[1] *Shuster S, Awad S*. **A RARE CASE OF STATIN-INDUCED NECROTIZING AUTOIMMUNE MYOPATHY**. AACE clinical case reports 2020; 6:e86-e89.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32524017

ABSTRACT

OBJECTIVE: Necrotizing autoimmune myopathy (NAM) is a rare side-effect of statin therapy. We report the case of a patient who developed statin-induced NAM with a review of the clinical presentation and management of this rare entity. The case illustrates the importance of including NAM in the differential diagnosis of persistent myopathy in a statin-exposed individual. METHODS: A 74-year-old male was referred to endocrinology for hypercholesterolemia management in the context of a statin contraindication. He previously developed myositis and rhabdomyolysis secondary to statin therapy, but continued to have persistent proximal lower limb muscle weakness despite statin discontinuation. Rheumatologic and metabolic work-up were negative and neurologic work-up was negative except for a myopathic pattern in the glutei found on electromyography. RESULTS: Due to the persistence of proximal myopathy despite statin discontinuation and myopathic pattern seen on electromyography, NAM was suspected and antibodies against 3-hydroxy-3-methylglutaryl-coenzyme A reductase were sent and came back positive. The patient was treated with the immunosuppressant azathioprine, which resulted in clinical improvement. The patient was started on a proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitor evolucumab for hypercholesterolemia, which resulted in significant improvement in his lipid panel. CONCLUSION: The case illustrates the presentation and management of statin-induced NAM. We demonstrate the necessity for prompt diagnosis and timely management, as statin therapy is contraindicated and immunosuppressive therapy is warranted. Statin-induced NAM is rare however, it should be included in the differential diagnosis of persistent myopathy despite statin discontinuation. PCSK9 inhibitors are the only alternative therapy for hypercholesterolemia management in patients with statin-induced NAM.

[2] *Kuo CL, Pilling LC, Atkins JL et al.* **ApoE e2 and aging-related outcomes in 379,000 UK Biobank participants**. Aging 2020; 12:12222-12233.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32511104

ABSTRACT

The Apolipoprotein E (APOE) e4 allele is associated with reduced longevity and increased Coronary Artery Disease (CAD) and Alzheimer's disease, with e4e4 having markedly larger effect sizes than e3e4. The e2 longevity promoting variant is less studied. We conducted a phenome-wide association study of ApoE e2e3 and e2e2 with aging phenotypes, to assess their potential as targets for anti-aging interventions. Data were from 379,000 UK Biobank participants, aged 40 to 70 years. e2e3 (n=46,535) had mostly lower lipid-related biomarker levels including reduced total and LDL-cholesterol, and lower risks of CAD (Odds Ratio=0.87, 95% CI: 0.83 to 0.90, p=4.92×10(-14)) and hypertension (OR=0.94, 95% CI: 0.92 to 0.97, p=7.28×10(-7)) versus e3e3. However, lipid changes in e2e2 (n=2,398) were more extreme, including a marked increase in triglyceride levels (0.41 Standard Deviations, 95% CI: 0.37 to 0.45, p=5.42×10(-92)), with no associated changes in CAD risks. There were no associations with biomarkers of kidney function. The effects of both e2e2 and e2e3 were minimal on falls, muscle mass, grip strength or frailty. In conclusion, e2e3 has protective effects on some health outcomes, but the effects of e2e2 are not similar, complicating the potential usefulness of e2 as a target for anti-aging intervention.

[3] *Hollstein T, Kassner U, Grenkowitz T et al.* **PCSK9 Inhibitors in a German Single-Center Clinical Practice: Real-World Treatment of Patients at High Cardiovascular Risk Over 68 Weeks**. American journal of cardiovascular drugs : drugs, devices, and other interventions 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32514867
ABSTRACT
AIMS: Several the use of proprotein convertase subtilisin/kexin type 9 inhibitors (PCSK9i) for patients at high/very high cardiovascular risk who are inadequately treated with maximally tolerated lipid-lowering therapies (LLTs). OBJECTIVES: We assessed the effectiveness and safety of the PCSK9i alirocumab and evolocumab in a single-center clinical practice for up to 68 weeks. METHODS: In this prospective, open-label study conducted in Germany, 635 enrolled patients were treated with alirocumab [75 or 150 mg every 2 weeks (Q2W)] or evolocumab (140 mg Q2W) according to European Society of Cardiology/European Atherosclerosis Society guidelines (low-density lipoprotein cholesterol [LDL-C] > 1.81/2.59 mmol/L (70/100 mg/dL), depending on cardiovascular risk]. Investigators were able to adjust LLTs, including PCSK9i, according to their own clinical judgment. The primary effectiveness endpoint was LDL-C reduction from baseline to week 68. RESULTS: At baseline, approximately 50% of patients were statin intolerant, and approximately 90% reported a history of cardiovascular disease. LDL-C reductions remained generally unchanged from weeks 4 to 68 in each treatment group. At week 68, LDL-C mean percentage changes from baseline were - 41.7% (alirocumab 75 mg Q2W), - 53.7% (alirocumab 150 mg Q2W), and - 54.1% (evolocumab 140 mg Q2W). LDL-C reduction was 7.1% greater in patients receiving statins than in those not receiving statins because of statin intolerance (P < 0.0001). PCSK9i consistently improved levels of other lipoproteins throughout. Overall, 47.1% of patients reported adverse events at week 68. CONCLUSIONS: Consistent with clinical trial findings, alirocumab and evolocumab improved lipid levels in a real-world setting in patients with high baseline LDL-C levels despite receiving maximally tolerated LLTs. PCSK9i were generally well-tolerated.

[4] *Makariou SE, Challa A, Siomou E et al.* **Vitamin D status and cardiometabolic risk factors in Greek adolescents with obesity - the effect of vitamin D supplementation: a pilot study**. Archives of medical sciences. Atherosclerotic diseases 2020; 5:e64-e71.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32529108
ABSTRACT
INTRODUCTION: Obesity is associated with cardiovascular disease (CVD) risk factors as well as decreased 25(OH) vitamin D serum levels. We aimed to study 25(OH) vitamin D levels in adolescents with obesity compared with normal weight controls in association with CVD risk factors, and the possible effect of vitamin D supplementation. MATERIAL AND METHODS: In a cross-sectional study, 69 obese and 34 normal-weight adolescents were included. In an interventional study 15 adolescents with obesity and vitamin D insufficiency were given 2000 IU vitamin D per os daily for 3 months. RESULTS: Adolescents with obesity had significantly lower 25(OH) vitamin D levels compared with normal-weight controls (12.0 (3.0-36.0) vs. 34.0 (10.0-69.0) ng/ml, respectively, p < 0.001). In adolescents with obesity, 25(OH) vitamin D was inversely associated with leptin even after adjustment for body mass index (BMI) (r = -0.340, p = 0.009). Conversely, 25(OH) vitamin D was not related with other parameters, such as BMI,

blood pressure, lipids, glucose, insulin, homeostasis model assessment (HOMA) index, adiponectin, leptin/adiponectin ratio, and visfatin levels. Following supplementation in 15 vitamin D insufficient adolescents with obesity, 25(OH) vitamin D significantly increased (from 17.3 (12.5-27.8) to 32.6 (14.3-68.0) ng/ml, p = 0.005) and so did low-density lipoprotein cholesterol (LDL-C) (from 85.4 ±9.5 to 92.1 ±15.8 mg/dl, p = 0.022), while there were reductions in glycated haemoglobin (HbA(1c)) (from 5.8 ±0.2 to 5.5 ±0.1%, p = 0.03) and leptin (from 19.7 (7.8-45.5) to 15.1 (4.3-37.3) ng/ml, p = 0.03). Oxidised LDL, paraoxonase, arylesterase, and urine isoprostanes remained unchanged. CONCLUSIONS: Adolescents with obesity had lower 25(OH) vitamin D, which may be associated with higher leptin levels. Vitamin D supplementation may lead to HbA(1c) and leptin reductions, but also to an increase in LDL-C.

[5] *Pecchioli V, Cicero AFG, Lomartire N et al.* **A double-blind, placebo-controlled clinical trial to assess the effects of a combined nutraceutical on endothelial function in patients with mild-to-moderate hypercholesterolaemia**. Archives of medical sciences. Atherosclerotic diseases 2020; 5:e36-e42.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32529103
ABSTRACT
INTRODUCTION: There is growing interest in lipid-lowering nutraceuticals; however, there are a relative scarcity of data on combined compounds. This study was aimed to assess the efficacy and tolerability of a combined nutraceutical (CARDIOL(®) Forte - CF) containing polyunsaturated fatty acids, hydroxytyrosol, Coenzyme Q10, folic acid, B(12) and E vitamins, piperine, and red yeast rice in patients with mild-to-moderate hypercholesterolaemia. MATERIAL AND METHODS: In this single-centre, double-blinded, placebo-controlled study enrolled subjects who were randomised to receive the tested combined nutraceutical for 16 weeks (CF group) or placebo (control group), in association with a low-fat diet. After 8 weeks of treatment, all patients underwent a 15-day washout period; then, a further 8 weeks of treatment was planned. RESULTS: Of 80 enrolled subjects, 37 completed the study in the CF group and 38 in the control group. After 8 weeks of treatment, low-density lipoprotein cholesterol levels were reduced by 17% in the CF group and by 6.4% in the control group, compared to baseline (p = 0.0001); these changes were improved at the end of study. Total cholesterol and triglyceride levels significantly decreased during treatment; high-density lipoprotein cholesterol did not change. In the CF group, flow-mediated dilation increased by 18.8% after 8 weeks and by 39.3% at the end of treatment. No adverse events or musculoskeletal disorders were reported in either group. CONCLUSIONS: The tested combined nutraceutical, in association with a controlled diet, can reduce cholesterol levels and improve endothelial function, thus reducing the cardiovascular risk in patients with mild-to-moderate hypercholesterolaemia.

[6] *Thongnak L, Chatsudthipong V, Lungkaphin A*. **Mitigation of renal inflammation and endoplasmic reticulum stress by vildagliptin and statins in high-fat high-fructose diet-induced insulin resistance and renal injury in rats**. Biochimica et biophysica acta. Molecular and cell biology of lipids 2020; 1865:158755.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32534015
ABSTRACT

Dyslipidemia and insulin resistance in obesity can lead to lipotoxicity and cellular damage. Renal lipotoxicity in association with an impairment of lipid metabolism induces renal damage through the activation of inflammation, ER stress, fibrosis and apoptosis. We investigated the effects of a combination treatment of the DPP-4 inhibitor vildagliptin and atorvastatin on renal lipotoxicity related to renal dysfunction and injury in a high-fat high-fructose diet (HFF)-induced insulin resistant condition. Male Wistar rats were fed on a high-fat diet and were given drinking water with 10% fructose for 16 weeks. After that, rats were divided into: no treatment (HFF), treatment with vildagliptin, atorvastatin and vildagliptin plus atorvastatin for 4 weeks. The results demonstrated that the combination treatment prominently improved insulin resistance, dyslipidemia and kidney morphological changes induced by HFF. These changes correlated well with the increased expression of nephrin and podocin and decreased urine protein. Notably, the combined treatment produced greater improvement in renal lipid metabolism through increasing fatty acid oxidation with the decreases in fatty acid transporters and fatty acid synthesis, thereby reducing renal lipid accumulation in HFF rats. The reduction in renal lipotoxicity via diminishing renal inflammation, ER stress, fibrosis and apoptosis was also more significant in the combined treatment group than in the other groups in which the drug was used as a monotherapy. In conclusion, the combination therapy produced synergistic beneficial effects on metabolic parameters, lipid metabolism and accumulation related to renal lipid accumulation-induced lipotoxicity and kidney injury in the HFF-induced insulin resistant model with improved outcomes.

[7] *Dai Y, Huang J, Zeng L et al.* **Comparison of the preventive efficacy of rosuvastatin versus atorvastatin in post-contrast acute kidney injury in patients with ST-segment elevation myocardial infarction undergoing percutaneous coronary intervention**. Biomedicine & pharmacotherapy = Biomedecine & pharmacotherapie 2020; 128:110336.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32521452

ABSTRACT

Statins have been shown to reduce the risk of post-contrast acute kidney injury (PC-AKI) in patients undergoing percutaneous coronary intervention (PCI). However, the preventive effect of rosuvastatin versus atorvastatin on PC-AKI in patients with ST-segment elevation myocardial infarction (STEMI) undergoing PCI remains unclear. Patients with STEMI undergoing PCI between January 2010 and May 2016 were consecutively enrolled. A total of 1300 included patients were divided into two groups according to the statin type (atorvastatin: n = 1040; rosuvastatin: n = 260). The primary endpoint was PC-AKI defined as an absolute increase of ≥ 0.5 mg/dL in the level of serum creatinine or an increase of ≥ 25 % over baseline within 48-72 h after contrast media exposure. In total, 245 (18.8 %) patients developed PC-AKI. The atorvastatin and rosuvastatin groups had similar rates of PC-AKI (19.1 % vs. 17.7 %, p = 0.595), in-hospital mortality (4.1 % vs. 3.8 %, p = 0.833), and major adverse clinical events (MACE). Multivariate logistic regression analysis revealed that rosuvastatin treatment had an effect similar to atorvastatin regarding PC-AKI (odds ratio [OR] = 0.97, 95 % confidence interval [CI], 0.66-1.43, p = 0.874). Propensity score analyses and subgroup analysis demonstrated similar results for PC-AKI. Kaplan-Meier survival curves and Cox proportional regression showed that the atorvastatin and rosuvastatin groups had no differences regarding follow-up mortality. Rosuvastatin exerted a similar preventive effect against PC-AKI and showed similar levels of in-hospital and follow-up all-cause mortality and in-hospital MACE compared with atorvastatin in patients with STEMI undergoing PCI.

[8] *Xie Z, Li Z, Dong W et al.* **The impact of coexisting diabetes mellitus on clinical outcomes in patients with idiopathic membranous nephropathy: a retrospective observational study**. BMC Nephrol 2020; 21:224.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32532223
ABSTRACT
BACKGROUND: Idiopathic membranous nephropathy (IMN) is frequently coexisted with diabetes mellitus (DM). Few researches investigate clinical outcomes in IMN patients coexisting diabetes mellitus (DM), including remission rates, renal survival and complications. Concurrent DM also pose therapeutic challenges to IMN patients due to the influence of glucocorticoids and immunosuppressant on metabolic disorders. We performed this study to investigate the impact of DM on clinical outcomes in IMN and the influence of therapeutic regime on metabolic parameters in diabetic IMN patients. METHODS: Two hundred and six adult hospitalized patients diagnosed with biopsy-proven IMN were retrospectively studied, including 42 patients coexisted with DM. Clinical outcomes including remission rates, renal outcome and complications were compared between groups. Impact of cyclophosphamide and ciclosporin on metabolism and complications were analyzed in IMN patients coexisting DM. RESULTS: IMN patients coexisted with DM were presented with advanced age, lower level of eGFR and hemoglobin. Patients coexisted with DM experienced worse renal function deterioration and higher incidence of infection. COX regression analysis showed that DM was an independent risk factor for renal function deterioration in IMN patients. There was no significant difference in remission rates and incidence of venous thromboembolism between two groups. Further exploration on the impact of therapeutic regimens on complications and metabolism showed that cyclophosphamide and ciclosporin had no significant difference in incidence of complications including infection and venous thromboembolism, and posed comparable influences on blood glucose, uric acid and blood lipids in IMN patients coexisted with DM. CONCLUSION: Coexisting DM was an independent risk factor for renal function deterioration in IMN patients but did not influence the remission of proteinuria. Glucocorticoids in combination with cyclophosphamide or ciclosporine had similar impact on complications and metabolic index including blood glucose, uric acid and blood lipids in IMN patients coexisted with DM.

[9] *Engell AE, Svendsen ALO, Lind BS et al.* **Drug-drug interaction between warfarin and statins: A Danish cohort study**. British journal of clinical pharmacology 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32533893
ABSTRACT
Initiation of statin treatment is suggested to increase the international normalised ratio (INR) among warfarin users. However, available data is limited and conflicting. We conducted a register-based cohort study to evaluate the drug-drug interaction between warfarin and statins. By linking data on INR measurements and filled prescriptions, we identified warfarin users 2000-2015 initiating simvastatin (n = 1363), atorvastatin (n = 165) or rosuvastatin (n = 23). Simvastatin initiation led to an increase in mean INR from 2.40 to 2.71, with INRs peaking after 4 weeks, corresponding to a mean change of 0.32 (95%CI 0.25-0.38). High-dose and low-dose simvastatin led to comparable changes (mean change 0.33 vs 0.29). Initiation of atorvastatin and rosuvastatin lead to INR increases of 0.27 (95%CI 0.12-0.42) and 0.30 (95%CI -0.09-0.69). In conclusion, initiation of simvastatin, atorvastatin or rosuvastatin among warfarin users

led to a minor increase in INR. The magnitude of this change is for most patients likely of limited clinical relevance.

[10] *Sullivan VK, Petersen KS, Kris-Etherton PM*. **Dried fruit consumption and cardiometabolic health: a randomised crossover trial**. The British journal of nutrition 2020:1-10.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32513313
ABSTRACT
Fruit intake is associated with lower risk of cardiometabolic diseases. However, effects of dried fruits on cardiometabolic health are not well researched. We investigated the effect of daily dried fruit consumption compared with a carbohydrate-rich snack on cardiometabolic disease risk factors in adults with increased cardiometabolic risk. A two-period randomised crossover trial was conducted in adults (n 55) with elevated BMI and at least one additional risk factor for cardiometabolic disease to compare the effects of consuming 3/4 cup/d mixed dried fruits (plums, figs, dates and raisins) or an energy- and carbohydrate-matched control snack for 4 weeks. The primary outcome was LDL-cholesterol; secondary outcomes included other lipids and lipoproteins, glucose and insulin, C-reactive protein, blood pressure and vascular stiffness. Linear mixed models were used for data analysis. Lipid and lipoprotein concentrations did not differ between conditions; however, dried fruit increased LDL-cholesterol (0·10 mmol/l, 95 % CI 0·01, 0·20) compared with baseline. Compared with the control, dried fruit increased mean fasting glucose (0·08 mmol/l, 95 % CI 0·005, 0·16; P = 0·038). Vascular outcomes, fasting insulin and C-reactive protein did not differ between conditions. Mean weight changes did not differ (P = 0·55) but tended to increase after both conditions (dried fruit 0·3 kg, 95 % CI -0·09, 0·65; control 0·4 kg, 95 % CI 0·01, 0·75). Thus, short-term daily consumption of a large portion of mixed dried plums, figs, dates and raisins, without structured dietary guidance, did not improve cardiometabolic risk factors, compared with carbohydrate-rich snacks, in adults with increased baseline cardiometabolic risk.

[11] *Colivicchi F, Imperoli G*. **Overcoming Statin Intolerance in Clinical Practice: An Enduring Effort**. Cardiology 2020; 145:425-427.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32506062
ABSTRACT

[12] *Parolini C*. **Biotechnology Approaches for the Treatment of Dyslipidemia**. Cardiovascular drugs and therapy / sponsored by the International Society of Cardiovascular Pharmacotherapy 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32519066
ABSTRACT
BACKGROUND: Despite advances in the development of lipid-lowering therapies, clinical trials have shown that a significant residual risk of cardiovascular disease persists. Specifically, new drugs are needed for non-responding or statin-intolerant subjects or patients considered at very high risk for cardiovascular events even though are already on treatment with the best standard of care. RESULTS AND CONCLUSIONS: Besides, genetic and epidemiological studies and Mendelian randomization analyses have strengthened the linear correlation between the concentration of low-density lipoprotein cholesterol (LDL-C) and the incidence of cardiovascular events and highlighted various novel therapeutic targets. This review describes

the novel strategies to reduce the levels of LDL-C, non-HDL-C, triglyceride, apolipoprotein B, and Lp(a), focusing on those developed using biotechnology-based strategies.

[13] *Gomez-Delgado F, Katsiki N, Lopez-Miranda J, Perez-Martinez P*. **Dietary habits, lipoprotein metabolism and cardiovascular disease: From individual foods to dietary patterns**. Critical reviews in food science and nutrition 2020:1-19.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32515660
ABSTRACT
Cardiovascular disease (CVD) remains the first cause of mortality in Western countries. Among cardiometabolic risk factors, dyslipidemia, and especially high low-density lipoprotein cholesterol (LDL-C) concentrations, have been extensively linked to the development and progression of atherosclerosis and to CVD events. Recent evidence has shown that the prevention of unhealthy dietary habits and sedentarism is crucial in the management of dyslipidemia. In this sense, a number of scientific societies recommend the adherence to certain healthy dietary patterns (DPs), such as the Mediterranean diet (MedDiet), the Dietary Approaches to Stop Hypertension (DASH), the Portfolio diet, the Vegetarian diet, the Nordic diet and low-carbohydrate diets, as well as increased physical activity between others. This nutritional and lifestyle advice could be adopted by government bodies and implemented in different health programs as a reliable way of providing health-care professionals with efficient tools to manage cardiometabolic risk factors and thus, prevent CVD. In this narrative review, we will discuss recent data about the effects of nutrition on dyslipidemia, mainly focusing on high LDL-C concentrations and other lipid particles related to atherogenic dyslipidemia such as triglycerides (TG) and non-high density lipoprotein cholesterol (non-HDL-C), that are related to CVD. On the other hand, we also comment on other cardiometabolic risk factors such as type 2 diabetes mellitus (T2DM), high blood pressure (HBP), inflammation and endothelial dysfunction. This review includes food groups as well as different healthy DPs.

[14] *Stroie OP, Boster J, Surry L*. **Statin-Induced Immune-Mediated Necrotizing Myopathy: An Increasingly Recognized Inflammatory Myopathy**. Cureus 2020; 12:e7963.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32523820
ABSTRACT
Statin-induced immune-mediated necrotizing myopathy, also known as anti-3-hydroxy-3-methylglutaryl-coenzyme A reductase (anti-HMGCR) myopathy, is an inflammatory myopathy that is triggered by statin exposure and persists after statin discontinuation. It is a rare side effect of statins, distinct from the more commonly recognized statin-induced myalgia, that is challenging to diagnose and treat. We describe a case of anti-HMGCR myopathy in a 59-year-old male with a prior history of statin intolerance presenting with markedly elevated creatinine kinase, myoglobinuria, and one month of progressive proximal muscle weakness after restarting atorvastatin 10 months prior to admission. High-dose glucocorticoids led to rapid clinical improvement, although the patient relapsed upon tapering. Remission was attained at three months after combination therapy with azathioprine, intravenous immunoglobulin, and a prolonged prednisone taper.

[15] *Bélanger AM, Akioyamen L, Alothman L, Genest J*. **Evidence for improved survival with treatment of homozygous familial hypercholesterolemia**. Current opinion in lipidology 2020; 31:176-181.

PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32520777
ABSTRACT
PURPOSE OF REVIEW: Homozygous familial hypercholesterolemia (HoFH) is an orphan disease caused by biallelic mutations at the LDL receptor (LDLR) gene, with a prevalence estimated at 1:250000 to 1:630000. HoFH is characterized by extremely elevated plasma levels of LDL-C greater than 10 mmol/l (>387 mg/dl), tendinous and cutaneous xanthomas in youth and premature atherosclerotic cardiovascular disease (ASCVD). The expected prevalence varies from country to country depending on the presence of founder effects, genetic probability and life expectancy. Untreated, HoFH is a fatal condition before age 30. Plasma levels of LDL-C are the major cause of mortality and the therapeutic target. Statin therapy led to a remarkable improvement in survival but is of limited use in loss-of-function LDLR gene variants or 'null' mutations. Inhibitors of PCSK9 are a useful adjunct in patients with LDLR mutations with residual activity. Extracorporeal LDL filtration has improved survival since its introduction three decades ago. RECENT FINDINGS: Novel therapies, not dependent on a functioning LDLR include lomitapide and mipomersen, which decrease hepatic apolipoprotein B secretion, and evinacumab, directed at the angiopoietin like-3 protein (ANGPLT-3). SUMMARY: Over the past 3-4 decades, the survival of patients with HoFH has increased markedly. New therapeutic options offer new hope.

[16] *Ganda OP*. **When to lower triglycerides?** Current opinion in lipidology 2020; 31:238-245.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32520780
ABSTRACT
PURPOSE OF REVIEW: Substantial risk of ASCVD events persists despite intensive statin therapy and other agents to lower LDL-C. The optimal way to address other elements of dyslipidemia, such as triglyceride-rich particles (TRL) and when to treat has remained unclear. RECENT FINDINGS: Several lines of evidence indicate that TRL are associated with atherogenesis, partly because of associated factors, such as cholesterol-enriched remnant particles, high LDL particle number, high apo-B, high apo-CIII, and others. High triglyceride is increasingly prevalent because of worsening of lifestyle factors, obesity, and diabetes. Trials with fibrates, and niacin to reduce residual dyslipidemia have not provided evidence of benefits after statin therapy, thus far. A recent trial with an omega 3 fatty acid (OM3FA), icosapent-ethyl (IPE), provided evidence for a 25% reduction in ASCVD events in statin-treated high-risk population. These results were unexplained by triglyceride reduction alone, and are likely related to unique biologic effects of IPE on atherosclerosis. Finally, in patients with very high triglycerides, lifestyle measures and several triglyceride-lowering agents are indicated, often in combination, to prevent episodes of pancreatitis. A novel Apo C-III inhibitor may provide additional benefit in such patients. SUMMARY: There is evidence for the benefits of IPE in preventing ASCVD events. A novel fibrate is in clinical trials.

[17] *Liu Y, Morton RE*. **Apolipoprotein F: a natural inhibitor of cholesteryl ester transfer protein and a key regulator of lipoprotein metabolism**. Current opinion in lipidology 2020; 31:194-199.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32520778
ABSTRACT
PURPOSE OF REVIEW: The aim of this study is to highlight recent studies that have advanced our understanding of apolipoprotein F (ApoF) and its role in lipid metabolism.

RECENT FINDINGS: Previous studies showed that ApoF hepatic mRNA levels are suppressed by fat-enriched diets. Recent studies show this downregulation is mediated by agonist-induced binding of liver X receptor (LXR) and PPARalpha to a regulatory element in the ApoF promoter. First-of-kind in-vivo studies show ApoF lowers low-density lipoprotein levels and enhances reverse cholesterol transport in fat-fed hamsters. SUMMARY: Diverse studies collectively provide compelling evidence that cholesteryl ester transfer protein (CETP) plays an important role in regulating lipid metabolism. Inhibiting CETP raises HDL cholesterol. However, considering the recent failures of pharmacological inhibitors of CETP in clinical trials, it does not seem likely that global inhibition of CETP will be beneficial. ApoF is a minor apolipoprotein that functions as a natural inhibitor of CETP. However, ApoF is not a general inhibitor of CETP, but rather it preferentially inhibits CETP activity with LDL. Therefore, ApoF tailors CETP activity so that less tissue-derived cholesterol traffics from HDL into the LDL compartment. Lower LDL cholesterol levels have recognized clinical benefit for reduced cardiovascular disease.

[18] *Ferri N, Grego MF, Corsini A, Ruscica M*. **Proprotein convertase subtilisin/kexin type 9: an update on the cardiovascular outcome studies**. European heart journal supplements : journal of the European Society of Cardiology 2020; 22:E64-e67.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32523442
ABSTRACT
Inhibitors of the 3-hydroxy-3-methylglutaryl coenzyme A reductase enzyme, statins, are powerful cholesterol-lowering medications and have provided outstanding contributions to the primary and secondary prevention of coronary heart disease. Low-density lipoprotein cholesterol (LDL-C) is one of the major modifiable cardiovascular risk factors, indeed, every 1.0 mmol/L (38.7 mg/dL) reduction in LDL cholesterolaemia corresponds to a 21% lowering in the risk of major vascular events. In this context, the pharmacological approach with PCSK9 monoclonal antibodies is considered a promising non-statin therapeutic option for the management of lipid disorders in patients with persistent cardiovascular risk, including patients with diabetes mellitus. Data from two large clinical trials have indisputably demonstrated the efficacy of alirocumab and evolocumab in preventive major adverse cardiovascular events in high risk, secondary-prevention patients with clinical manifestation of atherosclerotic cardiovascular diseases. Finally, PCSK9 monoclonal antibodies did not increase the risk of serious adverse events, neurocognitive events, new-onset of diabetes, muscle-related events, or myalgia.

[19] *Muscente F, De Caterina R*. **Causal relationship between influenza infection and risk of acute myocardial infarction: pathophysiological hypothesis and clinical implications**. European heart journal supplements : journal of the European Society of Cardiology 2020; 22:E68-e72.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32523443
ABSTRACT
Presently several evidences support an association between acute myocardial infarction and influenza infection. The pathophysiology rationale rests on the release of inflammation cytokines, rupture of atherosclerotic plaque, and triggering of prothrombotic events leading to coronary artery occlusion. Several observational evidences support a potential role of influenza vaccine in cardiovascular prevention. It is estimated that the efficacy of influenza vaccine in

preventing myocardial infarction could range between 15% and 45%. Notwithstanding the clear recommendation of numerous guidelines concerning patients with cardiovascular diseases, vaccination rates are still low in the high-risk groups. Influenza vaccine as preventive measure of cardiovascular disease still awaits support from randomized clinical trials. Nonetheless, considering the favourable cost-efficacy and safety profile of influenza vaccination, its use should be encouraged in everyday clinical practice.

[20] *Santucci A, Riccini C, Cavallini C*. **Treatment of stable ischaemic heart disease: the old and the new**. European heart journal supplements : journal of the European Society of Cardiology 2020; 22:E54-e59.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32523440
ABSTRACT
Stable ischaemic heart disease is a frequent and very heterogeneous condition. Drug therapy is important, in these patients, for improving their prognosis and controlling their symptoms. The typical clinical manifestation of obstructive coronary disease is angina pectoris. This symptom can be improved by various classes of compounds, namely beta-blockers (BBs), calcium antagonist, and nitrates. More recently, ranolazine and ivabradine have been introduced. All these drugs have been proven to reduce significantly angina. On the other hand, there are no evidences supporting improvement in prognosis, besides for the use of BBs, in patients with previous myocardial infarction (MI) or systolic dysfunction. Besides drugs for symptoms control, these patients also receive antiplatelet drugs, specifically aspirin, and lipid lowering compounds such as statins. Furthermore, recent evidences supported the use of low doses direct anticoagulant, or a second antiplatelet agent in patients with previous MI. Similarly, a very low LDL cholesterol level, such as obtained with PCKS9 inhibitors, seems very beneficial in these patients. It is possible that in the near future a specific role for neo-angiogenesis factors and cellular therapies, could be proven, albeit, presently these treatments are not supported by solid evidences.

[21] *Vaccari F, Passaro A, D'Amuri A et al.* **Effects of 3-month high-intensity interval training vs. moderate endurance training and 4-month follow-up on fat metabolism, cardiorespiratory function and mitochondrial respiration in obese adults**. European journal of applied physiology 2020; 120:1787-1803.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32514607
ABSTRACT
PURPOSE: The purpose of this study was to investigate, in obese adults, changes in body composition, physical capacities, fat oxidation and ex vivo mitochondrial respiration induced by a 3-month either moderate-intensity continuous training (MICT) or high-intensity interval training (HIIT); afterwards, the patients were followed for four months. METHODS: Thirty-two patients (mean age 39 years; mean body mass index [BMI] 36 kg·m(-2)) participated in this study attending ~ 34 sessions of training. At baseline (PRE), at the end of the program (POST) and after follow-up, body composition, peak O(2) uptake (V'O(2)peak) and fat oxidation rate were measured. Vastus lateralis biopsies for the evaluation of mitochondrial respiration were performed only at PRE and POST. RESULTS: At POST, body mass (BM) and fat mass (FM) decreased (- 6 and - 14%, respectively, $P < 0.05$) in MICT and HIIT; V'O(2)peak increased in both groups (+ 6 and + 16%, respectively, $P < 0.05$). Maximal fat oxidation rate increased only after HIIT ($P < 0.001$). Maximal ADP-stimulated mitochondrial respiration normalized by citrate

synthase increased (P < 0.05) by 67% and 36% in MICT and HIIT, respectively, without significant difference. After follow-up, BM and FM were still lower (- 4 and - 20%, respectively, P < 0.050) compared with baseline in both groups. Only after HIIT, V'O(2)peak (+ 8%) and maximal fat oxidation rate were still higher (P < 0.05). CONCLUSIONS: HIIT was more effective in improving and maintaining V'O(2)peak and fat oxidation. These results may be relevant for an appropriate prescription of training programs designed to optimize aerobic fitness in obese subjects.

[22] *Abdolmaleki A, Zahri S, Bayrami A*. **Rosuvastatin enhanced functional recovery after sciatic nerve injury in the rat**. European journal of pharmacology 2020; 882:173260.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32534070
ABSTRACT
Posttraumatic nerve recovery remains a challenge in regenerative medicine. As such, there is a need for agents that limit nerve damage and enhance nerve regeneration. Here we investigate rosuvastatin, a 3-hydroxy-3-methylglutaryl coenzyme (HMG-CoA) reductase inhibitor, with anti-inflammatory and antioxidant properties. We explore its neuroprotective properties on sciatic nerve crush injury in male Wistar Rats. Rats were subjected to crush injury to the left sciatic nerve using a vessel clamp for 30 s. Rosuvastatin or vehicle was prepared daily and administrated by oral gavage for seven days post-injury. In rosuvastatin treatment groups, rosuvastatin was administrated at the doses of (5 or 10 mg/kg) in the treatment group. The control group was given a vehicle in the same manner. Behavioral, electrophysiological, morphological and molecular parameters were examined during the recovery process. Chronic administration of rosuvastatin at all doses after sciatic nerve crush markedly promoted nerve regeneration and significantly accelerated motor function recovery (P < 0.05). Electrophysiological, morphological and molecular parameters also improved in the rosuvastatin treatment groups compared to the controls. These findings suggest that neuroprotective effects of rosuvastatin could be due to its antioxidant and anti-inflammatory activity. It is clear that more research is needed to confirm these findings.

[23] *Wang H, Wang J, He C*. **Exploration of potential lipid biomarkers for premature canitiesby UPLC-QTOF-MS analyses of hair follicle roots**. Experimental dermatology 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32533882
ABSTRACT
BACKGROUND: The rate of premature greying, referred to as canities, varies among populations and effective treatments are lacking.However, few studies at the molecular level have been reported. OBJECTIVES: Comparing lipid profiles of individuals with premature canities and healthy volunteers to explore the mechanism of premature canities. METHODS: Ultra performance liquid chromatography/quadrupole time-of-flight mass spectrometry(UPLC-QTOF-MS) was used to detect lipids in the hair follicle root. Multivariate data analysis wasused to show lipid changes in follicle roots. RESULTS: We identified lipids in the hair follicle root that differ between black and white hair and analysed key lipids contributing to white hair development. We divided the samples into three groups: PC-WH(Premature canities-White hair), PC-PH(Premature canities-Pigmented hair), Control-PH(Pigmented hair).Phosphatidylethanolamine(PE), phosphatidylcholine(PC), vitamin D3 (VD3), and cholesterol in Control-PHwere higher than those in PC-WH. Sphingomyelin (SP), phosphatidic acid (PA), VD3, and diglyceride (DG) were lower in PC-WH than inPC-PH. Levels of VD3 were

highest inControl-PH, gradually decreased as theseverityof PC-PH increased, and were lowest in PC-WH. CONCLUSION: There are7 main class candidate compounds involved inthe generation of white hair. VD3showeda substantial decrease in white hair and was a potential targetfor further studies ofpremature canities.

[24] *Nurmohamed NS, Dallinga-Thie GM, Stroes ESG*. **Targeting apoC-III and ANGPTL3 in the treatment of hypertriglyceridemia**. Expert review of cardiovascular therapy 2020; 18:355-361.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32511037
ABSTRACT
INTRODUCTION: The prevalence of hypertriglyceridemia (HTG) is increasing. Elevated triglyceride (TG) levels are associated with an increased cardiovascular disease (CVD) risk. Moreover, severe HTG results in an elevated risk of pancreatitis, especially in severe HTG with an up to 350-fold increased risk. Both problems emphasize the clinical need for effective TG lowering. AREAS COVERED: The purpose of this review is to discuss the currently available therapies and to elaborate the most promising novel therapeutics for TG lowering. EXPERT OPINION: Conventional lipid lowering strategies do not efficiently lower plasma TG levels, leaving a residual CVD and pancreatitis risk. Both apolipoprotein C-III (apoC-III) and angiopoietin-like 3 (ANGPTL3) are important regulators in TG-rich lipoprotein (TRL) metabolism. Several novel agents targeting these linchpins have ended phase II/III trials. Volanesorsen targeting apoC-III has shown reductions in plasma TG levels up to 90%. Multiple ANGPLT3 inhibitors (evinacumab, IONIS-ANGPTL3-L(Rx), ARO-ANG3) effectuate TG reductions up to 70% with concomitant potent reduction in all other apoB containing lipoprotein fractions. We expect these therapeutics to become players in the treatment for (especially) severe HTG in the near future.

[25] *Yang J*. **Bempedoic acid for the treatment of hypercholesterolemia**. Expert review of cardiovascular therapy 2020; 18:373-380.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32532162
ABSTRACT
INTRODUCTION: Although several lipid-lowering drugs are available, they are not sufficient for some patients. Bempedoic acid is a small molecule adenosine triphosphate-citrate lyase inhibitor indicated for the treatment of adults with hypercholesterolemia. AREAS COVERED: We performed a systematic review of the literature using PubMed database, and the following keywords were used: 'bempedoic acid,' 'hypercholesterolemia,' and 'adenosine triphosphate citrate lyase.' The chemical property, mechanism of action, pharmacokinetics, clinical efficacy, and safety of bempedoic acid are introduced in this paper. EXPERT OPINION: Bempedoic acid can modulate the metabolism of cholesterol. Clinical trials indicated that bempedoic acid could significantly reduce low-density lipoprotein cholesterol levels. Bempedoic acid was well tolerated.

[26] *Salerno AG, van Solingen C, Scotti E et al.* **LDL Receptor Pathway Regulation by miR-224 and miR-520d**. Frontiers in cardiovascular medicine 2020; 7:81.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32528976
ABSTRACT

MicroRNAs (miRNA) have emerged as important post-transcriptional regulators of metabolic pathways that contribute to cellular and systemic lipoprotein homeostasis. Here, we identify two conserved miRNAs, miR-224, and miR-520d, which target gene networks regulating hepatic expression of the low-density lipoprotein (LDL) receptor (LDLR) and LDL clearance. In silico prediction of miR-224 and miR-520d target gene networks showed that they each repress multiple genes impacting the expression of the LDLR, including the chaperone molecules PCSK9 and IDOL that limit LDLR expression at the cell surface and the rate-limiting enzyme for cholesterol synthesis HMGCR, which is the target of LDL-lowering statin drugs. Using gain- and loss-of-function studies, we tested the role of miR-224 and miR-520d in the regulation of those predicted targets and their impact on LDLR expression. We show that overexpression of miR-224 or miR-520d dose-dependently reduced the activity of PCSK9, IDOL, and HMGCR 3'-untranslated region (3'-UTR)-luciferase reporter constructs and that this repression was abrogated by mutation of the putative miR-224 or miR-520d response elements in the PCSK9, IDOL, and HMGCR 3'-UTRs. Compared to a control miRNA, overexpression of miR-224 or miR-520d in hepatocytes inhibited PCSK9, IDOL, and HMGCR mRNA and protein levels and decreased PCSK9 secretion. Furthermore, miR-224 and miR-520d repression of PCSK9, IDOL, and HMGCR was associated with an increase in LDLR protein levels and cell surface expression, as well as enhanced LDL binding. Notably, the effects of miR-224 and miR-520d were additive to the effects of statins in upregulating LDLR expression. Finally, we show that overexpression of miR-224 in the livers of Ldlr (+/-) mice using lipid nanoparticle-mediated delivery resulted in a 15% decrease in plasma levels of LDL cholesterol, compared to a control miRNA. Together, these findings identify roles for miR-224 and miR-520d in the posttranscriptional control of LDLR expression and function.

[27] *Fu L, Shang X, Zhang X*. **The Impact of Atorvastatin on Cardiac Performance for Dilated Cardiomyopathy: A Meta-analysis of Randomized Controlled Studies**. Heart Surg Forum 2020; 23:E329-e334.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32524984
ABSTRACT
INTRODUCTION: The efficacy of atorvastatin for dilated cardiomyopathy remains controversial. We conducted a systematic review and meta-analysis to explore the influence of atorvastatin on cardiac performance for dilated cardiomyopathy. METHODS: We searched PubMed, Embase, Web of Science, EBSCO, and Cochrane library databases through February 2019 for randomized controlled trials (RCTs) assessing the effect of atorvastatin on cardiac performance for dilated cardiomyopathy. This meta-analysis was performed using the random-effects model. RESULTS: Five RCTs involving 401 patients were included in the meta-analysis. Overall, compared with control groups for dilated cardiomyopathy, atorvastatin treatment resulted in a significantly positive impact on left ventricular ejection fraction (standard mean difference [SMD] = 0.58; 95% confidence interval [CI] = 0.33 to 0.84; P < .00001), 6-minute walk test (SMD = 0.79; 95% CI = 0.27 to 1.31; P = .003), N-terminal pro-brain natriuretic peptide (SMD = -0.60; 95% CI = -1.18 to -0.01; P = .04), left ventricular systolic volume (SMD = 0.41; 95% CI = 0.03 to 0.79; P = .03), low-density lipoprotein (SMD = -1.37; 95% CI = -1.92 to -0.82; P = .00001), and C-reactive protein (SMD = -0.47; 95% CI = -0.72 to -0.22; P = .0002), but showed no obvious influence on left ventricular end-diastolic volume (SMD = 0.14; 95% CI = -0.37 to 0.64; P = .59). CONCLUSIONS: Atorvastatin treatment provides significant benefits for dilated cardiomyopathy.

[28] *Mangge H, Prüller F, Schnedl W et al.* **Beyond Macrophages and T Cells: B Cells and Immunoglobulins Determine the Fate of the Atherosclerotic Plaque**. International journal of molecular sciences 2020; 21.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32521607
ABSTRACT
Atherosclerosis (AS) leading to myocardial infarction and stroke remains worldwide the main cause for mortality. Vulnerable atherosclerotic plaques are responsible for these life-threatening clinical endpoints. Atherosclerosis is a chronic, complex, inflammatory disease with interactions between metabolic dysfunction, dyslipidemia, disturbed microbiome, infectious triggers, vascular, and immune cells. Undoubtedly, the immune response is a most important piece of the pathological puzzle in AS. Although macrophages and T cells have been the focus of research in recent years, B cells producing antibodies and regulating T and natural killer (NKT) cell activation are more important than formerly thought. New results show that the B cells exert a prominent role with atherogenic and protective facets mediated by distinct B cell subsets and different immunoglobulin effects. These new insights come, amongst others, from observations of the effects of innovative B cell targeted therapies in autoimmune diseases like systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA). These diseases associate with AS, and the beneficial side effects of B cell subset depleting (modifying) therapies on atherosclerotic concomitant disease, have been observed. Moreover, the CANTOS study (NCT01327846) showed impressive results of immune-mediated inflammation as a new promising target of action for the fight against atherosclerotic endpoints. This review will reflect the putative role of B cells in AS in an attempt to connect observations from animal models with the small spectrum of the thus far available human data. We will also discuss the clinical therapeutic potency of B cell modulations on the process of AS.

[29] *Jiang Z, Zhang J, Lu Y*. **Protective Effects and Mechanisms of Rosuvastatin on Acute Kidney Injury Induced by Contrast Media in Rats**. International journal of nephrology 2020; 2020:3490641.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32509347
ABSTRACT
OBJECTIVE: To explore the protective effect and mechanism of rosuvastatin on acute renal injury induced by a nonionic hypotonic contrast medium in rats. METHODS: Forty-eight healthy adult SD rats were randomly divided into three groups: normal control group (NC); contrast medium control group (CM); and rosuvastatin intervention group (RI). The RI group was intragastrically administered with a 10 mg/kg of rosuvastatin 12 h prior to the contrast exposure. All rats in CM and RI groups were inoculated with 10 mL/kg of chemical (IV) while the same volume of saline for the NC group. At 24 h and 72 h posttreatments, pathomorphological changes of renal tubules were documented, respectively, and several biochemical indicators were tested to assess renal injury of experimental rats. RESULTS: Compared with the CM group, rats in the RI group showed significantly reduced injury of kidneys and decreased levels of biochemical indicators such as blood Scr, blood Cys-C, urine NAG, urine α1-MG, and urine mALB. The serum Hs-CRP in the CM group increased significantly from 24 h to 72 h ($p < 0.05$), but this was not observed in the rats of the RI group. In addition, SOD activity in the RI group was significantly increased ($p < 0.01$) while SOD activity in renal tissue decreased significantly with time in the CM group ($p < 0.05$).

CONCLUSION: Short-term intervention with rosuvastatin can lead to reduced kidney damage associated with the contrast agent by reducing the levels of inflammatory factors and oxidative stress. Thus, rosuvastatin intervention has a protective effect on rats from contrast-induced nephropathy.

[30] *Wani MA, Mukherjee S, Mallick S et al.* **Atorvastatin ameliorates viral burden and neural stem/ progenitor cell (NSPC) death in an experimental model of Japanese encephalitis**. J Biosci 2020; 45.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32515359
ABSTRACT
Japanese encephalitis virus, a neurotropic flavivirus, causes sporadic encephalitis with nearly 25% fatal case reports. JEV infects neural stem/progenitor cells (NSPCs) and decreases their proliferation. Statin, a commonly used class of cholesterol lowering drug, has been shown to possess potent anti-inflammatory and neuroprotective effects in acute brain injury and chronic neurodegenerative conditions. Here, we aimed to check the efficacy of atorvastatin in alleviating the symptoms of Japanese encephalitis (JE). Using BALB/c mouse model of JEV infection, we observed that atorvastatin effectively reduces viral load in the subventricular zone (SVZ) of infected pups and decreases the resultant cell death. Furthermore, atorvastatin abrogates microglial activation and production of proinflammatory cyto/chemokine production post JEV infection in vivo. It also reduced interferon-β response in the neurogenic environs. The neuroprotective role of atorvastatin is again evident from the rescued neurosphere size and decreased cell death in vitro. It has also been observed that upon atorvastatin administration, cell cycle regulatory proteins and cell survival proteins are also restored to their respective expression level as observed in uninfected animals. Thus the antiviral, immunomodulatory and neuroprotective roles of atorvastatin reflect in our experimental observations. Therefore, this drug broadens a path for future therapeutic measures against JEV infection.

[31] *Gu C, Brereton N, Schweitzer A et al.* **Metabolic Effects of Late Dinner in Healthy Volunteers-A Randomized Crossover Clinical Trial**. The Journal of clinical endocrinology and metabolism 2020; 105.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32525525
ABSTRACT
CONTEXT: Consuming calories later in the day is associated with obesity and metabolic syndrome. We hypothesized that eating a late dinner alters substrate metabolism during sleep in a manner that promotes obesity. OBJECTIVE: The objective of this work is to examine the impact of late dinner on nocturnal metabolism in healthy volunteers. DESIGN AND SETTING: This is a randomized crossover trial of late dinner (LD, 22:00) vs routine dinner (RD, 18:00), with a fixed sleep period (23:00-07:00) in a laboratory setting. PARTICIPANTS: Participants comprised 20 healthy volunteers (10 male, 10 female), age 26.0 ± 0.6 years, body mass index 23.2 ± 0.7 kg/m2, accustomed to a bedtime between 22:00 and 01:00. INTERVENTIONS: An isocaloric macronutrient diet was administered on both visits. Dinner (35% daily kcal, 50% carbohydrate, 35% fat) with an oral lipid tracer ([2H31] palmitate, 15 mg/kg) was given at 18:00 with RD and 22:00 with LD. MAIN OUTCOME MEASURES: Measurements included nocturnal and next-morning hourly plasma glucose, insulin, triglycerides, free fatty acids (FFAs), cortisol, dietary fatty acid oxidation, and overnight polysomnography. RESULTS: LD caused a 4-hour

shift in the postprandial period, overlapping with the sleep phase. Independent of this shift, the postprandial period following LD was characterized by higher glucose, a triglyceride peak delay, and lower FFA and dietary fatty acid oxidation. LD did not affect sleep architecture, but increased plasma cortisol. These metabolic changes were most pronounced in habitual earlier sleepers determined by actigraphy monitoring. CONCLUSION: LD induces nocturnal glucose intolerance, and reduces fatty acid oxidation and mobilization, particularly in earlier sleepers. These effects might promote obesity if they recur chronically.

[32] *Brown EE, Sturm AC, Cuchel M et al.* **Genetic testing in dyslipidemia: A scientific statement from the National Lipid Association**. Journal of clinical lipidology 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32507592
ABSTRACT
The genetic basis for more than 2 dozen monogenic dyslipidemias has largely been defined. Genetic technologies, such as DNA sequencing, can detect both rare and common DNA variants underlying dyslipidemias, and these methods are increasingly available. Although patients with extreme abnormalities in low-density lipoprotein cholesterol, triglycerides, or high-density lipoprotein cholesterol may be considered for genetic testing, it is only in a minority of patients that the results will alter treatment or outcomes. Currently, there is potential clinical utility of genetic testing for familial hypercholesterolemia, familial chylomicronemia syndrome, sitosterolemia, lysosomal acid lipase deficiency, and a few other rare disorders, and this will increase the demand for reliable genetic diagnostic methods at lower cost. Clinical indications for genetic testing for most dyslipidemias are not clearly established and currently no guidelines exist. A shared decision-making model between the patient and the provider is essential as patient values and preferences play a very strong role. Potential benefits of genetic testing include providing a firm diagnosis in many cases, guiding optimal management and prevention strategies, advancing care strategies beyond currently available treatments, and contributing to overall scientific progress. Understanding the limitations and risks of genetic testing techniques is also important, as is careful interpretation of genetic test results to achieve the greatest benefit. Here we review laboratory methods, as well as technical, biological, clinical, and ethical implications and applications of genetic testing in dyslipidemias.

[33] *Danchin N, Farnier M, Zeller M et al.* **Long-term outcomes after acute myocardial infarction in patients with familial hypercholesterolemia: The French registry of Acute ST-elevation and non-ST-elevation Myocardial Infarction program**. Journal of clinical lipidology 2020; 14:352-360.e356.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32527469
ABSTRACT
BACKGROUND: Patients with familial hypercholesterolemia (FH) are prone to develop acute myocardial infarction (AMI) at a younger age. OBJECTIVES: The aim of the present study was to assess 5-year outcomes after AMI according to the presence of FH in a large multicenter cohort of patients. METHODS: The French registry of Acute ST-elevation and non-ST-elevation Myocardial Infarction consists of nationwide surveys recruiting patients over a 1- to 2-month period every 5 years. Patients recruited in 2005 and 2010 were followed up to 5 years. RESULTS: Of 5147 patients discharged alive and in whom FH status could be assessed, 2.8% had probable/definite FH, using an adapted Dutch Lipid Clinic score. They were 12 years younger, on average, than non-FH patients. Before adjustment, their 5-year survival and

event-free survival did not differ from non-FH patients. After adjustment, however, both mortality (hazard ratio [HR] 1.82, 95% confidence interval [CI] 1.15-2.89; P = .011) and the combined endpoint of death, AMI, or stroke (HR 2.22, 95% CI: 1.51-3.26; P < .001) were higher in FH patients. The higher risk in FH patients was also present in patients receiving high-intensity lipid-lowering therapy at discharge: adjusted HR for mortality 2.29, 95% CI: 1.18 to 4.47, P = .015; HR for cardiovascular events 2.57, 95% CI: 1.48 to 4.48, P = .001. Concordant results were observed in propensity score-marched cohorts. CONCLUSIONS: The risk of long-term mortality and cardiovascular events is twice as high in FH than in non-FH patients, when adjusted on baseline characteristics, even for those receiving high-intensity lipid-lowering therapy. Additional therapeutic measures are needed in these patients.

[34] *Bertasso IM, Pietrobon CB, da Silva BS et al.* **Hepatic lipid metabolism in adult rats using early weaning models: sex-related differences**. Journal of developmental origins of health and disease 2020:1-10.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32519629
ABSTRACT
Non-pharmacological early weaning (NPEW) induces liver damage in male progeny at adulthood; however, pharmacological early weaning (PEW) does not cause this dysfunction. To elucidate this difference in liver dysfunction between these two models and determine the phenotype of female offspring, de novo lipogenesis, β-oxidation, very low-density lipoprotein (VLDL) export, and gluconeogenesis in both sexes were investigated in the adult Wistar rats that were weaned after a normal period of lactation (control group) or early weaned either by restriction of access to the dams' teats (NPEW group) or by reduction of dams' milk production with bromocriptine (PEW group). The offspring received standard diet from weaning to euthanasia (PN180). NPEW males had higher plasma triglycerides and TyG index, liver triglycerides, and cholesterol by de novo lipogenesis, which leads to intracellular lipids accumulation. As expected, hepatic morphology was preserved in PEW males, but they showed increased liver triglycerides. The only molecular difference between PEW and NPEW males was in acetyl-CoA carboxylase-1 (ACC-1) and stearoyl-CoA desaturase-1 (SCD-1), which were lower in PEW animals. Both early weaning (EW) females had no changes in liver cholesterol and triglyceride contents, and the hepatic cytoarchitecture was preserved. The expression of microsomal triglyceride transfer protein was increased in both the female EW groups, which could constitute a protective factor. The changes in hepatic lipid metabolism in EW offspring were less marked in females. EW impacted in the hepatic cytoarchitecture only in NPEW males, which showed higher ACC-1 and SCD-1 when compared to the PEW group. As these enzymes are lipogenic, it could explain a worsened liver function in NPEW males.

[35] *Szwarcbard N, Villani M, Earnest A et al.* **The association of smoking status with glycemic control, metabolic profile and diabetic complications- Results of the Australian National Diabetes Audit (ANDA)**. Journal of diabetes and its complications 2020:107626.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32527672
ABSTRACT
BACKGROUND: Tobacco smoking and diabetes mellitus contribute significantly to the overall health burden and mortality of Australians. We aimed to assess the relationship of smoking with glycemic control, metabolic profile and complications in Australian patients living with

diabetes. METHODS: We analysed the 2011-2017 biennial Australian National Diabetes Audit cross-sectional data. Patients were classified as current, past or never smokers. Linear (or quantile) and logistic regression models were used to assess for associations. RESULTS: Data from 15,352 patients were analysed, including 72.2% with type 2 diabetes. Current smokers comprised 13.5% of the study population. Current and past smokers had a median HbA(1c) that was 0.49% and 0.14% higher than never smokers, respectively, as well as higher triglyceride and lower HDL levels (all p values < .0001). Compared to never smokers, current smokers had higher odds of severe hypoglycemia and current and past smokers had higher odds of myocardial infarction, stroke, peripheral vascular disease, lower limb amputation, erectile dysfunction and peripheral neuropathy (all p values ≤.001), with no significant change over time. CONCLUSION: When compared to never smokers, current and past smokers had poorer glycemic and lipid control and higher odds of macrovascular and microvascular complications. Despite this, current smoking remains prevalent among Australians with diabetes.

[36] *Zhai C, Hou K, Li R et al.* **Efficacy of statin treatment based on cardiovascular outcomes in elderly patients: a standard meta-analysis and Bayesian network analysis**. J Int Med Res 2020; 48:300060520926349.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32529863
ABSTRACT
OBJECTIVE: Statins have been shown to be beneficial for the prevention of cardiovascular events. In elderly individuals, the efficacy of statins remains controversial and the comparative effect of statins has not been assessed. METHODS: MEDLINE, Embase, and the Cochrane Central database were searched for randomized controlled trials that assessed statins in older patients. RESULTS: Seventeen trials were analyzed. When used for secondary prevention, statins were associated with reduced risk of cardiovascular events, all-cause mortality, cardiovascular mortality, revascularization, and stroke. When used for primary prevention, statins reduced the risk of myocardial infarction and revascularization, but did not significantly affect other outcomes. A modest difference between pharmaceutical statin products was found, and high-quality evidence indicated that intensive atorvastatin had the greatest benefits for secondary prevention. CONCLUSIONS: In secondary prevention, evidence strongly suggests that statins are associated with a reduction in the risk of all-cause mortality, cardiovascular events, cardiovascular mortality, and revascularization. However, differences in the effects of various statins do not appear to have significant effects on therapy in secondary prevention for the elderly.

[37] *Kurth T, Rist PM, Ridker PM et al.* **Association of Migraine With Aura and Other Risk Factors With Incident Cardiovascular Disease in Women**. Jama 2020; 323:2281-2289.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32515815
ABSTRACT
IMPORTANCE: Migraine with aura is known to increase the risk of cardiovascular disease (CVD). The absolute contribution of migraine with aura to CVD incidence in relation to other CVD risk factors remains unclear. OBJECTIVE: To estimate the CVD incidence rate for women with migraine with aura relative to women with other major vascular risk factors. DESIGN, SETTING, AND PARTICIPANTS: Female health professionals in the US (the Women's Health Study cohort) with lipid measurements and no CVD at baseline (1992-1995)

were followed up through December 31, 2018. EXPOSURES: Self-reported migraine with aura compared with migraine without aura or no migraine at baseline. MAIN OUTCOMES AND MEASURES: The primary outcome was major CVD (first myocardial infarction, stroke, or CVD death). Generalized modeling procedures were used to calculate multivariable-adjusted incidence rates for major CVD events by risk factor status that included all women in the cohort. RESULTS: The study population included 27 858 women (mean [SD] age at baseline, 54.7 [7.1] years), among whom 1435 (5.2%) had migraine with aura and 26 423 (94.8%) did not (2177 [7.8%] had migraine without aura and 24 246 [87.0%] had no migraine in the year prior to baseline). During a mean follow-up of 22.6 years (629 353 person-years), 1666 major CVD events occurred. The adjusted incidence rate of major CVD per 1000 person-years was 3.36 (95% CI, 2.72-3.99) for women with migraine with aura vs 2.11 (95% CI, 1.98-2.24) for women with migraine without aura or no migraine ($P < .001$). The incidence rate for women with migraine with aura was significantly higher than the adjusted incidence rate among women with obesity (2.29 [95% CI, 2.02-2.56]), high triglycerides (2.67 [95% CI, 2.38-2.95]), or low high-density lipoprotein cholesterol (2.63 [95% CI, 2.33-2.94]), but was not significantly different from the rates among those with elevated systolic blood pressure (3.78 [95% CI, 2.76-4.81]), high total cholesterol (2.85 [95% CI, 2.38-3.32]), or family history of myocardial infarction (2.71 [95% CI, 2.38-3.05]). Incidence rates among women with diabetes (5.76 [95% CI, 4.68-6.84]) or who currently smoked (4.29 [95% CI, 3.79-4.79]) were significantly higher than those with migraine with aura. The incremental increase in the incidence rate for migraine with aura ranged from 1.01 additional cases per 1000 person-years when added to obesity to 2.57 additional cases per 1000 person-years when added to diabetes. CONCLUSIONS AND RELEVANCE: In this study of female health professionals aged at least 45 years, women with migraine with aura had a higher adjusted incidence rate of CVD compared with women with migraine without aura or no migraine. The clinical importance of these findings, and whether they are generalizable beyond this study population, require further research.

[38] *Marjot T, Green CJ, Charlton CA et al.* **Sodium-glucose cotransporter 2 inhibition does not reduce hepatic steatosis in overweight, insulin-resistant patients without type 2 diabetes**. JGH Open 2020; 4:433-440.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32514450
ABSTRACT
BACKGROUND AND AIM: Non-alcoholic fatty liver disease (NAFLD) is rapidly becoming the leading indication for liver transplant and is associated with increased cardiovascular and liver mortality, yet there are no licensed therapies. Sodium-glucose cotransporter 2 (SGLT2) inhibitors are widely used for their glucose-lowering effects in patients with type 2 diabetes (T2D). Preclinical models have suggested a beneficial impact on NAFLD, but clinical data are limited, and there are currently no data on patients without T2D. We aimed to investigate the impact of SGLT2 inhibition on NAFLD in overweight, nondiabetic patients and establish the effect these agents may have on the processes that regulate hepatic steatosis in vivo. METHODS: We conducted an open-label, experimental medicine pilot study on insulin-resistant overweight/obese individuals (n = 10) using gold-standard noninvasive assessments of NAFLD phenotype, including magnetic resonance spectroscopy, two-step hyperinsulinemic euglycemic clamps, and stable isotope tracers to assess lipid and glucose metabolism. Investigations were performed before and after a 12-week treatment with the SGLT2 inhibitor,

dapagliflozin. RESULTS: Despite a body weight reduction of 4.4 kg, hepatic steatosis was unchanged following treatment. Hepatic glucose production increased, and there was impairment of glucose disposal during the low-dose insulin infusion. Although circulating, nonesterified, fatty acid levels did not change, the ability of insulin to suppress lipolysis was reduced. CONCLUSIONS: SGLT2 inhibition for 12 weeks does not improve hepatic steatosis in patients without T2D. Additional studies in patients with established T2D or impairments of fasting or postprandial glucose homeostasis are needed to determine whether SGLT2 inhibition represents a viable therapeutic strategy for NAFLD. (http://clinicaltrials.gov Number NCT02696941).

[39] *Babaee M, Chamani E, Ahmadi R et al.* **The expression levels of miRNAs- 27a and 23a in the peripheral blood mononuclear cells (PBMCs) and their correlation with FOXO1 and some inflammatory and anti-inflammatory cytokines in the patients with coronary artery disease (CAD)**. Life sciences 2020; 256:117898.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32522566
ABSTRACT
BACKGROUND: Atherosclerosis as a progressive inflammatory disease is the main cause of Coronary Artery Disease (CAD). Multiple genetic and environmental factors are involved in susceptibility to atherosclerotic vascular diseases. FOXO1 gene acts as a key molecular proinflammatory transcription factor and the FBOX32 gene as an F-box protein plays pivotal roles in regulation of muscle atrophy and inhibition of the pathologic cardiac hypertrophy. MiR-27a has been reported to contribute to atherosclerosis prevention and the inflammatory processes of atherosclerosis. MicroRNA-23a has been found to promote atherosclerotic plaque progression and vulnerability. Hence, given the importance of these subjects, the present study was carried out to investigate the expression levels of the desired genes. METHODOLOGY: In this case-control study, 82 patients with CAD and 80 healthy controls were investigated. Expression levels of miRNAs -27a and 23a, FOXO1, Sirtuin 1 (SIRT1) in the Peripheral Blood Mononuclear Cells (PBMCs), serum concentration of IL6 and TNF-α of the studied subjects were evaluated using the real-time Polymerase Chain Reaction (PCR) technique. The correlation between the variables was also investigated. RESULTS: Results of the study demonstrated that expression of FOXO1, IL-6, TNF-α, miR-27a, and miR-23a increased in the PBMCs of the patients with CAD and their expression levels were significantly correlated with the severity of stenosis. A significant decrease was observed in the expression of SIRT1 in the patients with CAD compared to the healthy controls. Furthermore, the Receiver Operating Characteristic (ROC) curve was plotted to find the effectiveness of FOXO1 and miRNA-27a gene expression as a diagnostic marker for CAD. CONCLUSIONS: Findings of the study suggested that miRs-27a and FOXO1 genes have a potential role in the progression of atherosclerosis and mediate the molecular and genetic disturbances of the intracellular communication in the atherosclerosis.

[40] *Fonseca L, Paredes S, Ramos H et al.* **Apolipoprotein B and non-high-density lipoprotein cholesterol reveal a high atherogenicity in individuals with type 2 diabetes and controlled low-density lipoprotein-cholesterol**. Lipids in health and disease 2020; 19:127.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32505210
ABSTRACT

BACKGROUND: Lipid-lowering therapy is guided by Low-density-lipoprotein cholesterol (LDL-c) levels, although the cardiovascular disease (CVD) risk could be better reflected by other lipid parameters. This study aimed at comparing a comprehensive lipid profile between patients with type 2 diabetes mellitus (T2DM) with LDL-c concentration within and above target. METHODS: A comprehensive lipid profile was characterized in 96 T2DM patients. The European Society of Cardiology/European Atherosclerosis Society (ESC/EAS) 2016 and 2019 Guidelines for the Management of Dyslipidemias were used to define LDL-c targets. RESULTS: In this population, only 28.1 and 16.7% of patients had mean LDL-c levels within target, as defined by the 2016 and 2019 guidelines, respectively. Applying the 2016 guidelines criteria, in patients with LDL-c within target, 22, 25 and 44% presented non-high-density lipoprotein cholesterol (non-HDL-c), Apolipoprotein B (ApoB) and oxidized LDL-c levels above the recommended range, respectively, whereas according to the 2019 guidelines criteria, 50, 39 and 44% of the patients with LDL-c within target had elevated high-density lipoprotein cholesterol (HDL-c), ApoB and oxidized LDL-c levels, respectively. LDL-c was strongly correlated with non-HDL-c ($r = 0.850$), ApoB ($r = 0.656$) and oxidized LDL-c ($r = 0.508$). Similarly, there was a strong correlation between non-HDL-c with both ApoB ($r = 0.808$) and oxidized LDL-c ($r = 0.588$). CONCLUSIONS: These findings emphasize the limitations of only considering LDL-c concentration for cardiovascular (CV) risk assessment. Targeting only LDL-c could result in missed opportunities for CV risk reduction in T2DM patients. These data suggest that non-HDL-c, ApoB and oxidized LDL-c levels could be considered as an important part of these patients' evaluation allowing for a more accurate estimation of CV risk and hopefully better management of these high-risk patients.

[41] *Molavi F, Namazi N, Asadi M et al.* **Comparison common equations for LDL-C calculation with direct assay and developing a novel formula in Iranian children and adolescents: the CASPIAN V study**. Lipids in health and disease 2020; 19:129.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32505199

ABSTRACT

BACKGROUND: Hypercholesterolemia is a common dyslipidemia that leads to atherosclerosis. It is proved that early stages of atherosclerosis begins in early stages of life. In several studies, widespread prevalence of dyslipidemia in children is reported. So, assessment of lipid profile in children and adolescence is necessary for early diagnosis of dyslipidemia. Laboratory methods for measuring LDL are not available and economical. So, in some laboratories Friedwald method is used to determine LDL level. But, the preciseness of this method is not acceptable. Further, the preciseness of this method was not assayed in children and adolescence. So, it seems that assaying the preciseness of different methods is necessary. METHODS: The methodology of this work is on the basis of findings of the Caspian V study. This study was conducted in 30 provinces of Iran during 2015. The population of this work was rural and urban students aged 7-18 years old. The level of total cholesterol (TC), HDL, LDL, and TG were measured using laboratory methods. The average and variances values were determined for each group of data using SPSS. Further, LDL values were calculated with a new formula introduced in this work. A comparison was made between the new formula and the other methods. RESULTS: In the present study, we found that compare to four common formulas, Friedwald was the best equation to estimate LDL-C concentrations in Iranian children and adolescents and the new formula was the next accurate equation. The strongest correlation between Friedwald and the new equation was found for those with 15-

18 years old. CONCLUSION: Considering the cut-off points of TG (100 mg/dL), we observed the strongest correlation between Friedwald equation and direct assay and the weakest one was for Ahmadi formula in subjects with either greater or lower TG concentrations. Furthermore, we found that Anandraja equation had the most sensitivity (89.5%), while the most specificity was dedicated to the new formula (98.9%).

[42] *Wang M, Liu M, Li F et al.* **Gender heterogeneity in dyslipidemia prevalence, trends with age and associated factors in middle age rural Chinese**. Lipids in health and disease 2020; 19:135.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32532299
ABSTRACT
BACKGROUND: Heterogeneity should be carefully addressed to facilitate establishment of effective population-level blood lipid management. The primary aim of the study was to investigate gender heterogeneity in prevalence of dyslipidemia, including trends with age and associated factors in middle age rural Chinese. METHODS: This is a cross-sectional study based on a baseline investigation of a population-based randomized controlled trial in rural China, involving 26,378 permanent residents of age 45-69. The age-specific prevalence of dyslipidemia was estimated for men and women, and the trends of prevalence with age were compared. Logistic regression was used to explore the factors associated with prevalent risk of dyslipidemia. RESULTS: The overall prevalence of dyslipidemia was significantly higher in females than in males for borderline high and above (BHA) total cholesterol (TC ≥ 200 mg/dL), BHA triglycerides (TG ≥ 150 mg/dL) and BHA low-density lipoprotein cholesterol (LDL-C ≥ 130 mg/dL), but was lower for low high-density lipoprotein cholesterol (HDL-C < 40 mg/dL) in females than the corresponding prevalence in males. The prevalence of borderline high and above TC, TG and LDL-C all rose with age in females, but was stable or even decreased with age in males. In contrast, graphic representation of the prevalence of low HDL-C showed no striking age related trend in both genders. Risk of dyslipidemia was associated predominantly with obesity in males, but was more predominantly associated with hypertension in females. CONCLUSION: Heterogeneity was found in comparing the prevalence of dyslipidemia in men and women, and gender heterogeneity was found in its trend with age and associated factors in middle aged rural Chinese. The effectiveness of population-level blood lipid management and CVD primary prevention programs in China is expected to be improved if gender heterogeneity is considered.

[43] *Zhang N, Lyu J, Ren L et al.* **Arterial culprit plaque characteristics revealed by magnetic resonance Vessel Wall imaging in patients with single or multiple infarcts**. Magnetic resonance imaging 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32534066
ABSTRACT
PURPOSE: To investigate characteristics of intra- and extracranial arterial culprit plaques between patients with single infarct and multiple-infarcts by a head-neck combined high resolution magnetic resonance vessel wall imaging (HR-MRVWI). MATERIALS AND METHODS: Forty-three patients with recent ischemic stroke due to large artery atherosclerosis were enrolled. The head-neck combined HR-MRVWI was performed in all patients both pre- and post-contrast administration. Based on diffusion weighted imaging findings, patients were divided into single-infarction and multiple-infarction groups. For patients with anterior

circulation ischemic stroke, they were also divided into perforating artery infarction (PAI) and non-PAI groups. Patient demographics, number and location of culprit plaques, artery stenosis percentage, intraplaque hemorrhage, and plaque enhancement were evaluated and compared between single-infarction and multiple-infarction groups, as well as between PAI and non-PAI groups. RESULTS: A total of 83 culprit plaques were identified. The artery stenosis degree was more severe and plaque enhancement more prominent in multiple-infarction group than in single-infarction group. Patients with multiple infarcts also had more culprit plaques per patient than those with single infarct, which contributed to the occurrence of multiple infarcts. For comparison of PAI and non-PAI groups, a higher artery stenosis percentage was observed in non-PAI group, and patients with non-PAI had more culprit plaques per patient, which contributed to a variety of infarct manifestations. CONCLUSION: A higher stenosis grade and higher number of culprit plaques seem to be associated with a higher number of cerebral infarcts in patients with large artery atherosclerosis.

[44] *Curvello-Silva KL, Oliveira NA, Silva TSS et al.* **Association Between Cardiovascular Risk Factors and 25(OH)D Levels in Obese Patients**. Metab Syndr Relat Disord 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32513042
ABSTRACT
Background: Obesity is associated with lower levels of 25-hydroxyvitamin D [25(OH)D] and higher cardiovascular risk related to metabolic syndrome (MetS). Our purpose was to investigate if there is an association between levels of 25(OH)D and the components of MetS in an obese sample. Methods: This cross-sectional study enrolled obese patients referred for bariatric surgery in a specialized clinic. Secondary data were gathered as follows: glycemic and lipid profiles, 25(OH)D, anthropometric parameters, and clinical and sociodemographic information. The results were presented as means (standard deviations) or medians and interquartile intervals or absolute and relative frequencies. The patients were divided into three groups based on 25(OH)D terciles for analysis and were compared using ANOVA, Kruskal-Wallis or chi-squared tests. The correlations were calculated by Spearman's or Pearson's correlation tests. Results: We studied 299 patients, with the majority being women (74.9%). The patients' average (SD) age and 25(OH)D level were 36 (9) years and 25.8 (7.5) ng/mL, respectively. There was no association between vitamin D and MetS or its components. A progressive decrease in total cholesterol, low-density lipoprotein cholesterol (LDL-c), and nonhigh-density lipoprotein cholesterol (HDL-c) was observed as the serum vitamin D level increased, although only the latter reached statistical significance (P = 0.033). The correlation analysis showed a negative linear association between 25(OH)D and total cholesterol (r = -0.157; P = 0.047), 25(OH)D and LDL-c (r = -0.164; P = 0.038), and 25(OH)D and non-HDL-c (r = -0.176; P = 0.026). Conclusions: There was a negative correlation between 25(OH)D levels and the atherogenic profile but none with the MetS.

[45] *Özdoğan Ö, Başaran Ö, Güngör B et al.* **Knowledge and attitudes towards hypertriglyceridaemia and associated residual risk amongst cardiologists in Turkey**. Minerva cardioangiologica 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32524807
ABSTRACT
BACKGROUND: Hypertriglyceridaemia (HTG) is an important component of residual risk. The knowledge regarding its treatment might not be at a desired level, which might prevent patients

from receiving the maximum benefit. We aimed to investigate the knowledge and attitudes of Turkish cardiologists who responded to a survey regarding HTG treatment. METHODS: A multiple-choice survey was conducted to analyse Turkish cardiologists' management of HTG. The questionnaire was submitted by the Turkish Society of Cardiology to all its members. RESULTS: A total of 160 cardiologists responded to the survey. The mean age was 37.5 ± 8.5 years, and 35 (21.9%) of the participants were female. Most of the participants (88%) thought HTG was a risk factor, and 75% of them felt confident in diagnosing and treating HTG. Patient compliance (41%), polypharmacy (33%), and lack of treatment options (15%) were the most common problems obstructing treatment of HTG. A proportion of 96% of the participants knew about non-high-density lipoprotein cholesterol, which is a good surrogate marker of atherogenic dyslipidaemia; however, only 39% were using it as a treatment goal. In the case of low-density lipoprotein cholesterol at goal but with HTG (residual risk), the first choice for treatment was fibrates (94%). Half of cardiologists had never used omega-3 fatty acids as a treatment option. CONCLUSIONS: Although most of the participating cardiologists felt competent treating HTG, there was a knowledge gap in the treatment of atherogenic dyslipidaemia and management of residual risk. Evidence of the benefit of lowering triglycerides from cardiovascular outcome trials is eagerly awaited. There is also an unmet need of increasing patient compliance and managing polypharmacy.

[46] *Suyama T, Shimura M, Fushimi T et al.* **Efficacy of bezafibrate in two patients with mitochondrial trifunctional protein deficiency**. Molecular genetics and metabolism reports 2020; 24:100610.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32509533
ABSTRACT
Mitochondrial trifunctional protein (TFP) deficiency is a rare inherited metabolic disorder caused by defects in fatty acid β-oxidation (FAO) of long-chain fatty acids, leading to impaired energy production. Fasting avoidance, fatty acid-restricted diets, and supplementation with medium-chain triglycerides are recommended as a treatment, but there are no pharmaceutical treatments available with strong evidence of efficacy. Bezafibrate, which enhances the transcription of FAO enzymes, is a promising therapeutic option for FAO disorders (FAODs). The effectiveness of bezafibrate for FAODs has been reported in some clinical trials, but few clinical studies have investigated its in vivo efficacy toward TFP deficiency. Herein, we describe two Japanese patients with TFP deficiency. Patient 1 presented with recurrent myalgia since the age of 5 years. Laboratory findings showed increased serum levels of long-chain fatty acids and reduced expression of TFPα and TFPβ in his skin fibroblasts. Based on these findings, he was diagnosed with the myopathic type of TFP deficiency. Patient 2 suddenly exhibited cardiopulmonary arrest one day after birth. Elevated levels of creatine kinase and long-chain acylcarnitines were observed. Genetic analysis identified compound heterozygous variants in HADHB (c.1175C>T/c.1364T>G). He was diagnosed with the lethal type of TFP deficiency. Although both patients were treated with dietary therapy and l-carnitine supplementation, they experienced frequent myopathic attacks associated with respiratory infections and exercise. After the initiation of bezafibrate, their myopathic manifestations were markedly reduced, leading to an improvement in quality of life without any side effects. Our clinical findings indicate that bezafibrate combined with other treatments such as dietary therapy may be effective in improving myopathic manifestations in TFP deficiency.

[47] *Bueno DC, Canto RFS, de Souza V et al.* **New Probucol Analogues Inhibit Ferroptosis, Improve Mitochondrial Parameters, and Induce Glutathione Peroxidase in HT22 Cells**. Mol Neurobiol 2020; 57:3273-3290.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32514861
ABSTRACT
Probucol, a hypocholesterolemic compound, is neuroprotective in several models of neurodegenerative diseases but has serious adverse effects in vivo. We now describe the design and synthesis of two new probucol analogues that protect against glutamate-induced oxidative cell death, also known as ferroptosis, in cultured mouse hippocampal (HT22) cells and in primary cortical neurons, while probucol did not show any protective effect. Treatment with both compounds did not affect glutathione depletion but still significantly decreased glutamate-induced production of oxidants, mitochondrial superoxide generation, and mitochondrial hyperpolarization in HT22 cells. Both compounds increase glutathione peroxidase (GPx) 1 levels and GPx activity, also exhibiting protection against RSL3, a GPx4 inactivator. These two compounds are therefore potent activators of GPx activity making further studies of their neuroprotective activity in vivo worthwhile.

[48] *Catalão CHR, Santos-Junior NN, da Costa LHA et al.* **Simvastatin Prevents Long-Term Cognitive Deficits in Sepsis Survivor Rats by Reducing Neuroinflammation and Neurodegeneration**. Neurotox Res 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32524380
ABSTRACT
Sepsis-associated encephalopathy causes brain dysfunction that can result in cognitive impairments in sepsis survivor patients. In previous work, we showed that simvastatin attenuated oxidative stress in brain structures related to memory in septic rats. However, there is still a need to evaluate the long-term impact of simvastatin administration on brain neurodegenerative processes and cognitive damage in sepsis survivors. Here, we investigated the possible neuroprotective role of simvastatin in neuroinflammation, and neurodegeneration conditions of brain structures related to memory in rats at 10 days after sepsis survival. Male Wistar rats (250-300 g) were submitted to cecal ligation and puncture (CLP, n = 42) or remained as non-manipulated (naïve, n = 30). Both groups were treated (before and after the surgery) by gavage with simvastatin (20 mg/kg) or an equivalent volume of saline and observed for 10 days. Simvastatin-treated rats that survived to sepsis showed a reduction in the levels of nitrate, IL1-β, and IL-6 and an increase in Bcl-2 protein expression in the prefrontal cortex and hippocampus, and synaptophysin only in the hippocampus. Immunofluorescence revealed a reduction of glial activation, neurodegeneration, apoptosis, and amyloid aggregates confirmed by quantification of GFAP, Iba-1, phospho Ser(396)-tau, total tau, cleaved caspase-3, and thioflavin-S in the prefrontal cortex and hippocampus. In addition, treated animals presented better performance in tasks involving habituation memory, discriminative, and aversive memory. These results suggest that statins exert a neuroprotective role by upregulation of the Bcl-2 and gliosis reduction, which may prevent the cognitive deficit observed in sepsis survivor animals.

[49] *Mirmiran P, Bakhshi B, Hosseinpour-Niazi S et al.* **Does the association between patterns of fruit and vegetables and metabolic syndrome incidence vary according to**

lifestyle factors and socioeconomic status? Nutrition, metabolism, and cardiovascular diseases : NMCD 2020; 30:1322-1336.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32513582
ABSTRACT
BACKGROUND AND AIMS: The aim of this study is to investigate the association between the identified patterns of fruits and vegetables and metabolic syndrome (MetS) incidence, and to investigate whether lifestyle factors and socioeconomic status modify the effect of the patterns on MetS risk. METHODS AND RESULTS: We prospectively studied 1915 participants of the Tehran Lipid and Glucose Study, who were aged 19-74 years and followed up for dietary assessment using a validated, semi-quantitative food frequency questionnaire. After adjustment for confounding factors, total vegetable intake was inversely related to the risk of MetS. Total fruit and total fruit and vegetable were not associated with MetS risk. We identified four major patterns of fruits and vegetables by factor analysis: "fresh fruit pattern", "vegetable pattern", "dried fruit and cruciferous vegetable pattern", and "potatoes and fruit juice pattern". "Vegetable pattern" was negatively associated with MetS risk, and "potatoes and fruit juice pattern" increased the risk of MetS. Among participants with weight gain <7% during follow-up, all four identified patterns reduced MetS risk. When stratified by smoking, "vegetable pattern" and "dried Fruit and cruciferous vegetable pattern" lowered MetS risk among non-smokers. Stratification based on education resulted in MetS risk reduction across tertiles of "fresh fruit pattern" and "vegetable pattern". First and second tertiles of "dried fruit and cruciferous vegetable pattern" lowered MetS risk among educated participants, compared to the reference. CONCLUSIONS: The reduction in MetS risk caused by fruits and vegetables intake depends on the modifying effect of lifestyle and socioeconomic factors.

[50] *Lammi C, Bellumori M, Cecchi L et al.* **Extra Virgin Olive Oil Phenol Extracts Exert Hypocholesterolemic Effects through the Modulation of the LDLR Pathway: In Vitro and Cellular Mechanism of Action Elucidation**. Nutrients 2020; 12.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32526887
ABSTRACT
This study was aimed at investigating the hypocholesterolemic effects of extra virgin olive oil (EVOO) phenols and the mechanisms behind the effect. Two phenolic extracts were prepared from EVOO of different cultivars and analyzed using the International Olive Council (IOC) official method for total phenols, a recently validated hydrolytic procedure for total hydroxytyrosol and tyrosol, and (1)H-NMR analysis in order to assess their secoiridoid profiles. Both of the extracts inhibited in vitro the 3-hydroxy-3-methylglutaryl co-enzyme A reductase (HMGCoAR) activity in a dose-dependent manner. After the treatment of human hepatic HepG2 cells (25 µg/mL), they increased the low-density lipoprotein (LDL) receptor protein levels through the activation of the sterol regulatory element binding proteins (SREBP)-2 transcription factor, leading to a better ability of HepG2 cells to uptake extracellular LDL molecules with a final hypocholesterolemic effect. Moreover, both of the extracts regulated the intracellular HMGCoAR activity through the increase of its phosphorylation by the activation of AMP-activated protein kinase (AMPK)-pathways. Unlike pravastatin, they did not produce any unfavorable effect on proprotein convertase subtilisin/kexin 9 (PCSK9) protein level. Finally, the fact that extracts with different secoiridoid profiles induce practically the same biological effects suggests that the hydroxytyrosol and tyrosol derivatives may have similar roles in hypocholesterolemic activity.

[51] *Michalsen VL, Braaten T, Kvaløy K et al.* **Relationships between metabolic markers and obesity measures in two populations that differ in stature-The SAMINOR Study**. Obesity science & practice 2020; 6:324-339.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32523722
ABSTRACT
BACKGROUND: The relationships between metabolic markers and obesity measures may differ by ethnicity, sex, and height. Questions have been posed whether these relationships differ by ethnicity in the population in Northern Norway, but this has not been explored yet. OBJECTIVES: Investigate the relationships between metabolic markers and obesity measures in Sami and non-Sami and explore the impact of stature. METHODS: In total, 13 921 men and women aged 30 and 36 to 79 years (22.0% Sami) from a population-based cross-sectional survey in Norway, the SAMINOR 1 Survey (2003-2004, 57.2% attendance), were included. Relationships between triglycerides, high-density lipoprotein cholesterol, glucose, systolic/diastolic blood pressure (BP), metabolic syndrome and diabetes mellitus as outcomes, and body mass index (BMI), waist circumference (WC), and waist-to-height ratio (WHtR), respectively, were modelled using fractional polynomial regression. Appropriate interaction analyses and adjustments were made. RESULTS: The non-Sami were approximately 6 cm taller than the Sami. No interactions were found between ethnicity and obesity. At the same levels of WC, BMI, or WHtR, levels of lipids and BP differed marginally between Sami and non-Sami, but these were eliminated by height adjustment, with one exception: At any given WC, BMI, or WHtR, Sami had approximately 1.4 mmHg (95% CI, -2.1 to -0.7) lower systolic BP than non-Sami (P values < .001). CONCLUSIONS: Height explained the marginal ethnic differences in metabolic markers at the same level of obesity, except for systolic BP, which was lower in Sami than in non-Sami at any given BMI, WC, or WHtR.

[52] *Nitya KN, Doshi D, Kulkarni S et al.* **Assessment of Periodontal Status Based on Carotid Artery Intima Media Thickness**. Oral Health Prev Dent 2020; 18:511-519.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32515422
ABSTRACT
PURPOSE: Atherosclerosis is a devastating disease worldwide since it is the most frequent cause of myocardial infarction, stroke, renal failure, peripheral vascular disease and perhaps dementia. There is a well-documented evidence supporting the association between clinical/subclinical atherosclerosis and periodontitis. Carotid intima media wall thickness (CIMT) is a histopathologically validated marker of atherosclerosis. This study's purpose was to assess periodontal status based on carotid artery intima media thickness. MATERIALS AND METHODS: A cross-sectional study was carried out among subjects who visited the Care Hospital, Nampally Hyderabad for CIMT test. Oral hygiene status was evaluated using Simplified Oral Hygiene Index and periodontal health status was measured using modified World Health Organization (WHO) Oral Health Assessment form, 1997. The data was analysed using Statistical Package for Social Sciences (SPSS) version 21.0. The proportions and mean scores were compared using chi-square test, Mann-Whitney U test and analysis of variance (ANOVA). Logistic regression analysis determined the relationship between periodontitis, as an independent variable and other variables with CIMT. $P < 0.05$ was considered statistically significant. RESULTS: A total of 600 individuals were classified based on CIMT thickness ≤ 1 mm (292; 48.6%) and CIMT > 1 mm (308; 51.3%) according to

variables. Significantly higher mean scores were observed for all oral parameters among subjects with CIMT > 1 mm aged > 45 years and among males (p ≤ 0.05*). Logistic regression analysis showed that increasing age group, ie,> 45 years (OR 3.5), males (OR 2.02), university education (OR 2.99), no history of previous dental visit (OR 3.71); and visit ≥ 1 year (OR 0.76) and previous history of tobacco (OR 1.13) and alcohol use (OR 1.65), poor OHI-S (OR 8.00), Community Periodontal Index (CPI) with Code 3, 4 (OR 4.41) and loss of attachment (LOA) with Code 2 (OR 3.05) and Code 3 (OR 5.80) had significantly higher odds among individuals with subjects with CIMT > 1 mm compared to their counterparts (p ≤ 0.05*). CONCLUSION: The results of the study concluded that periodontal disease and poor oral hygiene were more severe among the subjects with CIMT > 1 mm. To halt the progression of increasing CIMT, preventive oral health programmes need to be integrated in the cardiac setting with established dental referral which can bring out positive health behaviours.

[53] *Alenazy FO, Thomas MR*. **Novel antiplatelet targets in the treatment of acute coronary syndromes**. Platelets 2020:1-14.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32529932
ABSTRACT
Acute coronary syndromes (ACS) are a global cause of mortality and morbidity that affect millions of lives worldwide. Following atherosclerotic plaque rupture, platelet activation and aggregation are the two major elements that initiate thrombus formation inside a coronary artery, which can obstruct blood flow and cause myocardial ischemia; ergo, antiplatelet therapy forms a major part of the treatment strategy for ACS. Patients with ACS routinely receive dual antiplatelet therapy (DAPT), which consists of aspirin and a platelet P2Y(12) inhibitor to both treat and prevent atherothrombosis. Use of platelet glycoprotein (GP) IIb/IIIa inhibitors is now limited due to the risk of severe bleeding and thrombocytopenia. Thus, administration of GPIIb/IIIa inhibitors is generally restricted to bail out thrombotic events associated with PCI. Furthermore, current antiplatelet medications mainly rely on thromboxane A(2) and P2Y(12) inhibition, which have broad-acting effects on platelets and are known to cause bleeding, which especially limits the long-term use of these agents. In addition, not all ACS patients treated with current antiplatelet treatments are protected from recurrence of arterial thrombosis, since many platelet mechanisms and activation pathways remain uninhibited by current antiplatelet therapy. Pharmacological antagonism of novel targets involved in platelet function could shape future antiplatelet therapies that could ultimately lead to more effective or safer therapeutic approaches. In this article, we focus on inhibitors of promising targets that have not yet been introduced into clinical practice, including inhibitors of GPVI, protease-activated receptor (PAR)-4, GPIb, 5-hydroxytryptamine receptor subtype 2A (5-HT(2A)), protein disulfide isomerase, P-selectin and phosphoinositide 3-kinase β.

[54] *Nordström A, Bergman J, Björk S et al.* **A multiple risk factor program is associated with decreased risk of cardiovascular disease in 70-year-olds: A cohort study from Sweden**. PLoS medicine 2020; 17:e1003135.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32525878
ABSTRACT
BACKGROUND: In individuals below 65 years of age, primary prevention programs have not been successful in reducing the risk of cardiovascular disease (CVD) and death. However, no large study to our knowledge has previously evaluated the effects of prevention programs in

individuals aged 65 years or older. The present cohort study evaluated the risk of CVD in a primary prevention program for community-dwelling 70-year-olds. METHOD AND FINDINGS: In 2012-2017, we included 3,613 community-dwelling 70-year-olds living in Umeå, in the north of Sweden, in a health survey and multidimensional prevention program (the Healthy Ageing Initiative [HAI]). Classic risk factors for CVD were evaluated, such as blood pressure, lipid levels, obesity, and physical inactivity. In the current analysis, each HAI participant was propensity-score-matched to 4 controls (n = 14,452) from the general Swedish population using national databases. The matching variables included age, sex, diagnoses, medication use, and socioeconomic factors. The primary outcome was the composite of myocardial infarction, angina pectoris, and stroke. The 18,065 participants and controls were followed for a mean of 2.5 (range 0-6) years. The primary outcome occurred in 128 (3.5%) HAI participants and 636 (4.4%) controls (hazard ratio [HR] 0.80, 95% CI 0.66-0.97, p = 0.026). In HAI participants, high baseline levels of blood pressure and lipids were associated with subsequent initiation of antihypertensive and lipid-lowering therapy, respectively, as well as with decreases in blood pressure and lipids during follow-up. In an intention-to-treat approach, the risk of the primary outcome was lower when comparing all 70-year-olds in Umeå, regardless of participation in HAI, to 70-year-olds in the rest of Sweden for the first 6 years of the HAI project (HR 0.87, 95% CI 0.77-0.97, p = 0.014). In contrast, the risk was similar in the 6-year period before the project started (HR 1.04, 95% CI 0.93-1.17, p = 0.03 for interaction). Limitations of the study include the observational design and that changes in blood pressure and lipid levels likely were influenced by regression towards the mean. CONCLUSIONS: In this study, a primary prevention program was associated with a lower risk of CVD in community-dwelling 70-year-olds. With the limitation of this being an observational study, the associations may partly be explained by improved control of classic risk factors for CVD with the program.

[55] *Pereira MP, Lima EG, Serrano Junior CV*. **Viral infections and atherothrombosis: Another caution in the wake of COVID-19?** Rev Assoc Med Bras (1992) 2020; 66:366-369.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32520159
ABSTRACT

[56] *Venetsanopoulou AI, Pelechas E, Voulgari PV, Drosos AA*. **The lipid paradox in rheumatoid arthritis: the dark horse of the augmented cardiovascular risk**. Rheumatology international 2020; 40:1181-1191.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32524301
ABSTRACT
Rheumatoid arthritis (RA) is an autoimmune disease characterized by chronic inflammation that, if left untreated, can cause joint destruction and physical impairments. The inflammatory process is systematic, and it is associated with increased morbidity and mortality. Over the last years, mortality presents a decreasing trend; still, there is a high burden of cardiovascular disease (CVD) in RA that seems to be related to coronary atherosclerosis. Chronic inflammation, physical inactivity, and drugs used to treat RA are some of the reasons. Thus, the management of CVD risk is essential and involves the patient's stratification using distinct parameters that include assessment of the blood lipid profile. However, 'dyslipidemia' in RA patients follows a different pattern under the impact of inflammatory processes, while therapies that target the underlying disease change the levels of specific lipid components. In this review, we explore the relationship between blood lipids and inflammation in the so-called ´lipid

paradox´ in RA, and we present the existing knowledge over the influence of antirheumatic drugs on the lipid profile of RA patients.

[57] *Kumar DP, Caffrey R, Marioneaux J et al.* **The PPAR α/γ Agonist Saroglitazar Improves Insulin Resistance and Steatohepatitis in a Diet Induced Animal Model of Nonalcoholic Fatty Liver Disease**. Scientific reports 2020; 10:9330.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32518275
ABSTRACT
Insulin resistance and hepatic lipid accumulation constitute the metabolic underpinning of nonalcoholic steatohepatitis (NASH). We tested the hypothesis that saroglitazar, a PPAR α/γ agonist would improve NASH in the diet-induced animal model of NAFLD. Mice received chow diet and normal water (CDNW) or high fat western diet and ad lib sugar water (WDSW). After 12 weeks, WDSW fed mice were randomized to receive (1) WDSW alone, (2) WDSW + vehicle, (3) WDSW + pioglitazone or (4) WDSW + saroglitazar for an additional 12 weeks. Compared to mice on WDSW and vehicle controls, mice receiving WDSW + saroglitazar had lower weight, lower HOMA-IR, triglycerides, total cholesterol, and ALT. Saroglitazar improved steatosis, lobular inflammation, hepatocellular ballooning and fibrosis stage. NASH resolved in all mice receiving saroglitazar. These effects were at par with or superior to pioglitazone. Molecular analyses confirmed target engagement and reduced oxidative stress, unfolded protein response and fibrogenic signaling. Transcriptomic analysis further confirmed increased PPAR-target expression and an anti-inflammatory effect with saroglitazar. Lipidomic analyses demonstrated that saroglitazar also reduced triglycerides, diglycerides, sphingomyelins and ceramides. These preclinical data provide a strong rationale for developing saroglitazar for the treatment of NASH in humans.

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PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32517887
ABSTRACT
OBJECTIVES: To determine possible differences in the incidence of cardiovascular events between dyslipidaemia patients older than 75 years treated with statins compared to those not treated with them, as primary prevention. MATERIAL AND METHODS: A retrospective cohort study was conducted in patients older than 75 years with dyslipidaemia in a health centre, between 2005 and 2015. The study included 329 patients (182 on treatment with statins and 147 with no lipid-lowering treatment) who met the inclusion criteria (patients older than 75 years, on treatment with statins for at least 3 years, or to have not had any lipid lowering treatment and as primary prevention). The study variables were all those considered as a risk factor in the latest cardiovascular risk guidelines, and the dependent variable was "cardiovascular event". A descriptive and inferential analysis was carried out for quantitative and qualitative variables, as well as a multivariate analysis using binary logistic regression. RESULTS: The incidence of cardiovascular events in patients without treatment with statins was 15.93% (95% CI 11.15-21.80), and 37.42% (95% CI 29.87-45.45) in those that were taking them (P<.001). The RR was 2.35 (95% CI 1.58-3.48). CONCLUSIONS: There are statistically significant differences, with an increase in the incidence of cardiovascular events in patients taking statins, compared to those who do not. It is currently considered whether real

importance is being given to cholesterol levels in this patient group, as well as whether the prescription of statins in patients older than 75 years is suitable in primary prevention.

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PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32519982
ABSTRACT
OBJECTIVE: Though epidemiological data suggest that an elevated triglyceride (TG) level may be a risk factor for coronary artery disease (CAD), there is still insufficient clinical evidence. This study was designed to evaluate the real-life efficacy and side effects of fibrate treatment for hypertriglyceridemia seen in a lipid clinic, as well as cardiovascular and diabetic outcomes. METHODS: This retrospective study evaluated patients who were followed-up for a diagnosis of hypertriglyceridemia at the lipid outpatient clinic of the Ege University Cardiology Department between 1997 and 2018. Data of demographic and clinical characteristics were obtained from hospital records. All patients (n=240) with at least 1 year of follow-up were included in the analysis. During follow-up, patients were treated with fenofibrate, and less frequently, gemfibrozile (14 patients), at different doses according to the TG level and disease severity. RESULTS: Of the study population, 23% had CAD, 21% were diabetic, and 52% were obese. On admission, 20% were using fibrates and 17% were on statins. The mean admission lipid levels were TG: 281±194 mg/dL, low-density lipoprotein cholesterol: 115±37 mg/dL, high-density lipoprotein (HDL) cholesterol: 43±13 mg/dL, and non-HDL cholesterol: 166±42 mg/dL. The mean length of follow-up was 5.3±4.7 years (range: 1-16 years). A total of 8 (4.3%) patients had adverse effects during follow-up (1 on statin combination and 7 on fibrates alone). The side effects observed were an elevation of liver enzymes in 3, myalgia in 2, insomnia in 1, malaise in 1, and a skin rash in 1 patient. No rhabdomyolysis or myopathy was seen. During follow-up, diabetes developed in 14 and cardiovascular disease (CVD) in 14 patients. The cumulative non-HDL cholesterol level was significantly high in patients who developed diabetes or CVD. Receiver operating curve analysis indicated that a cumulative non-HDL cholesterol value of 1016 mg/dL was predictive of the development of diabetes mellitus or CVD with 85% sensitivity and 70% specificity. CONCLUSION: In real life, long-term fibrate use is effective and safe. The cumulative non-HDL cholesterol burden can be used to assess the efficacy of treatment as a simple and easily calculated method. Large studies are needed to further clarify the value of this parameter in predicting the development of both diabetes and CVD.

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ABSTRACT
Using a novel 3-D ultrasound system, we aimed to determine differences in carotid plaque size and echogenicity in two atherosclerotic groups. Seventy patients admitted with acute myocardial infarction (aMI) and 69 patients known with chronic peripheral arterial disease (cPAD) were included. The cPAD group had larger plaque volumes (median: 70.24 mm(3), interquartile range [40.12-135.61] vs. 55.41 mm(3) [4.24-84.31], p = 0.004), thicker plaques (2.45 mm [1.85-3.25] vs. 1.99 mm [1.55 - 2.64], p = 0.005) and higher gray-scale medians (GSMs) (mean: 71.75, standard deviation: 21.55 vs. 60.99 [24.09], p = 0.006) than the aMI group. After adjustment for traditional risk factors, the difference persisted for thickness and volume. The difference in GSM persisted after adjustment for volume only. Patients with stable atherosclerotic disease had larger and brighter carotid plaques compared with unstable atherosclerotic patients. 3-D ultrasound may prove useful in identifying thromboembolic risk.