Dear Reader,

We are honoured to present you the 4th issue of "The State of the Heart", which explores the clinical evidence supporting the new understandings and happenings in the field of cardiology.

In India, the epidemiological transition from predominantly infectious disease conditions to non-communicable diseases has occurred over a rather succinct period of time. Despite wide heterogeneity in the prevalence of cardiovascular risk factors across different regions, CVD has emerged as the leading cause of death in all parts of India, including poorer states and rural areas. In this research driven time, management of these disorders is also constantly evolving towards the betterment whether it's pharmacological or non-pharmacological.

Being a healthcare custodian of the society, clinicians are constantly thriving to be abreast with the novel understandings of disease and its management. In this context, this is our initiative to provide you a compiled and to the point information.

Present booklet comprises of recent and latest deeds in the field of cardiovascular diseases like dyslipidemia, coronary artery disease, heart failure and its management. We hope that it will facilitate increased cooperation and innovation, and enthuse commitment to prevent these life-threatening and disabling disorders and providing the best possible care for people who suffer from these conditions.

Editor in chief

Dr. Dixit Patel (MBBS, MD)

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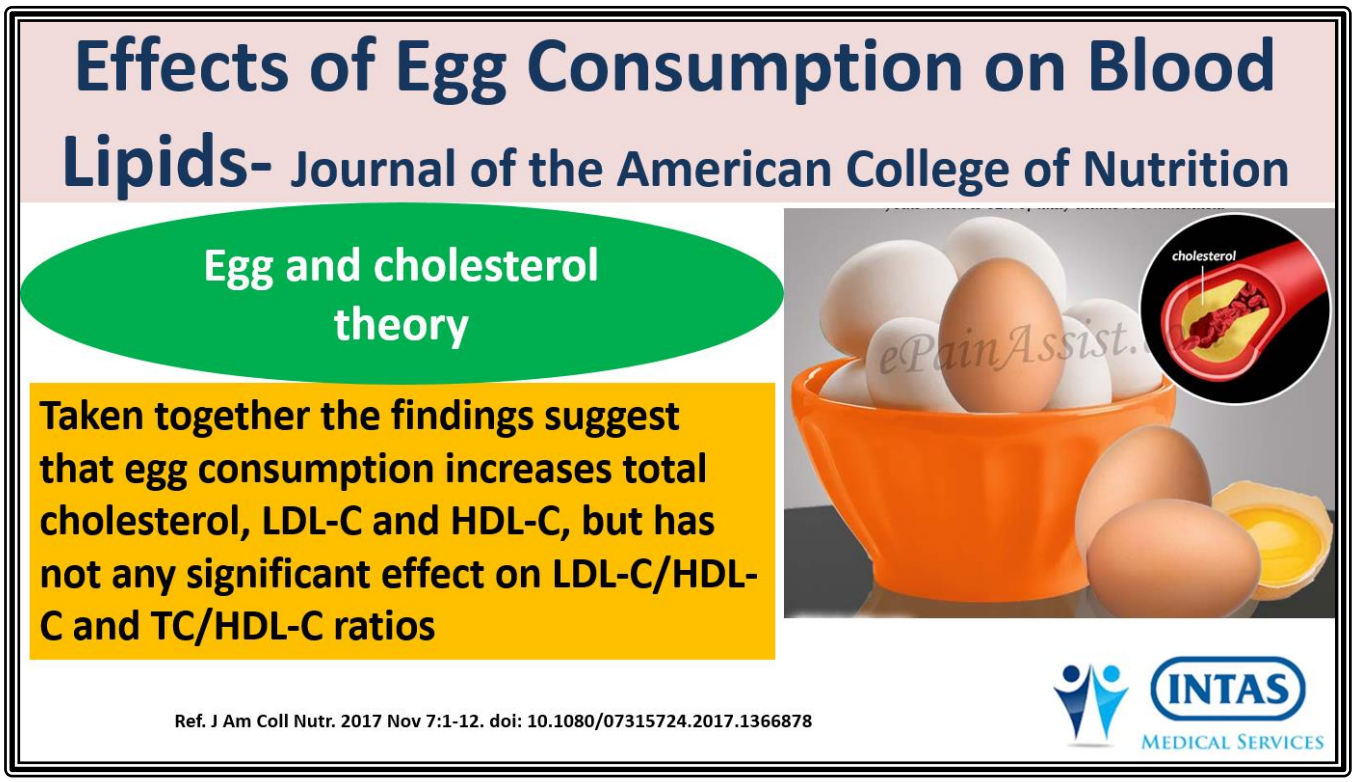
1. Effects of Egg Consumption on Blood Lipids: Journal of the American College of Nutrition



BACKGROUND: It is widely agreed that egg consumption only modestly influences serum lipid concentrations. However, there is no meta-analysis summarizing existing randomized controlled trials.

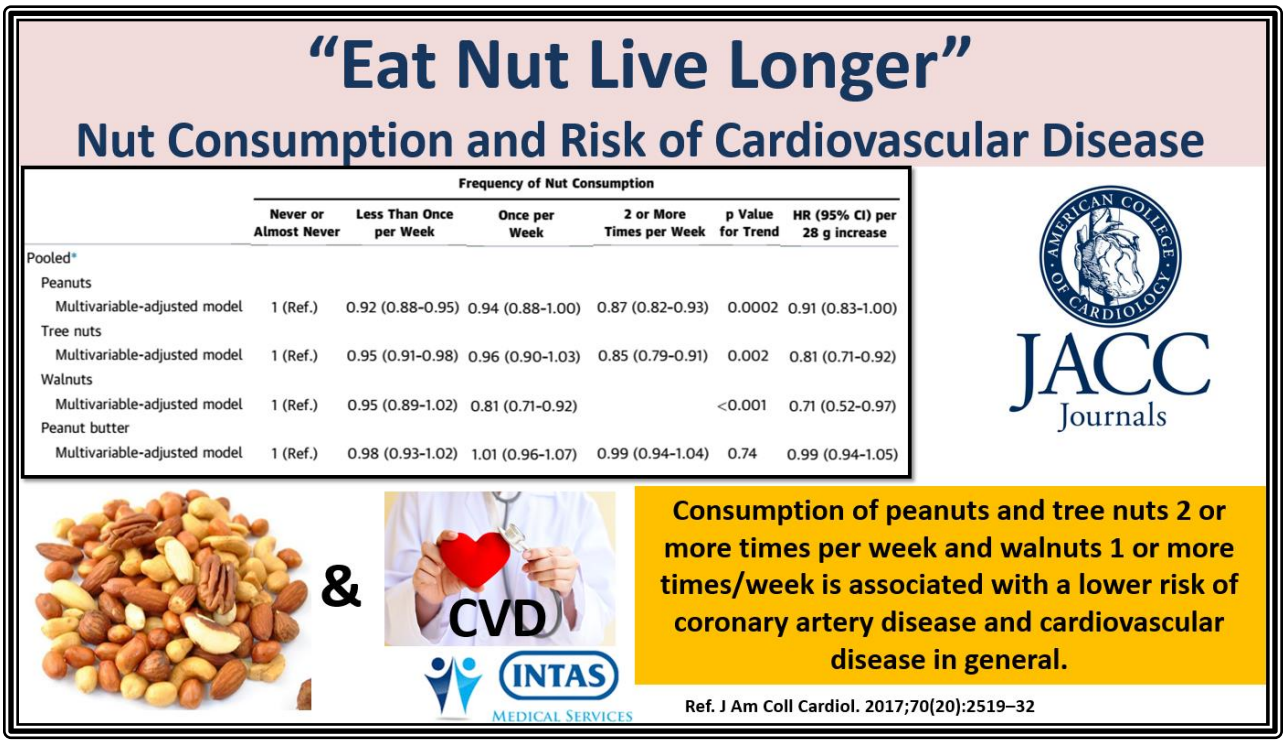
OBJECTIVE: The purpose of this study was to conduct a meta-analysis of published randomized controlled trials to explore the quantitative effect of egg consumption on serum lipid concentrations.

DESIGN: Online databases including MEDLINE, Proquest and Google Scholar were systematically searched. Studies that were published after 2000 and compared serum lipids concentrations in egg-consumers and non egg-consumers were included. The data were obtained from 28 studies. Weighted mean differences were calculated as the ultimate effect using random effects model.

RESULTS: Overall, egg consumption increased total cholesterol (TC) by 5.60 mg/dL (95% CI: 3.11, 8.09; P<0.0001), low density lipoprotein-cholesterol (LDL-C) by 5.55 mg/dL (95% CI: 3.14, 7.69; P<0.0001) and high density lipoprotein-cholesterol (HDL-C) by 2.13 mg/dL (95% CI: 1.10, 3.16; P<0.0001) compared with the control group. Heterogeneity found between studies was explained partly by study design and participant response to dietary cholesterol. No effect of increased egg consumption on LDL-C:HDL-C and TC:HDL-C ratios, and triglyceride (TG) concentrations were found. No association was observed between number of eggs consumed per day or study duration and any of the serum lipid markers.

CONCLUSION: Consumption of egg increases total cholesterol, LDL-C and HDL-C, but not LDL-C:HDL-C, TC:HDL-C and TG compared with low egg control diets. To assess the risk of coronary events, future studies should focus on the postprandial effect of egg consumption and effects on coronary risk.

2. "Eat Nut Live Longer": Nut Consumption and Risk of Cardiovascular Disease



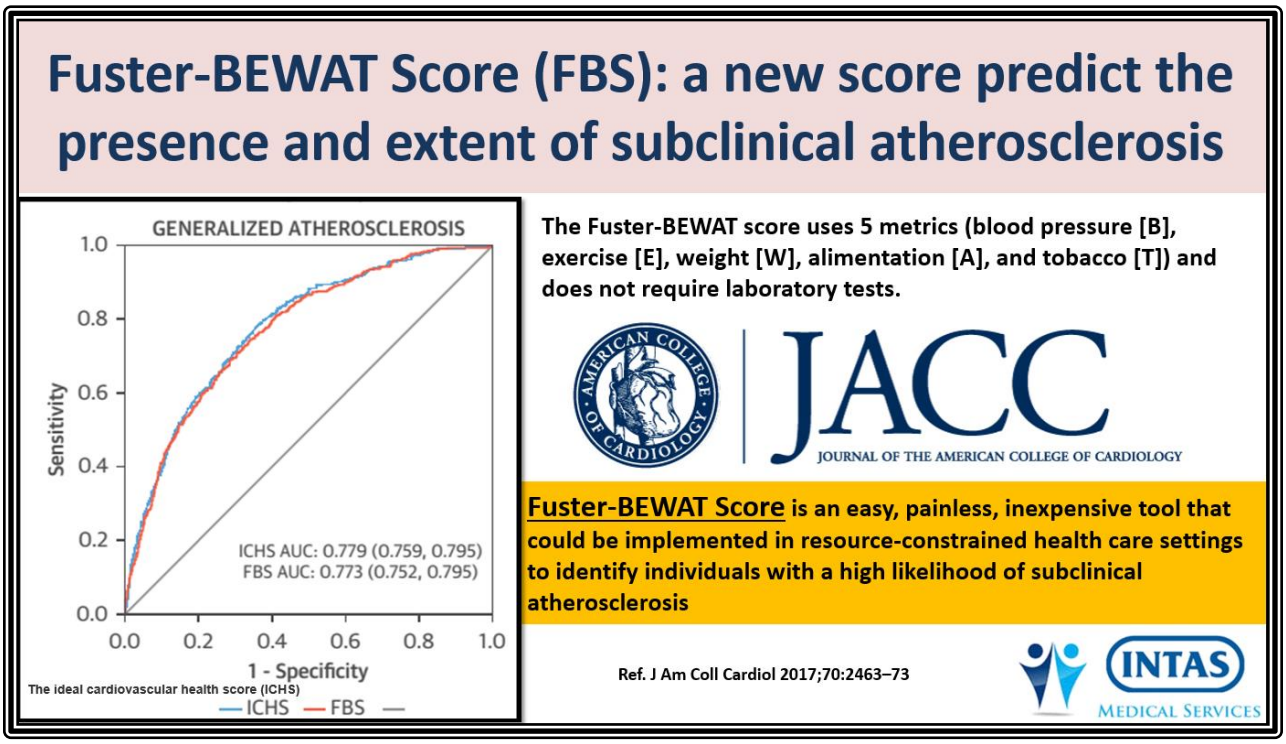
Background The associations between specific types of nuts, specifically peanuts and walnuts, and cardiovascular disease remain unclear. The authors sought to analyze the associations between the intake of total and specific types of nuts and cardiovascular disease, coronary heart disease, and stroke risk.

Methods The authors included 76,364 women from the Nurses' Health Study (1980 to 2012), 92,946 women from the Nurses' Health Study II (1991 to 2013), and 41,526 men from the Health Professionals Follow-Up Study (1986 to 2012) who were free of cancer, heart disease, and stroke at baseline. Nut consumption was assessed using food frequency questionnaires at baseline and was updated every 4 years.

Results During 5,063,439 person-years of follow-up, the authors documented 14,136 incident cardiovascular disease cases, including 8,390 coronary heart disease cases and 5,910 stroke cases. Total nut consumption was inversely associated with total cardiovascular disease and coronary heart disease after adjustment for cardiovascular risk factors. The pooled multivariable hazard ratios for cardiovascular disease and coronary heart disease among participants who consumed 1 serving of nuts (28 g) 5 or more times per week, compared with the reference category (never or almost never), were 0.86 (95% confidence interval: 0.79 to 0.93; p for trend = 0.0002) and 0.80 (95% confidence interval: 0.72 to 0.89; p for trend <0.001), respectively. Consumption of peanuts and tree nuts (2 or more times/week) and walnuts (1 or more times/week) was associated with a 13% to 19% lower risk of total cardiovascular disease and 15% to 23% lower risk of coronary heart disease.

Conclusions In 3 large prospective cohort studies, higher consumption of total and specific types of nuts was inversely associated with total cardiovascular disease and coronary heart disease.

3. Fuster-BEWAT Score (FBS): a new score predict the presence and extent of subclinical atherosclerosis.



Background The ideal cardiovascular health score (ICHS) is recommended for use in primary prevention. Simpler tools not requiring laboratory tests, such as the Fuster-BEWAT (blood pressure [B], exercise [E], weight [W], alimentation [A], and tobacco [T]) score (FBS), are also available.

Objectives The purpose of this study was to compare the effectiveness of ICHS and FBS in predicting the presence and extent of subclinical atherosclerosis.

Methods A total of 3,983 participants 40 to 54 years of age were enrolled in the PESA (Progression of Early Subclinical Atherosclerosis) cohort. Subclinical atherosclerosis was measured in right and left carotids, abdominal aorta, right and left iliofemoral arteries, and coronary arteries. Subjects were classified as having poor, intermediate, or ideal cardiovascular health based on the number of favorable ICHS or FBS.

Results With poor ICHS and FBS as references, individuals with ideal ICHS and FBS showed lower adjusted odds of having atherosclerotic plaques (ICHS odds ratio [OR]: 0.41; 95% confidence interval [CI]: 0.31 to 0.55 vs. FBS OR: 0.49; 95% CI: 0.36 to 0.66), coronary artery calcium (CACS) ≥1 (CACS OR: 0.41; 95% CI: 0.28 to 0.60 vs. CACS OR: 0.53; 95% CI: 0.38 to 0.74), higher number of affected territories (OR: 0.32; 95% CI: 0.26 to 0.41 vs. OR: 0.39; 95% CI: 0.31 to 0.50), and higher CACS level (OR: 0.40; 95% CI: 0.28 to 0.58 vs. OR: 0.52; 95% CI: 0.38 to 0.72). Similar levels of significantly discriminating accuracy were found for ICHS and FBS with respect to the presence of plaques (C-statistic: 0.694; 95% CI: 0.678 to 0.711 vs. 0.692; 95% CI: 0.676 to 0.709, respectively) and for CACS ≥1 (C-statistic: 0.782; 95% CI: 0.765 to 0.800 vs. 0.780; 95% CI: 0.762 to 0.798, respectively).

Conclusions Both scores predict the presence and extent of subclinical atherosclerosis with similar accuracy, highlighting the value of the FBS as a simpler and more affordable score for evaluating the risk of subclinical disease.

4. Ultralow LDL-C Still Predicts Early Subclinical Atherosclerosis- PESA study

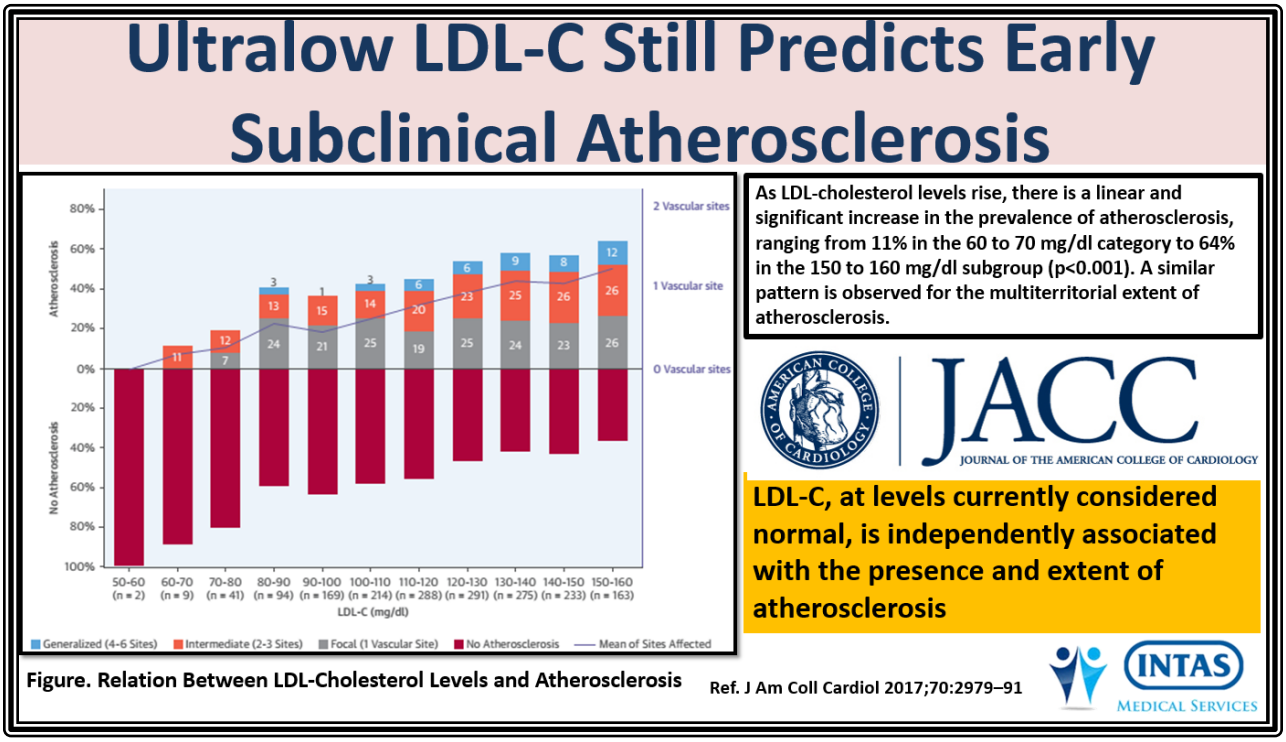


Figure. Relation Between LDL-Cholesterol Levels and Atherosclerosis Ref. J Am Coll Cardiol 2017;70:2979–91

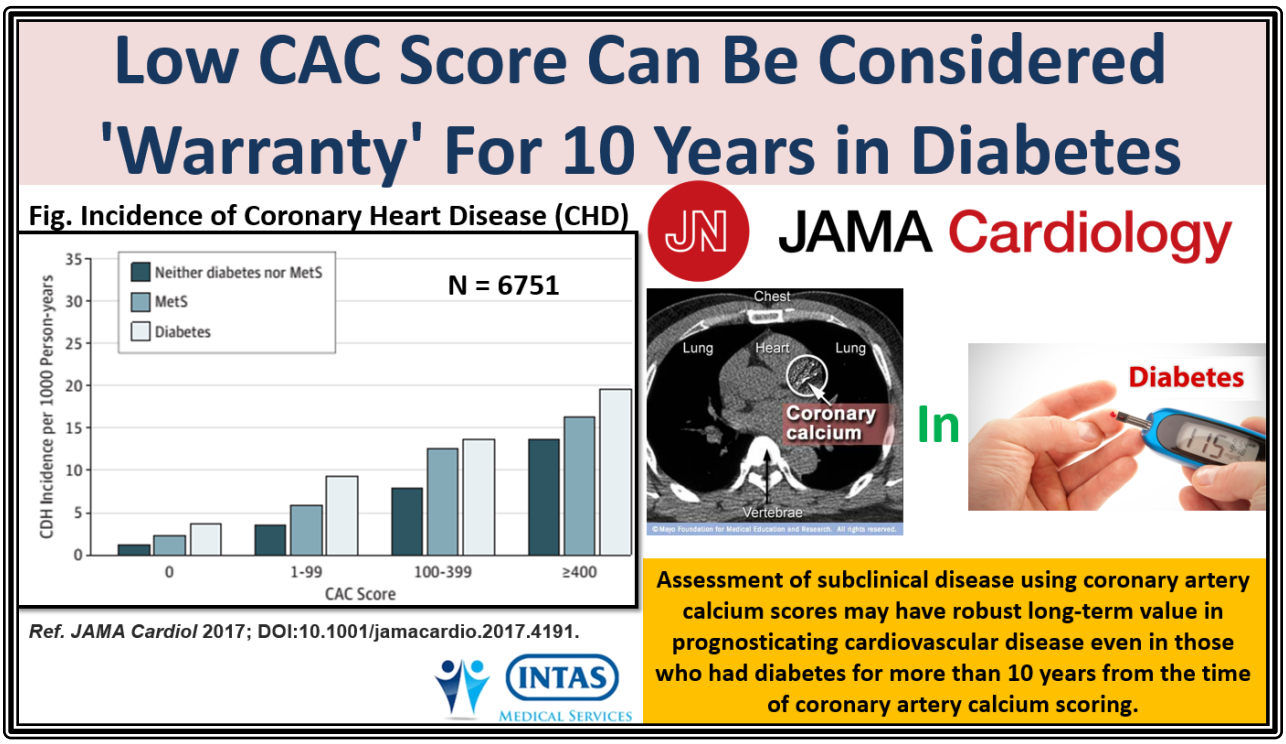
Objective: This study sought to identify predictors of subclinical atherosclerosis in CVRF-free individuals.

Methods: Participants from the PESA (Progression of Early Subclinical Atherosclerosis) study (n = 4,184) without conventional CVRFs were evaluated (n = 1,779; 45.0 ± 4.1 years, 50.3% women). CVRF freedom was defined as no current smoking and untreated blood pressure <140/90 mm Hg, fasting glucose <126 mg/dl, total cholesterol <240 mg/dl, low-density lipoprotein cholesterol (LDL-C) <160 mg/dl, and high-density lipoprotein cholesterol ≥40 mg/dl. A subgroup with optimal CVRFs (n = 740) was also defined as having blood pressure <120/80 mm Hg, fasting glucose <100 mg/dl, glycosylated hemoglobin <5.7%, and total cholesterol <200 mg/dl. We evaluated ultrasound-detected carotid, iliofemoral, and abdominal aortic plaques; coronary artery calcification; serum biomarkers; and lifestyle. Adjusted odds ratiosand ordinal logistic regression models were used.

Results: Subclinical atherosclerosis (plaque or coronary artery calcification) was present in 49.7% of CVRF-free participants. Together with male sex and age, LDL-C was independently associated with atherosclerosis presence and extent, in both the CVRF-free and CVRF-optimal groups (odds ratio [×10 mg/dl]: 1.14 to 1.18; p < 0.01 for all). Atherosclerosis presence and extent was also associated in the CVRF-free group with glycosylated hemoglobin levels.

Conclusions: Many CVRF-free middle-aged individuals have atherosclerosis. LDL-C, even at levels currently considered normal, is independently associated with the presence and extent of early systemic atherosclerosis in the absence of major CVRFs. These findings support more effective LDL-C lowering for primordial prevention, even in individuals conventionally considered at optimal risk. (Progression of Early Subclinical Atherosclerosis [PESA] Study

5. Low CAC Score Can Be Considered 'Warranty' For 10 Years in Diabetes



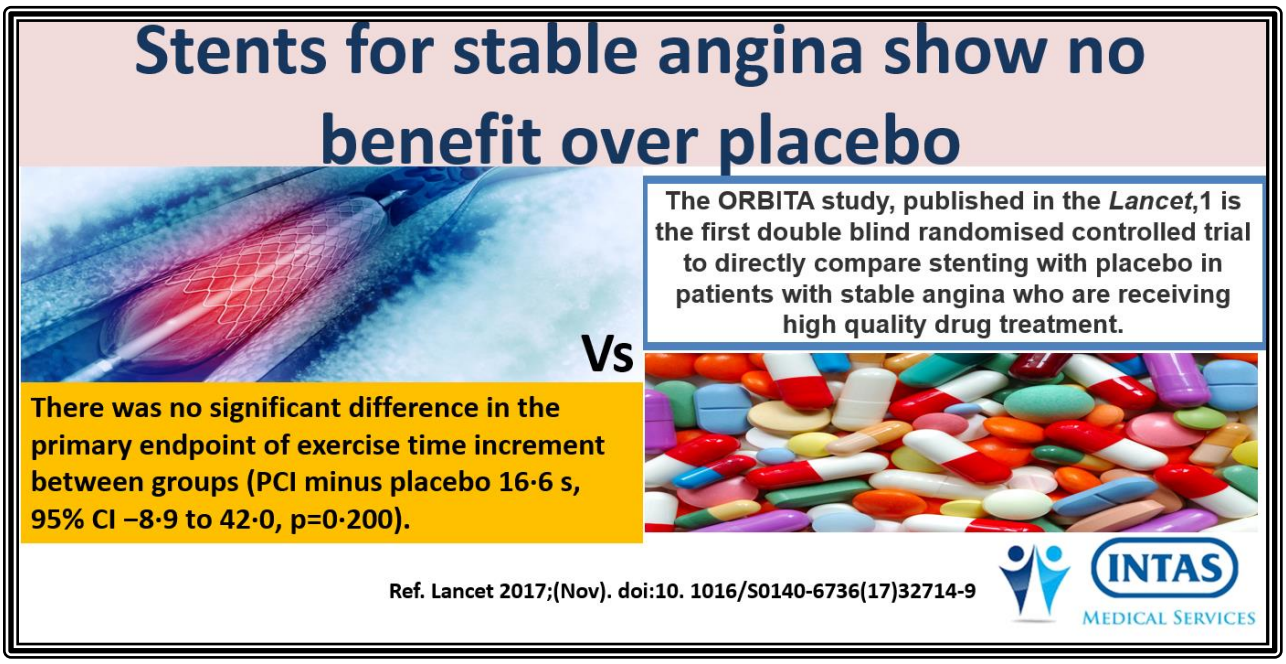
Objective To compare improvement in long-term prognostication of incident CHD and ASCVD using CAC scores among those with diabetes, MetS, or neither condition.

Design, Setting, and Participants This study included participants from the Multi-Ethnic Study of Atherosclerosis (MESA), a prospective cohort study of 6814 males and females aged 45 to 84 years without known CVD from 4 race/ethnicity groups (white [38.5%], African American [27.5%], Hispanic [22.1%], and Chinese [11.9%]) recruited from 6 US communities Main Outcomes and Measures CHD events, including myocardial infarction, resuscitated cardiac arrest, or CHD death.

Results Of 6814 MESA participants, 6751 had complete risk factor and follow-up data and were included in this study (mean [SD] age, 62.2 [10.2] years; 3186 [47.2%] male). A total of 881 (13.0%) had diabetes, 1738 (25.7%) had MetS, and 4132 (61.2%) had neither condition. After 11.1 mean years of follow-up, CHD events occurred in 84 participants with diabetes (135 ASCVD events), 115 with MetS (175 ASCVD events), and 157 with neither (250 ASCVD events). The CAC score was independently associated with incident CHD in multivariable analyses in those with diabetes (HR, 1.30; 95% CI, 1.19-1.43), MetS (HR, 1.30; 95% CI, 1.20-1.41), and neither condition (HR, 1.37; 95% CI, 1.27-1.47). For incident CHD, net reclassification improvement with addition of CAC score was 0.23 (95% CI, 0.10-0.37) in those with diabetes, 0.22 (95% CI, 0.09-0.35) in those with MetS, and 0.25 (95% CI, 0.15-0.35) in those with neither condition. The CAC score was also a prognostic indicator of CHD and ASCVD after controlling for diabetes duration of 10 years or longer at baseline, insulin use, and glycemic control.

Conclusions and Relevance In a large multiethnic cohort, the addition of CAC score to global risk assessment was associated with significantly improved risk classification in those with MetS and diabetes, even if diabetes duration was longer than a decade, suggesting a role for the CAC score in risk assessment in such patients.

6. Stents for stable angina show no benefit over placebo: ORBITA trial



BACKGROUND: Symptomatic relief is the primary goal of percutaneous coronary intervention (PCI) in stable angina and is commonly observed clinically. However, there is no evidence from blinded, placebo-controlled randomised trials to show its efficacy.

METHODS: ORBITA is a blinded, multicentre randomised trial of PCI versus a placebo procedure for angina relief that was done at five study sites in the UK. They enrolled patients with severe (≥70%) single-vessel stenoses. After enrolment, patients received 6 weeks of medication optimisation. Patients then had pre-randomisation assessments with cardiopulmonary exercise testing, symptom questionnaires, and dobutamine stress echocardiography. Patients were randomised 1:1 to undergo PCI or a placebo.

FINDINGS: ORBITA enrolled 230 patients with ischaemic symptoms. After the medication optimisation phase and between Jan 6, 2014, and Aug 11, 2017, 200 patients underwent randomisation, with 105 patients assigned PCI and 95 assigned the placebo procedure. Lesions had mean area stenosis of 84·4% (SD 10·2), fractional flow reserve of 0·69 (0·16), and instantaneous wave-free ratio of 0·76 (0·22). There was no significant difference in the primary endpoint of exercise time increment between groups (PCI minus placebo 16·6 s, 95% CI -8·9 to 42·0, p=0·200). There were no deaths. Serious adverse events included four pressure-wire related complications in the placebo group, which required PCI, and five major bleeding events, including two in the PCI group and three in the placebo group.

INTERPRETATION: In patients with medically treated angina and severe coronary stenosis, PCI did not increase exercise time by more than the effect of a placebo procedure. The efficacy of invasive procedures can be assessed with a placebo control, as is standard for pharmacotherapy.

7. Poor nutritional status does not modify the protective effect of statins against all cause mortality in CAD patients

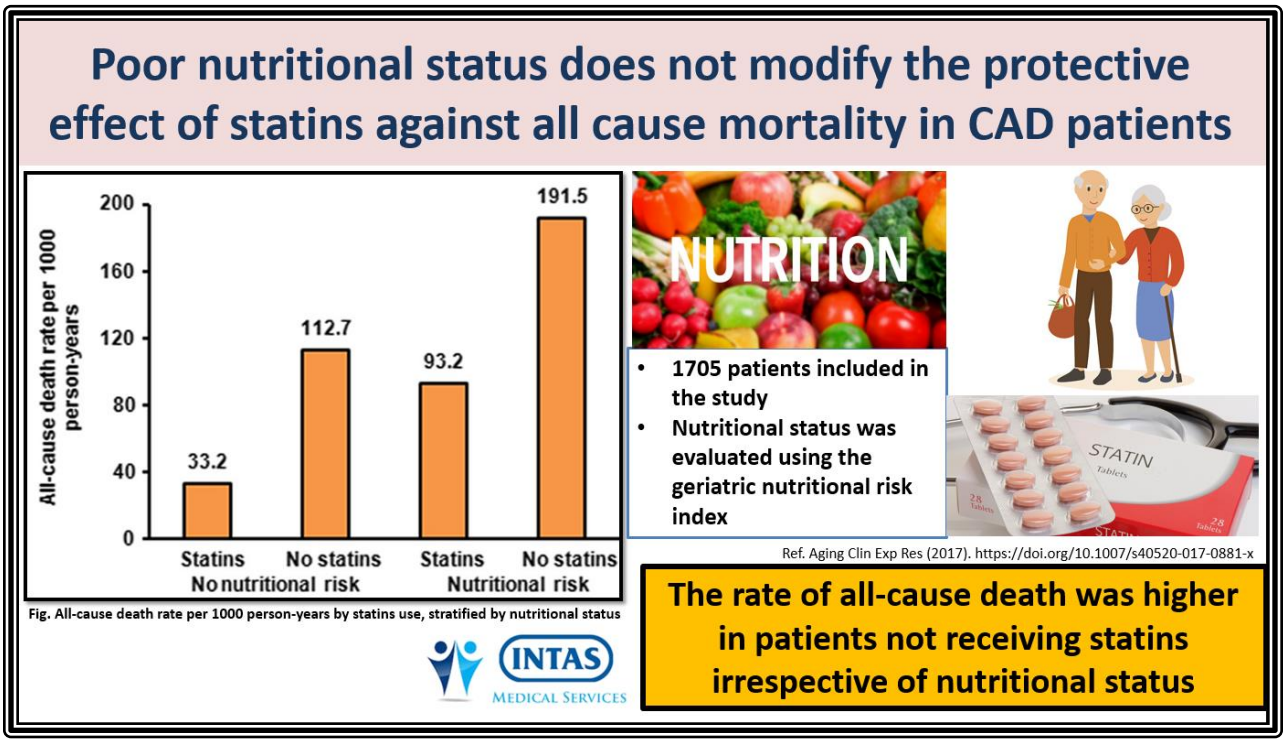


Fig. All-cause death rate per 1000 person-years by statins use, stratified by nutritional status

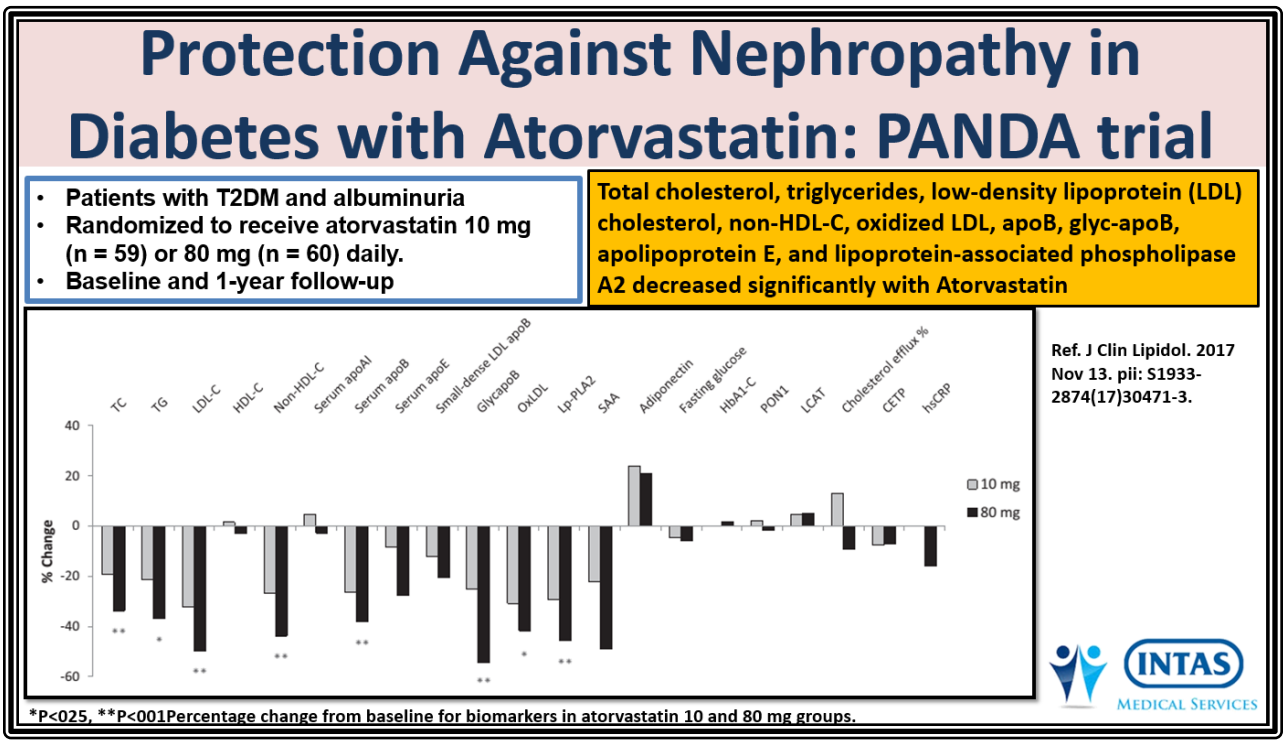
Aims: To investigate whether older patients with CAD who were at nutritional risk gain similar survival benefit from statins therapy as their counterparts without nutritional risk.

Methods: They conducted a retrospective hospital-based cohort study among 1705 patients with CAD who were older than 65 years of age, using coronary heart disease database from 2008 to 2012. Nutritional status of included patients was gauged using the geriatric nutritional risk index. After stratification by nutritional status, the hazard of all-cause death was compared between those with or without statins therapy.

Results: Of the 1705 patients included in the study (mean age 72 years; 73% male), all-cause death occurred in 146 (9.2%) patients with statins use and in 33 (26.2%) patients without statins use. The rate of all-cause death was higher in patients not receiving statins irrespective of nutritional status. After adjustments for potential confounders, the HR with statins use was 0.33 (95% CI 0.20–0.55) in patients without nutritional risk and 0.47 (95% CI 0.22–1.00) in patients with nutritional risk. No interaction effect was detected between nutritional status and statins use in relation to all-cause death (*P* value for interaction effect 0.516).

Conclusion: Despite of the patient's nutritional status, statins therapy as a secondary prevention in elderly CAD patients was associated with decreased risk of all-cause death.

8. Protection Against Nephropathy in Diabetes with Atorvastatin: PANDA trial



OBJECTIVES: Our objectives were to compare the effects of high-intensity and moderate-intensity atorvastatin treatment on lipoprotein metabolism and inflammatory markers and how frequently treatment goals are met in high-risk T2DM patients.

METHODS: Patients with T2DM and albuminuria (urinary albumin:creatinine ratio >5 mg/mmol, total cholesterol <7 mmol/L, proteinuria <2 g/d, creatinine <200 µmol/L) were randomized to receive atorvastatin 10 mg (n = 59) or 80 mg (n = 60) daily. Baseline and 1-year follow-up data are reported.

RESULTS: Patients were at high cardiovascular disease risk (observed combined mortality and nonfatal cardiovascular disease annual event rate 4.8%). The non-high-density lipoprotein cholesterol (HDL-C) goal of <2.6 mmol/L was achieved in 72% of participants receiving high-dose atorvastatin, but only in 40% on low-dose atorvastatin (P < .005). The proportion achieving apolipoprotein B (apoB) <0.8 g/L on high-dose and low-dose atorvastatin was 82% and 70%, respectively (NS). Total cholesterol, triglycerides, low-density lipoprotein (LDL) cholesterol, non-HDL-C, oxidized LDL, apoB, glyc-apoB, apolipoprotein E, and lipoprotein-associated phospholipase A2 decreased significantly, more so in participants on high-dose atorvastatin. Adiponectin increased and serum amyloid A decreased without dose dependency. Neither dose produced significant changes in HDL-C, cholesterol efflux, high-sensitivity C-reactive protein, glycated hemoglobin, serum paraoxonase-1, lecithin:cholesterol acyltransferase, or cholesteryl ester transfer protein.

CONCLUSIONS: High-dose atorvastatin is more effective in achieving non-HDL-C therapeutic goals and in modifying LDL-related parameters. Recommended apoB treatment targets may require revision. Despite the increase in adiponectin and the decrease in serum amyloid A, HDL showed no change in functionality.

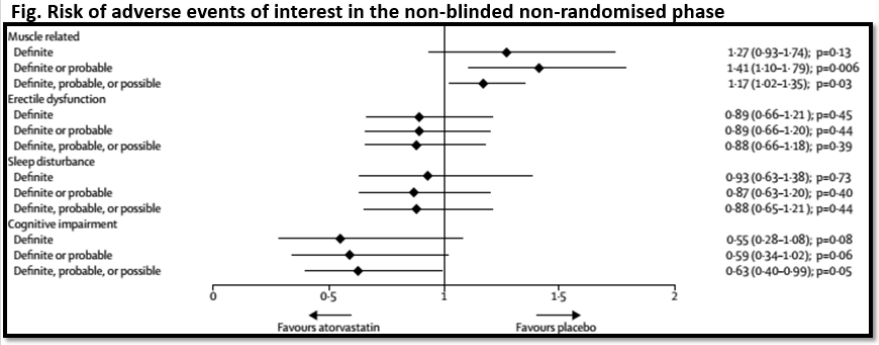
9. An excess rate of muscle-related AE reports, only when patients were aware: ASCOT-LLA- non-blind extension

An excess rate of muscle-related AE reports, only when patients were aware: ASCOT-LLA- non-blind extension

Included 9899 patients in this analysis (6409 [65%] atorvastatin users and 3490 [35%] nonusers), with a median follow-up of 2·3 years

THE LANCET

Fig. Risk of adverse events of interest in the non-blinded non-randomised phase



These analyses illustrate the so-called nocebo effect, with an excess rate of muscle-related AE reports only when patients and their doctors were aware that statin therapy was being used and not when its use was blinded.

Ref. Lancet 2017; 389: 2473–81

INTAS MEDICAL SERVICES

Background:

In blinded randomised controlled trials, statin therapy has been associated with few adverse events (AEs). By contrast, in observational studies, larger increases in many different AEs have been reported than in blinded trials.

Methods:

In the Lipid-Lowering Arm of the Anglo-Scandinavian Cardiac Outcomes Trial, patients aged 40–79 years with hypertension, at least three other cardiovascular risk factors, and fasting total cholesterol concentrations of 6·5 mmol/L or lower, and who were not taking a statin or fibrate, had no history of myocardial infarction, and were not being treated for angina were randomly assigned to atorvastatin 10 mg daily or matching placebo in a randomised double-blind placebo-controlled phase. In a subsequent non-randomised non-blind extension phase (initiated because of early termination of the trial because efficacy of atorvastatin was shown), all patients were offered atorvastatin 10 mg daily open label. They classified AEs using the Medical Dictionary for Regulatory Activities. They blindly adjudicated all reports of four prespecified AEs of interest—muscle-related, erectile dysfunction, sleep disturbance, and cognitive impairment—and analysed

all remaining AEs grouped by system organ class. Rates of AEs are given as percentages per annum.

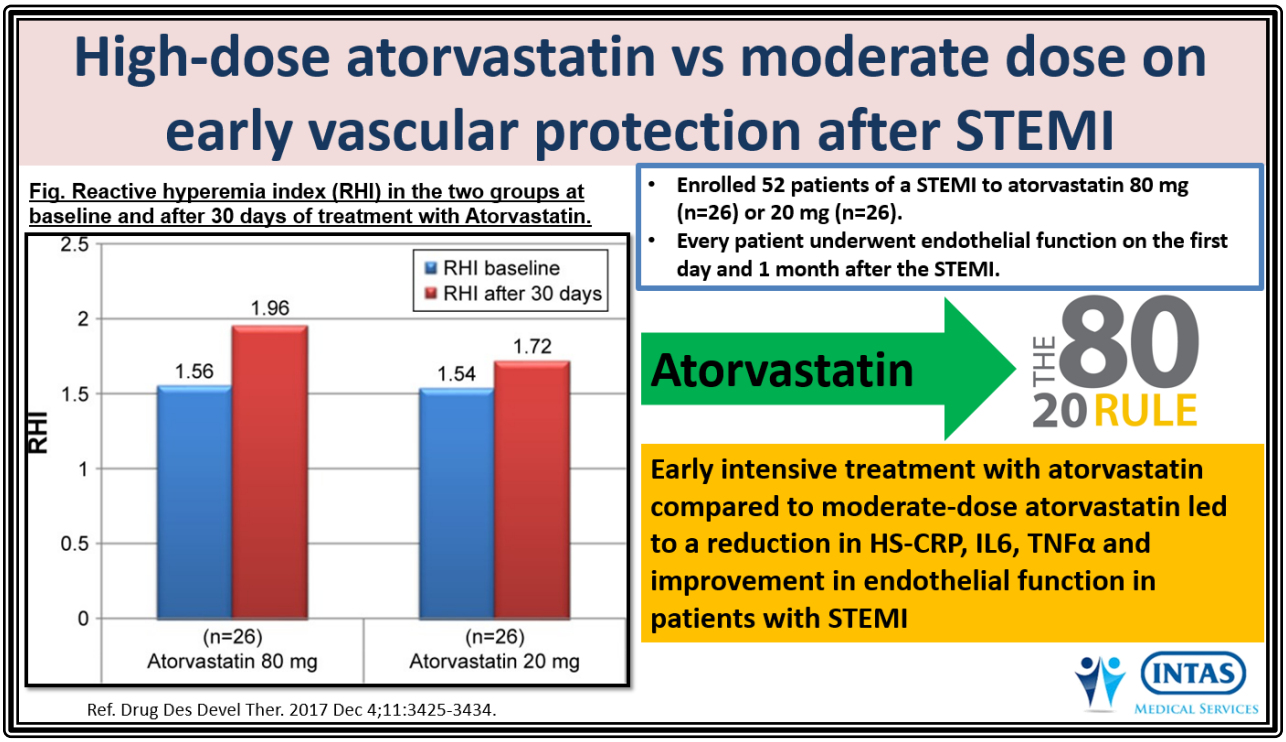
Results :

The blinded randomised phase was done between February, 1998, and December, 2002; they included 101 80 patients in this analysis (5101 [50%] in the atorvastatin group and 5079 [50%] in the placebo group), with a median follow-up of 3·3 years (IQR 2·7–3·7). The non-blinded non-randomised phase was done between December, 2002, and June, 2005; They included 9899 patients in this analysis (6409 [65%] atorvastatin users and 3490 [35%] non-users), with a median follow-up of 2·3 years (2·2–2·4). During the blinded phase, muscle-related AEs (298 [2·03% per annum] *vs* 283 [2·00% per annum]; hazard ratio 1·03 [95% CI 0·88–1·21]; p=0·72) and erectile dysfunction (272 [1·86% per annum] *vs* 302 [2·14% per annum]; 0·88 [0·75–1·04]; p=0·13) were reported at a similar rate by participants randomly assigned to atorvastatin or placebo. The rate of reports of sleep disturbance was significantly lower among participants assigned atorvastatin than assigned placebo (149 [1·00% per annum] *vs* 210 [1·46% per annum]; 0·69 [0·56–0·85]; p=0·0005). Too few cases of cognitive impairment were reported for a statistically reliable analysis (31 [0·20% per annum] *vs* 32 [0·22% per annum]; 0·94 [0·57–1·54]; p=0·81). They observed no significant differences in the rates of all other reported AEs, with the exception of an excess of renal and urinary AEs among patients assigned atorvastatin (481 [1·87%] per annum *vs* 392 [1·51%] per annum; 1·23 [1·08–1·41]; p=0·002). By contrast, during the non-blinded non-randomised phase, muscle-related AEs were reported at a significantly higher rate by participants taking statins than by those who were not (161 [1·26% per annum] *vs* 124 [1·00% per annum]; 1·41 [1·10–1·79]; p=0·006). They noted no significant differences between statin users and non-users in the rates of other AEs, with the exception of musculoskeletal and connective tissue disorders (992 [8·69% per annum] *vs* 831 [7·45% per annum]; 1·17 [1·06–1·29]; p=0·001) and blood and lymphatic system disorders (114 [0·88% per annum] *vs* 80 [0·64% per annum]; 1·40 [1·04–1·88]; p=0·03), which were reported more commonly by statin users than by non-users.

Interpretation:

These analyses illustrate the so-called nocebo effect, with an excess rate of muscle-related AE reports only when patients and their doctors were aware that statin therapy was being used and not when its use was blinded. These results will help assure both physicians and patients that most AEs associated with statins are not causally related to use of the drug and should help counter the adverse effect on public health of exaggerated claims about statin-related side-effects.

10. High-dose atorvastatin vs moderate dose on early vascular protection after STEMI



AIM: In the study, they compared the short-term effects of high (80 mg) vs moderate doses of atorvastatin (20 mg) in patients with STEMI undergoing primary percutaneous coronary intervention on endothelial function and vascular inflammation. The aim of our study was the evaluation of dose-dependent short-term effects.

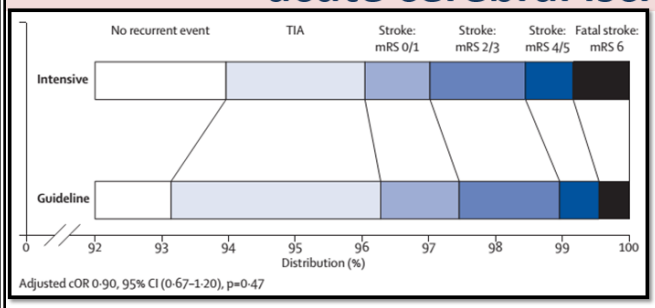
SUBJECTS AND METHODS: They enrolled 52 patients within 48 hours of a STEMI to atorvastatin 80 mg (n=26) or 20 mg (n=26). Every patient underwent endothelial function evaluation by the reactive hyperemia-peripheral arterial tonometry (RH-PAT) index on the first day and 1 month after the STEMI. At the same time, They measured lipid profile and serum levels of high-sensitivity CRP, IL6, TNFα, and oxidized LDL.

RESULTS: After 1 month of therapy, They observed differences in high-sensitivity CRP levels (0.04±0.02 mg/dL vs 0.36±0.3 mg/dL, *P*=0.001), IL6 (1.12±0.93 pg/mL vs 3.13±2.84 pg/mL, *P*=0.03), and improvement in RH-PAT index (1.96±0.16 vs 1.72±0.19, *P*=0.002) in the group treated with high-dose vs moderate-dose atorvastatin. There was no significant difference in levels of TNFα or oxidized LDL with atorvastatin20 mg, while there was a reduction in these variables in the group treated with atorvastatin 80 mg. They observed a correlation between high-sensitivity polymerase chain reaction and RH-PAT index on the 30th day after STEMI (*r*=0.5, *P*=0.001).

CONCLUSION: Higher dose statin therapy in patients with STEMI undergoing primary percutaneous coronary intervention showed early greater vascular protective effects that moderate dose.

11. Antiplatelet therapy with aspirin, clopidogrel, and dipyridamole versus clopidogrel alone in patients with acute cerebral ischaemia : TARDIS

Antiplatelet therapy with aspirin, clopidogrel, and dipyridamole versus clopidogrel alone in patients with acute cerebral ischaemia : TARDIS



Distribution of recurrent stroke and TIA by severity

The primary outcome was incidence and severity of stroke (fatal, mRS 4–5, mRS 2–3, mRS 0–1) and TIA at day 90. TIA=transient ischaemic attack. mRS=modified Rankin Scale.

Ref. The Lancet. Published Online December 20, 2017 http://dx.doi.org/10.1016/S0140-6736(17)32849-0

Among patients with recent cerebral ischaemia, intensive antiplatelet therapy did not reduce the incidence and severity of recurrent stroke or TIA, but did significantly increase the risk of major bleeding.

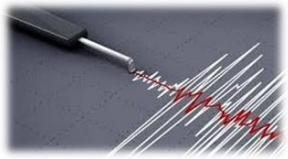
Aim: To compare the safety and efficacy of intensive antiplatelet therapy (combined aspirin, clopidogrel, and dipyridamole) with that of guideline-based antiplatelet therapy.

Methods: They did an international, prospective, randomised, open-label, blinded-endpoint trial in adult participants with ischaemic stroke or transient ischaemic attack (TIA) within 48 h of onset. Participants were assigned in a 1:1 ratio using computer randomisation to receive loading doses and then 30 days of intensive antiplatelet therapy (combined aspirin 75 mg, clopidogrel 75 mg, and dipyridamole 200 mg twice daily) or guideline-based therapy (comprising either clopidogrel alone or combined aspirin and dipyridamole). Randomisation was stratified by country and index event, and minimised with prognostic baseline factors, medication use, time to randomisation, stroke-related factors, and thrombolysis. The ordinal primary outcome was the combined incidence and severity of any recurrent stroke (ischaemic or haemorrhagic; assessed using the modified Rankin Scale) or TIA within 90 days, as assessed by central telephone follow-up with masking to treatment assignment.

Findings: 3096 participants (1556 in the intensive antiplatelet therapy group, 1540 in the guideline antiplatelet therapy group) were recruited from 106 hospitals in four countries between April 7, 2009, and March 18, 2016. The trial was stopped early on the recommendation of the data monitoring committee. The incidence and severity of recurrent stroke or TIA did not differ between intensive and guideline therapy (93 [6%] participants *vs* 105 [7%]; adjusted common odds ratio [cOR] 0·90, 95% CI 0·67–1·20, p=0·47). By contrast, intensive antiplatelet therapy was associated with more, and more severe, bleeding (adjusted cOR 2·54, 95% CI 2·05–3·16, p<0·0001).

Interpretation: Among patients with recent cerebral ischaemia, intensive antiplatelet therapy did not reduce the incidence and severity of recurrent stroke or TIA, but did significantly increase the risk of major bleeding. Triple antiplatelet therapy should not be used in routine clinical practice.

12. STATIN : How hard you hit does matter?



STATIN : How hard you hit does matter?

- Analysis of multicenter registry data of 1,626 patients of acute MI (Statin users Vs Non statin Users)

	All cause Mortality (Hazard Ratio)	MACE (Hazard Ratio)
No statin Group (n-212)	1.0	1.0
Statin : No LDL reduction (n=161)	1.2 [95% CI : 0.66-2.2]	0.98 [95% CI 0.51-1.86]
Statin : <50% reduction (n=904)	0.73 [95% CI : 0.45-1.18]	0.65 [95% CI : 0.40-1.06]
Statin : > 50% reduction (n=349)	0.52 [95% CI : 0.28-0.96]	0.38 [95% CI : 0.19-0.74]

"Magnitude of % LDL-C reduction directly relates to efficacy in patients with MI"

Dongjae Lee, Eun Ho Choo. Abstract 15307: Impact of Response to Statin Treatment in Patients With Myocardial Infarction. Circulation. 2017;136:A15307

INTAS MEDICAL SERVICES

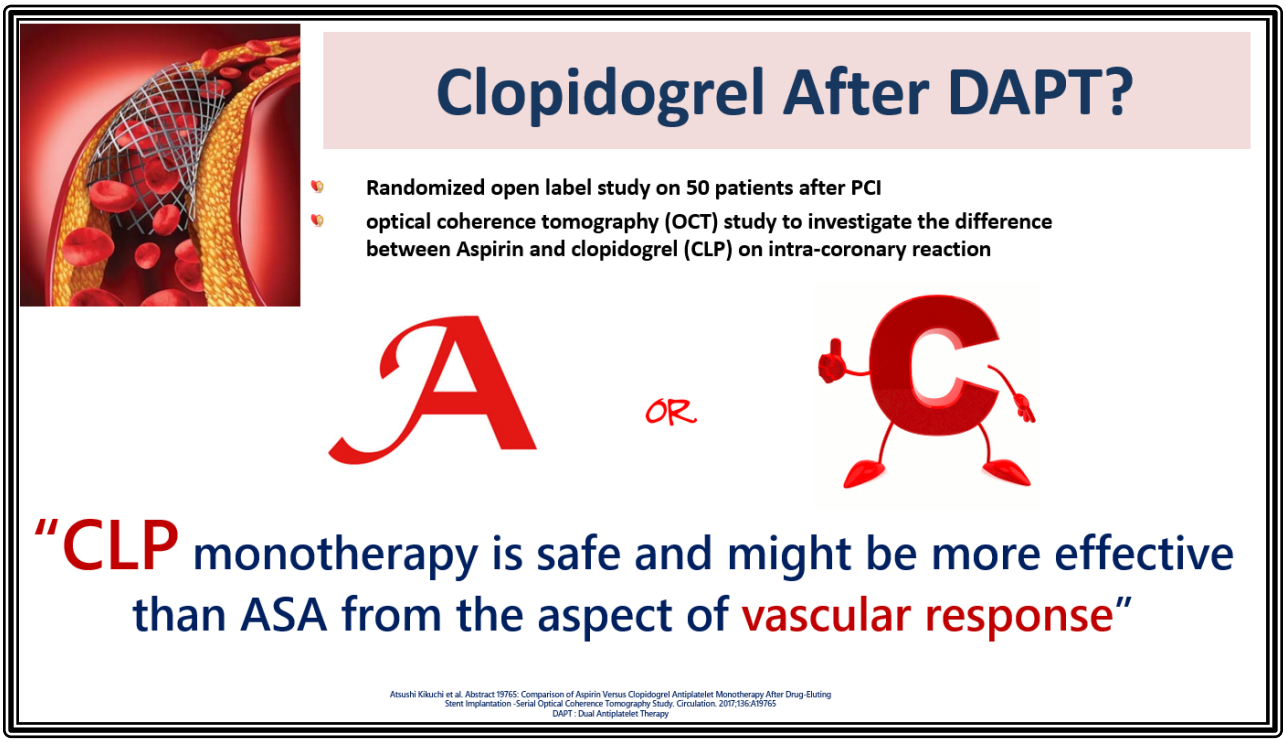
Background: Lowering low-density lipoprotein cholesterol (LDL-C) with statins has been demonstrated profound reductions in cardiovascular event rates. Despite the benefits of statin therapy, considerable interindividual variation exists in response to statin therapy, in terms of the degree of LDL-C lowering. They evaluated the impact of variability of LDL-C lowering after statin treatment in patients with myocardial infarction.

Methods: They analyzed a multicenter registry and identified 1,626 patients who presented with acute MI between 2004 and 2009. Patients were treated percutaneous coronary intervention and discharged with statin (1,414 patients) or without statin (212 patients). Patients with statin were categorized to 3 groups; No LDL-C reduction (n=161), <50% LDL-C reduction (n=904), >50% LDL-C reduction (n=349). The association between response to statin and major cardiovascular event (MACE, composite of cardiac death, myocardial infarction, and stroke) for 4 years was examined.

Results: During the median of 3.5 years, there was a gradual risk reduction from no reduction, <50% reduction (n=904) and to >50% LDL-C reduction in terms of all-cause mortality (Hazard Ratio [HR] 1.2 [95% confidence interval {CI} 0.66-2.2], 0.73[0.45-1.18], 0.52[0.28-0.96], p=0.032) and MACE (HR 0.98 [95% CI 0.51-1.86], 0.65 [0.40-1.06], 0.38 [0.19-0.74], p=0.017) compared with no statin. This stepwise relationship between % reduction and clinical outcomes was consistent in subgroups in follow up LDL-C < 70mg/dL or LDL-C > 70mg/dL (p for interaction = 0.11).

Conclusions: Magnitude of % LDL-C reduction directly relates to efficacy in patients with myocardial infarction. This data support guideline approaches that incorporate % reduction targets for statin therapy as well as absolute targets, and might provide a structure for the allocation of emerging adjunctive lipid-lowering therapies such as ezetimibe or PCSK9 inhibitors.

13. Clopidogrel After DAPT?



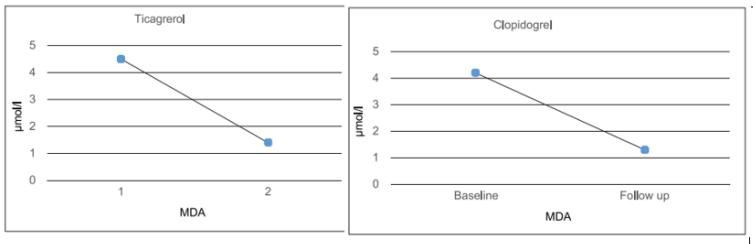
Background: Although aspirin (ASA) is usually selected after dual-antiplatelet therapy (DAPT) duration in patients with drug eluting stent (DES) implantated, there is less information of the efficacy of clopidogrel (CLP) monotherapy. They aimed to investigate the difference of the intra-coronary reaction between single antiplatelet monotherapies such as ASA and CLP, using serial optical coherence tomography (OCT).

Methods and Results: They prospectively studied 50 patients treated with second generation DES (68 DESs). From an open-labeled study, all patients were randomized into 2 groups; ASA and CLP groups (37 in ASA, 31 in CLP), and DAPT duration was 12 months after implantation. All patients underwent serial OCT at 8-12 and 18-24 months after DES implantation. Although there were not significant differences in baseline OCT parameters between two groups, the change of maximum length of segments with stent malapposition (malapposed length) significantly decreased in CLP group than in ASA group (-0.88±1.29 mm vs -0.16±0.61 mm, p=0.002), and the strut-vessel distance also decreased in CLP group than in ASA group (-108±159 µm vs -52±106 µm, p-0.045). Intra-stent thrombus > 250 µm newly appeared in 4 DESs (1(3.2%) in CLP group and 3(8.1%) in ASA group), and disappeared in 5 DESs (3(9.7%) in CLP group and 2(5.4%) in ASA group), at 2nd OCT assessment. The change of malapposed length was significantly greater in patients with than without newly appeared intra-stent thrombus (1.03±0.80 mm vs -0.58±0.98 mm, p=0.002), while the change of strut-vessel distance was significantly shorter in patients with than without disappeared thrombus group (-238±248 µm vs -65±116 µm, p=0.002).

Conclusion: The present serial OCT study revealed that CLP monotherapy is safe and might be more effective than ASA from the aspect of vascular response.

14. Ticagrelor versus Clopidogrel on Oxidative Stress Patients with Chronic Stable Angina (CSA) after PCI

Effect of Ticagrelor versus Clopidogrel on Oxidative Stress Bio-markers in Patients with Chronic Stable Angina (CSA) after PCI



- A total of 100 CSA patients.
- Divided into two groups, Ticagrelor and Clopidogrel treated groups (each having 50 patients).
- The level of plasma Malondihyde – oxidative stress biomarkers in both Ticagrelor and Clopidogrel groups were significantly reduced from baseline to follow up (p <0.001).

Both Ticagrelor and Clopidogrel have similar effect on oxidative stress markers, resulting from oxidative injury processes in patients of chronic stable angina.

Cardiovasc. j. 2017; 10(1): 40-44)

Background: Ticagrelor, a reversible P2Y12 receptor inhibitor may represent a significant advancement over currently available oral antiplatelet drugs in treatment of ischaemic heart disease.The study was intended to compare the effect of Ticagrelor and Clopidogrel on oxidative stress markers in patients of chronic stable angina (CSA) following percutaneous coronary intervention (PCI).

Methods: The study included a total of 100 CSA patients. Patients were divided into two groups, Ticagrelor and Clopidogrel treated groups (each having 50 patients). The baseline laboratory parameters-Malondihyde (MDA), Reduced glutathione (GSH), bleeding time, clotting time and platelet count, were measured and then patients of both groups underwent PCI. The same parameters were again assessed at follow up after 4 weeks of intervention. Comparisons of the laboratory parameters were made between two groups at baseline and at follow up and also within group before and after intervention.

Results: The level of plasma MDA in Ticagrelor group was significantly reduced from baseline to follow up(4.5 ± 1.8 to 1.4 ± 0.7, p <0.001) and in Clopidogrel group (4.2 ± 1.2 to 1.3 ± 0.7, p <0.001). GSH level was increased from 0.7 mg/dl to 2.5 mg/dl (p <0.001) in Ticagrelor group and in Clopidogrel group 0.6 mg/dl to 1.4 mg/dl, p <0.001).

Conclusion: The study concluded that both Ticagrelor and Clopidogrel have similar effect on oxidative stress markers, resulting from oxidative injury processes in patients of chronic stable angina.

15. COPD and β-blocker treatment in Asian patients with heart failure: ASIA-HF Study

Chronic obstructive pulmonary disease and β-blocker treatment in Asian patients with heart failure: ASIA-HF Study

COPD And Heart Failure

- 5232 patients with HFrEF <40% from 11 Asian regions including India.
- Usage of all β-blockers was lower in the COPD group than in the non-COPD group in the overall (66.3% vs. 79.9%).

Take Home Message: The prevalence of COPD was strongly related to the underuse of β-blockers, in patients with both HF and COPD.

ESC Heart Failure (2017)

AIMS:

Chronic obstructive pulmonary disease (COPD) and heart failure (HF) are increasingly frequent in Asia and commonly coexist in patients. However, the prevalence of COPD among Asian patients with HF and its impact on HF treatment are unclear.

METHODS AND RESULTS:

They compared clinical characteristics and treatment approaches between patients with or without a history of COPD, before and after 1:2 propensity matching (for age, sex, geographical region, income level, and ethnic group) in 5232 prospectively recruited patients with HF and reduced ejection fraction (HFrEF, <40%) from 11 Asian regions (Northeast Asia: South Korea, Japan, Taiwan, Hong Kong, and China; South Asia: India; Southeast Asia: Thailand, Malaysia, Philippines, Indonesia, and Singapore). Among the 5232 patients with HFrEF, a history of COPD was present in 8.3% (n = 434), with significant variation in geography (11.0% in Northeast Asia vs. 4.7% in South Asia), regional income level (9.7% in high income vs. 5.8% in low income), and ethnicity (17.0% in Filipinos vs. 5.2% in Indians) (all $P < 0.05$). Use of mineralocorticoid receptor antagonists and diuretics was similar between groups, while usage of all β-blockers was lower in the COPD group than in the non-COPD group in the overall (66.3% vs. 79.9%) and propensity-matched cohorts (66.3% vs. 81.7%) (all $P < 0.05$). A striking exception was the Japanese cohort in which β-blocker use was high in COPD and non-COPD patients (95.2% vs. 91.2%).

CONCLUSIONS:

The prevalence of COPD in HFrEF varied across Asia and was related to underuse of β-blockers, except in Japan.

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