AFRICA STEMI LIVE 2018

Heart of Africa

AFRICA STEMI LIVE!

2018

THE EPIDEMIC OF CORONARY ARTERY DISEASE HAS
ARRIVED IN AFRICA.
ARE YOU READY FOR IT?

Five Myths About Statins (Cholesterol Lowering)

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Secretary General, PASCAR

Governor, African Chapter, ACC

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Disclosures

- None

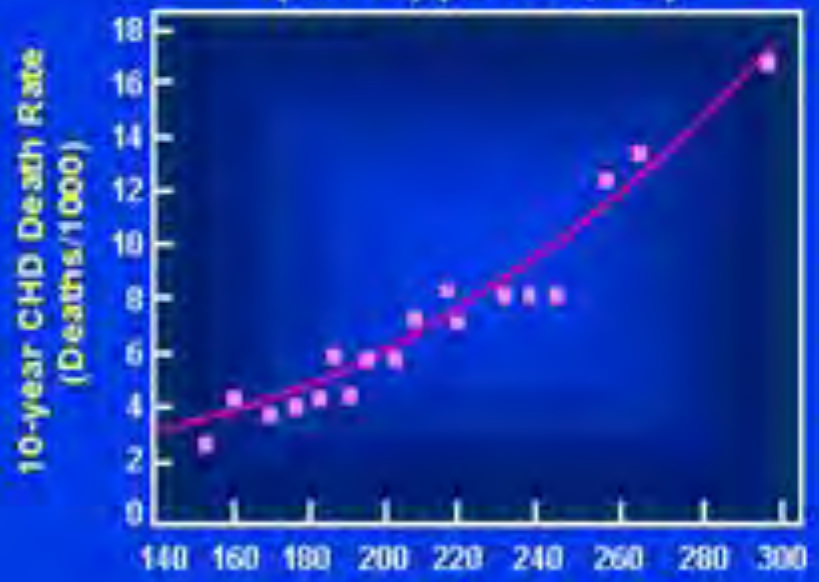
Outline

- Does high cholesterol cause heart disease?
- Does lowering LDL cholesterol lower heart disease?
- Is cholesterol lowering useful in primary prevention (low risk)?
- Does the risk of diabetes outweigh benefits of cholesterol lowering?
- Does cholesterol lowering cause neuro-cognitive decline?
- Does cholesterol lowering increase cancer risk?

Relationship Between Cholesterol and CHD Risk

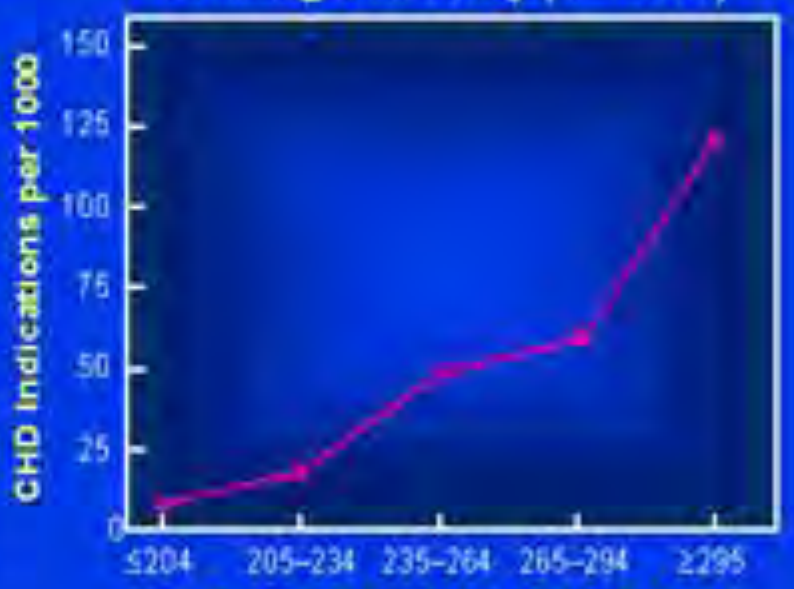
Epidemiologic Trials

Multiple Risk Factor Intervention Trial (MRFIT) (n = 361,662)



Each 1% increase in total cholesterol level is associated with a 2% increase in CHD risk

Framingham Study (n = 5209)



1% reduction in total cholesterol resulted in a 2% decrease in CHD risk

Gotto AM Jr, et al. *Circulation*. 1990;81:1721–1733
Castelli WP. *Am J Med*. 1984;76:4–12.

4S: Cardiovascular Endpoints

Post-MI or Angina Patients with Raised Cholesterol

Outcomes	Number of events			
	placebo (*n*=2223)	simvastatin (*n*=2221)	Relative risk reduction (%)	*p*-value
Total mortality*	256	182	30	<0.001
Coronary death	189	111	42	<0.001
Major coronary events	622	431	34	<0.001
PCTA/CABG	383	252	37	<0.001

* primary endpoint

4S Group. *Lancet* 1994;**344**:1383–1389.

WOSCOPS: Nonfatal MI and CHD Death

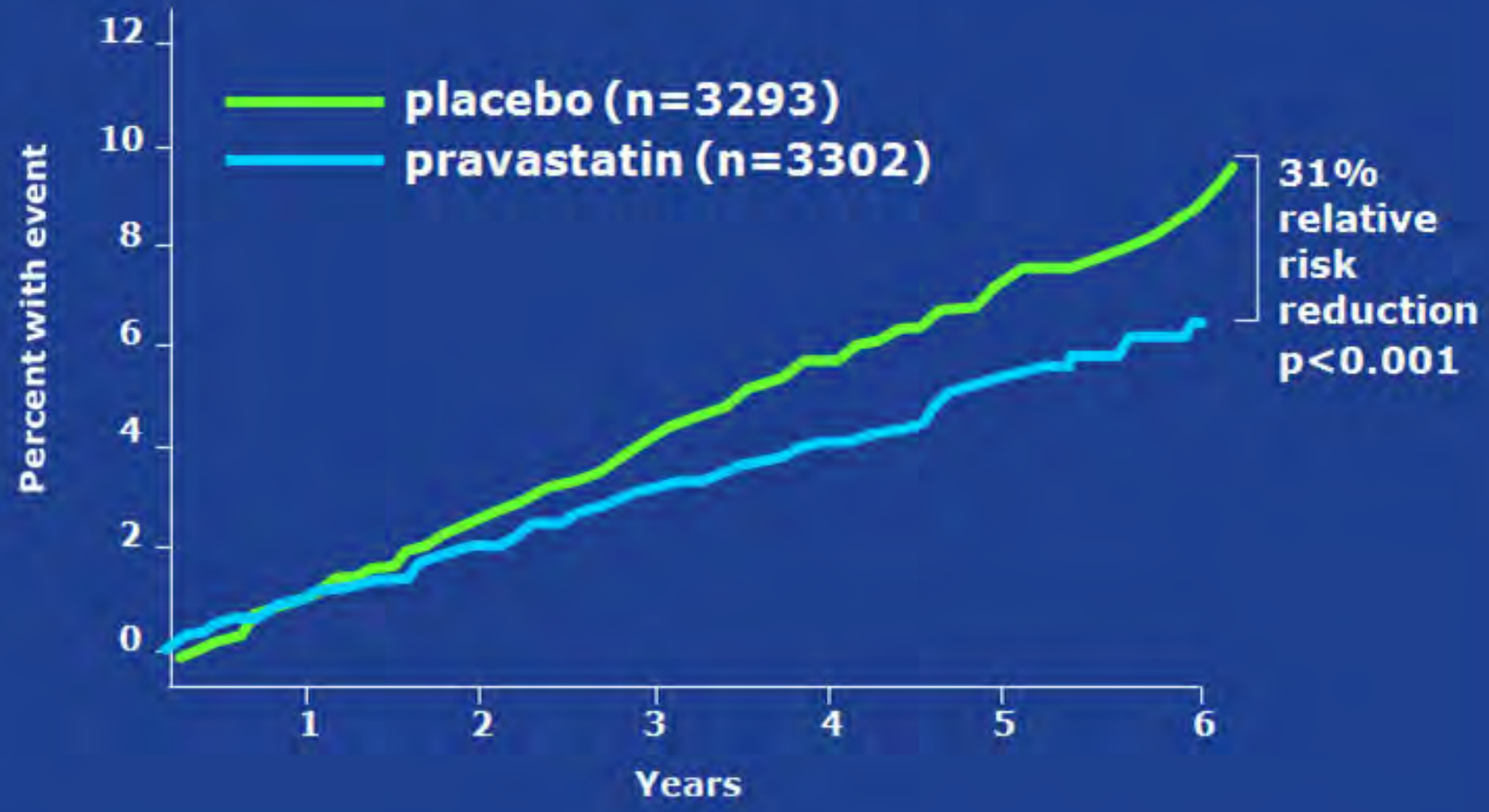
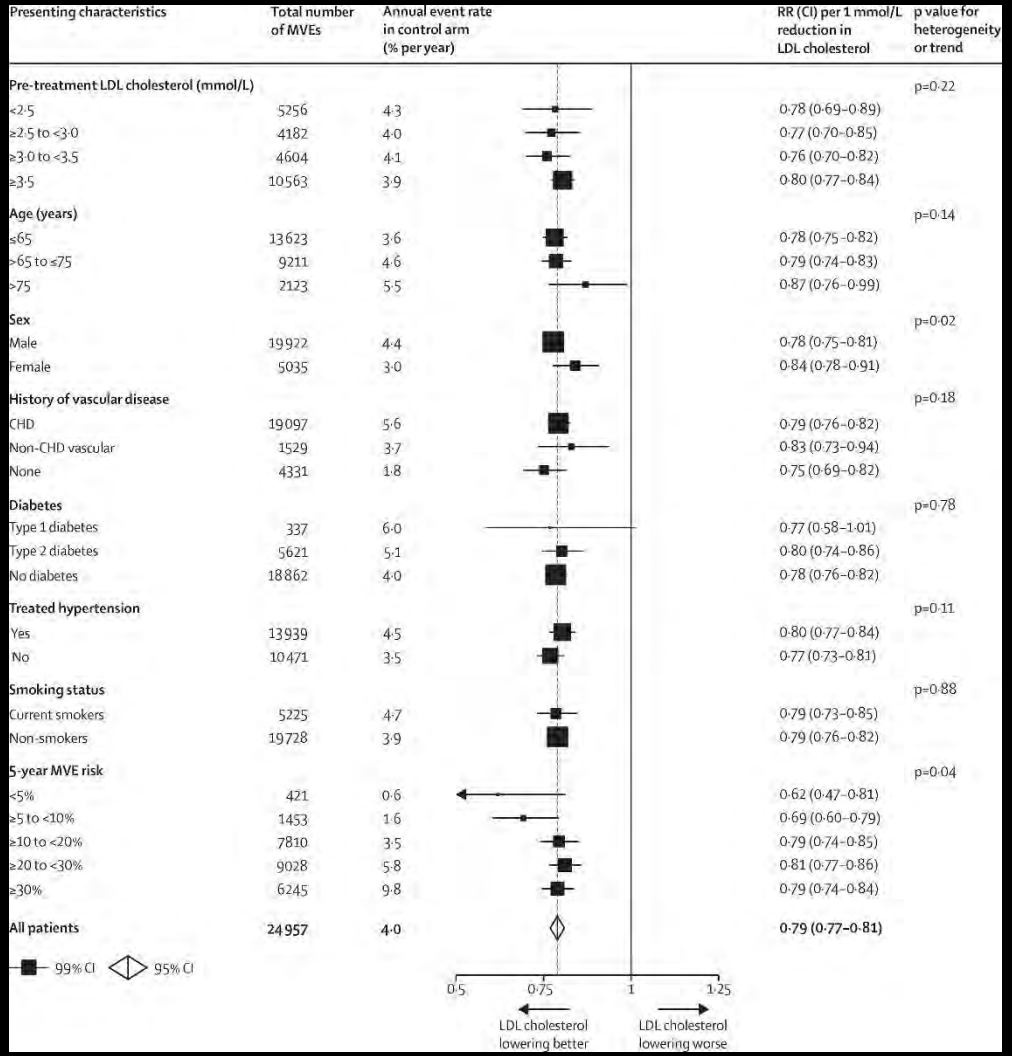


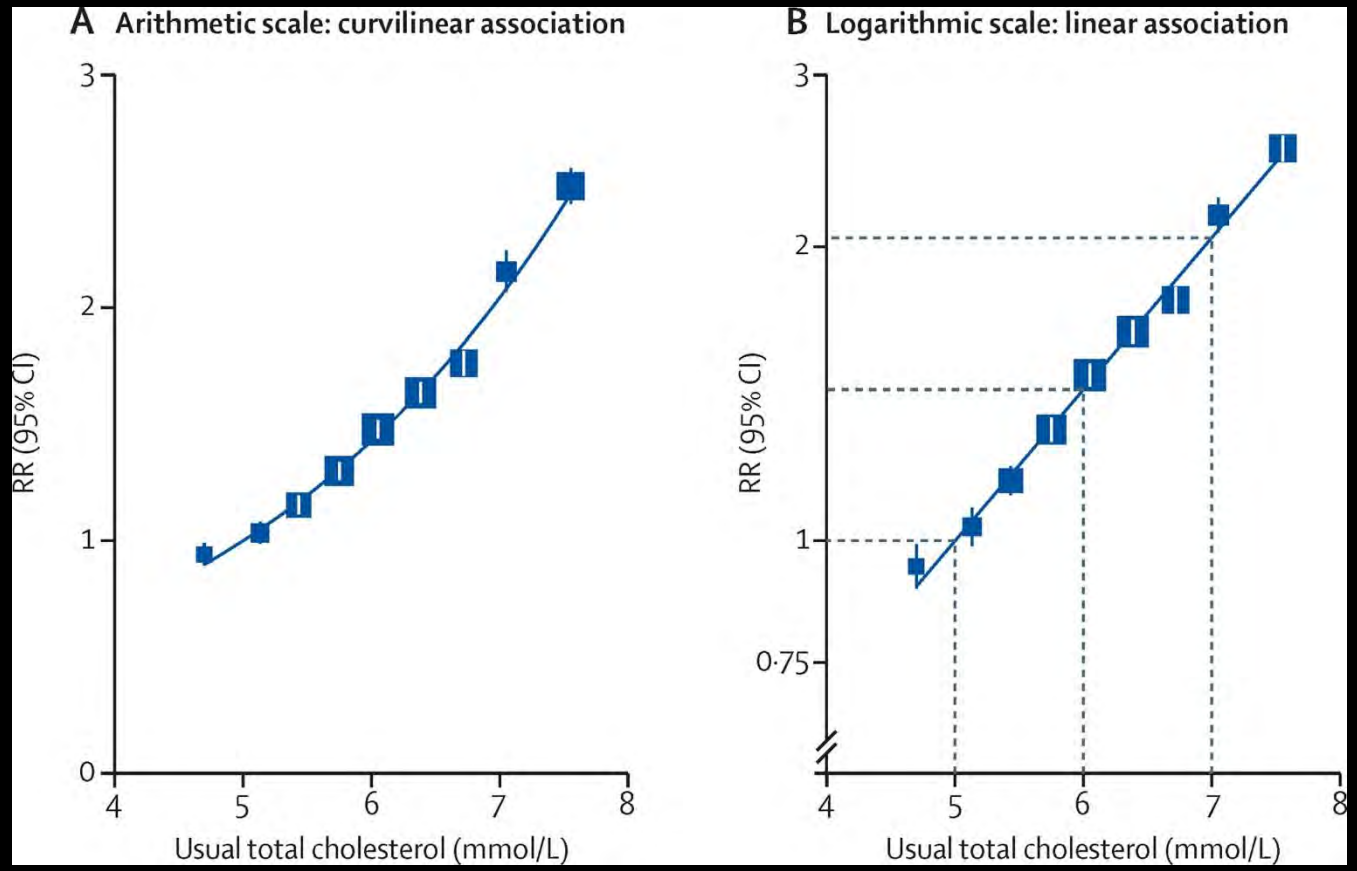
Figure 1



Presenting characteristics	Total number of MVEs	Annual event rate in control arm (% per year)	RR (CI) per 1 mmol/L reduction in LDL cholesterol	p value for heterogeneity or trend
Pre-treatment LDL cholesterol (mmol/L)				p=0·22
<2·5	5256	4·3	0·78 (0·69–0·89)	
≥2·5 to <3·0	4182	4·0	0·77 (0·70–0·85)	
≥3·0 to <3·5	4604	4·1	0·76 (0·70–0·82)	
≥3·5	10563	3·9	0·80 (0·77–0·84)	
Age (years)				p=0·14
≤65	13623	3·6	0·78 (0·75–0·82)	
>65 to ≤75	9211	4·6	0·79 (0·74–0·83)	
>75	2123	5·5	0·87 (0·76–0·99)	
Sex				p=0·02
Male	19922	4·4	0·78 (0·75–0·81)	
Female	5035	3·0	0·84 (0·78–0·91)	
History of vascular disease				p=0·18
CHD	19097	5·6	0·79 (0·76–0·82)	
Non-CHD vascular	1529	3·7	0·83 (0·73–0·94)	
None	4331	1·8	0·75 (0·69–0·82)	
Diabetes				p=0·78
Type 1 diabetes	337	6·0	0·77 (0·58–1·01)	
Type 2 diabetes	5621	5·1	0·80 (0·74–0·86)	
No diabetes	18862	4·0	0·78 (0·76–0·82)	
Treated hypertension				p=0·11
Yes	13939	4·5	0·80 (0·77–0·84)	
No	10471	3·5	0·77 (0·73–0·81)	
Smoking status				p=0·88
Current smokers	5225	4·7	0·79 (0·73–0·85)	
Non-smokers	19728	3·9	0·79 (0·76–0·82)	
5-year MVE risk				p=0·04
<5%	421	0·6	0·62 (0·47–0·81)	
≥5 to <10%	1453	1·6	0·69 (0·60–0·79)	
≥10 to <20%	7810	3·5	0·79 (0·74–0·85)	
≥20 to <30%	9028	5·8	0·81 (0·77–0·86)	
≥30%	6245	9·8	0·79 (0·74–0·84)	
All patients	**24957**	**4·0**	**0·79 (0·77–0·81)**	

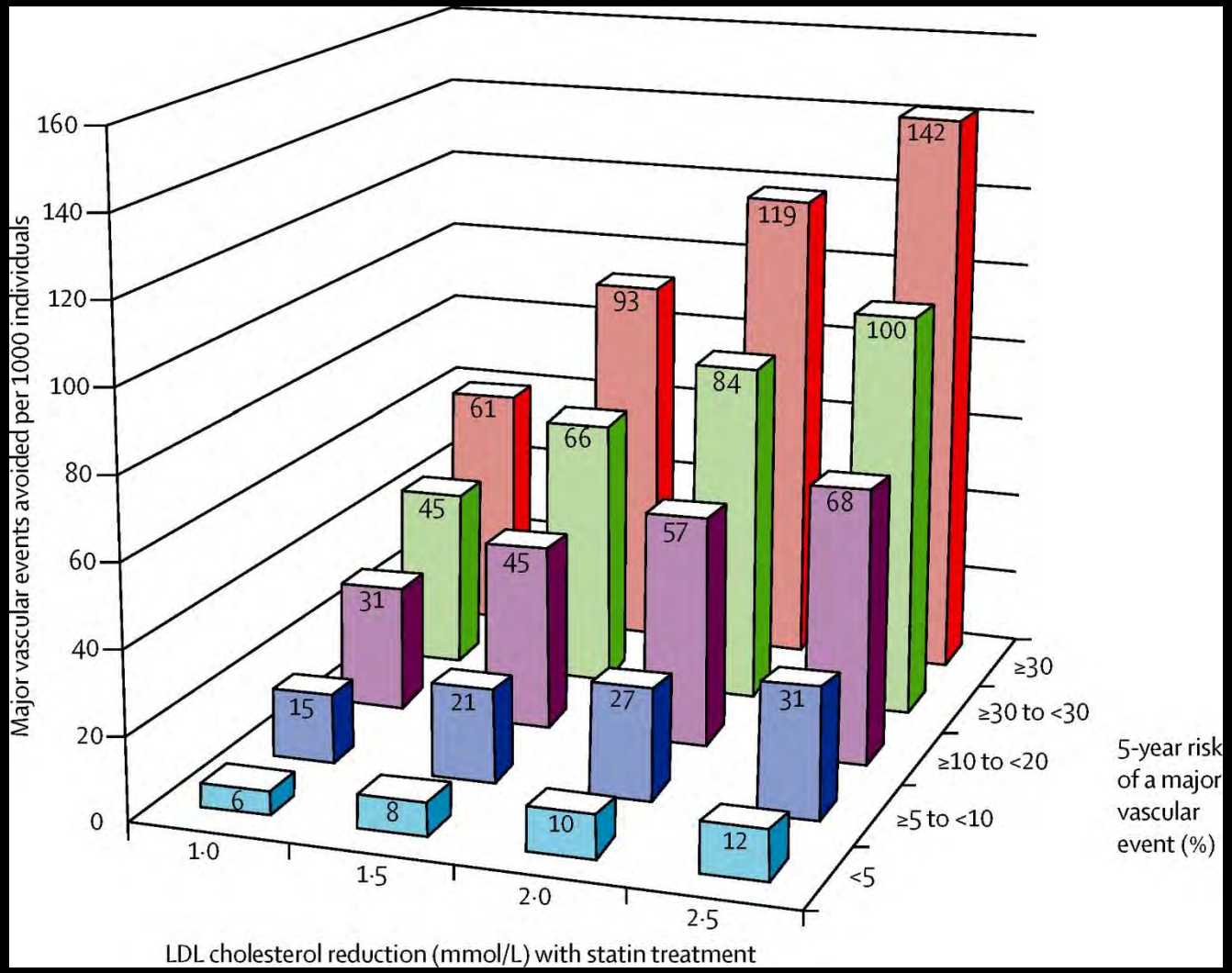
The Lancet 2016 388, 2532-2561DOI: (10.1016/S0140-6736(16)31357-5)

Figure 2



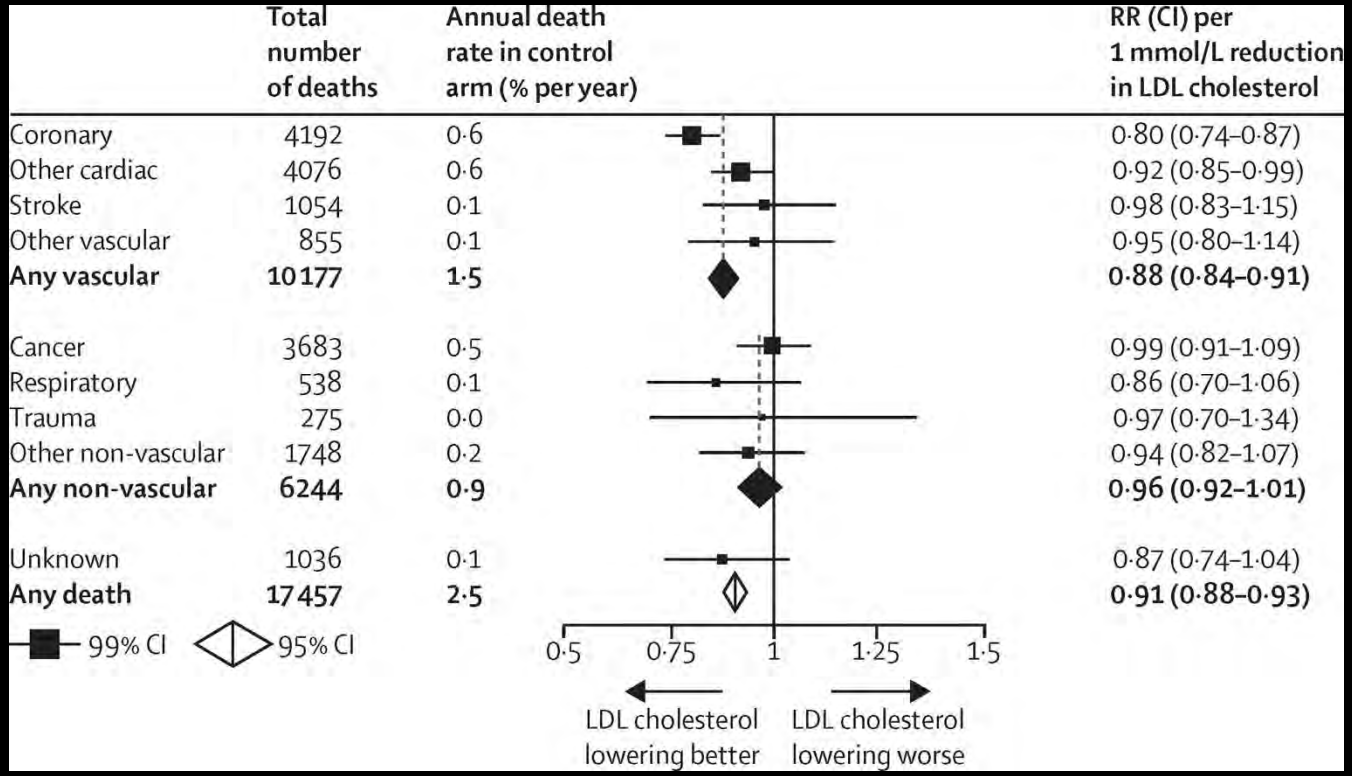
The Lancet 2016 388, 2532-2561DOI: (10.1016/S0140-6736(16)31357-5)

Figure 6



The Lancet 2014 384, 607-617DOI: (10.1016/S0140-6736(14)61009-6)

Figure 6



The Lancet 2016 388, 2532-2561DOI: (10.1016/S0140-6736(16)31357-5)

From: **Association Between Lowering LDL-C and Cardiovascular Risk Reduction Among Different Therapeutic InterventionsA Systematic Review and Meta-analysis**

JAMA. 2016;316(12):1289-1297. doi:10.1001/jama.2016.13985

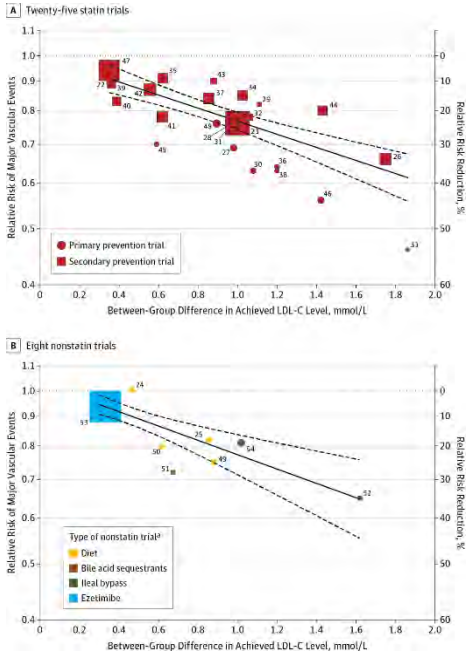
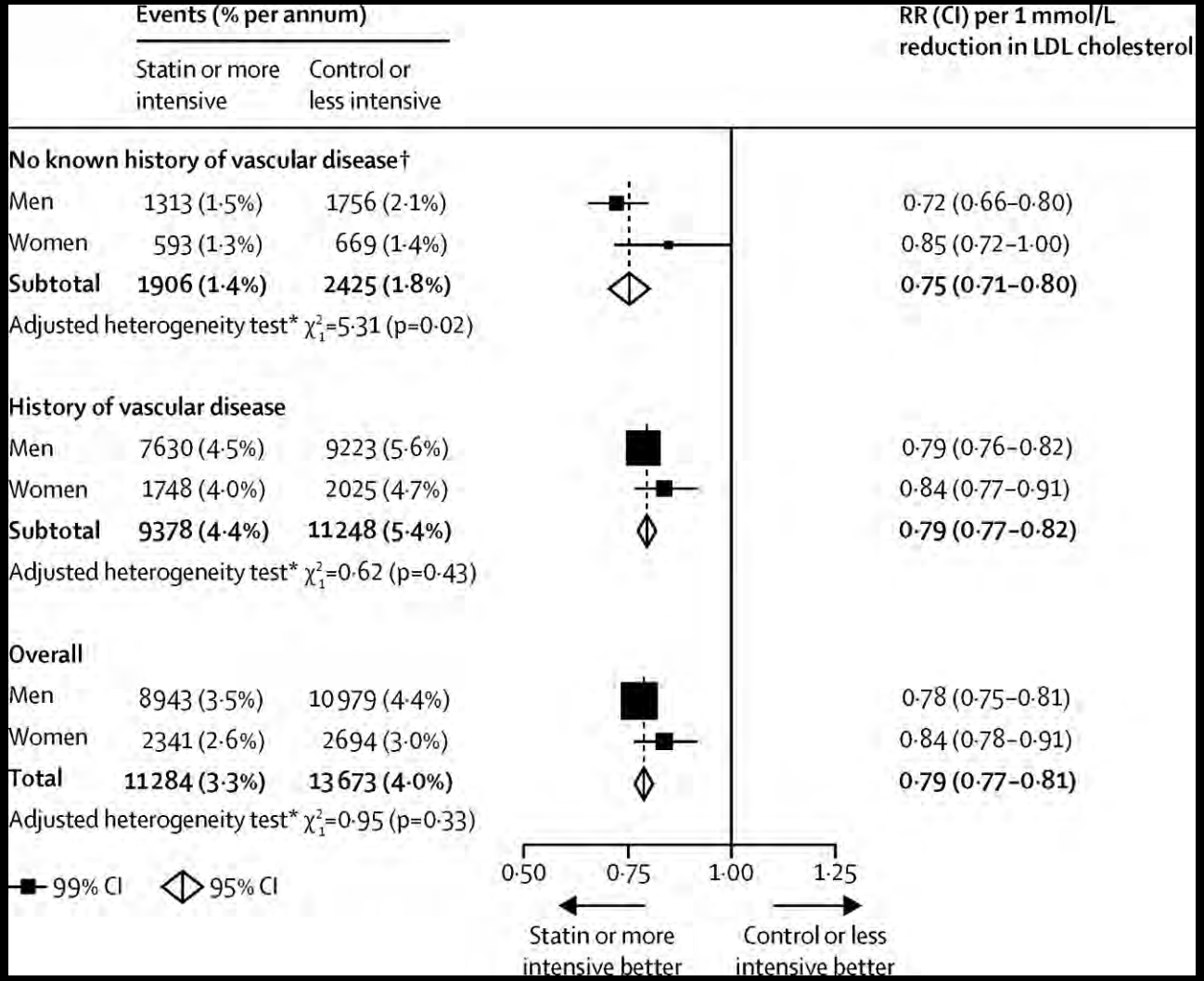


Figure Legend:

Association of Between-Group Difference in Achieved Low-Density Lipoprotein Cholesterol (LDL-C) Levels and Risk of Major Vascular EventsThe LDL-C differences are either mean or median depending on what was presented for each trial. Major vascular events include cardiovascular death, acute myocardial infarction or other acute coronary syndrome, coronary revascularization, and stroke (eTables 1-5 in the Supplement provide additional details). The size of the data marker is proportional to the weight in the meta-regression. The meta-regression slope (predicted relative risk for degree of LDL-C reduction) is represented by the solid line and the 95% CIs by the dashed lines. To convert LDL-C from mmol/L to mg/dL, divide by 0.0259.

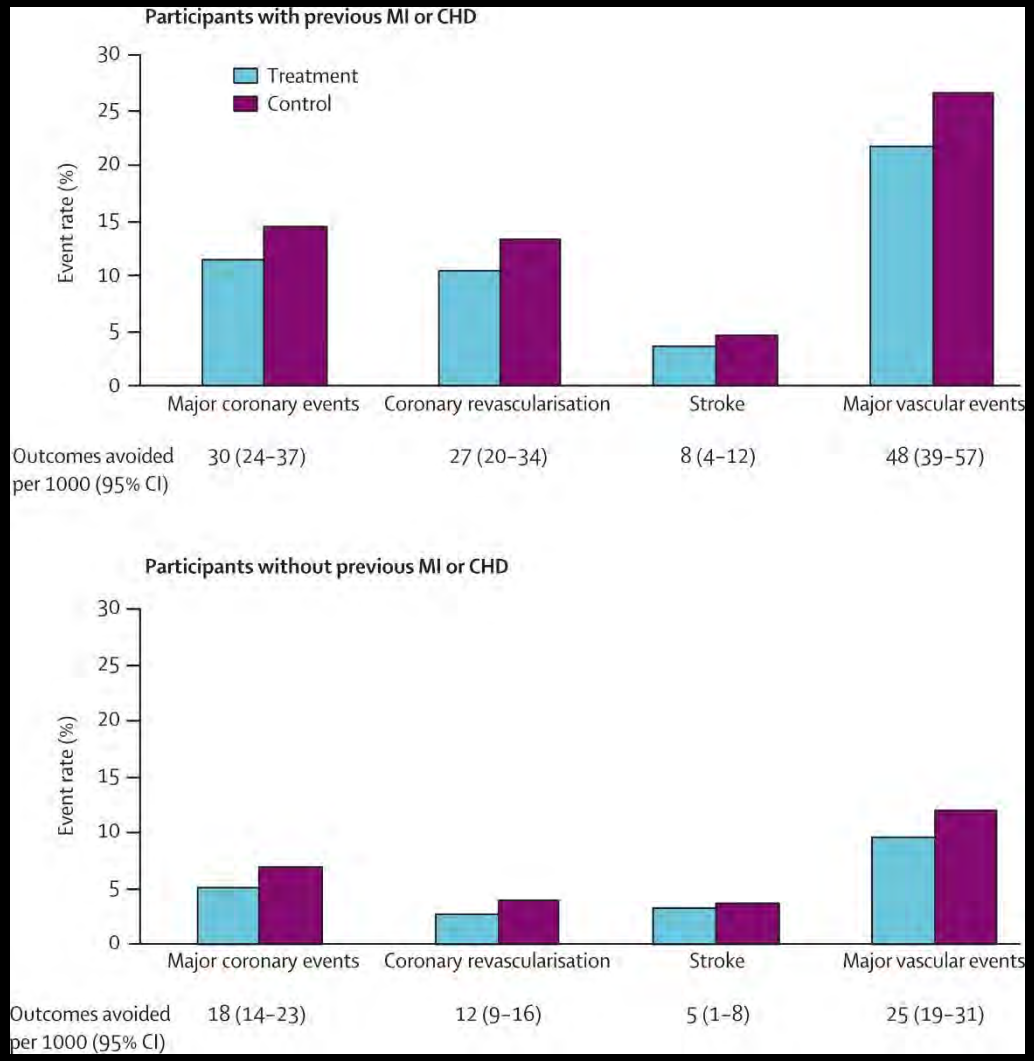
[a]The square data markers indicate secondary prevention trials. There was 1 primary prevention trial and 1 secondary prevention trial

Figure 1



The Lancet 2015 385, 1397-1405DOI: (10.1016/S0140-6736(14)61368-4)

Figure 6



The Lancet 2005 366, 1267-1278DOI: (10.1016/S0140-6736(05)67394-1)

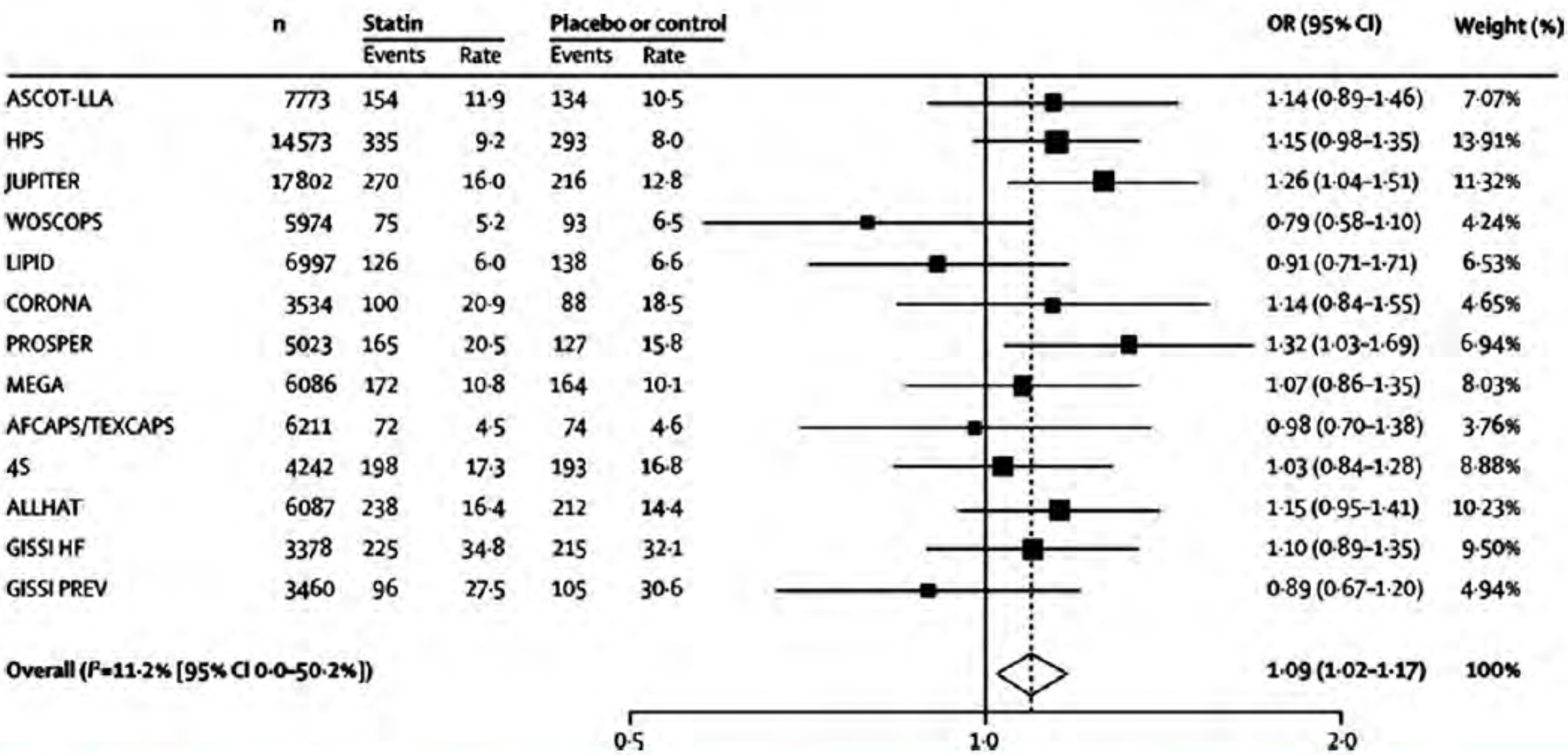


Figure 3 **Association Between Statin Therapy and Incident Diabetes in 13 Major Cardiovascular Trials**

Events per 1,000 patient-years. Weights are from random-effects analysis. Figure was originally published in Sattar et al. (66); permission for its use granted by the publisher. CI = confidence interval; OR = odds ratio.

Effects on major vascular events of 1 mmol/L reduction in LDL-C: Patients with and without diabetes from 14 RCTs

Major vascular event and prior diabetes	Events (%) Treatment	Control	RR (CI)
Major coronary event			
Diabetes	776 (8.3%)	979 (10.5%)	0.78 (0.69-0.87)
No diabetes	2561 (7.2%)	3441 (9.6%)	0.77 (0.73-0.81)
Any major coronary event	**3337 (7.4%)**	**4420 (9.8%)**	**0.77 (0.74-0.80)**
Test for heterogeneity within subgroup: x^2_1 = 0.1; p=0.8			
Coronary revascularisation			
Diabetes	491 (5.2%)	627 (6.7%)	0.75 (0.64-0.88)
No diabetes	2129 (6.0%)	2807 (7.9%)	0.76 (0.72-0.81)
Any Coronary revascularisation	**2620 (5.8%)**	**3434 (7.6%)**	**0.76 (0.73-0.80)**
Test for heterogeneity within subgroup: x^2_1 = 0.1; p=0.8			
Stroke			
Diabetes	407 (4.4%)	501 (5.4%)	0.79 (0.67-0.93)
No diabetes	933 (2.7%)	1116 (3.2%)	0.84 (0.76-0.93)
Any stroke	**1340 (3.0%)**	**1617 (3.7%)**	**0.83 (0.77-0.88)**
Test for heterogeneity within subgroup: x^2_1 = 0.8; p=0.4			
Major vascular event			
Diabetes	1465 (15.6%)	1782 (19.2%)	0.79 (0.72-0.86)
No diabetes	4889 (13.7%)	6212 (17.4%)	0.79 (0.76-0.82)
Any major vascular event	**6354 (14.1%)**	**7994 (17.8%)**	**0.79 (0.77-0.81)**
Test for heterogeneity within subgroup: x^2_1 = 0.0; p=0.9			

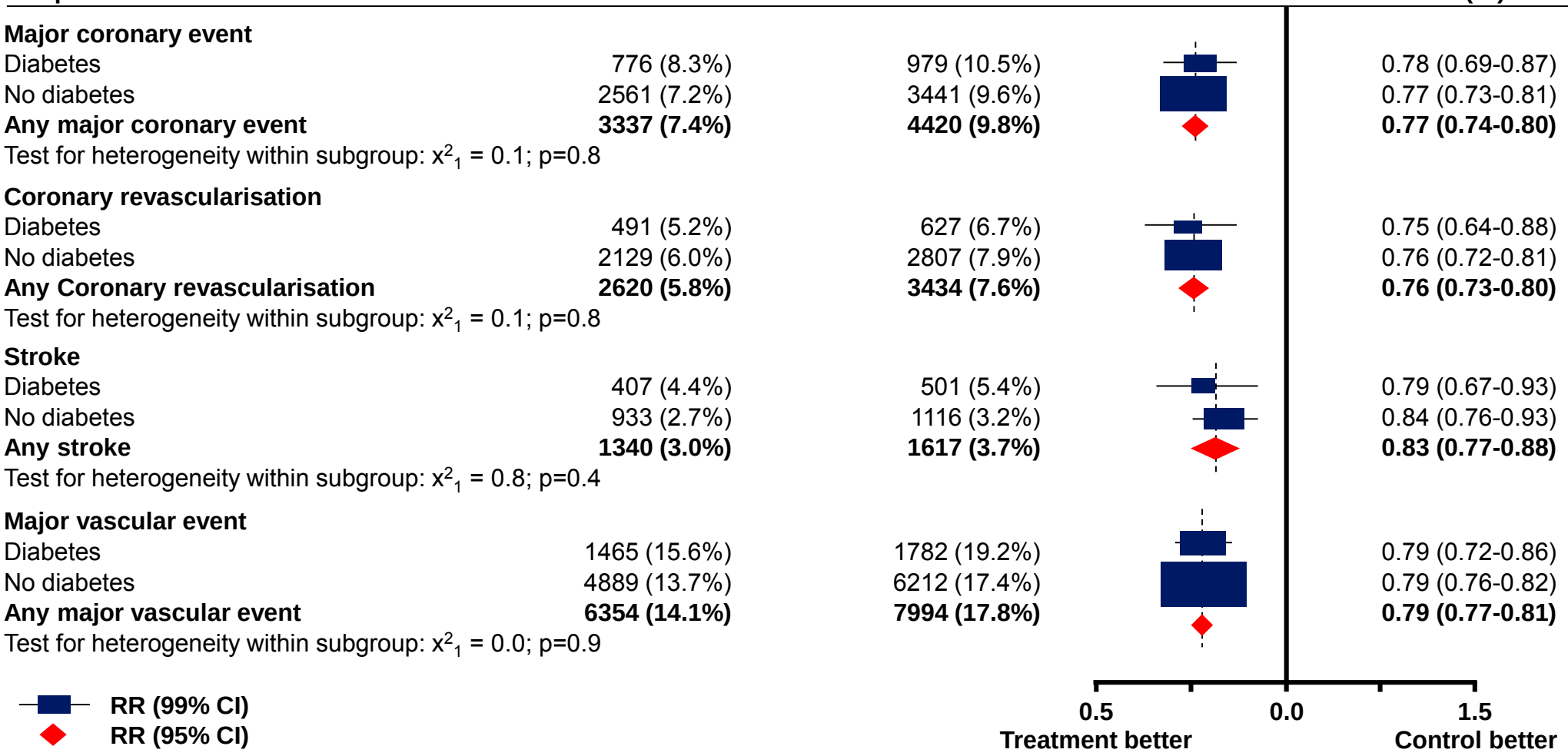
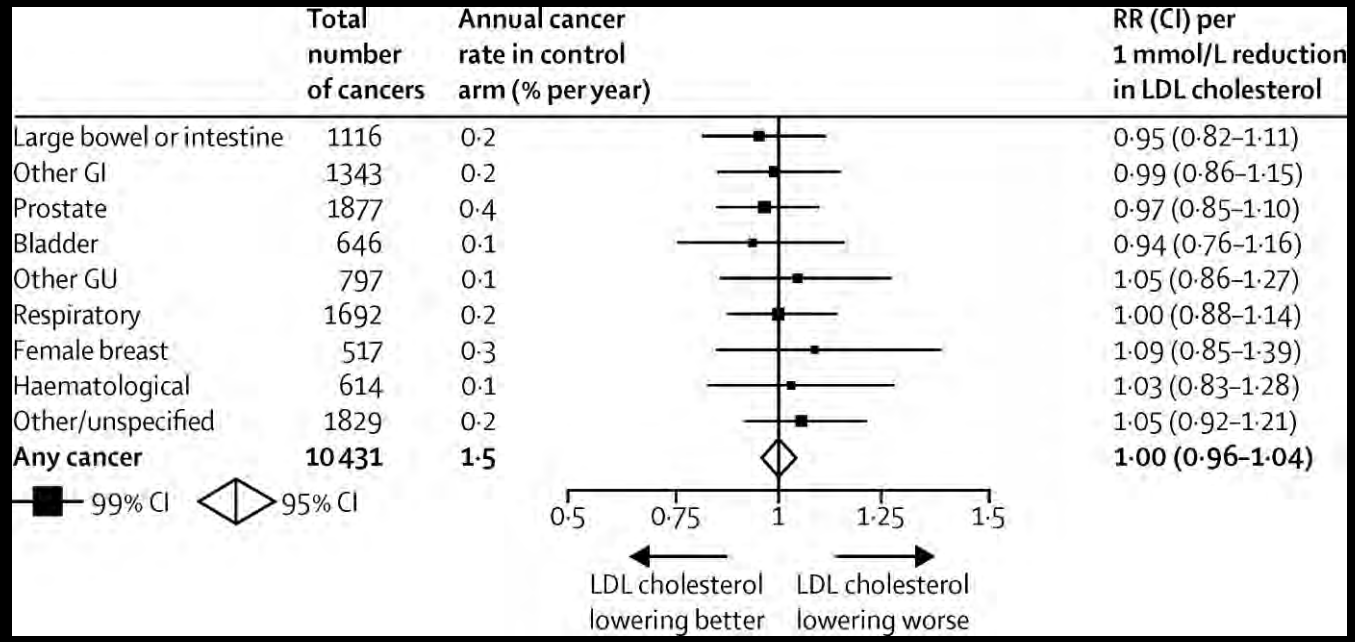


Figure 7



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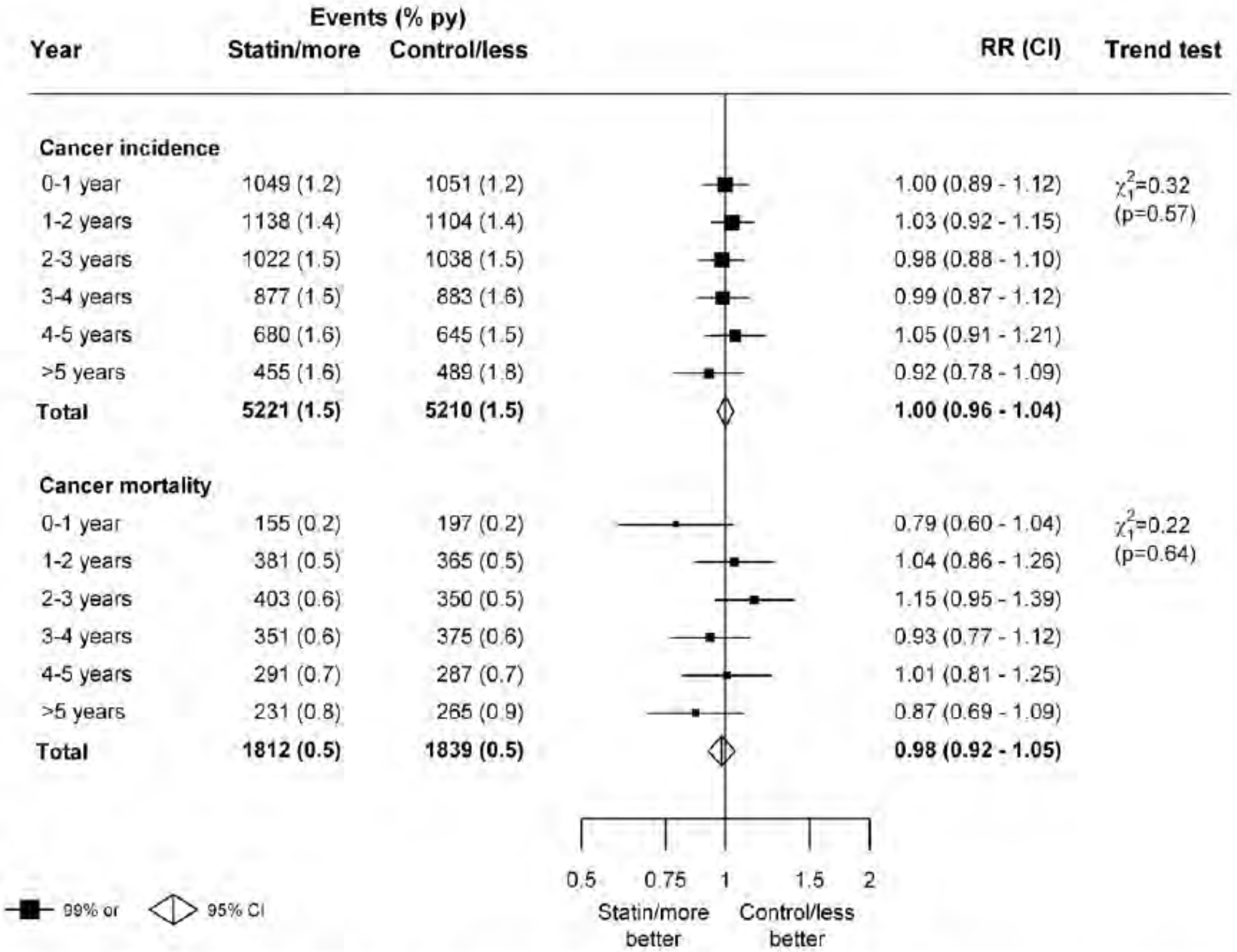

Figure 3. Effects of statin therapy on cancer incidence and mortality, by duration of treatment. Symbols and conventions as in Figure 1.
doi:10.1371/journal.pone.0029849.g003

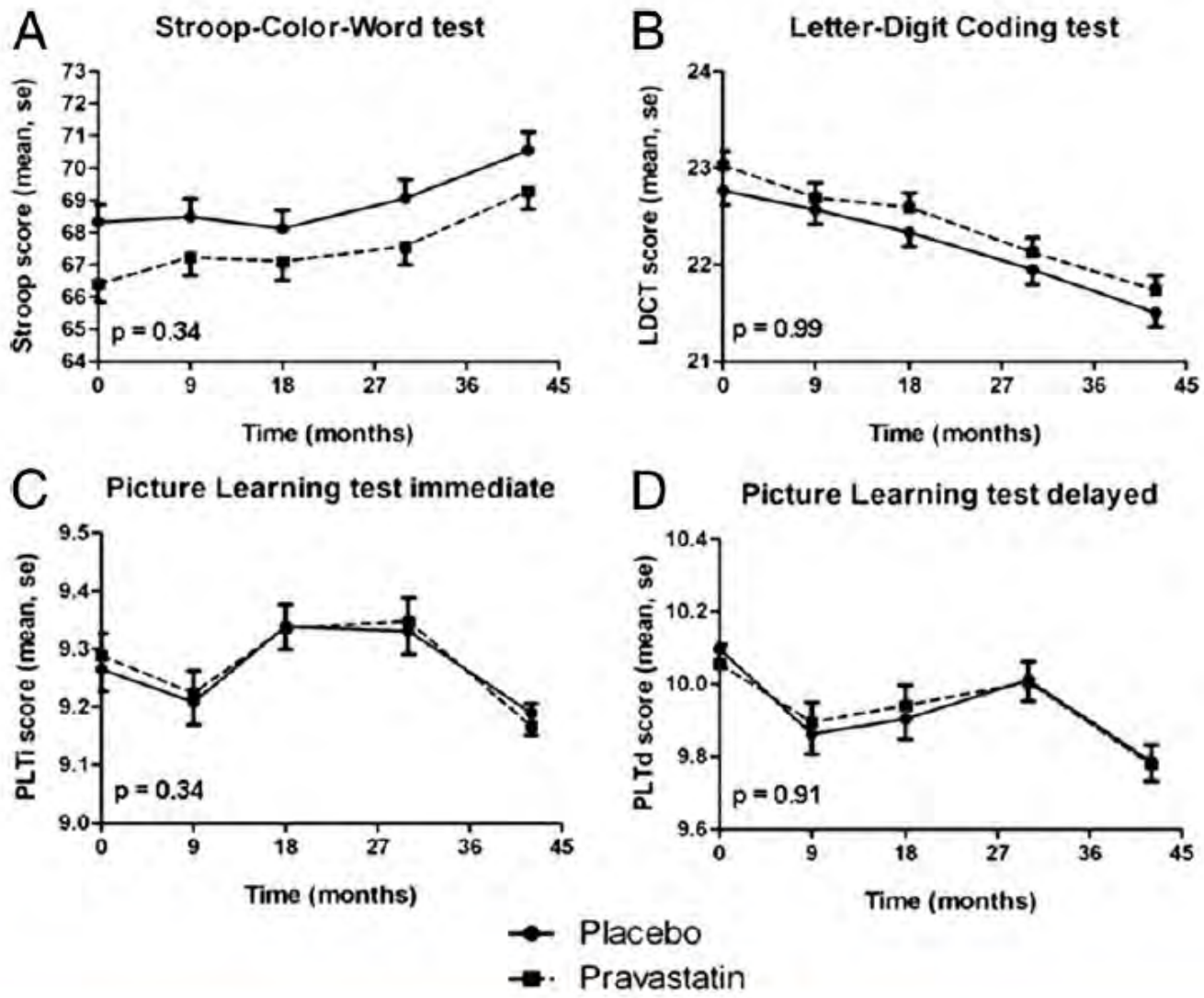

Figure 1 **Effect of Pravastatin on Cognitive Function Among Participants of the PROSPER Study**

The p values represent the statistical significance of the difference in test score changes over time between statin users **(squares)** and nonusers **(circles)** in the PROSPER study. Means were assessed using linear mixed models adjusted for sex, age, educational status, country, and version of test where appropriate. **(A)** Stroop-color-word test; **(B)** letter-digit coding test (LDCT); **(C)** picture learning test immediate (PLTi); **(D)** picture learning test delayed (PLTd). Figure was originally published in Trompet et al. (42); permission for its use granted by the publisher.

Thank You