized study.

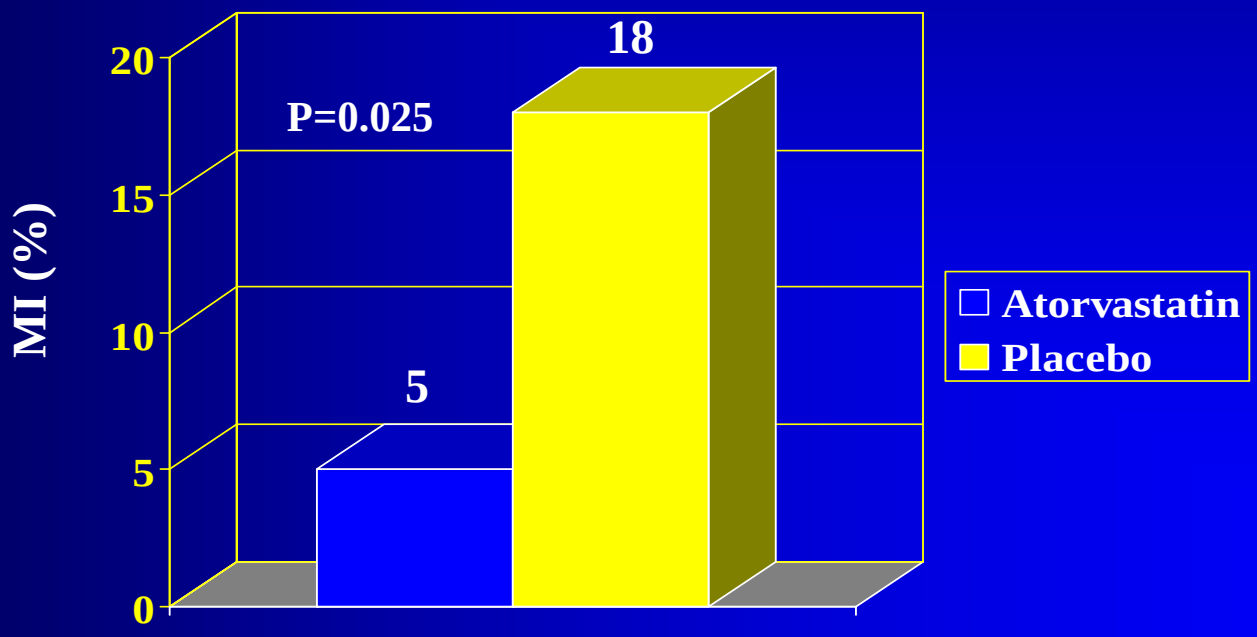
Methods and Results—One hundred fifty-three patients with chronic stable angina without previous statin treatment were enrolled in the study. Patients scheduled for elective coronary intervention were randomized to atorvastatin (40 mg/d, n=76) or placebo (n=77) 7 days before the procedure. Creatine kinase-MB, troponin I, and myoglobin levels were measured at baseline and at 8 and 24 hours after the procedure. Detection of markers of myocardial injury above the upper normal limit was significantly lower in the statin group versus the placebo group: 12% versus 35% for creatine kinase-MB (P=0.001), 20% versus 48% for troponin I (P=0.0004), and 22% versus 51% for myoglobin (P=0.0005). Myocardial infarction by creatine kinase-MB determination was detected after coronary intervention in 5% of patients in the statin group and in 18% of those in the placebo group (P=0.025). Postprocedural peak levels of creatine kinase-MB (2.9±3 versus 7.5±18 ng/mL, P=0.007), troponin I (0.09±0.2 versus 0.47±1.3 ng/mL, P=0.0008), and myoglobin (58±36 versus 81±49 ng/mL, P=0.0002) were also significantly lower in the statin than in the placebo group.

Conclusions—Pretreatment with atorvastatin 40 mg/d for 7 days significantly reduces procedural myocardial injury in elective coronary intervention. These results may influence practice patterns with regard to adjuvant pharmacological therapy before percutaneous revascularization. (*Circulation*. 2004;110:674-678.)

BACKGROUND

❖ The original ARMYDA trial demostrated that 7-day pretreatment with atorvastatin (40 mg/day) confers 81% risk reduction of peri-procedural MI in patients with Stable Angina undergoing elective PCI

Primary end point: Incidence of MI



Pasceri V, Patti G, Di Sciascio G, et al. Circulation 2004;110:674-678

ARMYDA-ACS trial

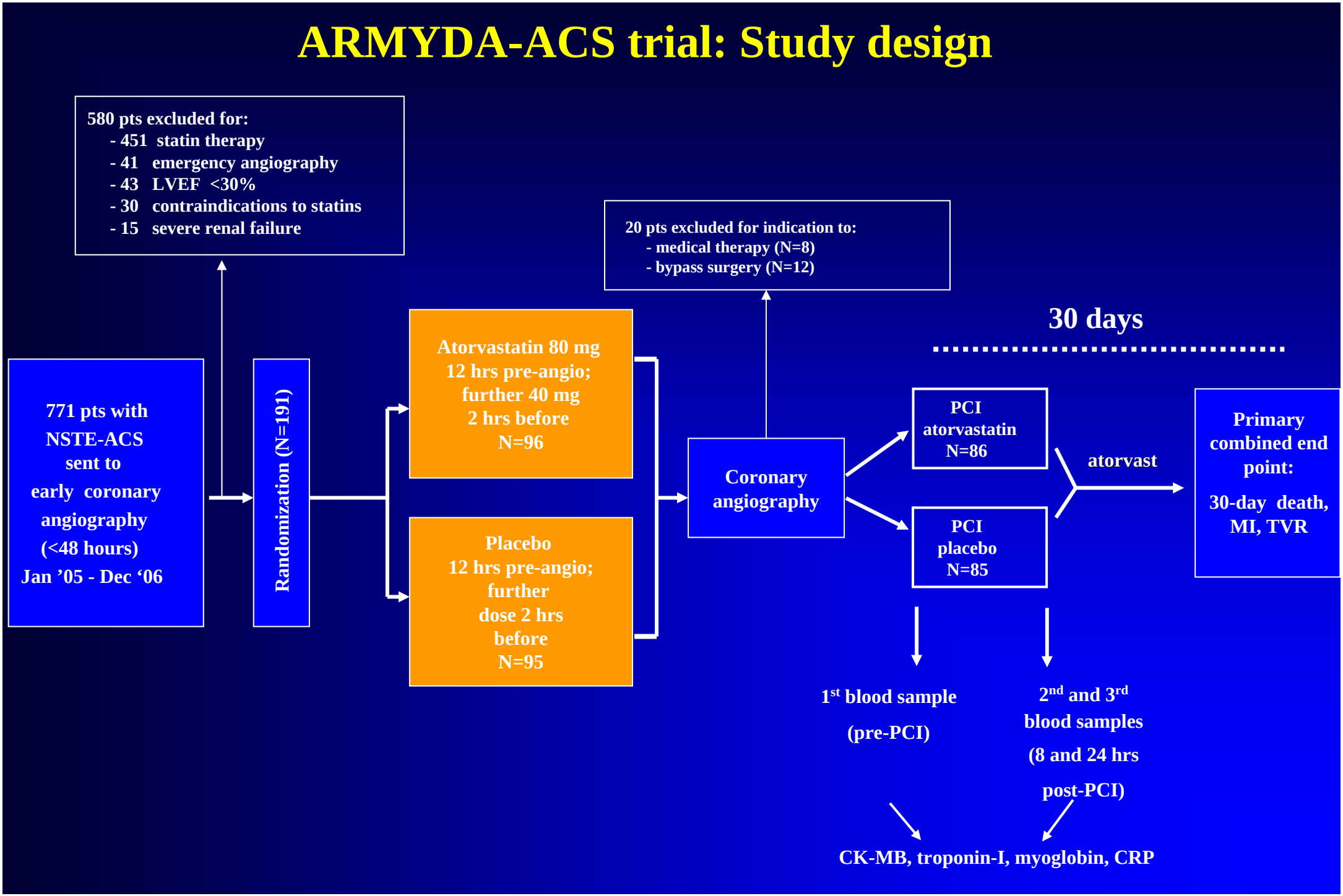
Inclusion criteria:

- ✓ NSTE-ACS undergoing early angiography (<48 hrs)

Exclusion criteria:

- ✓ STEMI
- ✓ ACS with high risk features warranting emergency angiography
- ✓ Previous or current statin therapy
- ✓ LVEF <30%
- ✓ Contraindications to statins (liver or muscle disease)
- ✓ Severe renal failure (creatininine >3 mg/dl)

ARMYDA-ACS trial: Study design



ARMYDA-ACS trial: Study end points

Primary end point:

Incidence of major adverse cardiac events (MACE: death, MI, TVR) from the procedure up to 30 days

MI definition:

- If normal baseline levels of CK-MB: post-procedural increase of CK-MB >2 times above UNL, according to the consensus statement of the Joint ESC/ACC Committee for the Redefinition of Myocardial Infarction for clinical trials on coronary intervention.

- If elevated baseline levels of CK-MB: subsequent rise of >2 times in CK-MB from baseline value

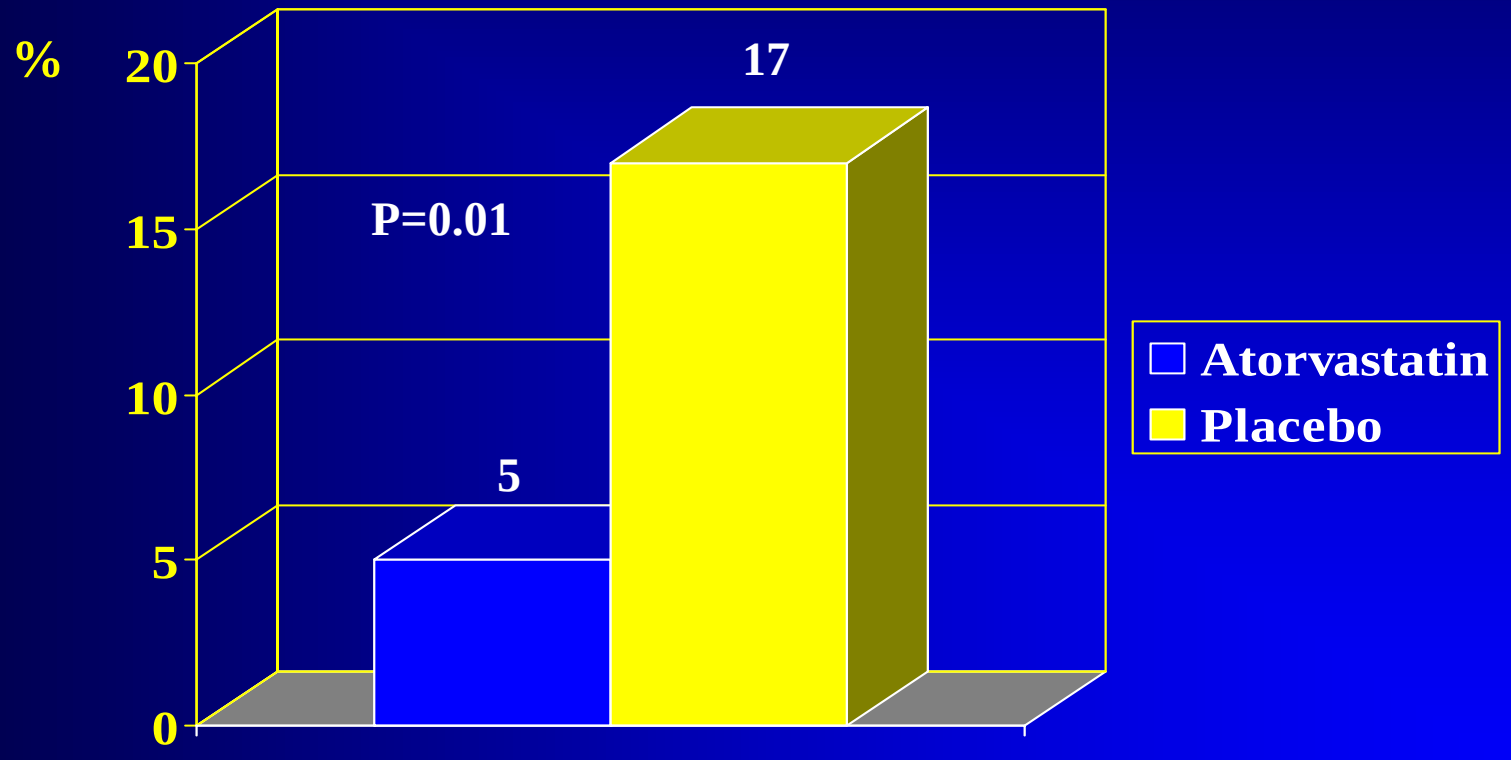
Secondary end points:

✓ **Any post-procedural increase of markers of myocardial injury above UNL (CK-MB, troponin-I, myoglobin)**

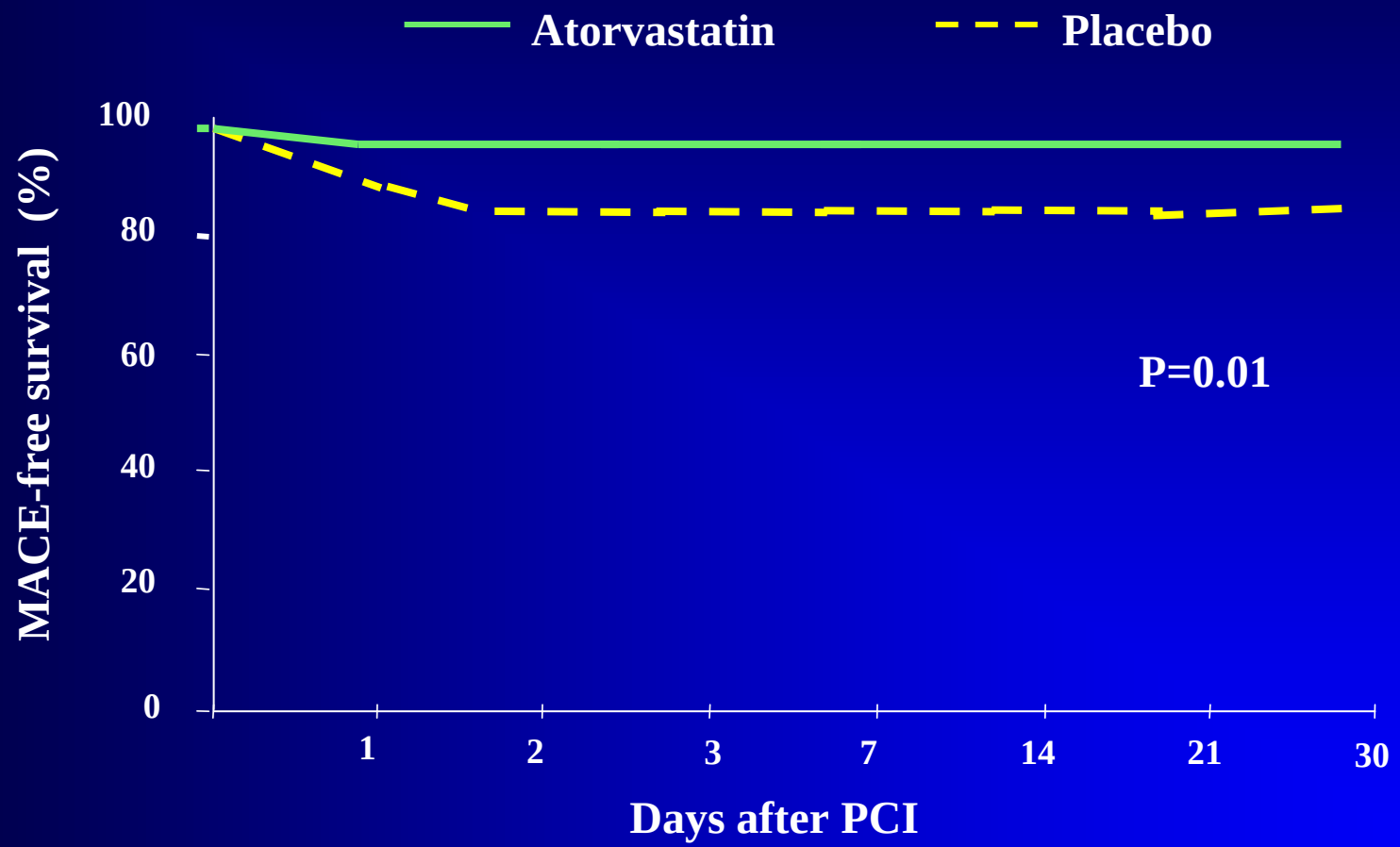
✓ **Post-PCI variations from baseline of CRP levels in the 2 arms**

ARMYDA-ACS trial

Composite primary end-point (30-day death, MI, TVR)

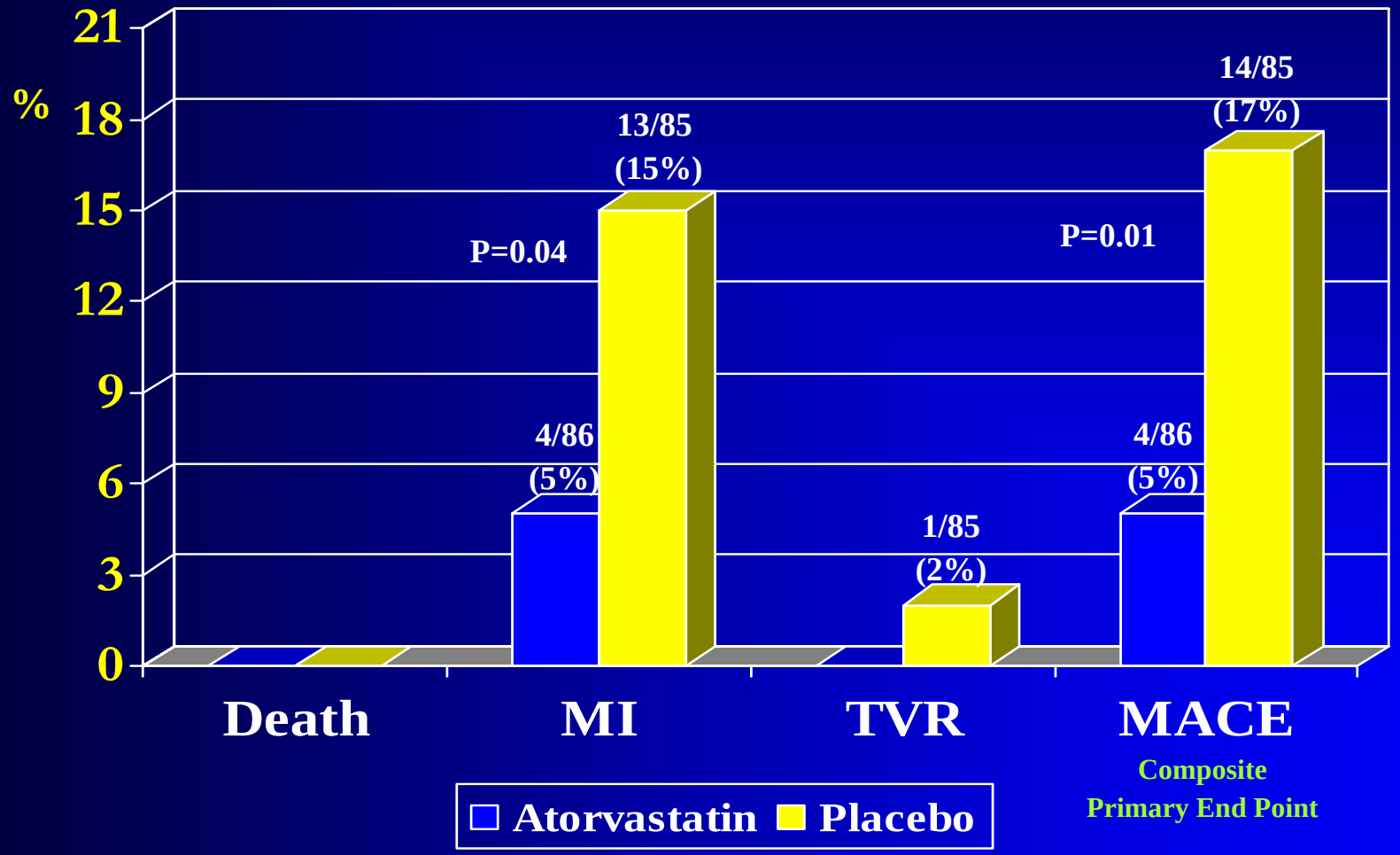


ARMYDA-ACS: Actuarial Survival curves

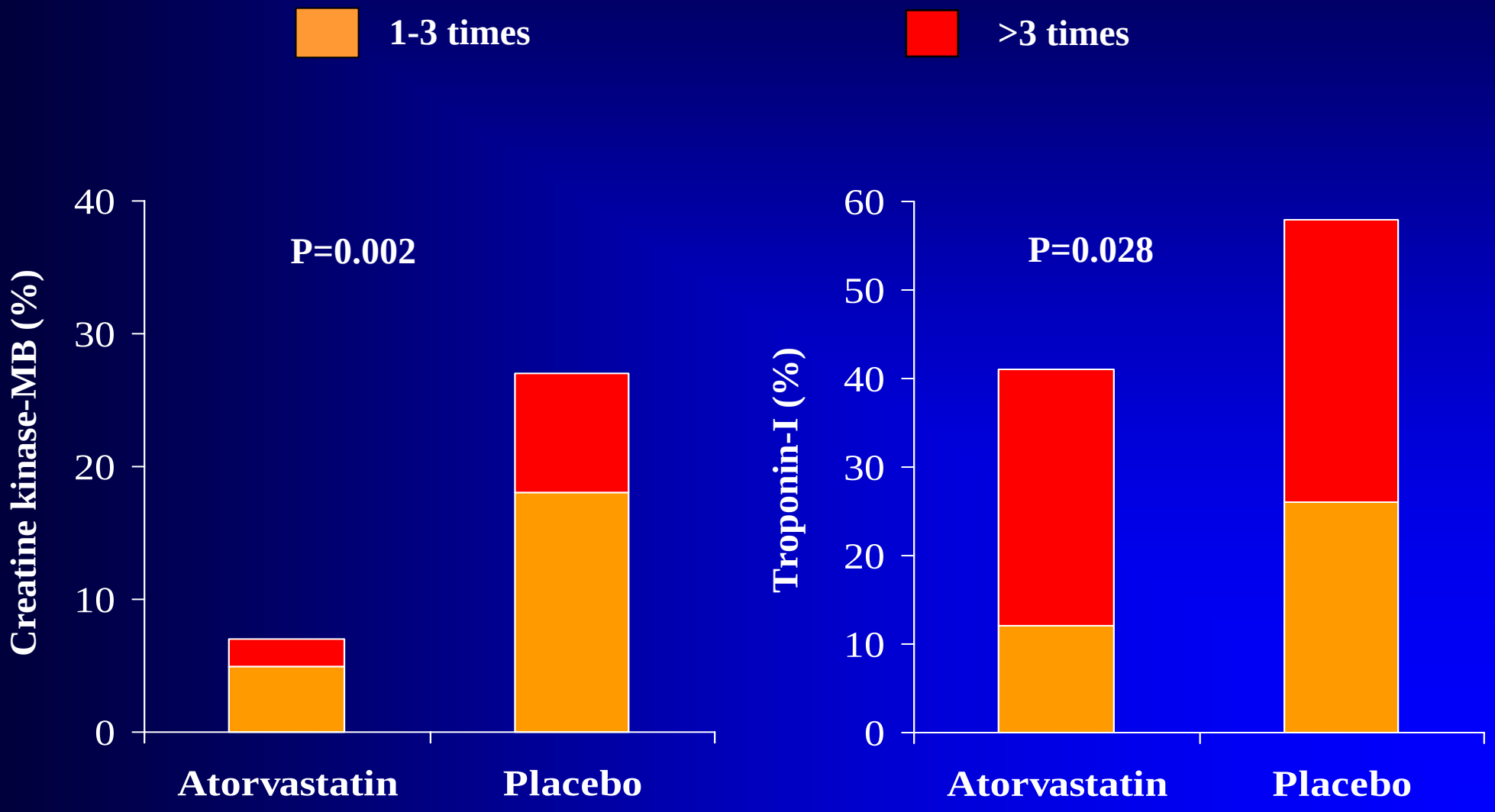


ARMYDA-ACS

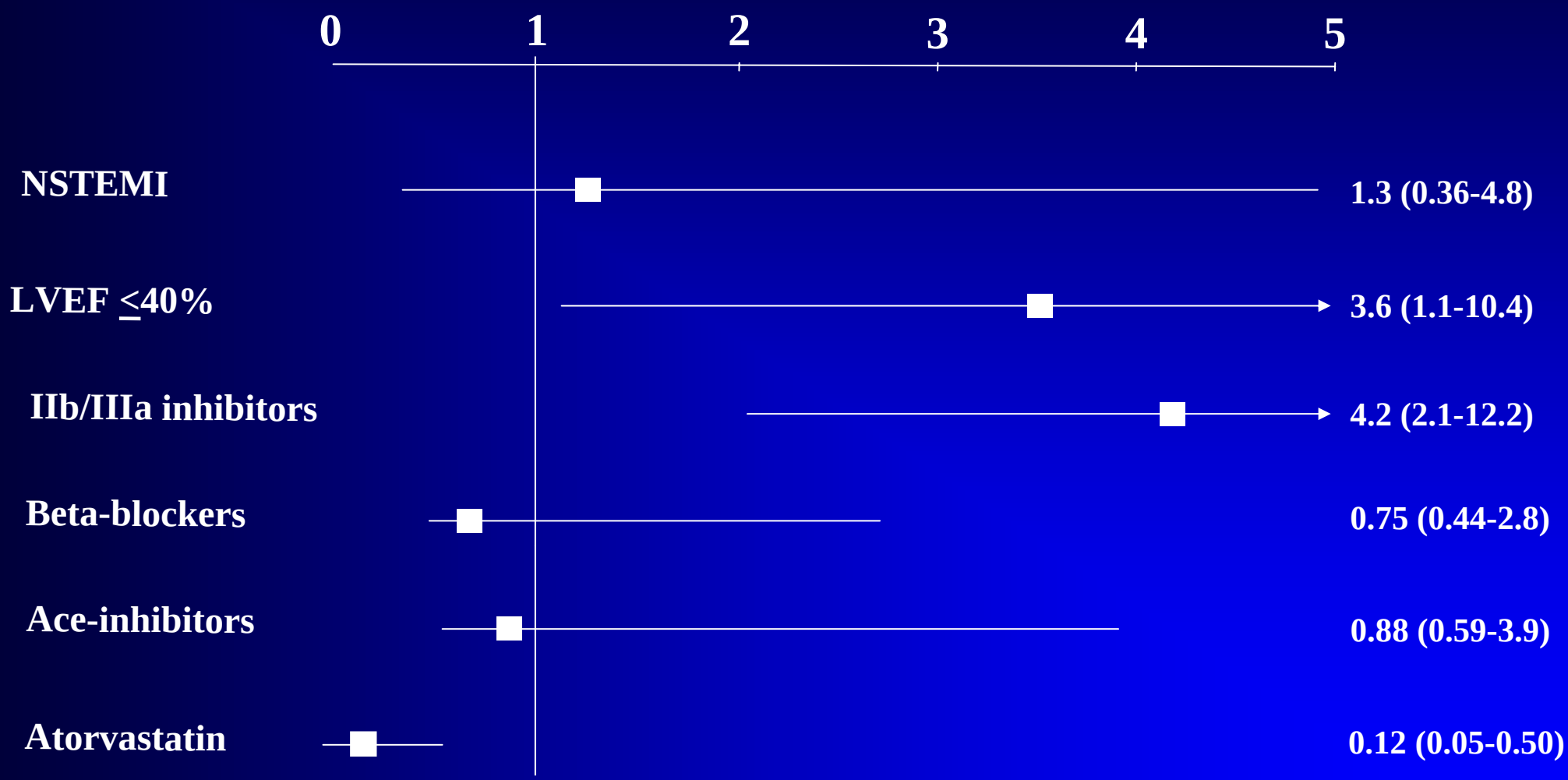
Individual and Combined Outcome Measures of the Primary End Point at 30 days



ARMYDA-ACS: Secondary end point
Cardiac markers elevations



ARMYDA-ACS: Odds Ratio for 30-day MACE



Summary of ARMYD-ACS

- The ARMYDA-ACS trial indicates that even short-term pretreatment with atorvastatin may improve outcomes in patients with ACS undergoing early invasive strategy.

Conclusions

- The clinical trials provide substantial support for the institution of high-dose statin therapy in various clinical settings in the primary and secondary prevention of cardiovascular disease.

- In an analysis of high-dose statin therapy in the setting of ACS, diabetes mellitus, metabolic syndrome, cerebrovascular disease and heart failure demonstrated reduction in mortality and morbidity.

- Use of high-dose statins before intervention in patients with ACS may be benificial.