Dear Reader,

We are grateful to present you the 9th 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.

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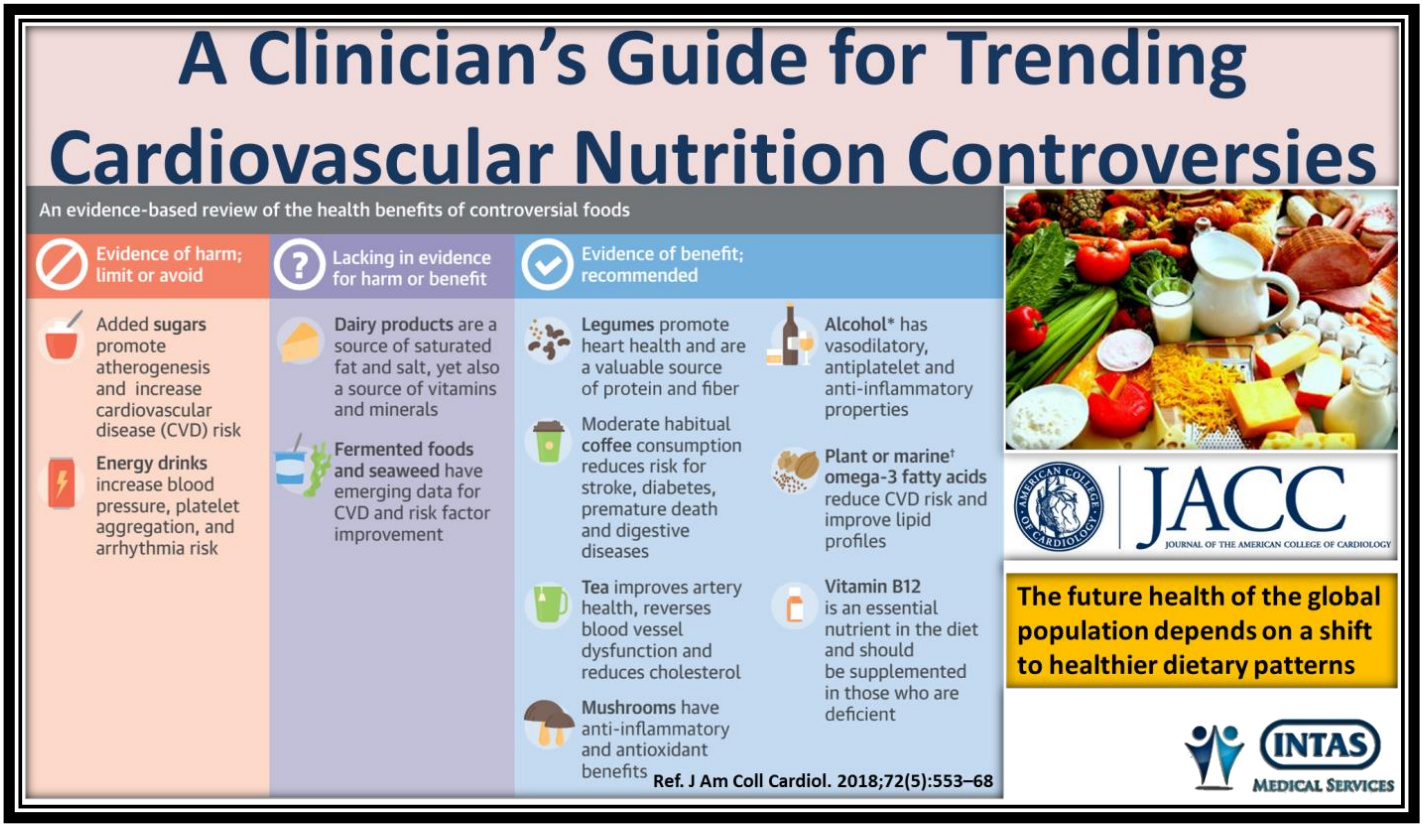
1. A Clinician's Guide for Trending Cardiovascular Nutrition Controversies



The potential cardiovascular (CV) benefits of many trending foods and dietary patterns are still incompletely understood, and scientific inquiry continues to evolve. In the meantime, however, a number of controversial dietary patterns, foods, and nutrients have received significant media attention and are mired by "hype." A heart-healthy diet has been the cornerstone of atherosclerotic cardiovascular disease (ASCVD) prevention and treatment for decades.

Available evidence supports CV benefits of plant-based proteins, OM3 (from both marine and plant sources, although with some concerns regarding marine sources), vitamin B12 (but not in excess, and when dietary deficiencies are present), mushrooms, legumes of all sorts, coffee, tea, modest if any alcohol, fermented foods, and seaweed. The evidence to date suggests adverse CV outcomes with high intake of both red meat and added sugar, excessive vitamin B12, and any amounts of energy drinks. Finally, there is still debate over the effects of dairy products on CVD, although they remain the top source of saturated fat and sodium in the United States. As clinicians, it is important to stay abreast of the current scientific evidence to provide meaningful and effective nutrition guidance to patients for ASCVD risk reduction.

2. Binge Drinking Negatively Affects Blood Pressure, Lipid Profiles

Binge Drinking Negatively Affects Blood Pressure, Lipid Profiles

Binge-Drinking Frequency	Systolic Blood Pressure (mm Hg)				Total Cholesterol (mg/dL)	HDL-C (mg/dL)	LDL-C (mg/dL)	Glucose (mg/dL)
Men								
Non–binge drinkers	117.5	207.8	47.0	126.5	104.7			
Binge ≤ 1-12 times/y	119.0	217.9	50.6	121.7	100.9			
Binge > 12 times/y	121.8	215.5	52.3	134.0	102.5			
Women								
Non–binge drinkers	111.8	207.6	126.5	121.3	97.1			
Binge ≤ 1-12 times/y	112.0	207.4	121.7	128.0	102.2			
Binge >12 times/y	112.2	210.3	134.0	122.4	101.8			

American Heart Association | American Stroke Association

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Repeated binge drinking in men was associated with an elevated systolic BP, and greater frequency of binge drinking in men was associated with a more unfavorable lipid profile

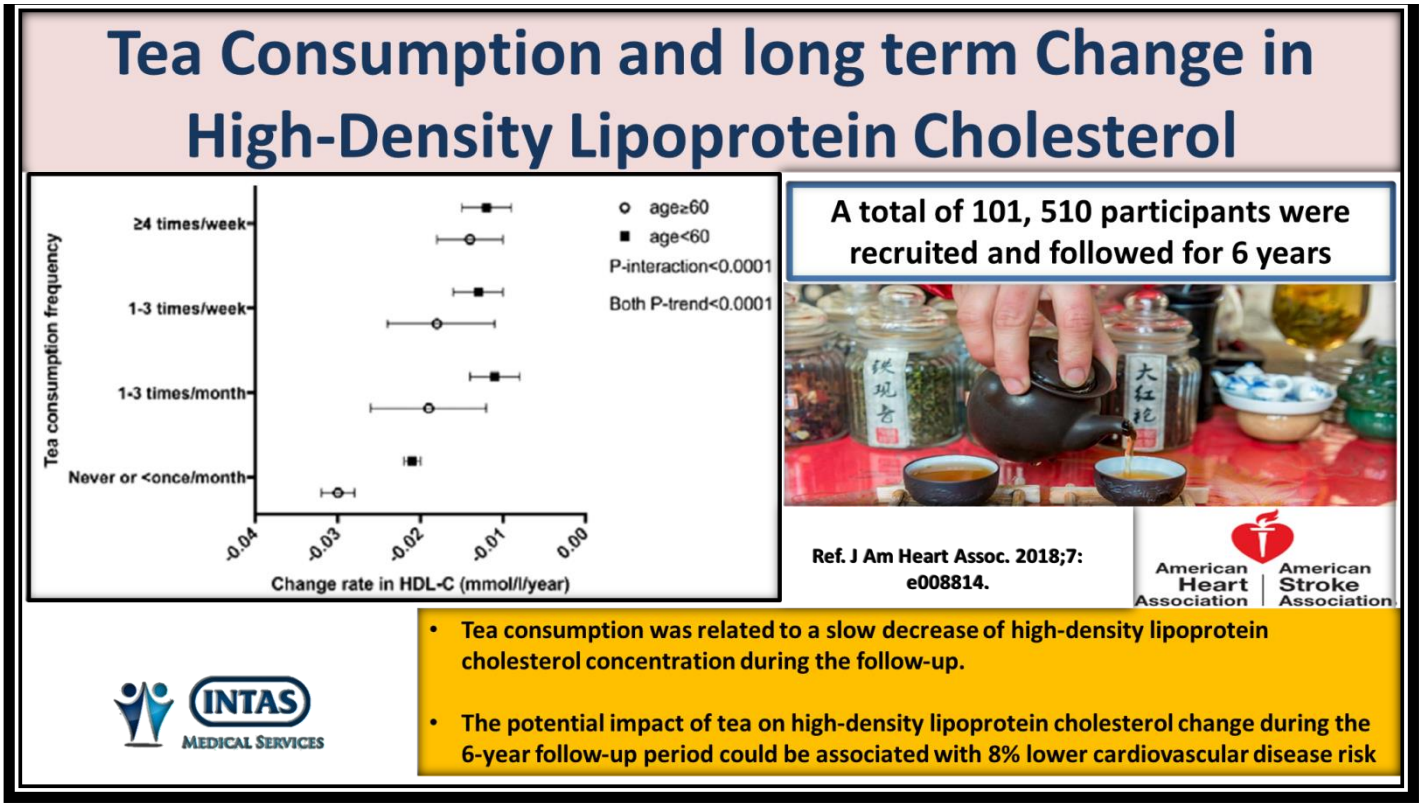
Background—Binge drinking prevalence rates are highest in young adults; however, little is known about the effects of binge drinking on blood pressure (BP) and other cardiovascular health metrics in individuals between 18 and 45 years of age. The aim of this study was to determine the effects of regular binge drinking on BP, lipid and glucose levels and to determine if there were differences in these associations between men and women.

Methods and Results—We analyzed data from NHANES (the US National Health and Nutrition Examination Survey) for men and women 18 to 45 years old who were non–binge drinkers, binge drank 1 to 12 times, or binge drank>12 times in the past year. After controlling for diet and physical activity, both categories of men binge drinkers compared with non–binge drinkers had higher systolic BP (121.8 and 119.0 mm Hg versus 117.5 mm Hg) and total cholesterol (215.5 and 217.9 mg/dL versus 207.8 mg/dL) values. There were no effects of binge drinking on systolic BP or total cholesterol in women. Binge drinking in men and women was associated with higher high-density lipoprotein-cholesterol values. The effects of binge drinking on glucose parameters in men and women were variable.

Conclusions—Compared with young adult women, repeated binge drinking in men was associated with an elevated systolic BP, and greater frequency of binge drinking in men was associated with a more unfavorable lipid profile. In young adults with elevated systolic BP, practitioners should consider the

possible role of binge drinking and address the importance of reducing alcohol intake as an important cardiovascular risk reduction strategy.

3. Tea Consumption and long term Change in High-Density Lipoprotein Cholesterol



Background: The relation between tea consumption and age-related changes in high-density lipoprotein cholesterol (HDL-C) concentrations remains unclear, and longitudinal human data are limited. The aim of current study was to examine the relation between tea intake and longitudinal change in HDL-C concentrations.

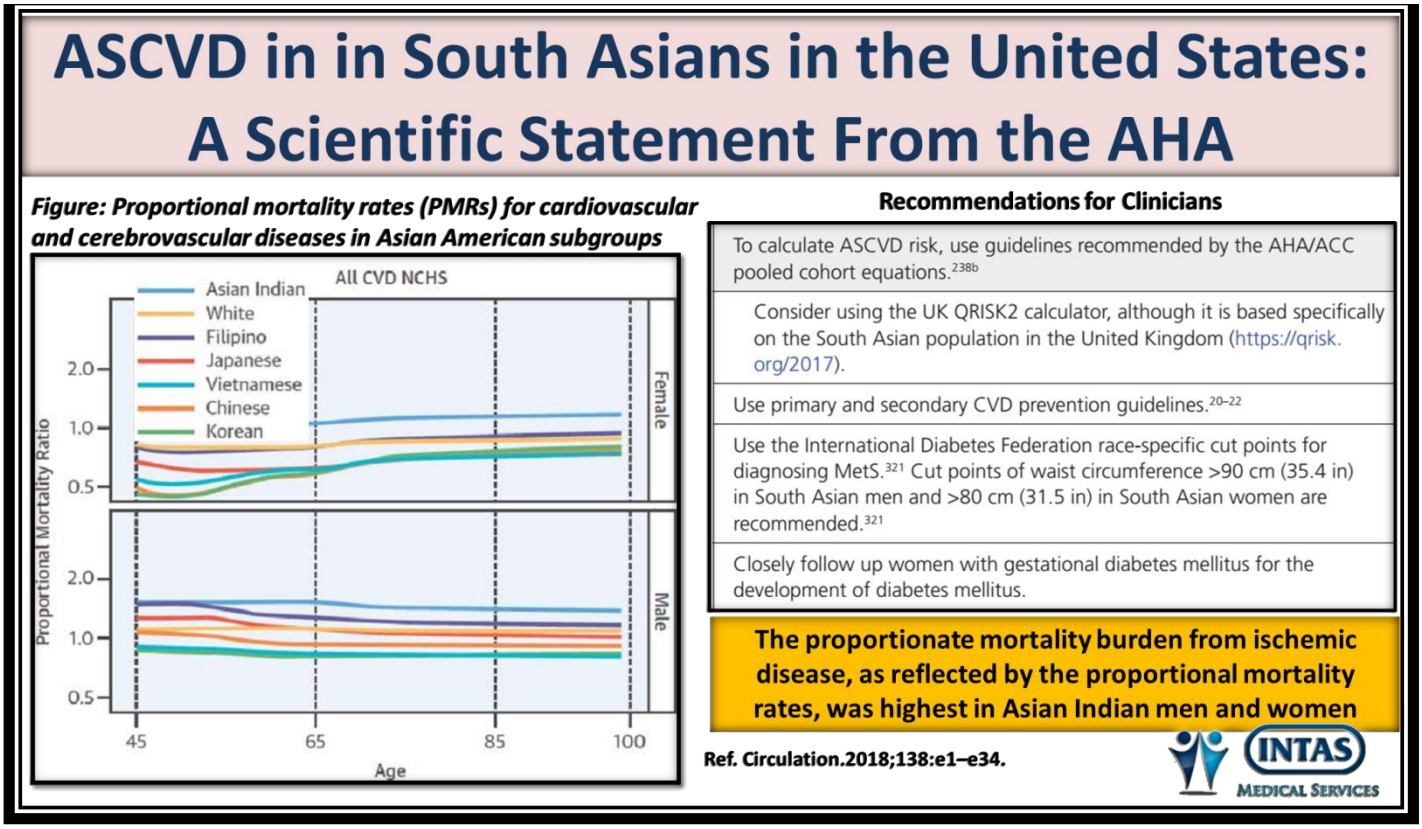
Methods: Baseline (2006) tea consumption was assessed via a questionnaire, and plasma HDL-C concentrations were measured in 2006, 2008, 2010, and 2012 among 80 182 individuals (49±12 years of age) who did not have cardiovascular diseases or cancer, or did not use cholesterol-lowering agents both at baseline (2006) and during the follow-up period (2006–2012). The associations between baseline tea consumption and rate of change in HDL-C concentrations were examined using generalized estimating equation models.

Results: Tea consumption was inversely associated with a decreased rate of HDL-C concentrations (P-trend <0.0001) in the fully adjusted model. The adjusted mean difference in the HDL-C decreased rate was 0.010 (95% confidence interval, 0.008, 0.012) mmol/L per year for tea consumers versus non-consumers (never or less than once/month group). Interactions between tea consumption and age, sex, lifestyle scores, and metabolic syndrome (all P-interaction <0.0001) were identified. The associations between greater tea consumption and

slower decrease in HDL-C concentrations were more pronounced in men, individuals aged 60 or older, individuals with a lower lifestyle score, and individuals with metabolic syndrome (all P-trend <0.0001).

Conclusions: Tea consumption was associated with slower age-related decreases in HDL-C concentrations during 6 years of follow-up.

4. ASCVD in in South Asians in the United States: A Scientific Statement from the AHA

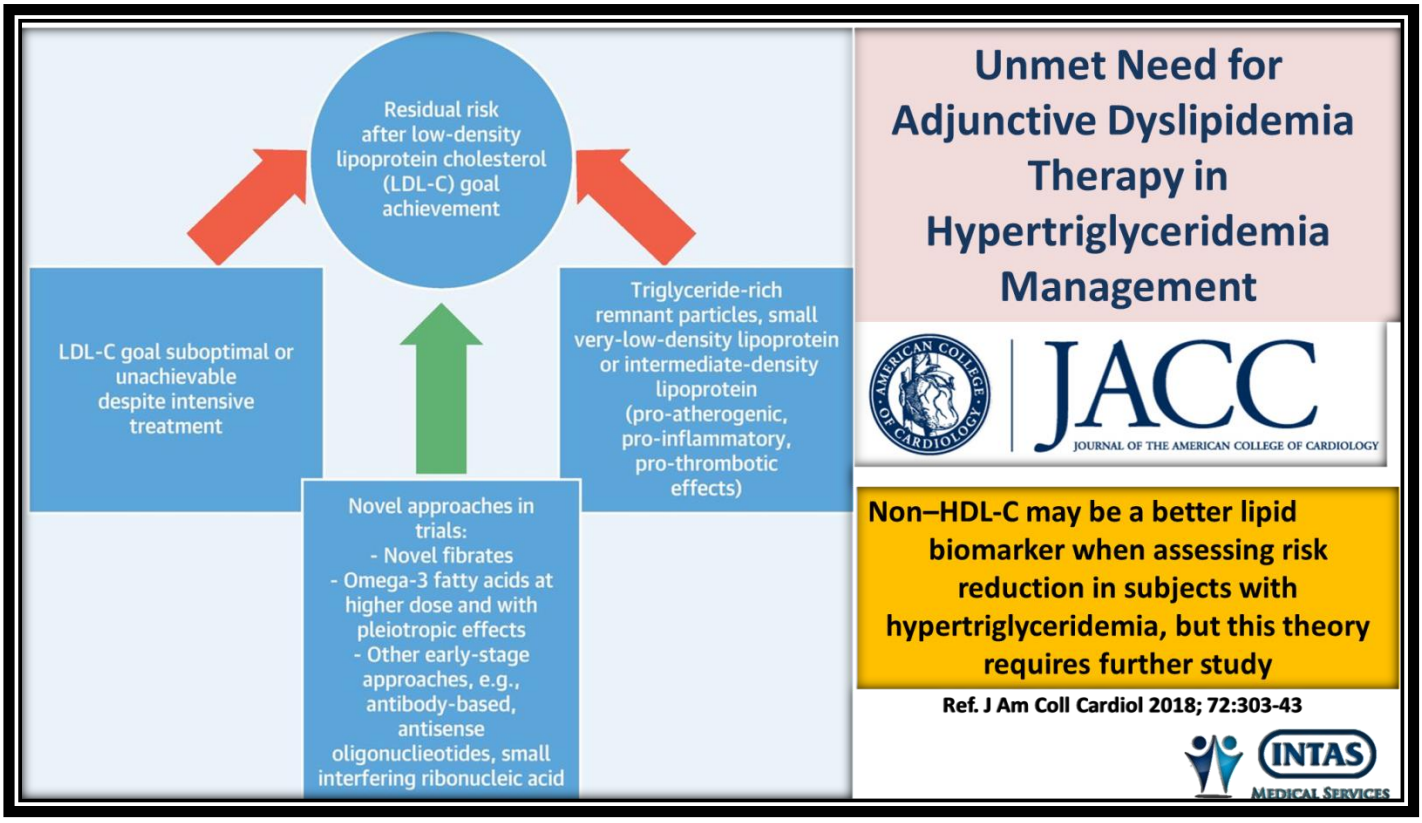


South Asians (from Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka) make up one quarter of the world's population and are one of the fastest-growing ethnic groups in the United States. Although native South Asians share genetic and cultural risk factors with South Asians abroad, South Asians in the United States can differ in socioeconomic status, education, healthcare behaviors, attitudes, and health insurance, which can affect their risk and the treatment and outcomes of atherosclerotic cardiovascular disease (ASCVD). South Asians have higher proportional mortality rates from ASCVD compared with other Asian groups and non-Hispanic whites, in contrast to the finding that Asian Americans (Asian Indian, Chinese, Filipino, Japanese, Korean, and Vietnamese) aggregated as a group are at lower risk of ASCVD, largely because of the lower risk observed in East Asian populations.

Literature relevant to South Asian populations regarding demographics and risk factors, health behaviors, and interventions, including physical activity, diet, medications, and community strategies, is summarized. The

evidence to date is that the biology of ASCVD is complex but is no different in South Asians than in any other racial/ethnic group. A majority of the risk in South Asians can be explained by the increased prevalence of known risk factors, especially those related to insulin resistance, and no unique risk factors in this population have been found. This scientific statement focuses on how ASCVD risk factors affect the South Asian population in order to make recommendations for clinical strategies to reduce disease and for directions for future research to reduce ASCVD in this population.

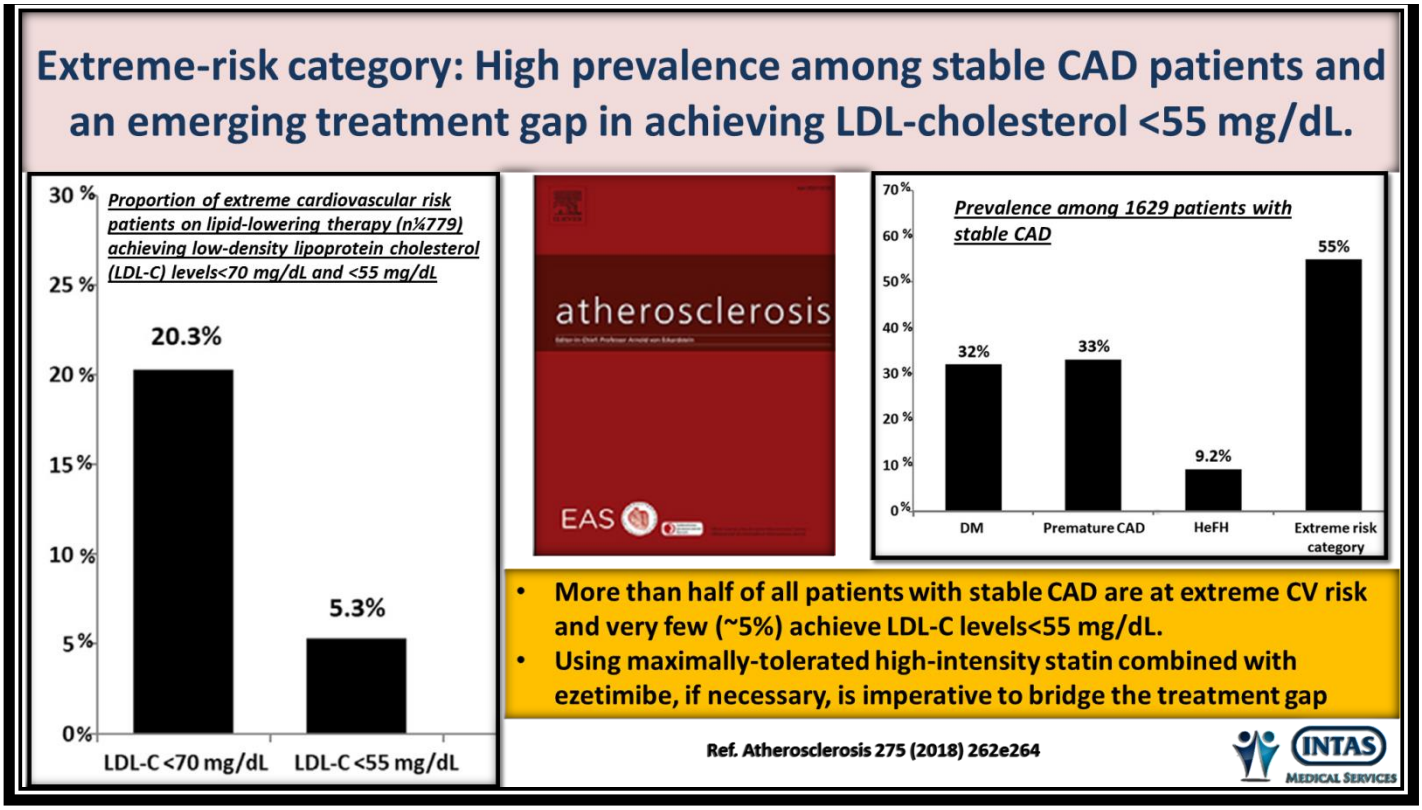
5. Unmet Need for Adjunctive Dyslipidemia Therapy in Hypertriglyceridemia Management



Despite the important role of high-intensity statins in reducing atherosclerotic cardiovascular disease events in secondary and primary prevention, substantial residual risk persists, particularly among high-risk patients with type 2 diabetes mellitus, metabolic syndrome, and obesity. Considerable attention is currently directed to the role that elevated triglycerides (TGs) and non–high-density lipoprotein cholesterol levels play as important mediators of residual atherosclerotic cardiovascular disease risk, which is further strongly supported by genetic linkage studies. Previous trials with fibrates, niacin, and most cholesterol ester transfer protein inhibitors that targeted high-density lipoprotein cholesterol raising, and/or TG lowering, have failed to show conclusive evidence of incremental event reduction after low-density lipoprotein cholesterol levels were "optimally controlled" with statins.

Although omega-3 fatty acids are efficacious in lowering TG levels and may have pleiotropic effects such as reducing plaque instability and pro-inflammatory mediators of atherogenesis, clinical outcomes data are currently lacking. Several ongoing randomized controlled trials of TG-lowering strategies with an optimal dosage of omega-3 fatty acids are nearing completion.

6. Extreme-risk category: High prevalence among stable CAD patients and an emerging treatment gap in achieving LDL-cholesterol <55 mg/dL.



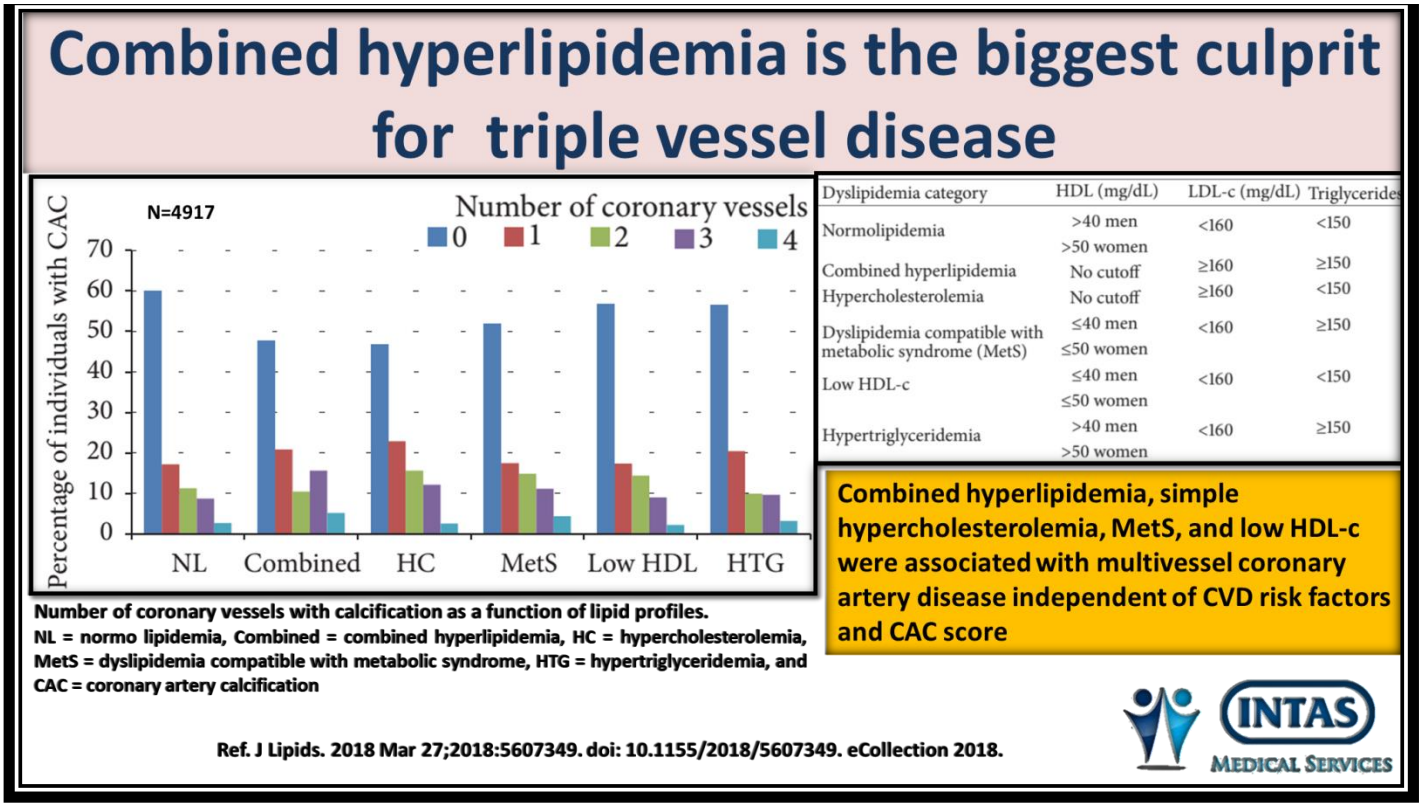
Background and aims: The latest guidelines from the American Association of Clinical Endocrinologists (AACE) and the American College of Endocrinology (ACE) proposed a new "extreme-risk" category of patients, for whom a low-density lipoprotein cholesterol (LDL-C) level <55 mg/dL (1.4 mmol/L) is advised. We aimed to identify the proportion of patients with stable coronary artery disease (CAD), who are at extreme cardiovascular (CV) risk, and explore how achievable is the new LDL-C goal.

Methods: Enrolled 1629 consecutive patients ≤80 years with stable CAD. Fasting lipids were determined and patients having probable or definite heterozygous familial hypercholesterolemia (HeFH) were identified using the Dutch Lipid Clinic Network algorithm.

Results: The prevalence of risk factors/characteristics suggesting an extreme CV risk were as follows: 32% diabetes mellitus, 33% premature CAD and 9.2% HeFH. In total, 895 (55%) patients had at least one of those risk factors/characteristics and formed the extreme CV risk category. Among patients at extreme risk, 87% were on lipid-lowering therapy, of whom 20.3% had LDL-C <70 mg/dL (1.8 mmol/L) and only 5.3% had LDL-C <55 mg/dL.

Conclusions: More than half of all patients with stable CAD are at extreme CV risk and very few (~5%) achieve LDL-C levels <55 mg/dL. Using maximally-tolerated high-intensity statin combined with ezetimibe, if necessary, is imperative to bridge the treatment gap, while in selected cases the addition of PCSK9 inhibitors will be required.

7. Combined hyperlipidemia is the biggest culprit for triple vessel disease



BACKGROUND: The extent of coronary artery calcium (CAC) improves cardiovascular disease (CVD) risk prediction. The association between common dyslipidemias (combined hyperlipidemia, simple hypercholesterolemia, metabolic Syndrome (MetS), isolated low high-density lipoprotein cholesterol, and isolated hypertriglyceridemia) compared with normolipidemia and the risk of multivessel CAC is under-investigated.

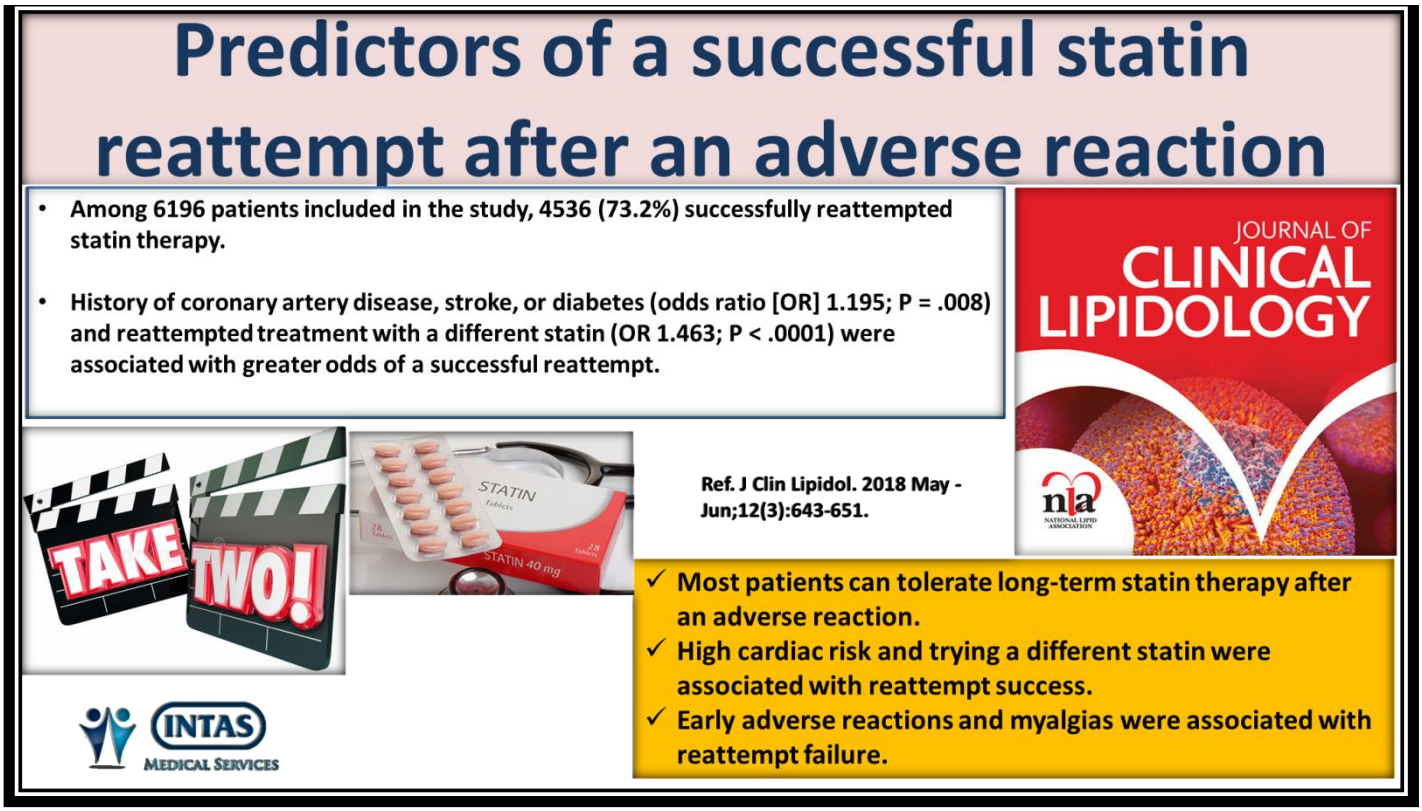
OBJECTIVES: To determine whether there is an association between common dyslipidemias compared with normolipidemia, and the extent of coronary artery involvement among MESA participants who were free of clinical cardiovascular disease at baseline.

METHODS: In a cross-sectional analysis, 4,917 MESA participants were classified into six groups defined by specific LDL-c, HDL-c, or triglyceride cutoff points. Multivessel CAC was defined as involvement of at least 2 coronary arteries. Multivariate Poisson regression analysis evaluated the association of each group with multivessel CAC after adjusting for CVD risk factors.

RESULTS: Unadjusted analysis showed that all groups except hypertriglyceridemia had statistically significant prevalence ratios of having multivessel CAC as compared to the normolipidemia group. The same groups maintained statistical significance prevalence ratios with multivariate analysis adjusting for other risk factors including Agatston CAC score [combined hyperlipidemia 1.41 (1.06-1.87), hypercholesterolemia 1.55 (1.26-1.92), MetS 1.28 (1.09-1.51), and low HDL-c 1.20 (1.02-1.40)].

CONCLUSION: Combined hyperlipidemia, simple hypercholesterolemia, MetS, and low HDL-c were associated with multivessel coronary artery disease independent of CVD risk factors and CAC score. These findings may lay the groundwork for further analysis of the underlying mechanisms in the observed relationship, as well as for the development of clinical strategies for primary prevention.

8. Predictors of a successful statin reattempt after an adverse reaction



Background: Many patients can tolerate statin therapy after an adverse reaction. However, optimal patient selection criteria and methods of reattempting statin therapy after an adverse reaction are unknown.

Objective: To identify patient and treatment characteristics associated with a successful statin reattempt after an adverse reaction.

Methods: Retrospectively studied adults treated in primary care practices affiliated with 2 academic medical centers between 2000 and 2012 who reattempted statin therapy after an adverse reaction. Statin reattempts were considered successful if the patient had at least 2 statin prescriptions after discontinuation of the original statin, and had an active electronic medical record statin record at 2 years after the adverse reaction.

Results: Among 6196 patients included in the study, 4536 (73.2%) successfully reattempted statin therapy. In multivariable analysis, history of coronary artery disease, stroke, or diabetes (odds ratio [OR] 1.195; $P = .008$) and reattempted treatment with a different statin (OR 1.463; $P < .0001$) were associated with greater odds of a successful reattempt. Adverse reaction during the first year after statin initiation (OR 0.721; $P < .0001$) or myalgia or myopathy (OR 0.807; $P = .001$) as well as history of adverse reactions to non-statin drugs (OR 0.908; $P < .0001$) were associated with lower odds.

Conclusions: Nature and timing of the adverse reaction, patient's medical history and the medication prescribed affected the likelihood of a successful reattempt of statin therapy after an adverse reaction. These findings suggest that a patient-centered approach to restarting statins should be considered for patients at high cardiovascular risk to improve the chances of success.

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