

# Comparison of the Progression of Coronary Atherosclerosis for Two High Efficacy Statin Regimens with Different HDL Effects: SATURN Study Results

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# Disclosures

- Research support: AstraZeneca, Anthera, Eli Lilly, Novartis, Resverlogix, Roche and LipoScience
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- SATURN was sponsored by AstraZeneca

# Steering Committee

- Steven Nissen (Chair)
- Stephen Nicholls (Principal Investigator)
- Philip Barter
- Christie Ballantyne
- John Chapman
- Raimund Erbel
- Peter Libby
- Joel Raichlen (non-voting)

# Background

- Statins have consistently reduced cardiovascular event rates in large randomized controlled clinical trials.
- Imaging studies have shown that statins have a favorable effect on disease progression.
- The effects on plaque burden appear to correlate with both lowering of LDL-C and raising of HDL-C.
- However, no study has compared the effects of maximal dosages of the most efficacious statin regimens on progression of coronary atherosclerosis.

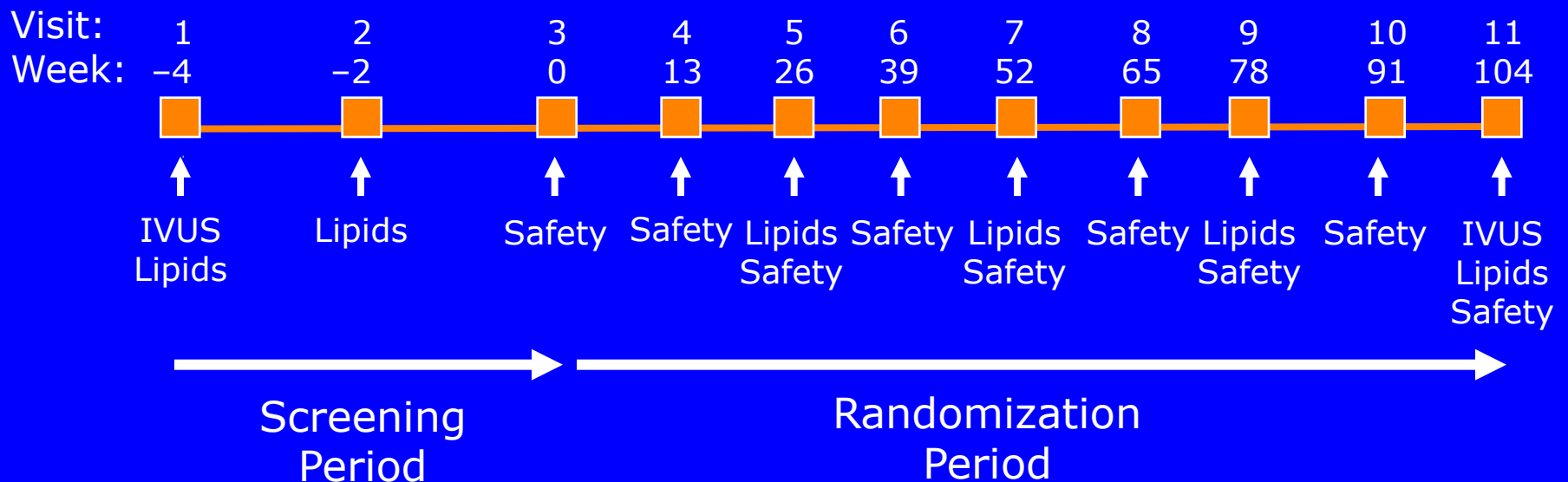
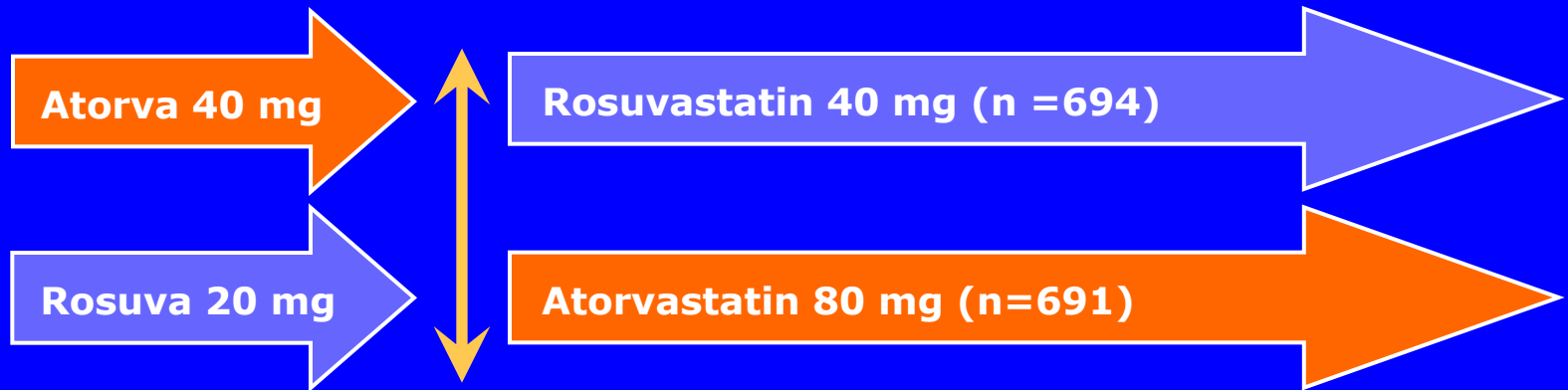
# Objective

To compare the effects of rosuvastatin 40 mg versus atorvastatin 80 mg on progression of coronary atherosclerosis assessed by intravascular ultrasound.

# Study Design

1385 patients with symptomatic CAD (angiographic stenosis >20%)

LDL-C with (>80 mg/dL) or without (>100 mg/dL) statin use last 4 weeks



# SATURN Trial: Flow of Patients

4255 patients screened and 1578 patients treated at centers in North America, Europe, South America and Australia

Treatment for 2 weeks with atorvastatin 40 mg or rosuvastatin 20 mg for 2 weeks to achieve LDL-C <116 mg/dL

Atorvastatin 80 mg (n=691)

24 months  
treatment

Rosuvastatin 40 mg (n=694)

346 (25%) patients withdrew or did not have an evaluable final IVUS

Follow-up IVUS of originally imaged "target" vessel (n=1039)

# Clinical Characteristics

Parameter	Atorvastatin (n=519)	Rosuvastatin (n=520)
Mean age in years	57.9	57.4
Males	74.4%	72.9%
Median Body Mass Index	29.2	28.9
History of Hypertension	70.7%	70.0%
History of Diabetes	16.8%	13.8%
Prior Statin Use	61.5%	58.3%
Concomitant Medications		
Anti-platelet Therapy	97.9%	97.5%
Beta-blockers	61.1%	60.6%
ACE Inhibitors	44.5%	43.5%
Angiotensin Receptor Antagonists	15.8%	16.7%

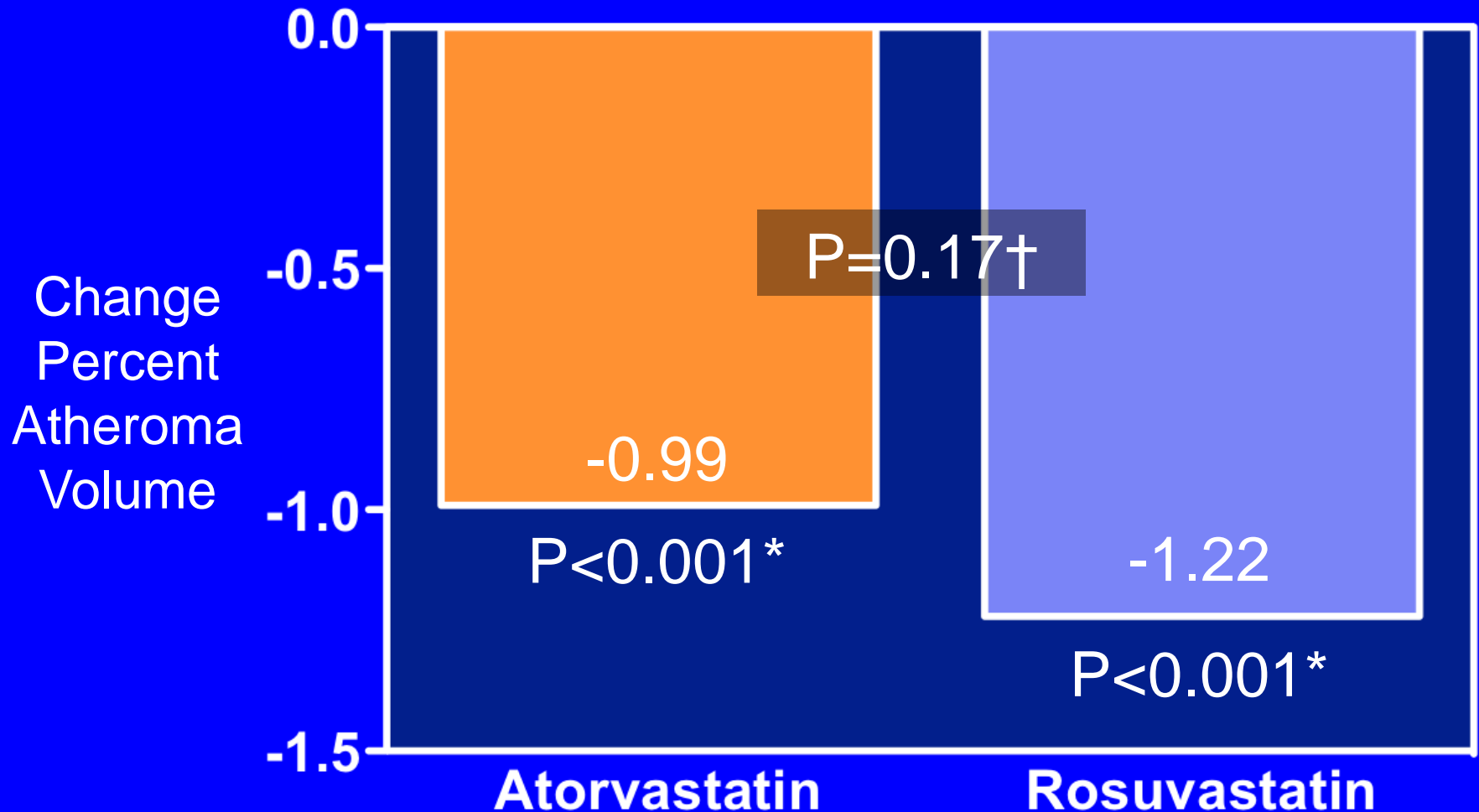
# Time-Weighted Lipid Levels and hsCRP

Parameter	Atorvastatin (n=519)	Rosuvastatin (n=520)	P Value
<b>LDL cholesterol (mg/dL)</b>	<b>70.2</b>	<b>62.6</b>	<b>&lt;0.001</b>
<b>HDL cholesterol (mg/dL)</b>	<b>48.6</b>	<b>50.4</b>	<b>0.01</b>
Triglycerides (mg/dL)*	110	120	0.02
LDL:HDL cholesterol	1.5	1.3	<0.01
hsCRP (mg/L)*	1.0	1.1	0.05

Presented as least-square means. \*Median values

# Primary IVUS Efficacy Parameter

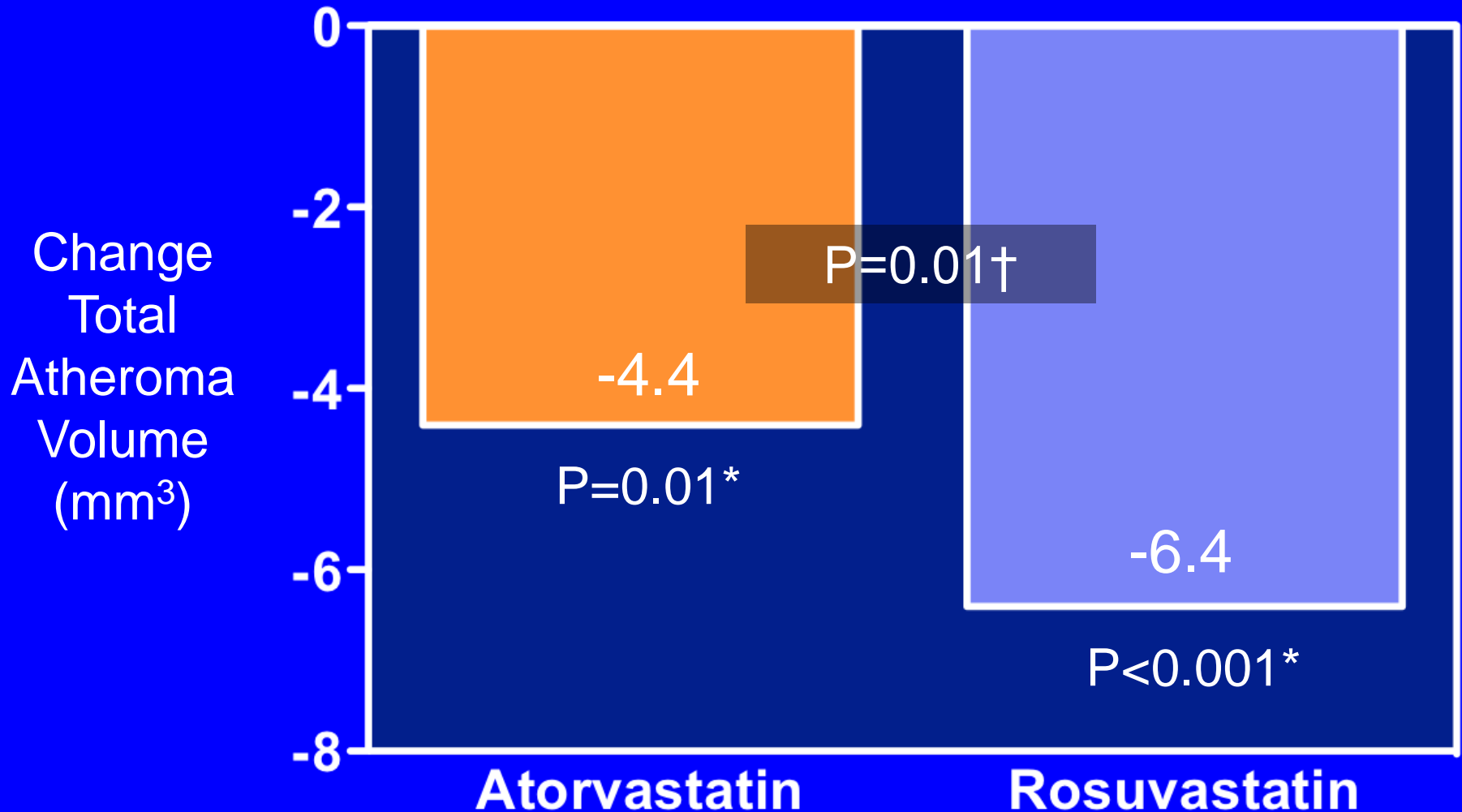
Median Change Percent Atheroma Volume



† comparison between groups. \* comparison from baseline

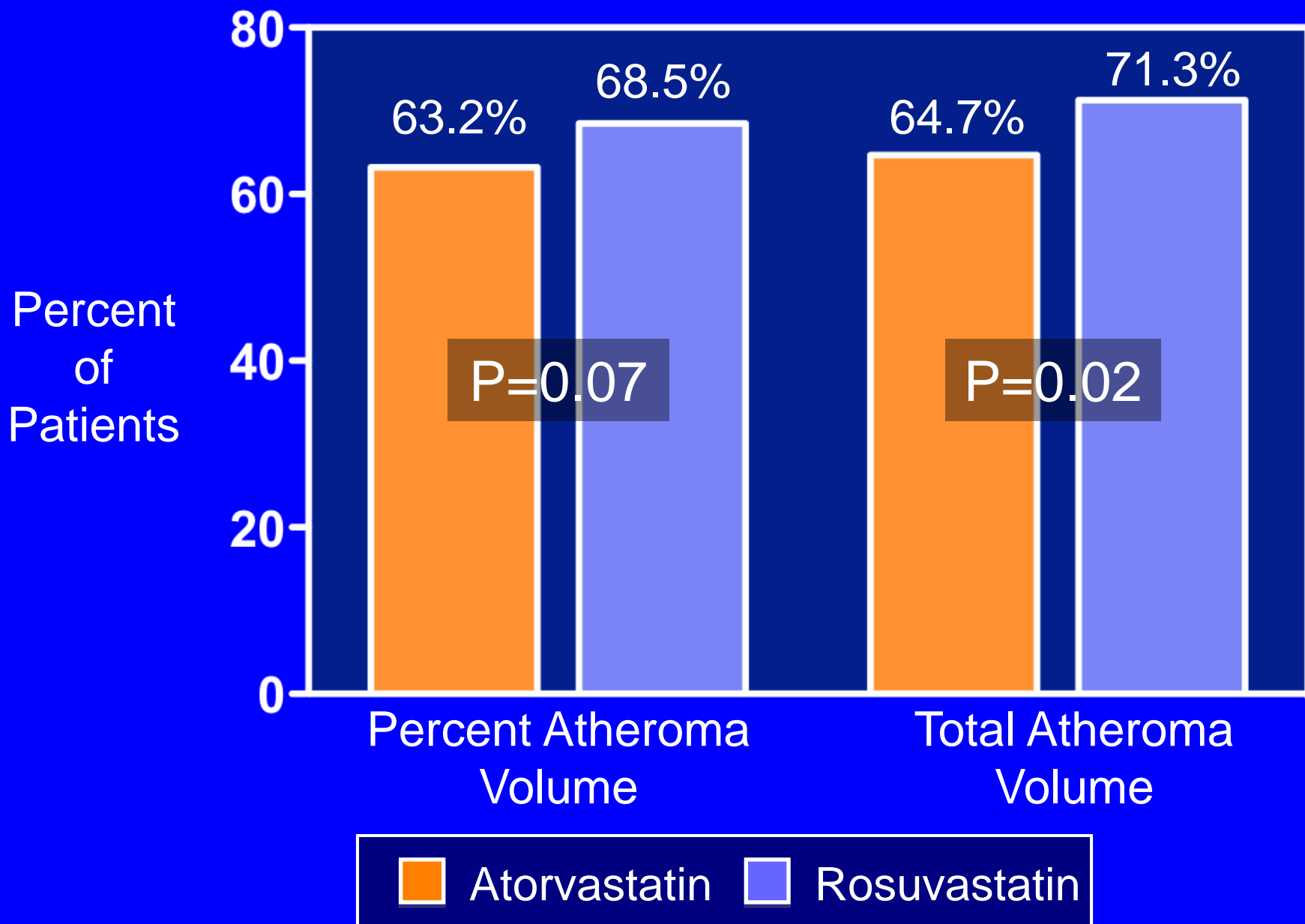
# Secondary IVUS Efficacy Parameter

Median Change in Total Atheroma Volume

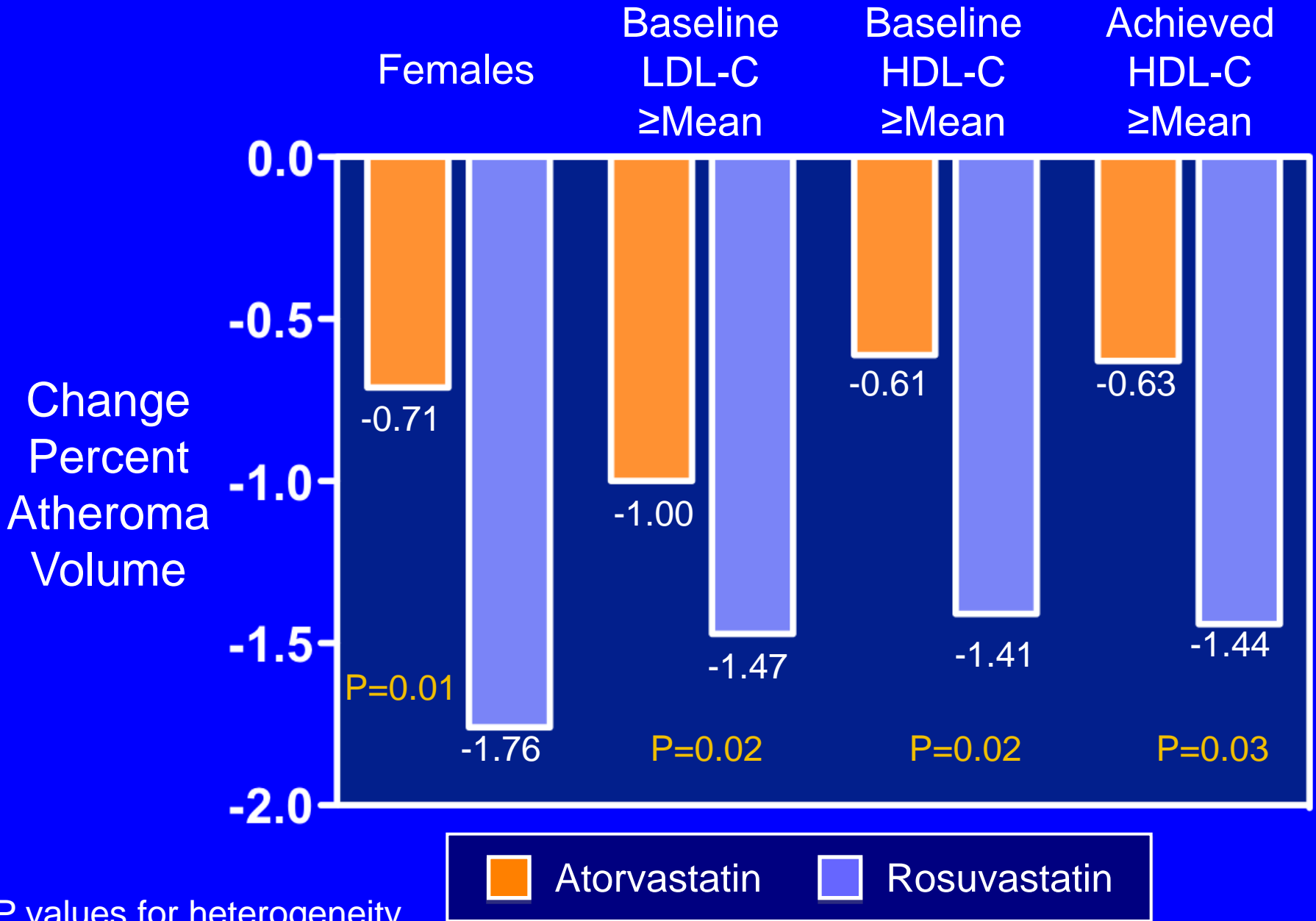


† comparison between groups. \* comparison from baseline

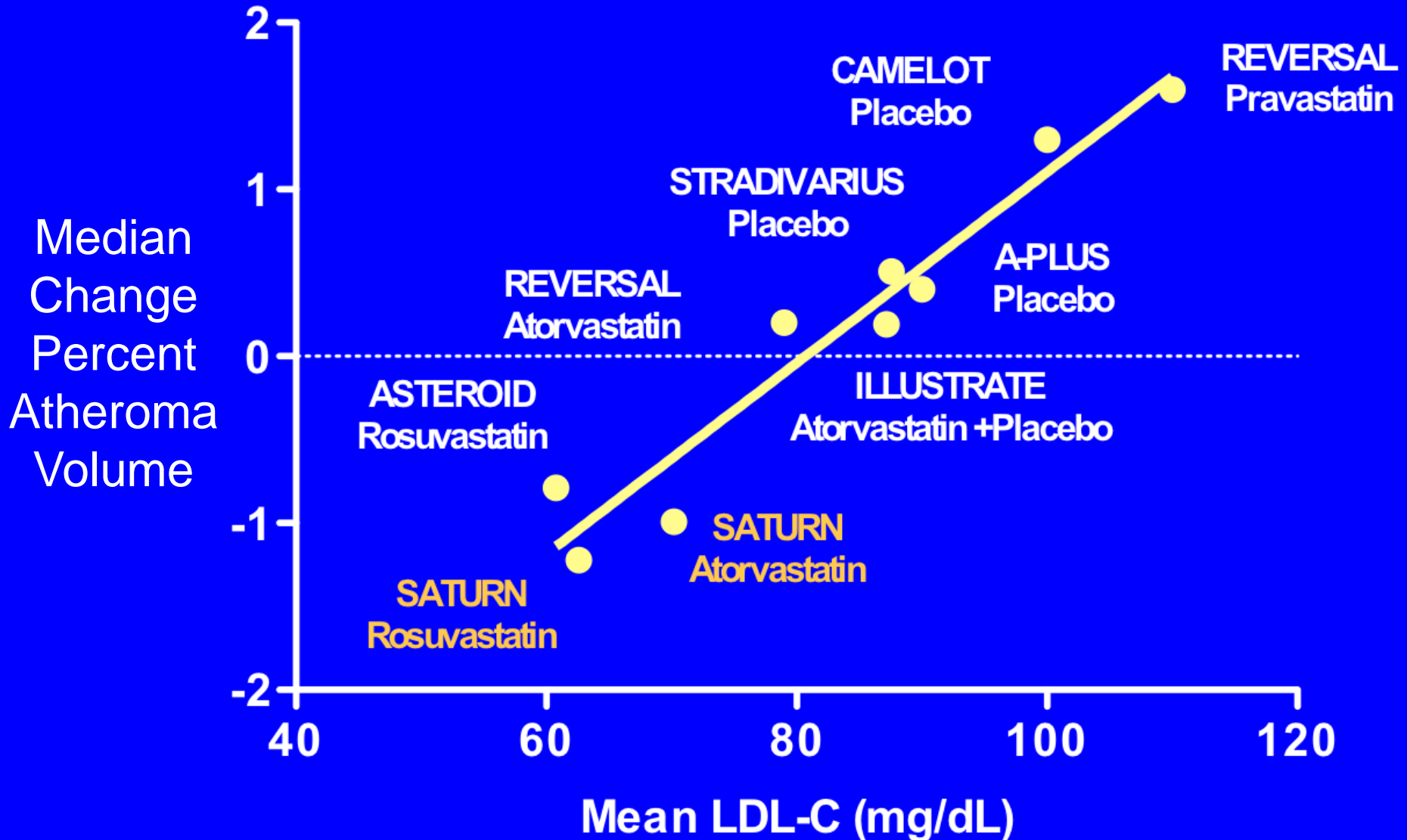
# Fraction of Patients Exhibiting Regression



# Subgroups Demonstrating Heterogeneity



# LDL-C and Disease Progression



# Adverse Events: Safety Population (n=1385)

Parameter	Atorvastatin (n=691)	Rosuvastatin (n=691)
Major cardiovascular event	7.1%	7.5%
ALT >3x ULN†	2.0%	0.7%
CK >5x ULN	0.7%	0.3%
Proteinuria*	1.7%	3.8%
Creatinine >ULN	3.0%	3.3%
Change HbA1c (%)	0.09	0.05

† P=0.04 and \* P=0.02 for comparison between groups

# Conclusions

- Rosuvastatin 40 mg resulted in moderately lower LDL-C and higher HDL-C than atorvastatin 80 mg.
- For the primary IVUS endpoint, the extent of regression was similar for both regimens ( $P=0.17$ ).
- However, for the secondary IVUS endpoint, a greater degree of regression was observed with rosuvastatin compared with atorvastatin ( $P=0.01$ ).
- A low number of clinical and biochemical adverse events were observed in both groups.

# Publication Available On-line

[www.nejm.org](http://www.nejm.org)

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ORIGINAL ARTICLE

## Effect of Two Intensive Statin Regimens on Progression of Coronary Disease

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# A Final Thought

- Maximal statin therapy, achieving optimal LDL-C and HDL-C levels, is well tolerated and promotes extensive disease regression.
- The extent and frequency of regression observed in the SATURN trial is unprecedented.
- The finding that nearly one third of patients continue to progress supports the need to develop additional anti-atherosclerotic therapies.