[1] *Shahraeini SS, Akbari J, Saeedi M et al.* **Atorvastatin Solid Lipid Nanoparticles as a Promising Approach for Dermal Delivery and an Anti-inflammatory Agent**. AAPS PharmSciTech 2020; 21:263.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32978691

ABSTRACT

In the current research, the main focus was to overcome dermal delivery problems of atorvastatin. To this end, atorvastatin solid lipid nanoparticles (ATR-SLNs) were prepared by ultra-sonication technique. The prepared SLNs had a PDI value of ≤ 0.5, and the particle size of nanoparticles was in the range 71.07 ± 1.72 to 202.07 ± 8.40 nm. It was noticed that, when the concentration of lipid in ATR-SLNs increased, the size of nanoparticles and drug entrapment efficiency were also increased. Results showed that a reduction in the HLB of surfactants used in the preparation of SLN caused an increase in the particle size, zeta potential (better stability), and drug entrapment efficiency. Despite Tween and Span are non-ionic surfactants, SLNs containing these surfactants showed a negative zeta potential, and the absolute zeta potential increased when the concentration of Span 80 was at maximum. DSC thermograms, FTIR spectra, and x-ray diffraction (PXRD) pattern showed good incorporation of ATR in the nanoparticles without any chemical interaction. In vitro skin permeation results showed that SLN containing atorvastatin was capable of enhancing the dermal delivery of atorvastatin where a higher concentration of atorvastatin can be detected in skin layers. This is a hopeful promise which could be developed for clinical studies of the dermal delivery of atorvastatin nanoparticles as an anti-inflammatory agent.

[2] *Summers RM, Elton DC, Lee S et al.* **Atherosclerotic Plaque Burden on Abdominal CT: Automated Assessment With Deep Learning on Noncontrast and Contrast-enhanced Scans**. Academic radiology 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32958429

ABSTRACT

BACKGROUND: Abdominal aortic atherosclerotic plaque burden may have clinical significance but manual measurement is time-consuming and impractical. PURPOSE: To perform external validation on an automated atherosclerotic plaque detector for noncontrast and postcontrast abdominal CT. MATERIALS AND METHODS: The training data consisted of 114 noncontrast CT scans and 23 postcontrast CT urography scans. The testing data set consisted of 922 CT colonography (CTC) scans, and 1207 paired noncontrast and postcontrast CT scans from renal donors from a second institution. Reference standard data included manual plaque segmentations in the 137 training scans and manual plaque burden measurements in the 922 CTC scans. The total Agatston score and group (0-3) was determined using fully-automated deep learning software. Performance was assessed by measures of agreement, linear regression, and paired evaluations. RESULTS: On CTC scans, automated Agatston scoring correlated highly with manual assessment (R(2) = 0.94). On paired renal donor CT scans, automated Agatston scoring on postcontrast CT correlated highly with noncontrast CT (R(2) = 0.95). When plaque burden was expressed as a group score, there was excellent agreement for both the CTC (weighted kappa 0.80 ± 0.01 [95% confidence interval: 0.78-0.83]) and renal donor (0.83 ± 0.02 [0.79-0.86]) assessments. CONCLUSION: Fully automated detection, segmentation, and scoring of abdominal aortic atherosclerotic plaques on both pre- and post-contrast CT was validated and may have application for population-based studies.

[3] *Lin JL, Huang PH, Yeh HI, Li YH*. **Appropriate Use of Proprotein Convertase Subtilisin/Kexin Type 9 (PCSK9) Inhibitors for Atherosclerotic Cardiovascular Disease: Comparison of Recommendations from Different Guidelines or Consensus Around the World**. Acta Cardiologica Sinica 2020; 36:403-408.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32952349
ABSTRACT
Increased low-density lipoprotein cholesterol (LDL-C) is the most crucial risk factor for atherosclerotic cardiovascular disease (ASCVD). Statins are the mainstay therapy, but many patients need to add non-statin treatment to reach the recommended LDL-C goal. Although proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors are the most effective agents in LDL-C reduction, they are much more expensive than other lipid-lowering agents. In January 2020, the Taiwan National Health Insurance (NHI) program started to reimburse PCSK9 inhibitors for select ASCVD patients with certain conditions. Major guidelines or consensus worldwide also provide specific recommendations about how to appropriately use these agents. This review summarizes the Taiwan NHI regulations of using PCSK9 inhibitors and compared them with other guidelines or consensus around the world.

[4] *Dolzhenko MM, Barnett OY, Grassos C et al.* **Management of Dyslipidemia in Individuals with Low-to-Moderate Cardiovascular Risk: Role of Nutraceuticals**. Adv Ther 2020; 37:4549-4567.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32979190
ABSTRACT
Cardiovascular diseases (CVDs) are the leading cause of premature deaths globally and in Ukraine. Dyslipidemia is a recognized risk factor for the development of CVD. Therefore, early detection and appropriate management of dyslipidemia are essential for the primary prevention of CVDs. However, currently, there is a lack of Ukraine-specific guideline recommendations focusing on the management of dyslipidemia in individuals with low-to-moderate CV risk, thus creating an urgent need for structured and easily implementable clinical recommendations/guidelines specific to the country. An expert panel of cardiologists, endocrinologists, and family physicians convened in Ukraine in March 2019. The expert panel critically reviewed and analyzed the current literature and put forth the following recommendations for the management of dyslipidemia in individuals with low-to-moderate risk of CVDs specific to Ukraine: (1) family physicians have the greatest opportunities in carrying out primary prevention; (2) lipid-lowering interventions are essential for primary prevention as per guidelines; (3) a number of nutraceuticals and nutraceutical combinations with clinically established lipid-lowering properties can be considered for primary prevention; they also have a suggested role as an alternative therapy for statin-intolerant patients; (4) on the basis of clinical evidence, nutraceuticals are suggested by guidelines for primary prevention; (5) red yeast rice has potent CV-risk-lowering potential, in addition to lipid-lowering properties; (6) in patients with low-to-moderate cardiovascular risk, a nutraceutical combination of low-dose red yeast rice and synergic lipid-lowering compounds can be used as integral part of guideline-recommended lifestyle interventions for effective primary prevention strategy; (7) nutraceutical combination can be used in patients aged 18 to 75+ years; its use is particularly appropriate in the age group of 18-44 years; (8) it is necessary to attract the media (websites, etc.) to increase patient awareness on the importance of primary prevention; and (9) it is necessary to

legally separate nutraceuticals from dietary supplements. These consensus recommendations will help physicians in Ukraine effectively manage dyslipidemia in individuals with low-to-moderate CV risk.

[5] *Wang D, Bai L, Cui XR et al.* **Effectiveness of Atorvastatin in the Treatment of Asymptomatic Heart Failure After Myocardial Infarction: A Clinical Study**. Adv Ther 2020; 37:4649-4659.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32968936
ABSTRACT
INTRODUCTION: Silent heart failure after myocardial infarction has not been effectively treated. Atorvastatin has certain efficacy in the treatment of heart failure. Our clinical study aimed to investigate the effectiveness of atorvastatin in patients with asymptomatic heart failure after myocardial infarction. METHODS: A total of 162 patients with asymptomatic heart failure after myocardial infarction in our hospital from August 2018 to August 2019 were randomly divided into the observation group (81 cases were treated with atorvastatin on the basis of routine therapy) and the control group (81 cases were treated with routine symptomatic treatment). The clinical curative effect, the level of related inflammatory cytokines, cardiac function index, and vascular endothelial function were compared between the two groups. RESULTS: Before intervention, there was no significant difference in tumor necrosis factor (TNFα), high-sensitivity C-reactive protein (hs-CRP), interleukin-6 (IL-6), plasma N-terminal B-type natriuretic peptide (NT-ProBNP), left ventricular ejection fraction (LVEF), left ventricular end diastolic diameter (LVEDD), left ventricular end systolic diameter (LVESD), left ventricular posterior wall thickness (LVPWT), asymmetric dimethyarginine (ADMA), activity of nitric oxide synthase (NOS), nitric oxide (NO) and flow-mediated dilation (FMD) between the two groups. After intervention, TNFα, hs-CRP, IL-6, NT-ProBNP, LVEF, LVEDD, LVESD, LVPWT, ADMA, NOS, NO, and FMD were improved in both groups. The clinical curative effect, TNFα, hs-CRP, IL-6, NT-ProBNP, LVEF, LVEDD, LVESD, LVPWT, ADMA, NOS, NO, and FMD in the observation group showed significantly greater results than those in the control group ($P < 0.05$). CONCLUSION: Atorvastatin exerted a great effect in treating asymptomatic heart failure after myocardial infarction, which can evidently reduce the level of related inflammatory cytokines, improve cardiac function, and regulate vascular endothelial function. Hence, atorvastatin is considered a valid and alternative approach in clinical practice.

[6] *Bertolini S, Calandra S, Arca M et al.* **Homozygous familial hypercholesterolemia in Italy: Clinical and molecular features**. Atherosclerosis 2020; 312:72-78.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32977124
ABSTRACT
BACKGROUND AND AIMS: Homozygous familial hypercholesterolemia (HoFH) is a rare genetic disorder characterized by extremely elevated plasma levels of low density lipoprotein cholesterol (LDL-C) and high risk of premature atherosclerotic cardiovascular disease (ASCVD). HoFH is caused by pathogenic variants in several genes, such as LDLR, APOB and PCSK9, responsible for autosomal dominant hypercholesterolemia (ADH), and LDLRAP1 responsible for autosomal recessive hypercholesterolemia (ARH). Aim of this study was the review of the clinical and molecular features of patients with HoFH identified in Italy from 1989 to 2019. METHODS: Data were collected from lipid clinics and laboratories, which had performed molecular diagnosis in suspected HoFH. Clinical data included baseline lipid levels

and ASCVD events. RESULTS: A total of 125 subjects with ADH were identified, of whom 60 were true homozygotes, 58 compound heterozygotes and 7 double heterozygotes for LDLR (likely) pathogenic variants. Compared with compound heterozygotes, true homozygotes showed a more severe lipid phenotype and more ASCVD events. ADH carriers of LDLR negative variants (R-NEG) presented with a more aggressive phenotype, as compared to carriers of LDLR defective variants (R-DEF). Kaplan-Meier analysis showed that the median age of ASCVD event-free survival was 25 years of age in R-NEG as opposed to 50 years of age in R-DEF patients. A total of 66 patients with ARH were also identified, of whom 46 were homozygotes and 20 compound heterozygotes. The phenotypic features of ARH patients were similar to those of R-DEF/ADH patients. Overall, 45% ADH patients and 33% ARH patients did not meet the classic diagnostic criteria for HoFH. CONCLUSIONS: In our cohort, the phenotypic variability of HoFH was dependent on the candidate gene involved and the functional impact of its variants on the LDL receptor pathway.

[7] *Gvozdjakova A, Kucharska J, Sumbalova Z et al.* **The importance of coenzyme Q10 and its ratio to cholesterol in the progress of chronic kidney diseases linked to non- -communicable diseases**. Bratislavske lekarske listy 2020; 121:693-699.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32955899

ABSTRACT

OBJECTIVES: The mortality of patients with chronic kidney diseases (CKD) increases with the decrease in glomerular filtration rate (eGFR). In the progress of CKD that is closely linked to non-communicable diseases (NCDs), the role of coenzyme Q10 (CoQ10) is not fully evaluated. We aimed to evaluate the importance of CoQ10, CoQ10/cholesterol ratio, and oxidative stress in the progress of CKD. PATIENTS AND METHODS: The control group was constituted of 19 healthy subjects who volunteered to enrol in the study, CKD group consisted of 58 patients with CKD, of whom 54 had CKD combined with hypertension, 22 had CKD combined with hypertension and diabetes type 2 , and 18 had CKD combined with hypertension and statin therapy. We observed age, BMI, creatinine, uric acid, eGFR, hemoglobin, CRP, glucose, lipids fraction, and liver enzymes. Coenzyme Q10-TOTAL (ubiquinol+ubiquinone) in platelets and plasma were determined using HPLC method with UV detection. Indexed of CoQ10/lipid fractions were evaluated. Oxidative stress was determined as thiobarbituric acid-reactive substances (TBARS). RESULTS: With increased stages of CKD, eGFR and CoQ10 as well as its ratio to lipids were significantly reduced while TBARS increased. CONCLUSION: We assume that lower endogenous CoQ10 level may be one of the reasons of kidney dysfunction. CoQ10/lipids ratio and increase in oxidative stress can predict the progression of CKD in patients with arterial hypertension, diabetes mellitus and dyslipidemia (Tab. 2, Fig. 4, Ref. 49).

[8] *Razova OA, Afanas'eva OI, Egiazaryan MG et al.* **Circulating Complex of Lipoprotein(a) and Proprotein Convertase Subtilisin/Kexin Type 9 in the Serum Measured by ELISA**. Bulletin of experimental biology and medicine 2020; 169:639-643.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32979126

ABSTRACT

The presence of a complex of lipoprotein(a) and proprotein convertase subtilisin/kexin type 9 (PCSK9) in the blood of healthy volunteers and patients with cardiovascular diseases was analyzed by ELISA. The levels of the complex varied in a wide range and did not depend on

the concentrations of Lp(a) and PCSK9. Moreover, the complex was found not only in patients with cardiovascular diseases, but also in healthy volunteers, which can indicate physiological role of lipoprotein(a) as PCSK9 transporter.

[9] *Kousios A, Kouis P, Hadjivasilis A, Panayiotou A*. **Cardiovascular Risk Assessment Using Ultrasonographic Surrogate Markers of Atherosclerosis and Arterial Stiffness in Patients With Chronic Renal Impairment: A Narrative Review of the Evidence and a Critical View of Their Utility in Clinical Practice**. Canadian journal of kidney health and disease 2020; 7:2054358120954939.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32963791

ABSTRACT

PURPOSE OF THE REVIEW: Validated tools to improve cardiovascular disease (CVD) risk assessment and mortality in patients with chronic kidney disease (CKD) and end-stage renal disease (ESRD) are lacking. Noninvasive measures of arteriosclerosis and subclinical atherosclerosis such as pulse wave velocity (PWV) and carotid intima-media thickness (cIMT), respectively, have emerged as promising risk stratification tools and potential modifiable biomarkers. Their wide use as surrogate markers in clinical research studies is based on the strong pathophysiological links with CVD. However, whether their effect as risk stratification or intervention targets is superior to established clinical approaches is uncertain. In this review, we examine the evidence on the utility of PWV, cIMT, and plaque assessment in routine practice and highlight unanswered questions from the clinician's perspective. SOURCES OF INFORMATION: Electronic databases PubMed and Google Scholar were searched until February 2020. METHODS: This narrative review is based on peer-reviewed meta-analyses, national and international societies' guidelines, and on focused critical review of recent original studies and landmark studies in the field. KEY FINDINGS: Although patients with CKD are considered in the high-risk CVD groups, there is still need for tools to improve risk stratification and individualized management strategies within this group of patients. Carotid intima-media thickness is associated with all-cause mortality, CVD mortality, and events in CKD and hemodialysis cohorts. However, the evidence that measurement of cIMT has a clinically meaningful role over and above existing risk scores and management strategies is limited. Plaque assessment is a better predictor than cIMT in non-CKD populations and it has been incorporated in recent nonrenal-specific guidelines. In the CKD population, one large observational study provided evidence for a potential role of plaque assessment in CKD similar to the non-CKD studies; however, whether it improves prediction and outcomes in CKD is largely understudied. Pulse wave velocity as a marker of arterial stiffness has a strong pathophysiological link with CVD in CKD and numerous observational studies demonstrated associations with increased cardiovascular risk. However, PWV did not improve CVD reclassification of dialysis patients when added to common risk factors in a reanalysis of ESRD cohorts with available PWV data. Therapeutic strategies to regress PWV, independently from blood pressure reduction, have not been studied in well-conducted randomized trials. LIMITATIONS: This study provides a comprehensive review based on extensive literature search and critical appraisal of included studies. Nevertheless, formal systematic literature review and quality assessment were not performed and the possibility of selection bias cannot be excluded. IMPLICATIONS: Larger, prospective, randomized studies with homogeneous approach, designed to answer specific clinical questions and taking into consideration special

characteristics of CKD and dialysis, are needed to study the potentially beneficial role of cIMT/plaque assessment and PWV in routine practice.

[10] *Aizaz M, Moonen RPM, van der Pol JAJ et al.* **PET/MRI of atherosclerosis**. Cardiovascular diagnosis and therapy 2020; 10:1120-1139.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32968664
ABSTRACT
Myocardial infarction and stroke are the most prevalent global causes of death. Each year 15 million people worldwide die due to myocardial infarction or stroke. Rupture of a vulnerable atherosclerotic plaque is the main underlying cause of stroke and myocardial infarction. Key features of a vulnerable plaque are inflammation, a large lipid-rich necrotic core (LRNC) with a thin or ruptured overlying fibrous cap, and intraplaque hemorrhage (IPH). Noninvasive imaging of these features could have a role in risk stratification of myocardial infarction and stroke and can potentially be utilized for treatment guidance and monitoring. The recent development of hybrid PET/MRI combining the superior soft tissue contrast of MRI with the opportunity to visualize specific plaque features using various radioactive tracers, paves the way for comprehensive plaque imaging. In this review, the use of hybrid PET/MRI for atherosclerotic plaque imaging in carotid and coronary arteries is discussed. The pros and cons of different hybrid PET/MRI systems are reviewed. The challenges in the development of PET/MRI and potential solutions are described. An overview of PET and MRI acquisition techniques for imaging of atherosclerosis including motion correction is provided, followed by a summary of vessel wall imaging PET/MRI studies in patients with carotid and coronary artery disease. Finally, the future of imaging of atherosclerosis with PET/MRI is discussed.

[11] *Cademartiri F, Balestrieri A, Cau R et al.* **Insight from imaging on plaque vulnerability: similarities and differences between coronary and carotid arteries-implications for systemic therapies**. Cardiovascular diagnosis and therapy 2020; 10:1150-1162.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32968666
ABSTRACT
Nowadays it is widely accepted that the rupture of the atherosclerotic plaque in coronary and carotid arteries plays a fundamental role in the development of acute myocardial infarctions or cerebrovascular events. In recent years, imaging techniques have explored, with a new level of detail, the atherosclerotic disease generating new evidences that some plaque characteristics are significantly associated to the risk of rupture and subsequent thrombosis or embolization. Moreover, the recent evidence of the anti-atherosclerotic effects determined by lipid-lowering and anti-inflammatory therapies poses a challenge for the choice of therapeutic approaches (best/optimal medical therapy vs. revascularization), maximized by the evidence that coronary and carotid atherosclerosis share common patterns but also differ regarding some important features. In this Review, we discuss the similarities and differences between coronary and carotid artery vulnerable plaque from the imaging point of view and the potential implications for systemic therapies according to the emerging evidence.

[12] *Murgia A, Balestrieri A, Francone M et al.* **Plaque imaging volume analysis: technique and application**. Cardiovascular diagnosis and therapy 2020; 10:1032-1047.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32968659
ABSTRACT

The prevention and management of atherosclerosis poses a tough challenge to public health organizations worldwide. Together with myocardial infarction, stroke represents its main manifestation, with up to 25% of all ischemic strokes being caused by thromboembolism arising from the carotid arteries. Therefore, a vast number of publications have focused on the characterization of the culprit lesion, the atherosclerotic plaque. A paradigm shift appears to be taking place at the current state of research, as the attention is gradually moving from the classically defined degree of stenosis to the identification of features of plaque vulnerability, which appear to be more reliable predictors of recurrent cerebrovascular events. The present review will offer a perspective on the present state of research in the field of carotid atherosclerotic disease, focusing on the imaging modalities currently used in the study of the carotid plaque and the impact that such diagnostic means are having in the clinical setting.

[13] *Porambo ME, DeMarco JK*. **MR imaging of vulnerable carotid plaque**. Cardiovascular diagnosis and therapy 2020; 10:1019-1031.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32968658

ABSTRACT
Current risk stratification for stroke is still based upon percentage of carotid stenosis, despite this measure providing minimal patient-specific information on the actual risk of stroke for both symptomatic individuals without significant carotid artery stenosis as well as asymptomatic carotid stenosis patients. A continuously growing body of literature suggests that the identification and quantification of certain carotid plaque characteristics, including lipid-rich necrotic core (LRNC), thin/ruptured fibrous cap (FC), and intraplaque hemorrhage (IPH), provide a superior means of predicting future stroke. These characteristics are identifiable via magnetic resonance imaging (MRI), with most features detectable using commercially available coils and sequences utilized in routine clinical practice in as little as 4 minutes. The presence of LRNC, a thin/ruptured FC, and IPH is associated with increased risk of future stroke or TIA. Plaques with greater than 40% LRNC with a thin overlying FC are prone to rupture. LRNC is T2 hypointense and lacks enhancement on contrast enhanced T1 weighted images. Increasing LRNC size is associated with the development of new ulceration, FC rupture, increasing plaque burden, as well as fatal and nonfatal myocardial infarction, ischemic stroke, hospitalization for acute coronary syndrome (ACS), and symptom-driven revascularization, allowing for MR biomarkers of carotid plaque vulnerability to be utilized for systemic athero-thrombotic risk and not just stroke/TIA. LRNC typically shrinks with appropriate statin therapy, with PCSK9 inhibitors possibly playing a role in patients with inadequate response. Carotid plaques with IPH represent a more advanced stage of atherosclerotic disease. IPH is detectable with field strengths of both 3.0 T and 1.5 T and will demonstrate high signal on all T1 weighted imaging sequences. The presence of IPH increases the risk of future stroke in both symptomatic and asymptomatic patients, with multivariate analysis identifying IPH as a predictor of stroke, independent of percent stenosis, with no statistical difference in men vs. women, demonstrating that simple carotid stenosis measurements and traditional risk factor analysis may be inadequate in identifying patients at the highest risk for adverse cerebrovascular events. In the evaluation for recurrent stroke in recently symptomatic patients with >50% carotid stenosis, the estimated annual stroke risk is 23.2% in IPH+ patients and only 0.6% in IPH- patients, calling into question the current risk-benefit assessment for CEA. Additionally, a recent meta-analysis suggests that IPH+ plaque in patients with symptomatic <50% stenosis may be the etiology of embolic strokes previously

labeled as "embolic stroke of undetermined source" (ESUS). There are no prospective drug trials testing the ability of any lipid-lowering therapies to decrease IPH and/or total plaque volume (TPV). Given the continuously increasing evidence of IPH as a significant predictor of carotid plaque progression and future adverse vascular events, trials aimed at targeted therapy for IPH represents a significant need.

[14] *Porcu M, Mannelli L, Melis M et al.* **Carotid plaque imaging profiling in subjects with risk factors (diabetes and hypertension)**. Cardiovascular diagnosis and therapy 2020; 10:1005-1018.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32968657
ABSTRACT
Carotid artery stenosis (CAS) due to the presence of atherosclerotic plaque (AP) is a frequent medical condition and a known risk factor for stroke, and it is also known from literature that several risk factors promote the AP development, in particular aging, smoke, male sex, hypertension, hyperlipidemia, smoke, diabetes type 1 and 2, and genetic factors. The study of carotid atherosclerosis is continuously evolving: even if the strategies of treatment still depends mainly on the degree of stenosis (DoS) determined by the plaque, in the last years the attention has moved to the study of the plaque components in order to identify the so called "vulnerable" plaque: features like the fibrous cap status and thickness, the volume of the lipid-rich necrotic core and the presence of intraplaque hemorrhage (IPH) are risk factors for plaque rupture, that can be studied with modern imaging techniques. The aim of this review is to give a general overview of the principle histological and imaging features of the subcomponent of carotid AP (CAP), focalizing in particular on the features of CAP of patients affected by hypertension and diabetes (in particular type 2 diabetes mellitus).

[15] *Tsuda K, Kataoka Y, Ogata S et al.* **Diminished response to statins predicts the occurrence of heart failure after acute myocardial infarction**. Cardiovascular diagnosis and therapy 2020; 10:705-716.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32968627
ABSTRACT
BACKGROUND: Lowering low-density lipoprotein cholesterol (LDL-C) levels using a statin is a cornerstone of preventive therapeutic management following acute myocardial infarction (AMI). In addition to its anti-atherosclerotic effects, recent studies reported a lower occurrence of heart failure (HF) under statin therapy. However, there is a wide variability in statin response. The association between the response to statin and the occurrence of HF in AMI subjects remains unclear. The purpose of present study is to examine whether the variability in statin response affects HF risk after AMI. METHODS: We analyzed 505 statin-naïve AMI subjects undergoing primary percutaneous coronary intervention (PCI) who commenced atorvastatin, rosuvastatin, or pitavastatin. Statin hyporesponse was defined as a reduction in LDL-C levels <15% from baseline to 1 month after statin therapy. HF outcomes were compared between patients with and without statin hyporesponse. RESULTS: Statin hyporesponse was identified in 15.2% (77/505) of study subjects. During a median 4.4-year observational period, statin hyporesponse was associated with a greater likelihood of HF [hazard ratio (HR) =3.01, 95% confidence interval (CI): 1.27-6.79, P=0.01]. This increased HF risk in statin hyporesponders was consistently observed in a multivariate Cox proportional hazards model (HR =2.74, 95% CI: 1.01-6.75, P=0.04), a propensity score-matched cohort (HR =12.30, 95% CI: 1.50-100.3,

P=0.01) and in an inverse probability of treatment weights analysis with average treatment effects (coefficient =7.02, 95% CI: 2.29-21.58, P=0.0006). CONCLUSIONS: Hyporesponse to statins increases HF risk after AMI. Our findings highlight statin hyporesponse as a high-risk feature associated with HF events.

[16] *Wu F, Yu H, Yang Q*. **Imaging of intracranial atherosclerotic plaques using 3.0 T and 7.0 T magnetic resonance imaging-current trends and future perspectives**. Cardiovascular diagnosis and therapy 2020; 10:994-1004.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32968656
ABSTRACT
Intracranial atherosclerotic disease (ICAD) is one of the most common causes of ischemic stroke and carries a relatively high risk of stroke recurrence. Advances in high-resolution magnetic resonance imaging (HRMRI) techniques of intracranial arteries now have made it possible to directly visualize atherosclerotic plaque itself, allowing detailed assessments of plaque morphology and components. Currently available intracranial HRMRI could be performed with 2-dimensional (2D) and 3D acquisitions, and multicontrast weightings in clinically reasonable scan times. Until now, HRMRI research of ICAD has focused on the identification of plaque vulnerability, and the relationship between plaque characteristics and ischemic stroke. HRMRI at ultra-high-field strength (7.0 T) holds promise in better visualizing intracranial vessel walls, as well as identifying early lesions and total burden of ICAD. As a result, intracranial HRMRI provides great insights into pathology of intracranial atherosclerotic plaques, stroke mechanisms, and future stroke risk. In this article, we will review the technical implementation, preclinical research, clinical applications, and future directions of HRMRI for the evaluation of ICAD at 3.0 T and 7.0 T.

[17] *Wegler C, Prieto Garcia L, Klinting S et al.* **Proteomics-Informed Prediction of Rosuvastatin Plasma Profiles in Patients with a Wide Range of Body Weight**. Clinical pharmacology and therapeutics 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32970864
ABSTRACT
Rosuvastatin is a frequently used probe to study transporter-mediated hepatic uptake. Pharmacokinetic models have therefore been developed to predict transporter impact on rosuvastatin disposition in vivo. However, the interindividual differences in transporter concentrations were not considered in these models, and the predicted transporter impact was compared with historical in vivo data. In this study, we investigated the influence of interindividual transporter concentrations on the hepatic uptake clearance of rosuvastatin in 54 patients covering a wide range of body weight. The 54 patients were given an oral dose of rosuvastatin the day before undergoing gastric bypass or cholecystectomy, and pharmacokinetic (PK) parameters were established from each patient's individual time-concentration profiles. Liver biopsies were sampled from each patient and their individual hepatic transporter concentrations were quantified. We combined the transporter concentrations with in vitro uptake kinetics determined in HEK293-transfected cells, and developed a semimechanistic model with a bottom-up approach to predict the plasma concentration profiles of the single dose of rosuvastatin in each patient. The predicted PK parameters were evaluated against the measured in vivo plasma PKs from the same 54 patients. The developed model predicted the rosuvastatin PKs within two-fold error for

rosuvastatin area under the plasma concentration versus time curve (AUC; 78% of the patients; average fold error (AFE): 0.96), peak plasma concentration (C(max) ; 76%; AFE: 1.05), and terminal half-life (t(1/2) ; 98%; AFE: 0.89), and captured differences in the rosuvastatin PKs in patients with the OATP1B1 521T<C polymorphism. This demonstrates that hepatic uptake clearance determined in transfected cell lines, together with proteomics scaling, provides a useful tool for prediction models, without the need for empirical scaling factors.

[18] *Yadollah-Damavandi S, Sharifi ZN, Arani HZ et al.* **Atorvastatin Prevent the Neuron Loss in the Hippocampal Dentate Gyrus Region through its Anti-oxidant and Anti-apoptotic Activities**. CNS & neurological disorders drug targets 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32962624

ABSTRACT

BACKGROUND: Atorvastatin is a member of statins, which has shown positive vascular effects, anti-oxidant, antiplatelet, and anti-apoptotic properties. OBJECTIVE: In this study, we hypothesized that atorvastatin could prevent the neurons lost in the hippocampal dentate gyrus region after transient global ischemia/reperfusion (I/R) through its anti-oxidant and anti-apoptotic activities. METHOD: Twenty-four male Wistar rats 12-13 weeks old and weighing 250-300 g, were divided randomly into four groups: control, I/R, vehicle (I/R treated with NaCl) and experiment (I/R treated with atorvastatin, 10 mg/kg) and rats were sacrificed 96 hours after I/R. Quantitative expression of genes (caspase 8, p53, bax, bcl2, cytochrome c) was studied. The MDA level, SOD, CAT, and GPx activities were measured with biochemical tests. To detect apoptotic cells, TUNEL and Nissl staining were performed. Mitochondria were prepared from the hippocampus rats, used to the quantification of mitochondrial ROS, ATP level, GSH content, membrane potential, cytochrome c release, and determination of mitochondrial swelling. RESULTS: Atorvastatin attenuated the overexpression of bax, cytochrome C, p53, and caspase8 mRNAs and induced expression of bcl-2 mRNA (P<0.001). Atorvastatin treatment increased anti-oxidant enzyme levels (P<0.01). Treatment with atorvastatin reduced the number of TUNEL-positive cells. It could decrease the cytochrome c release (P<0.01), inhibit the decrease of MMP (P<0.001) and increased the ATP level (P<0.001) in mitochondrial hippocampal in compared with I/R group. CONCLUSION: Atorvastatin treatment in I/R rats decreases oxidative stress, production of ROS, apoptosis rate in neuronal cells, and improves the mitochondrial function. Hence, atorvastatin have a proper neuronal protective effect against the I/R injury in the brain.

[19] Streja E, Streja DA. Management of Dyslipidemia in the Elderly. In: Endotext. Edited by: Feingold KR, Anawalt B, Boyce A *et al.* South Dartmouth (MA): MDText.com, Inc. Copyright © 2000-2020, MDText.com, Inc.; 2000.

[20] *Moşteoru S, Gaiţă D, Banach M*. **An update on PCSK9 inhibitors- pharmacokinetics, drug interactions, and toxicity**. Expert opinion on drug metabolism & toxicology 2020:1-7.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32966148

ABSTRACT

INTRODUCTION: While atherosclerotic cardiovascular disease is affecting growing numbers of patients, lipid-lowering therapies have been continuously improving to achieve prevention of cardiovascular events. Thus, the appearance of a novel therapeutic class, PCSK9 inhibitors, has raised both high expectations as well as concern over possible adverse effects. AREAS COVERED: This current review aims to analyze adverse events of special interest linked to

PCSK9 inhibitors and give recommendations regarding further conduct when dealing with patients on this therapy. The most stringent adverse effect, neurocognitive impairment has been investigated in several studies, concluding that PCSK9 inhibitors neither improved nor worsened cognitive function. While new onset diabetes mellitus has also been a cause of concern due to its possible association with lipid lowering therapies, studies conducted so far have dispelled this possibility by showing that PCSK9 inhibitors do not increase this risk. Also, statin-associated muscle symptoms have not been proven to arise after the use of PCSK9 inhibitors, even in statin-intolerant patients. EXPERT OPINION: In conclusion, it can be safely stated that so far, no compelling evidence links PCSK9 inhibitors to these adverse events; however, long-term trials are always welcome to further assess potential adverse effects.

[21] *Calza L, Colangeli V, Borderi M et al.* **Rosuvastatin decreases serum inflammatory markers and slows atherosclerosis progression rate in treated HIV-infected patients with metabolic syndrome**. Infectious diseases (London, England) 2020:1-8.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32955957
ABSTRACT
OBJECTIVES: Metabolic syndrome (MetS) is usually associated in general population with systemic inflammation and higher cardiovascular risk, but data about the effect of statins in patients with HIV infection and MetS are lacking to date. METHODS: Prospective cohort study of treated HIV-infected patients, aged from 40 to 60 years, with or without MetS, who started rosuvastatin (10 mg daily), and were followed-up for 12 months. The primary endpoint was change in serum levels of high-sensitivity C-reactive protein (hsCRP), interleukin-6 (IL-6), and tumour necrosis factor-α (TNF-α). The secondary endpoint was change in the carotid intima-media thickness (IMT). RESULTS: One hundred and twenty-five patients were enrolled: 61 with MetS (MetS group) and 64 without MetS (control group). After 12 months, rosuvastatin produced a significant decrease in mean serum levels of hsCRP (-0.28 mg/dL; p = .037), IL-6 (-2.1 pg/mL; p = .018) and TNF-α (-6.3 pg/mL; p = .004) in patients with MetS. On the contrary, in controls rosuvastatin did not lead to a significant change in mean levels of all biomarkers. After 12 months, the mean IMT increase at the carotid bifurcation was significantly lower in the MetS group than in the control group at the carotid bifurcation (0.017 vs. 0.031 mm; p = .037) and in all other anatomical sites. CONCLUSION: Our findings suggest that rosuvastatin is effective in reducing serum inflammation markers and slowing atherosclerosis progression rate in HIV-infected patients on cART and with MetS, while its effects on serum biomarkers and IMT increase seem to be negligible in those without MetS.

[22] *Bays HE, Banach M, Catapano AL et al.* **Bempedoic acid safety analysis: Pooled data from four phase 3 clinical trials**. Journal of clinical lipidology 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32980290
ABSTRACT
BACKGROUND: An ongoing need exists for safe and effective lipid-lowering therapies (LLTs) for patients unable to achieve desired lipid levels with current treatment options. OBJECTIVE: The objective of this study was to describe the safety profile of bempedoic acid, an oral, first-in-class, adenosine triphosphate (ATP)-citrate lyase inhibitor that significantly reduces low-density lipoprotein cholesterol (LDL-C) levels by 17.4%-28.5% vs placebo. METHODS: This was a pooled analysis of four phase 3, randomized (2:1), double-blind, placebo-controlled studies in patients with hypercholesterolemia who required additional LDL-C lowering, despite

stable maximally-tolerated LLT. Patients received 180 mg of bempedoic acid (n = 2424) or placebo (n = 1197) once daily for 12 to 52 weeks. Assessments included treatment-emergent adverse events (TEAEs) and clinical laboratory tests. RESULTS: Of 3621 patients (the median drug exposure: 363 days), exposure-adjusted TEAE rates were 87.1/100 and 82.9/100 person-years (PY) for bempedoic acid and placebo, respectively. No single TEAE influenced the difference in rates. TEAEs leading to discontinuation occurred at rates of 13.4/100 and 8.9/100 PY for bempedoic acid vs placebo, with the most common cause being myalgia, which occurred less frequently with bempedoic acid vs placebo (1.5/100 vs 2.0/100 PY). Rates of myalgia and muscle weakness were comparable vs placebo. Bempedoic acid was associated with mild increases in blood urea nitrogen, creatinine, and uric acid and decreases in hemoglobin. These laboratory abnormalities were apparent by week 4, stable over time, and reversible after treatment cessation. Gout incidence was 1.6/100 vs 0.5/100 PY in the bempedoic acid vs placebo groups. New-onset diabetes/hyperglycemia occurred less frequently with bempedoic acid vs placebo (4.7/100 vs 6.4/100 PY). The safety profile was consistent across subgroups. CONCLUSIONS: Bempedoic acid is generally safe and well tolerated among patients with hypercholesterolemia who require additional LLT.

[23] *Goldberg AC, Dunbar RL, Hemphill L et al.* **A retrospective analysis of clinical use of alirocumab in lipoprotein apheresis patients**. Journal of clinical lipidology 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32978095

ABSTRACT

BACKGROUND: The previously published ODYSSEY ESCAPE trial demonstrated a significant reduction in the use of lipoprotein apheresis for heterozygous familial hypercholesterolemia (HeFH) patients when placed on alirocumab 150 mg every 2 weeks. In patients with HeFH who have consistently elevated levels of low-density lipoprotein cholesterol (LDL-C) despite maximally tolerated statin therapy, current lipid guidelines recommend apheresis. Although apheresis reduces LDL-C levels by 50%-75%, it must be repeated, as frequently as every 1-2 weeks. OBJECTIVE: To assess clinical experience with apheresis and alirocumab for patients in a real-world practice setting. METHODS: This retrospective review included patients from 5 apheresis centers who were treated with apheresis and had started alirocumab therapy. In addition to LDL-C levels, total cholesterol, high-density lipoprotein cholesterol (HDL-C), non-HDL-C, triglycerides, and particle numbers were evaluated if data were available. RESULTS: Eleven of the 25 (44%) patients discontinued apheresis completely after initiation of alirocumab therapy, having achieved LDL-C <70 mg/dL or >50% reduction from baseline levels. Among the 14 patients who remained on apheresis, seven decreased the frequency of apheresis sessions. No significant safety problems were reported. CONCLUSION: Alirocumab lowered LDL-C levels by an average of 55.5% in patients receiving apheresis for elevated LDL-C. Seventy-two percent of patients on alirocumab therapy discontinued or reduced the frequency of apheresis treatment. However, some patients continued to require apheresis due to elevated lipoprotein(a), extremely elevated LDL-C, or if alirocumab therapy was discontinued due to less than anticipated LDL-C reduction.

[24] *Tunoa JA, Billups SJ, Lowe RN, Saseen JJ*. **Early impact of the 2018 AHA/ACC/multisociety cholesterol guideline on lipid monitoring after statin initiation**. Journal of clinical lipidology 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32978094

ABSTRACT
BACKGROUND: The 2018 AHA/ACC/multisociety cholesterol guideline emphasizes the need for lipid monitoring more strongly than the previous 2013 guideline to ensure patients reach recommended percent low-density lipoprotein cholesterol reductions. Real-world compliance to monitoring recommendations is currently unknown. OBJECTIVES: This study examined the proportion of patients with a lipid panel measured within 3 months of statin initiation. METHODS: This retrospective cohort study evaluated University of Colorado Health primary care patients aged 18 to 89 years with a new statin prescription identified via the Epic Clarity database. Patients initiated on a statin during January 1, 2018 to June 30, 2018 and January 1, 2019 to June 30, 2019 were included in the pre-2018 guideline cohort and the post-2018 guideline cohort, respectively. Patients with active liver disease, pregnancy, or missing demographic data were excluded. RESULTS: A total of 13,726 patients were included, 7476 in the preguideline cohort and 6250 in the postguideline cohort. A total of 13.9% of patients in the preguideline cohort had a lipid panel completed within 3 months of statin initiation compared with 16.2% in the postguideline cohort (adjusted P < .001). In the postguideline cohort, 56% (n = 857) of patients with lipid monitoring warranted a therapeutic intensification as recommended by the 2018 guideline; however, only 5% had their lipid-lowering regimen changed. CONCLUSION: In a large integrated health system, lipid monitoring increased among patients newly started on statin therapy soon after release of the 2018 guideline but remains low. Clinical interventions are needed to improve lipid monitoring to optimize low-density lipoprotein cholesterol-lowering therapy and ensure that guideline-recommended goals are achieved.

[25] *Sahin ON, Ozpinar A, Serdar M*. **Maternal omega-3 polyunsaturated fatty acids supplementation in pregnancy decreases MMP-1 levels in breastmilk: a cross-sectional study**. The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstet 2020:1-9.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32962453

ABSTRACT
INTRODUCTION: Anti-inflammatory properties of fish-oil are well known and suggested during pregnancy. MMP-1 is involved in inflammation and tissue remodelling. There have been studies focused on anti-inflammatory effect of maternal omega use on human milk while little is known about the effect of omega use on breastmilk proteases. Leptin is an important hormone that influences MMP levels in various tissues and exerts its metabolic effects. In our study we assessed the levels of MMP-1, TIMP-1, leptin, IL-6 and FA's including PUFA in breastmilk from women who used omega-3. MATERIALS AND METHODS: Our study was a cross-sectional study included 67(Group 1, n = 32, omega user; Group 2 n = 35, non-user)lactating women and their infan MMP-1, TIMP-1, leptin, IL-6 and FA's were evaluated in breastmilk of both groups. MMP-1, TIMP-1, IL-6 and leptin were measured by enzyme-linked immunoabsorbent assay (ELISA) method. Breastmilk fatty acids were measured by gas chromatography flame ionisation detector (GC-FID). RESULTS: Matrix metalloproteinase-1 (MMP-1) levels in breastmilk were significantly lower in breastmilk from omega users (mean ± SD, 0.455 ± 0.1) than non-users (mean ± SD, 0.677 ± 0.289) (p=.0001). MMP-1 and omega 6:3 ratio were positively correlated (r: 0.301, p=.01). MMP levels were correlated with IL-6 (Pearson's r: 0.411, p<.001). MMP-1 and leptin levels were positively correlated (r: .388, p=.001).

CONCLUSION: MMP-1 levels in breastmilk, may be modified by maternal omega use in pregnancy which may help to redirect extracellular matrix remodelling and metabolic programming in early infancy.

[26] *Liu R, Chen L, Wang Z et al.* **Omega-3 polyunsaturated fatty acids prevent obesity by improving tricarboxylic acid cycle homeostasis**. The Journal of nutritional biochemistry 2020:108503.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32956825
ABSTRACT
The beneficial effects of omega-3 polyunsaturated fatty acids (n-3 PUFAs) on preventing obesity are well known, however, the underlying mechanism by which n-3 PUFAs influence tricarboxylic acid (TCA) cycle under obesity remains unclear. We randomly divided male C57BL/6 mice into 5 groups (n=10) and fed for 12 weeks as follows: mice fed a normal diet (Con, 10% kcal); mice fed a high-fat diet (HFD, lard, 60% kcal); and mice fed a high-fat diet (60% kcal) substituting half the lard with safflower oil (SO), safflower oil and fish oil (SF) and fish oil (FO), respectively. Then we treated HepG2 cells with palmitic acid and DHA for 24 h. We found that body weight in FO group was significantly lower than it in HFD and SO groups. N-3 PUFAs reduced the transcription and translation of TCA cycle enzymes, including IDH1, IDH2, SDHA, FH and MDH2, to enhance mitochondrial function in vivo and vitro. DHA significantly inhibited protein expression of the mTORC1 signaling pathway, increased p-AKT protein expression to alleviate insulin resistance and improved mitochondrial oxygen consumption rate and glycolysis ability in HepG2 cells. In addition, the expressions of IDH2 and SDHB were reduced by rapamycin. N-3 PUFAs could prevent obesity by improving TCA cycle homeostasis and mTORC1 signaling pathway may be upstream.

[27] *Denisenko YK, Kytikova OY, Novgorodtseva TP et al.* **Lipid-Induced Mechanisms of Metabolic Syndrome**. J Obes 2020; 2020:5762395.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32963827
ABSTRACT
Metabolic syndrome (MetS) has a worldwide tendency to increase and depends on many components, which explains the complexity of diagnosis, approaches to the prevention, and treatment of this pathology. Insulin resistance (IR) is the crucial cause of the MetS pathogenesis, which develops against the background of abdominal obesity. In light of recent evidence, it has been shown that lipids, especially fatty acids (FAs), are important signaling molecules that regulate the signaling pathways of insulin and inflammatory mediators. On the one hand, the lack of n-3 polyunsaturated fatty acids (PUFAs) in the body leads to impaired molecular mechanisms of glucose transport, the formation of unresolved inflammation. On the other hand, excessive formation of free fatty acids (FFAs) underlies the development of oxidative stress and mitochondrial dysfunction in MetS. Understanding the molecular mechanisms of the participation of FAs and their metabolites in the pathogenesis of MetS will contribute to the development of new diagnostic methods and targeted therapy for this disease. The purpose of this review is to highlight recent advances in the study of the effect of fatty acids as modulators of insulin response and inflammatory process in the pathogenesis and treatment for MetS.

[28] *de Ferranti SD, Shrader P, Linton MF et al.* **Children with Heterozygous Familial Hypercholesterolemia in the United States: Data from the CASCADE FH Registry**. J Pediatr 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32976895
ABSTRACT
OBJECTIVE: To describe enrollment characteristics of youth in the CAscade SCreening for Awareness and DEtection (CASCADE) Familial Hypercholesterolemia Registry. STUDY DESIGN: Cross-sectional analysis of 493 participants <18 years old with heterozygous FH recruited from US lipid clinics (n=20), between April 1, 2014 and January 12, 2018. At enrollment, some were new patients and some were in care. Clinical characteristics are described, including lipid levels and lipid lowering treatments (LLTs). RESULTS: Mean age at diagnosis was 9.4 (4.0) years; 47% female, 68% white and 12% Hispanic. Average (SD) highest LDL-C was 238 (61) mg/dL prior to treatment. Lipid lowering therapy (LLT) was used by 64% of participants; 56% were treated with statin. LDL-C declined 84 mg/dL (33%) among those treated with LLT; statins produced the greatest decline, 100 mg/dL (39% reduction). At enrollment, 39% had reached an LDL-C goal, either <130 mg/dL or ≥50% decrease from pre-treatment; 20% of those on LLT reached both goals. CONCLUSIONS: Among youth enrolled in CASCADE FH, diagnosis occurred relatively late, only 77% of children eligible for LLT were on treatment and 39% of those treated met LDL-C goals. Opportunities exist for earlier diagnosis, broader use of LLT, and greater LDL-C lowering.

[29] *Liu B, Wen P, Gu X et al.* **Elevated serum triglyceride predicts recurrence of colorectal polyps in patients with advanced adenomas**. Lipids in health and disease 2020; 19:211.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32967679
ABSTRACT
BACKGROUND: Recurrence of colorectal polyps is common and impacted by various factors. This study was performed to explore the association between lipid profiles and recurrence of colorectal polyps. METHODS: This study retrospectively analyzed the lipid profiles of 435 patients who underwent colonoscopy with removal of colorectal polyps and assessed recurrence of polyps by follow-up colonoscopy. Multivariate regression logistic analysis was used to evaluate the association between lipid profiles and polyp recurrence. RESULTS: During the 1.5-year follow-up, recurrence of colorectal polyps was observed in 135 of 435 patients (30.34%). Patients with recurrent polyps showed a higher level of triglycerides (P = 0.006) and lower levels of high-density lipoprotein cholesterol (P = 0.008) and apolipoprotein A1 (P = 0.033). The multivariate regression logistic model suggested that an elevated triglyceride level was an independent risk factor for polyp recurrence (odds ratio, 1.55; 95% confidence interval, 1.02-2.35; P = 0.039) in patients with advanced adenoma. CONCLUSIONS: Lipid profiles are associated with recurrence of colorectal polyps. An elevated triglyceride level is an independent risk predictor of polyp recurrence in patients with advanced adenoma.

[30] *Xu J, Qiu X, Li Y et al.* **Hyperlipoproteinemia (a) is associated with breast cancer in a Han Chinese population**. Medicine (Baltimore) 2020; 99:e22037.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32957322
ABSTRACT

To investigate the relationship between serum lipoprotein (a) (LP(a)) levels and breast cancer as well as the clinicopathologic characteristics of breast cancer in a Han Chinese population.This study included 314 breast cancer patients, 51 patients with benign breast tumors, and 185 healthy control subjects. All study subjects were Han Chinese with similar socio-economic backgrounds, who were local residents of Zhoushan, Zhejiang, China or who had lived in Zhoushan for a long period of time. Serum concentrations of LP(a) were determined using a latex-enhanced immunoturbidimetric assay. Clinicopathological characteristics of patients were retrieved from medical records, which included the histopathological type, grade, stage, and molecular subtype of the disease, the expression of estrogen receptor (ER), progesterone receptor (PR), HER2, and Ki67, and the level of reproductive hormones. Correlations between 2 groups were evaluated using the Spearman correlation analysis. Associations among ≥3 groups were interpreted using the Kruskal-Wallis H test or the logistic regression test.Elevated serum LP(a) levels were detected in breast cancer patients compared with healthy control subjects, but no significant differences in LP(a) were detected between breast cancer and benign tumor or between benign tumor and healthy control. In breast cancer patients, serum LP(a) levels were inversely associated with HER2 expression, but they were not significantly correlated with any other clinicopathologic characteristics of breast cancer evaluated in this study.Elevated serum LP(a) levels were associated with breast cancer in a Han Chinese population.

[31] *Xue X, Liu Y, Yang M et al.* **Effect of hypercholesterolemia alone or combined with hypertension on the degree of coronary artery stenosis in patients with coronary heart disease angina pectoris: A medical records based retrospective study protocol**.
Medicine (Baltimore) 2020; 99:e22225.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32957361
ABSTRACT
BACKGROUND: Coronary heart disease (CHD) is the leading cause of death globally. Angina pectoris is closely associated with coronary artery insufficiency, which seriously affects the quality of life and work of patients. Hypercholesterolemia and hypertension (HTN) are risk factors for CHD angina pectoris. The correlation between hypercholesterolemia with or without HTN and the severity of coronary arteries has not been clarified. OBJECTIVE: To explore the correlation between hypercholesterolemia and the degree of coronary artery stenosis (CAS) of CHD angina pectoris, and to further research the influence of HTN on total cholesterol level and CAS, so as to provide guidance for clinical prevention and treatment. METHODS: A multicenter, retrospective clinical study was conducted in the medical records management system of 6 hospitals in Tianjin. Patients who were suffered from CHD angina pectoris and aged from 35 to 75 years old are involved. They hospitalized in the Department of Cardiology between September 1, 2014, and September 1, 2019, and underwent coronary angiography. We divide patients into 3 groups based on the total cholesterol level, the degree of CAS is evaluated by Gensini score, and further divide them into 6 subgroups based on with or without HTN. Collect and analyze the demographics, laboratory information, clinical outcome data, and coronary angiographic data of patients. CONCLUSION: Through clinical research data, the study will help to provide guidance for the prevention and treatment of CHD angina pectoris complicated with diseases and promote further research.

[32] *Gouaref I, Bouazza A, Abderrhmane SA, Koceir EA*. **Lipid Profile Modulates Cardiometabolic Risk Biomarkers Including Hypertension in People with Type-2 Diabetes: A Focus on Unbalanced Ratio of Plasma Polyunsaturated/Saturated Fatty Acids**. Molecules (Basel, Switzerland) 2020; 25.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32962299
ABSTRACT
Type 2 diabetes mellitus (T2DM) is associated with lipid metabolism disorder, particularly elevated plasma levels of non-esterified free fatty acids (NEFFA) and an increased cardiovascular disease risk, such as essential hypertension (H). The plasma unbalance of saturated fatty acid (SFA)/polyunsaturated fatty acid (PUFA) ratio is a likely contributor, but the mechanisms involved are not clearly elucidated. The aim of this study is to explore the association between plasma SFA/PUFA ratio and the clusters of cardiometabolic syndrome (CMS), including the atherogenic biomarkers, inflammatory status, feeding patterns, and physical activity in people with T2DM with or without essential hypertension. The study was conducted on 784 adult male and female participants, aged between 30 and 50 years, and divided into 3 groups: 100 T2DM without hypertension (D); 368 T2DM with hypertension (DM); and 316 hypertensive participants without T2DM (H). All Participants were phenotyped regarding CMS clusters according to the NCEP/ATPIII criteria. Insulin resistance was assessed by Homeostasis model assessment (HOMA model). Metabolic, atherogenic, and inflammatory parameters were analyzed by biochemical methods; NEFFA by microfluorimetry; SFA, PUFA-n6 and PUFA-n3 by gas phase chromatography. Dietary lipids and physical activity were analyzed through the use of validated questionnaires. The clusters of CMS were found in all groups. Dyslipidemia was correlated with accretion NEFFA levels in all groups, but more accentuated in the DH group ($r = +0.77$; $p < 0.001$). Similarly, plasma PUFA/SFA ratio and PUFA-3 level was lower, concomitantly with a higher plasma ApoB(100)/ApoA(1) ($p < 0.001$), lipoprotein (a), homocysteine ($p < 0.001$), and pro-inflammatory cytokines (TNFα, IL-6, IL1-β) in the DH group. Likewise, the depletion of PUFA-n3/PUFA-n6 ratio is associated with the decrease of omega 3-DHA (docosahexaenoic acid) and omega 3-EPA (eicosapentaenoic acid) ($p < 0.001$). It appears that the PUFAs-n3 ratio modulates cardiometabolic risk, inflammatory state and atherogenic biomarkers. The plasma unbalanced ratio of SFA/PUFA reflects dietary fatty acids intake. The contribution of dietary lipids is undisputed. Nutritional recommendations are required to determine the fatty acids ratio (saturated and unsaturated) provided in the diet.

[33] *Cannon CP, Pratley R, Dagogo-Jack S et al.* **Cardiovascular Outcomes with Ertugliflozin in Type 2 Diabetes**. The New England journal of medicine 2020; 383:1425-1435.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32966714
ABSTRACT
BACKGROUND: The cardiovascular effects of ertugliflozin, an inhibitor of sodium-glucose cotransporter 2, have not been established. METHODS: In a multicenter, double-blind trial, we randomly assigned patients with type 2 diabetes and atherosclerotic cardiovascular disease to receive 5 mg or 15 mg of ertugliflozin or placebo once daily. With the data from the two ertugliflozin dose groups pooled for analysis, the primary objective was to show the noninferiority of ertugliflozin to placebo with respect to the primary outcome, major adverse cardiovascular events (a composite of death from cardiovascular causes, nonfatal myocardial

infarction, or nonfatal stroke). The noninferiority margin was 1.3 (upper boundary of a 95.6% confidence interval for the hazard ratio [ertugliflozin vs. placebo] for major adverse cardiovascular events). The first key secondary outcome was a composite of death from cardiovascular causes or hospitalization for heart failure. RESULTS: A total of 8246 patients underwent randomization and were followed for a mean of 3.5 years. Among 8238 patients who received at least one dose of ertugliflozin or placebo, a major adverse cardiovascular event occurred in 653 of 5493 patients (11.9%) in the ertugliflozin group and in 327 of 2745 patients (11.9%) in the placebo group (hazard ratio, 0.97; 95.6% confidence interval [CI], 0.85 to 1.11; P<0.001 for noninferiority). Death from cardiovascular causes or hospitalization for heart failure occurred in 444 of 5499 patients (8.1%) in the ertugliflozin group and in 250 of 2747 patients (9.1%) in the placebo group (hazard ratio, 0.88; 95.8% CI, 0.75 to 1.03; P = 0.11 for superiority). The hazard ratio for death from cardiovascular causes was 0.92 (95.8% CI, 0.77 to 1.11), and the hazard ratio for death from renal causes, renal replacement therapy, or doubling of the serum creatinine level was 0.81 (95.8% CI, 0.63 to 1.04). Amputations were performed in 54 patients (2.0%) who received the 5-mg dose of ertugliflozin and in 57 patients (2.1%) who received the 15-mg dose, as compared with 45 patients (1.6%) who received placebo. CONCLUSIONS: Among patients with type 2 diabetes and atherosclerotic cardiovascular disease, ertugliflozin was noninferior to placebo with respect to major adverse cardiovascular events. (Funded by Merck Sharp & Dohme and Pfizer; VERTIS CV ClinicalTrials.gov number, NCT01986881.).

[34] *Satokar VV, Cutfield WS, Cameron-Smith D, Albert BB*. **Omega-3 fats in pregnancy: could a targeted approach lead to better metabolic health for children?** Nutrition reviews 2020.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32974665
ABSTRACT
The prevalence of childhood obesity is increasing worldwide, and the children of women who are obese during pregnancy are at greatest risk. This risk may be mediated by exaggeration of the normal insulin resistance of pregnancy. Omega-3 (n-3) fats are insulin sensitizing. Supplementation during pregnancy may reduce metabolic risk and adiposity in the children. Though results from animal studies are encouraging, completed clinical trials have not demonstrated this benefit. However, to our knowledge, previous studies have not targeted women who are overweight or obese while pregnant-the group at greatest risk for insulin resistance and most likely to benefit from n-3. In this narrative review, the importance of performing clinical trials restricted to women who are overweight or obese is discussed, as is the potential importance of n-3 dose, oil source and quality, and the timing of the intervention.

[35] *Zhang Z, Xu MH, Wei FJ, Shang LN*. **Clinical study of different doses of atorvastatin combined with febuxostat in patients with gout and carotid atherosclerosis**. Pak J Med Sci 2020; 36:1334-1338.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32968404
ABSTRACT
OBJECTIVE: To evaluate the efficacy of atorvastatin combined with febuxostat in the treatment of gout patients with carotid atherosclerosis and to observe the effects on serum tumor necrosis factor-α (TNF-α), interleukin-1β (IL-1β), and C-reactive protein (CRP) levels, carotid plaques, and the adverse reactions. METHODS: Seventy patients with gout and carotid

atherosclerosis admitted to Affiliated Hospital of Hebei University from January 2014 to June 2017 were randomly divided into a treatment group and a control group. The treatment group received oral febuxostat 40 mg/day combined with atorvastatin 40 mg/day. The control group was given 40 mg/day febuxostat combined with 20 mg/day atorvastatin for 90 days. The effects of treatment on TNF-α, IL-1β, and CRP levels and carotid plaques of the patients were observed. RESULTS: After 90 days of treatment, serum TNF-α, IL-1β, and CRP levels, as well as HUA and total cholesterol (TC), decreased in both groups after treatment. There were significant differences observed ($p < 0.05$). The carotid artery plaques in the two groups were significantly smaller after treatment ($P<0.05$). There was no significant difference in adverse reactions between the two groups ($P > 0.05$). CONCLUSION: Double doses of atorvastatin combined with febuxostat can effectively reduce uric acid to improve the inflammatory state in patients and reduce carotid plaques without increasing the incidence of adverse reactions.

[36] *Song SL, Hays SB, Panton CE et al.* **Statin Use Is Associated with Decreased Risk of Invasive Mechanical Ventilation in COVID-19 Patients: A Preliminary Study**. Pathogens 2020; 9.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32957539
ABSTRACT
COVID-19 disproportionately affects patients with medical comorbidities such as cardiovascular disease (CVD). Patients with CVD are widely prescribed 3-hydroxy-3-methyl-glutayl-CoA (HMG-CoA) reductase inhibitors (statins), a class of lipid-lowering medications known for their pleiotropic anti-inflammatory and immunomodulatory effects. However, the relationship between statin use and COVID-19 outcomes is not fully understood. In this preliminary study, we explored the association between statin use and severe COVID-19 outcomes in hospitalized patients, including intensive care unit (ICU) admission, the need for invasive mechanical ventilation (IMV), and in-hospital death. We performed a retrospective cohort study of 249 patients hospitalized with COVID-19 from 3 March 2020 to 10 April 2020 in Rhode Island, USA. Patient demographics, past medical history, current medications, and hospital course were recorded and analyzed. A multivariate logistic regression analysis was conducted to examine associations. After adjusting for age, sex, race, cardiovascular disease, chronic pulmonary disease, diabetes, and obesity, statin use was significantly associated with decreased risk for IMV (adjusted Odds Ratio (aOR) = 0.45, 95% Confidence Interval (CI): 0.20-0.99). Our results support the continued use of statins among COVID-19 patients and could have implications for future prospective studies on the management of COVID-19.

[37] *Tanaka S, De Tymowski C, Assadi M et al.* **Lipoprotein concentrations over time in the intensive care unit COVID-19 patients: Results from the ApoCOVID study**. PloS one 2020; 15:e0239573.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32970772
ABSTRACT
INTRODUCTION: Severe acute respiratory syndrome coronavirus2 has caused a global pandemic of coronavirus disease 2019 (COVID-19). High-density lipoproteins (HDLs), particles chiefly known for their reverse cholesterol transport function, also display pleiotropic properties, including anti-inflammatory or antioxidant functions. HDLs and low-density lipoproteins (LDLs) can neutralize lipopolysaccharides and increase bacterial clearance. HDL cholesterol (HDL-C) and LDL cholesterol (LDL-C) decrease during bacterial sepsis, and an

association has been reported between low lipoprotein levels and poor patient outcomes. The goal of this study was to characterize the lipoprotein profiles of severe ICU patients hospitalized for COVID-19 pneumonia and to assess their changes during bacterial ventilator-associated pneumonia (VAP) superinfection. METHODS: A prospective study was conducted in a university hospital ICU. All consecutive patients admitted for COVID-19 pneumonia were included. Lipoprotein levels were assessed at admission and daily thereafter. The assessed outcomes were survival at 28 days and the incidence of VAP. RESULTS: A total of 48 patients were included. Upon admission, lipoprotein concentrations were low, typically under the reference values ([HDL-C] = 0.7[0.5-0.9] mmol/L; [LDL-C] = 1.8[1.3-2.3] mmol/L). A statistically significant increase in HDL-C and LDL-C over time during the ICU stay was found. There was no relationship between HDL-C and LDL-C concentrations and mortality on day 28 (log-rank p = 0.554 and p = 0.083, respectively). A comparison of alive and dead patients on day 28 did not reveal any differences in HDL-C and LDL-C concentrations over time. Bacterial VAP was frequent (64%). An association was observed between HDL-C and LDL-C concentrations on the day of the first VAP diagnosis and mortality ([HDL-C] = 0.6[0.5-0.9] mmol/L in survivors vs. [HDL-C] = 0.5[0.3-0.6] mmol/L in nonsurvivors, p = 0.036; [LDL-C] = 2.2[1.9-3.0] mmol/L in survivors vs. [LDL-C] = 1.3[0.9-2.0] mmol/L in nonsurvivors, p = 0.006). CONCLUSION: HDL-C and LDL-C concentrations upon ICU admission are low in severe COVID-19 pneumonia patients but are not associated with poor outcomes. However, low lipoprotein concentrations in the case of bacterial superinfection during ICU hospitalization are associated with mortality, which reinforces the potential role of these particles during bacterial sepsis.

[38] *Kuszewski JC, Wong RHX, Howe PRC*. **Fish oil supplementation reduces osteoarthritis-specific pain in older adults with overweight/obesity**. Rheumatol Adv Pract 2020; 4:rkaa036.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32968708
ABSTRACT
OBJECTIVES: OA is a leading cause of chronic pain and disability. Next to inflammation, vascular pathology has been hypothesized to play a role in its aetiology and progression. Owing to side effects and the low efficacy of pharmacological treatments, dietary supplements are popular as alternative treatments, but evidence of efficacy is limited. We tested whether fish oil and curcumin supplementation can reduce chronic pain and OA burden in older adults. METHODS: A 16-week randomized, double-blind, placebo-controlled, 2 × 2 factorial design supplementation trial with fish oil (2000 mg/day docosahexaenoic acid + 400 mg/day eicosapentaenoic acid), curcumin (160 mg/day) or a combination of both was undertaken in sedentary overweight/obese older adults. Secondary outcomes included treatment-induced changes in self-reported chronic pain and OA burden and whether changes were related to changes in small artery elasticity (surrogate marker for microvascular function), CRP (inflammatory marker) and well-being. RESULTS: The majority of participants (131 of 152) reported chronic pain, which was predominantly OA specific. Fish oil significantly reduced OA-specific pain (P = 0.002, Cohen's d = 0.56) and burden (P = 0.015, Cohen's d = 0.45) compared with no fish oil treatment; reductions were correlated with improvements in microvascular function and well-being. Curcumin, alone or in combination with fish oil, did not reduce pain measures. CONCLUSION: Our findings indicate potential for fish oil to alleviate OA pain and burden in overweight/obese older adults. Further investigations should be undertaken in patients with clinically diagnosed OA to evaluate fish oil alone and as an adjunct to

conventional pharmacotherapy and to investigate underlying mechanisms. TRIAL REGISTRATION: Australian and New Zealand Clinical Trials Register, https://www.anzctr.org.au/Trial/Registration/TrialReview.aspx?id=370788, ACTRN12616000732482p.

[39] *Li SY, Fujinami K, Crewther SG et al.* **Fish oil supplementation and repeated macular hemorrhage without choroidal neovascularization: A case report**. SAGE Open Med Case Rep 2020; 8:2050313x20952974.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32974025
ABSTRACT
Macular hemorrhage can occur spontaneously and repeatedly without choroidal neovascularization or other known lesions associated with myopia. We report a case of repeated myopic macular hemorrhage following fish oil supplementation. A 32-year-old male was referred with newly acquired paracentral scotoma in the left eye. Serial retinal imaging, including fundus photography, fluorescein angiography, and spectral-domain optical coherence tomography were performed. Fundus photography and fluorescein angiography showed a subtle red-colored lesion nasal to the fovea. Optical coherence tomography showed a dome shaped elevation in the ellipsoid zone and interdigitation zone in the left eye. No known ocular risk factors for macular hemorrhage, such as choroidal neovascularization, lacquer cracks, Fuch's spot or choroid thinning or keratoconus were observed. After 2 months without any treatment, the left eye lesion disappeared. However 2 weeks later, another newly developed red-colored lesion close to the left fovea was observed. At that moment, the detailed medical history revealed that the patient had been regularly taking a high dose of commercially available fish oil supplement beginning one month before the first macular hemorrhage. After discontinuation of the fish oil, the second left hemorrhage resolved gradually over the following 8 weeks. No recurrent hemorrhages have been detected at the 12 months follow-up visits. Our observations suggest that the relative value of nutritional supplementation with high doses of fish oil should be cautioned in patients with repetitive retinal hemorrhage.

[40] *Amatruda M, Petracca M, Wentling M et al.* **Retrospective unbiased plasma lipidomic of progressive multiple sclerosis patients-identifies lipids discriminating those with faster clinical deterioration**. Scientific reports 2020; 10:15644.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32973249
ABSTRACT
The disease course of patients with a confirmed diagnosis of primary progressive multiple sclerosis (PPMS) is uncertain. In an attempt to identify potential signaling pathways involved in the evolution of the disease, we conducted an exploratory unbiased lipidomic analysis of plasma from non-diseased controls (n = 8) and patients with primary progressive MS (PPMS, n = 19) and either a rapid (PPMS-P, n = 9) or slow (PPMS-NP, n = 10) disease course based on worsening disability and/or MRI-visible appearance of new T2 lesions over a one-year-assessment. Partial least squares-discriminant analysis of the MS/MS(ALL) lipidomic dataset, identified lipids driving the clustering of the groups. Among these lipids, sphingomyelin-d18:1/14:0 and mono-hexosylceramide-d18:1/20:0 were differentially abundant in the plasma of PPMS patients compared to controls and their levels correlated with MRI signs of disease progression. Lyso-phosphatidic acid-18:2 (LPA-18:2) was the only lipid with significantly lower abundance in PPMS patients with a rapidly deteriorating disease course, and its levels

inversely correlated with the severity of the neurological deficit. Decreased levels of LPA-18:2 were detected in patients with more rapid disease progression, regardless of therapy and these findings were validated in an independent cohort of secondary progressive (SPMS) patients, but not in a third cohorts of relapsing-remitting (RRMS) patients. Collectively, our analysis suggests that sphingomyelin-d18:1/14:0, mono-hexosylceramide-d18:1/20:0, and LPA-18:2 may represent important targets for future studies aimed at understanding disease progression in MS.

[41] *Brzezinski RY, Levin-Kotler L, Rabin N et al.* **Automated thermal imaging for the detection of fatty liver disease**. Scientific reports 2020; 10:15532.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32968123
ABSTRACT
Non-alcoholic fatty liver disease (NAFLD) comprises a spectrum of progressive liver pathologies, ranging from simple steatosis to non-alcoholic steatohepatitis (NASH), fibrosis and cirrhosis. A liver biopsy is currently required to stratify high-risk patients, and predicting the degree of liver inflammation and fibrosis using non-invasive tests remains challenging. Here, we sought to develop a novel, cost-effective screening tool for NAFLD based on thermal imaging. We used a commercially available and non-invasive thermal camera and developed a new image processing algorithm to automatically predict disease status in a small animal model of fatty liver disease. To induce liver steatosis and inflammation, we fed C57/black female mice (8 weeks old) a methionine-choline deficient diet (MCD diet) for 6 weeks. We evaluated structural and functional liver changes by serial ultrasound studies, histopathological analysis, blood tests for liver enzymes and lipids, and measured liver inflammatory cell infiltration by flow cytometry. We developed an image processing algorithm that measures relative spatial thermal variation across the skin covering the liver. Thermal parameters including temperature variance, homogeneity levels and other textural features were fed as input to a t-SNE dimensionality reduction algorithm followed by k-means clustering. During weeks 3,4, and 5 of the experiment, our algorithm demonstrated a 100% detection rate and classified all mice correctly according to their disease status. Direct thermal imaging of the liver confirmed the presence of changes in surface thermography in diseased livers. We conclude that non-invasive thermal imaging combined with advanced image processing and machine learning-based analysis successfully correlates surface thermography with liver steatosis and inflammation in mice. Future development of this screening tool may improve our ability to study, diagnose and treat liver disease.

[42] *Siniscalchi C, Suriñach JM, Visonà A et al.* **Different Types of Statins and All-Cause Mortality during Anticoagulation for Venous Thromboembolism: Validation Study from RIETE Registry**. TH Open 2020; 4:e236-e244.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32964178
ABSTRACT
Introduction We previously reported that during the course of anticoagulation for venous thromboembolism (VTE) patients using statins were at a lower risk to die than nonusers. Methods We used the R egistro I nformatizado E nfermedad T rombo E mbólica (RIETE) registry to validate our previous findings in a subsequent cohort of patients and to compare the risk of death according to the use of different types of statins. Results From January 2018 to December 2019, 19,557 patients with VTE were recruited in RIETE. Of them, 4,065 (21%)

were using statins (simvastatin, 1,406; atorvastatin, 1,328; rosuvastatin, 246; and others, 1,085). During anticoagulation (192 vs.182 days, for statin and no statin users respectively), 500 patients developed a VTE recurrence, 519 suffered major bleeding, and 1,632 died (fatal pulmonary embolism [PE], 88 and fatal bleeding, 78). On multivariable analysis, statin users were at a lower risk to die (hazard ratio [HR] = 0.68; 95% confidence interval [CI]: 0.59-0.79) than nonusers. When separately analyzing the drugs, on multivariable analysis, patients using simvastatin (HR = 0.64; 95% CI: 0.52-0.80), atorvastatin (HR 0.72; 95% CI: 0.58-0.89), or other statins (HR = 0.67; 95% CI: 0.52-0.87) were at a lower risk to die than nonusers. For those using rosuvastatin, difference was not statistically significant (HR = 0.77; 95% CI: 0.50-1.19), maybe due to the sample size. Conclusion Our data validate previous findings and confirm that VTE patients using statins at baseline are at a lower risk to die than nonusers. No statistically differences were found according to type of statins.

[43] *Zlatohlávek L*. **Euvascor - early intervention of hypertension and dyslipidaemia (dual combination of atorvastatin and perindopril)**. Vnitr Lek 2020; 66:190-195.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32972174
ABSTRACT
Over the last 30 years, the number of cardiovascular causes of death has decreased, but Cardi-ovascular Disease has been the leading cause of mortality and morbidity in the Czech Republic. In spite of a clear decline, this still persisting primacy is due to the failure to achieve the target recommended values and the late initiation of pharmacotherapy. We know that lifetime LDL cholesterol exposure reduced by 1 mmol/l is associated with a 54% reduction in the incidence of coronary events. A lifetime lower systolic BP of 10 mmHg is associated with a 45% reduction in the incidence of coronary events. Lifetime exposure to a combination of LDL cholesterol lower by 1 mmol/l and systolic BP lower by 10 mm Hg was associated with a 78% reduction in the lifetime risk of coronary events and a 68% reduction in the lifetime risk of a cardiovascular death. The benefits of this intervention increase over time - long-term exposure to even a small difference in LDL cholesterol and systolic pressure can significantly reduce the lifetime risk of cardiovascular disease, if it persists over the time. In this respect, the recently presented new common ESC/ EAS recommendations from 2019, that is to focus treatment on dyslipidemia on a lifelong approach of reducing CV risk and therapeutic lifelong intervention with aim to achieve lower LDL cholesterol levels at all risk levels. Perindorpil antihypertezive and atorvasatin hypolipidemic drugs, ideally in a fixed combination, are able to reduce the patient's CV risk early. The ideal motivation for adherence of patients is the introduced concept of the vascular age, respectively the aging.

[44] *Kartsoli S, Kostara CE, Tsimihodimos V et al.* **Lipidomics in non-alcoholic fatty liver disease**. World journal of hepatology 2020; 12:436-450.
PM: http://www.ncbi.nlm.nih.gov/pubmed/?term=32952872
ABSTRACT
Non-alcoholic fatty liver disease (NAFLD), the most common chronic liver disorder in Western countries, comprises steatosis to nonalcoholic steatohepatitis (NASH), with the latter having the potential to progress to cirrhosis. The transition from isolated steatosis to NASH is still poorly understood, but lipidomics approach revealed that the hepatic lipidome is extensively altered in the setting of steatosis and steatohepatitis and these alterations correlate with disease progression. Recent data suggest that both quantity and quality of the accumulated

lipids are involved in pathogenesis of NAFLD. Changes in glycerophospholipid, sphingolipid, and fatty acid composition have been described in both liver biopsies and plasma of patients with NAFLD, implicating that specific lipid species are involved in oxidative stress, inflammation, and cell death. In this article, we summarize the findings of main human lipidomics studies in NAFLD and delineate the currently available information on the pathogenetic role of each lipid class in lipotoxicity and disease progression.