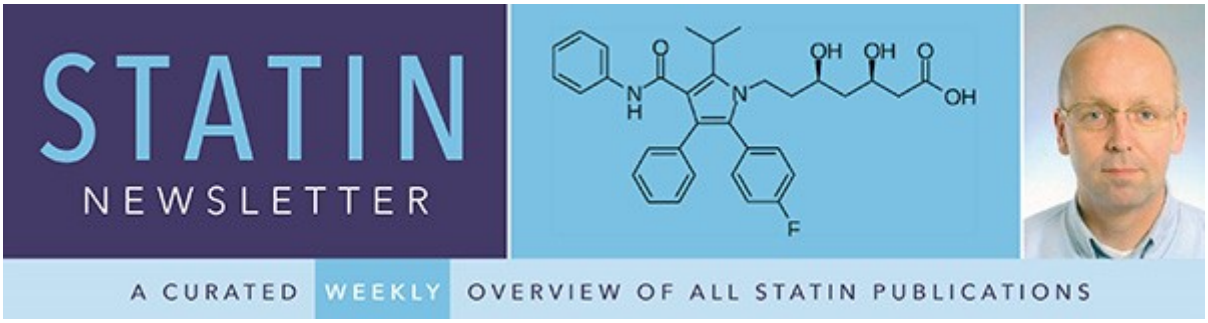

Update week 03 & 04 - 2023

Dr. Peter Lansberg is a Dutch lipidologist, educator and innovator. He has been instrumental in setting up The Dutch National Lipid Clinic Network, the Dutch Lipid Clinic Criteria for Familial Hypercholesterolemia (FH), and the Dutch National FH screening program

---

The Statin Newsletter will keep you up-to-date with all recent statin publications. Based on a curated approach to select relevant articles.

For live updates you can follow me on twitter

Key Publications

1. **Statin use; comparing high vs middle/low income countries**
2. **Potential to prevent statin triggered NODM?**
3. **Pediatric statin use - an update**
4. **Japanese guidelines on pediatric FH**
5. **Statin intolerance in Germany.**

Disparities in statin use between high and middle/low income countries

Statin utilization has increased globally over the last five years, but there are persistent and substantial disparities in utilization between high-income and low/middle-income countries, according to a recent study published in Heart. The study examined pharmaceutical sales data to analyze statin utilization in 41 high-income countries and 50 low/middle-income countries between 2015 and 2020. It found that globally, statin utilization increased by 24.7% during this period, but significant disparities remained, with utilization in high-income countries over six times higher than in low/middle-income countries. The study also found that every $100 increase in per capita health spending in low/middle-income countries was associated with a 17% increase in statin utilization, while every 10% increase in out-of-pocket health spending was associated with an 11% decline.

The World Health Organization's Global Non-Communicable Disease Action Plan 2013-2020 aimed to reduce premature deaths from non-communicable diseases, especially cardiovascular disease, by 25% from 2010 to 2025. The study's authors suggest that policymakers should promote increased and equitable access to statins in low/middle-income countries to achieve this goal. The study found that public investment in health has declined in low/middle-income countries during the last two decades, and out-of-pocket

spending as a share of total health spending has remained high in these countries, with only high-income and upper middle-income countries seeing moderate increases in government health spending. The authors conclude that policymakers need to address the disparities in statin utilization to reduce the global burden of cardiovascular disease.
Guadamuz JS, Shooshtari A, Qato DM. Global, regional and national trends in statin utilisation in high-income and low/middle-income countries, 2015-2020. BMJ Open 2022; 12:e061350. http://www.ncbi.nlm.nih.gov/pubmed/?term=36691204

Can GLP1 RA prevent NODM in statin users?

Statins are a class of drugs that are commonly used in the treatment of hyperlipidemia, or high cholesterol. They are known to have beneficial effects, such as reducing inflammation, but a growing body of evidence suggests they may also have diabetogenic properties, damaging pancreatic beta cells. A new in vitro study explored the impact of atorvastatin, a type of statin, on pancreatic islet beta cells, evaluating its influence on cell viability, insulin expression, low-density lipoprotein (LDL) receptor, and proprotein convertase subtilisin/kexin type 9 (PCSK9) expression. The experiments showed that atorvastatin significantly reduced mRNA for proinsulin and insulin expression but caused a rise in LDL receptor protein in cells exposed to the drug. Exenatide, a glucagon-like peptide 1 (GLP-1) analog used in the treatment of diabetes and known for its weight-reducing properties, was shown to alleviate the observed alterations. The study also explored the effects of atorvastatin on LDL receptor and PCSK9 expression, both of which are associated with lipid metabolism, and showed that atorvastatin increased the expression of LDL receptors in pancreatic beta cells, which might lead to increased cholesterol uptake and potential lipotoxicity. The study also demonstrated that exenatide could prevent the rise in LDL receptor in culture conditions. The authors concluded that statins may have diabetogenic properties, with reductions in insulin expression being one possible mechanism, and that the concomitant use of GLP-1 receptor agonists seems to successfully revert insulin expression.
Buldak L, Machnik G, Skudrzyk E *et al.* **Exenatide prevents statin-related LDL receptor increase and improves insulin secretion in pancreatic beta cells (1.1E7) in a protein kinase A-dependent manner.** J Appl Biomed 2022; 20:130-140.
http://www.ncbi.nlm.nih.gov/pubmed/?term=36708718

Update on pediatric use of statins

The article provides an overview of the use of statins in children and adolescents with dyslipidemia to reduce their cardiovascular risk, delay the development of fatty streaks, slow the progression of atherosclerosis and reverse atherosclerotic plaques. Statins are the most common lipid-lowering drugs and inhibit the endogenous cholesterol synthesis in the liver. They increase the catabolism of LDL-C, reduce VLDL-C, IDL-C, and TG, and modestly increase HDL-C. Additionally, statins have pleiotropic effects, and they are generally well-tolerated in both adults and children with uncommon adverse events. However, before initiating statin treatment, several factors should be considered, such as secondary causes, familial history, and additional risk factors. It is also imperative to consult patients and families and monitor patients taking statins.
Studies have shown that statin therapy is efficient at lowering lipid levels and reducing CIMT progression and cumulative estimated atherosclerotic burden in children, similar to adults. However, many children with lipid disorders are not on statin therapy and are not receiving the full potential benefit of adequate lipid-lowering therapies. It is, therefore, important for clinicians to become familiar with statins, especially primary care providers who often diagnose childhood dyslipidemia. Statin contraindications include children with hypersensitivity to any of its components and patients with active liver disease. They should be prescribed with caution in patients with concurrent administration of interfering drugs, predisposing factors for myopathy, and chronic kidney disease. While statins are considered the first-line pharmacologic therapy and the cornerstone of FH treatment during childhood, more studies are needed to evaluate statin use in children with other risk conditions, such as obesity and diabetes, which currently comprise the most frequent phenotype of lipid abnormalities.
Fiorentino R, Chiarelli F. **Statins in Children, an Update.** Int J Mol Sci 2023; 24.

http://www.ncbi.nlm.nih.gov/pubmed/?term=36674877

The Japanese guidelines for pediatric FH

The "Guidelines for the Diagnosis and Treatment of Pediatric Familial Hypercholesterolemia 2022" emphasizes the importance of early diagnosis and treatment of familial hypercholesterolemia (FH) in children, as atherosclerosis can begin in childhood. The diagnosis of pediatric FH is based on hyper-low-density lipoprotein (LDL) cholesterolemia and a family history of FH. However, to reduce overlooked cases, "probable FH" has been established. Once diagnosed, lifestyle guidance, including diet, should be provided, and an intrafamilial survey should be conducted to identify other family members with the same condition. If the LDL-C level remains above 180 mg/dL, drug therapy should be considered at the age of 10, with statins being the first-line drug. Non-invasive techniques, such as ultrasound, should be used for evaluating atherosclerosis, and the management target level is an LDL-C level of less than 140 mg/dL. In case of suspected homozygous FH, a specialist should be consulted, and if the response to pharmacotherapy is inadequate, lipoprotein apheresis should be initiated as soon as possible.

The guidelines were established due to the lack of consensus in Japan on the screening of FH in childhood, the type and starting age of treatment, the assessment of atherosclerosis, and the goals of treatment. The previous guidance was reviewed and revised after five years, with clinical questions and evidence evaluation used to develop the new guideline for medical practice. The aim of this update is to prevent possible future atherosclerosis by diagnosing the disease at an early stage and applying therapeutic intervention.

Harada-Shiba M, Ohtake A, Sugiyama D *et al.* **Guidelines for the Diagnosis and Treatment of Pediatric Familial Hypercholesterolemia 2022**. J Atheroscler Thromb 2023. http://www.ncbi.nlm.nih.gov/pubmed/?term=36682777

German perspective on prevalence of statin intolerance

Statin intolerance (SI) is a common problem, with non-adherence and discontinuation of treatment posing a challenge to optimal lipid management. However, there is no widely accepted definition of SI, and patient profiles and characteristics remain poorly understood. A new study used machine learning (ML) techniques to estimate SI and understand patient characteristics in Germany using real-world data. The study included 292,603 patients with a high cardiovascular risk, atherosclerotic cardiovascular disease, or hypercholesterolemia, and those on lipid-lowering therapies between 2017 and 2020. Patients were categorized as having "absolute" or "partial" SI, and ML techniques were applied to calibrate prevalence estimates derived from different rules and levels of confidence (high and low). The results indicated that approximately 6.4% and 2.8% of patients had high-confidence absolute and partial SI, respectively. After deploying ML, SI prevalence increased approximately by 27% and 57% ($p < 0.00001$) in absolute and partial SI, respectively, eliciting a maximum estimate of 12.5% SI with high confidence. The study's results may inform the identification, optimal treatment, and pragmatic, patient-centered management of SI in Germany. The study also revealed that intolerance was observed more often among women and the elderly, and obesity, hypothyroidism, vitamin D deficiency, and chronic kidney disease were the more prevalent risk factors for the manifestation of SI. The results highlighted the need for a patient-centric approach to the optimal CV risk reduction, continued therapy or alternative drugs, and management strategies.

Parhofer KG, Anastassopoulou A, Calver H *et al.* **Estimating Prevalence and Characteristics of Statin Intolerance among High and Very High Cardiovascular Risk Patients in Germany (2017 to 2020).** Journal of clinical medicine 2023; 12. http://www.ncbi.nlm.nih.gov/pubmed/?term=36675634

Relevant Publications

1. Vavlukis A, Vavlukis M, Dimovski A *et al.* Anti-inflammatory and immunomodulatory effects of rosuvastatin in patients with low-to-moderate cardiovascular risk. Acta pharmaceutica (Zagreb, Croatia) 2022; 72:303-315. http://www.ncbi.nlm.nih.gov/pubmed/?term=36651514
2. Şaylık F, Çınar T, Hayıroğlu M, Tekkeşin A. Digital Health Interventions in Patient Management Following Acute Coronary Syndrome: A Meta-Analysis of the Literature. Anatol J Cardiol 2023; 27:2-9. http://www.ncbi.nlm.nih.gov/pubmed/?term=36680440
3. De Los Ríos-Ibarra MO, Leiva-Pons JL, Rodríguez-Reyes H *et al.* Risk stratification and lipid evaluation in mexican patients, evidence of lipid and cardiovascular analysis in REMECAR. The mexican registry of cardiovascular diseases (REMECAR group). Atheroscler Plus 2022; 50:32-39. http://www.ncbi.nlm.nih.gov/pubmed/?term=36643798
4. Dykun I, Babinets O, Hendricks S *et al.* Utilization of IVUS improves all-cause mortality in patients undergoing invasive coronary angiography. Atheroscler Plus 2021; 43:10-17. http://www.ncbi.nlm.nih.gov/pubmed/?term=36644503
5. Fonzar WT, Fonseca FA, Fonseca HA *et al.* Atherosclerosis severity in patients with familial hypercholesterolemia: The role of T and B lymphocytes. Atheroscler Plus 2022; 48:27-36. http://www.ncbi.nlm.nih.gov/pubmed/?term=36644561
6. Gouni-Berthold I, Schaper F, Schatz U *et al.* Low-density lipoprotein cholesterol goal attainment in Germany: Results from the DA VINCI study. Atheroscler Plus 2022; 50:10-16. http://www.ncbi.nlm.nih.gov/pubmed/?term=36643801
7. Gunn LH, McKay AJ, Feng A *et al.* Estimated cardiovascular benefits of bempedoic acid in patients with established cardiovascular disease. Atheroscler Plus 2022; 49:20-27. http://www.ncbi.nlm.nih.gov/pubmed/?term=36644205
8. Li F, Ye P, Hao Y *et al.* A PCSK9 inhibitor induces a transient decrease in the neutrophil-lymphocyte ratio and monocyte-lymphocyte ratio in homozygous familial hypercholesterolemia patients. Atheroscler Plus 2022; 49:12-19. http://www.ncbi.nlm.nih.gov/pubmed/?term=36644203
9. Sawaguchi J, Saeki Y, Oda M *et al.* The circulating furin-cleaved/mature PCSK9 ratio has a potential prognostic significance in statin-naïve patients with acute ST elevation myocardial infarction. Atheroscler Plus 2022; 50:50-56. http://www.ncbi.nlm.nih.gov/pubmed/?term=36643795
10. Gargiulo P, Basile C, Cesaro A *et al.* Efficacy, safety, adherence and persistence of PCSK9 inhibitors in clinical practice: A single country, multicenter, observational study (AT-TARGET-IT). Atherosclerosis 2023; 366:32-39. http://www.ncbi.nlm.nih.gov/pubmed/?term=36696749
11. Ray KK, Bruckert E, Peronne-Filardi P *et al.* Long-term persistence with evolocumab treatment and sustained reductions in LDL-cholesterol levels over 30 months: Final results from the European observational HEYMANS study. Atherosclerosis 2023; 366:14-21. http://www.ncbi.nlm.nih.gov/pubmed/?term=36696747
12. Meijerink L, Wever KE, Terstappen F *et al.* Statins In Preeclampsia Or Fetal Growth Restriction: A Systematic Review and Meta-Analysis on Maternal Blood Pressure and Fetal Growth Across Species. BJOG : an international journal of obstetrics and gynaecology 2023. http://www.ncbi.nlm.nih.gov/pubmed/?term=36681887
13. Ansbro É, Masri S, Prieto-Merino D *et al.* Fixed dose combination drugs for cardiovascular disease in a prolonged humanitarian crisis in Lebanon: an implementation study. BMJ Open 2023; 13:e063668. http://www.ncbi.nlm.nih.gov/pubmed/?term=36697043
14. Luo J, Huang T, Xu R *et al.* Impact of conventional lipid-lowering therapy on circulating levels of PCSK9: protocol for a systematic review and meta-analysis of randomised controlled trials. BMJ Open 2022; 12:e061884. http://www.ncbi.nlm.nih.gov/pubmed/?term=36691198
15. Mackinnon ES, Har B, Champsi S *et al.* Guideline LDL-C Threshold Achievement in Acute Myocardial Infarction Patients: A Real-World Evidence Study Demonstrating the Impact of Treatment Intensification with PCSK9i. Cardiology and therapy 2023. http://www.ncbi.nlm.nih.gov/pubmed/?term=36656500

16. An JY, Park JY, Cho J *et al.* The Relationship between Delirium and Statin Use According to Disease Severity in Patients in the Intensive Care Unit. Clin Psychopharmacol Neurosci 2023; 21:179-187. http://www.ncbi.nlm.nih.gov/pubmed/?term=36700324
17. Jaqua E, Labib W, Danji K. HIV-Associated Conditions in Older Adults. Cureus 2022; 14:e32661. http://www.ncbi.nlm.nih.gov/pubmed/?term=36660505
18. Wang M, Chen D, Fu H *et al.* Development and validation of a risk prediction model for the recurrence of foot ulcer in type 2 diabetes in China: A longitudinal cohort study based on a systematic review and meta-analysis. Diabetes/metabolism research and reviews 2023:e3616. http://www.ncbi.nlm.nih.gov/pubmed/?term=36657181
19. Demirci E, Celik O, Cil C *et al.* Appropriateness of aspirin use among diabetic patients in primary prevention of atherosclerotic cardiovascular diseases: an analysis of the ASSOS study. Eur Rev Med Pharmacol Sci 2023; 27:307-314. http://www.ncbi.nlm.nih.gov/pubmed/?term=36647878
20. Greco A, Finocchiaro S, Angiolillo DJ, Capodanno D. Advances in the available pharmacotherapy for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation. Expert Opin Pharmacother 2023:1-19. http://www.ncbi.nlm.nih.gov/pubmed/?term=36693142
21. Kuang X, Wang Y, Liu S *et al.* Tongxinluo enhances the effect of atorvastatin on the treatment of atherosclerosis with chronic obstructive pulmonary disease by maintaining the pulmonary microvascular barrier. Food science & nutrition 2023; 11:390-407. http://www.ncbi.nlm.nih.gov/pubmed/?term=36655081
22. Xu Q, Zheng B, Shen P, Xiao Y. Protective efficacy of statins in patients with Klebsiella pneumoniae bloodstream infection. Frontiers in cellular and infection microbiology 2022; 12:1087701. http://www.ncbi.nlm.nih.gov/pubmed/?term=36683706
23. Onaisi R, Dumont R, Hasselgard-Rowe J *et al.* Multimorbidity and statin prescription for primary prevention of cardiovascular diseases: A cross-sectional study in general practice in France. Frontiers in medicine 2022; 9:1089050. http://www.ncbi.nlm.nih.gov/pubmed/?term=36698814
24. Chen B, Lahl K, Saban D *et al.* Effects of medication intake on the risk of hemorrhage in patients with sporadic cerebral cavernous malformations. Frontiers in neurology 2022; 13:1010170. http://www.ncbi.nlm.nih.gov/pubmed/?term=36686509
25. Chen J, Zhao F, Lei C *et al.* Effect of evolocumab on the progression of intraplaque neovascularization of the carotid based on contrast-enhanced ultrasonography (EPIC study): A prospective single-arm, open-label study. Frontiers in pharmacology 2022; 13:999224. http://www.ncbi.nlm.nih.gov/pubmed/?term=36686711
26. Zhang X, Liu Y, Ou Y *et al.* Gender-specific association between the regular use of statins and the risk of irritable bowel syndrome: A population-based prospective cohort study. Frontiers in pharmacology 2022; 13:1044542. http://www.ncbi.nlm.nih.gov/pubmed/?term=36686671
27. Ward NC, Watts GF, Bishop W *et al.* Australian Atherosclerosis Society Position Statement on Lipoprotein(a): Clinical and Implementation Recommendations. Heart, lung & circulation 2023. http://www.ncbi.nlm.nih.gov/pubmed/?term=36707360
28. Amanlou A, Nassireslami E, Dehpour AR *et al.* Beneficial Effects of Statins on Seizures Independent of Their Lipid-Lowering Effect: A Narrative Review. Iran J Med Sci 2023; 48:13-25. http://www.ncbi.nlm.nih.gov/pubmed/?term=36688200
29. Correction to: Association of Low-Density Lipoprotein Cholesterol Levels During Statin Treatment With Cardiovascular and Renal Outcomes in Patients With Moderate Chronic Kidney Disease. J Am Heart Assoc 2023; 12:e020845. http://www.ncbi.nlm.nih.gov/pubmed/?term=36695324
30. Caturano A, Albanese G, di Martino A *et al.* The Significance of Statin Associated Muscle Symptoms and Its Impact on Patient Adherence and Outcomes. Journal of cardiovascular pharmacology 2023. http://www.ncbi.nlm.nih.gov/pubmed/?term=36651946
31. Lee DY, Huang CJ, Yeh WY *et al.* Improvement of clinical outcomes in patients undergoing peritoneal dialysis using hydroxymethylglutaryl-CoA reductase

inhibitors: A systematic review and meta-analysis. Journal of the Chinese Medical Association : JCMA 2023; 86:155-165. http://www.ncbi.nlm.nih.gov/pubmed/?term=36652565
32. Cupido AJ, Hof MH, de Boer LM *et al.* Adherence to statin treatment in patients with familial hypercholesterolemia: A dynamic prediction model. J Clin Lipidol 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36697324
33. Vogel LH, Dykun I, Raggi P *et al.* High- vs. Low-Intensity Statin Therapy and Changes in Coronary Artery Calcification Density after One Year. Journal of clinical medicine 2023; 12. http://www.ncbi.nlm.nih.gov/pubmed/?term=36675405
34. Ivan L, Uyy E, Suica VI *et al.* Hepatic Alarmins and Mitochondrial Dysfunction under Residual Hyperlipidemic Stress Lead to Irreversible NAFLD. Journal of clinical and translational hepatology 2023; 11:284-294. http://www.ncbi.nlm.nih.gov/pubmed/?term=36643050
35. Kansal V, Burnham AJ, Kinney BLC *et al.* Statin drugs enhance responses to immune checkpoint blockade in head and neck cancer models. J Immunother Cancer 2023; 11. http://www.ncbi.nlm.nih.gov/pubmed/?term=36650022
36. Chang YH, Lin DY, Tsai CL *et al.* Management of Patients with Type V Hyperlipoproteinemia: An Uncommon Phenotype of Dyslipidemia with Chylomicronemia and Severe Hypertriglyceridemia. Journal of personalized medicine 2022; 13. http://www.ncbi.nlm.nih.gov/pubmed/?term=36675730
37. Malone M, Lahmar A, Siddique A *et al.* A Case of Statin-Associated Autoimmune Myopathy: Management and Treatment. J Prim Care Community Health 2023; 14:21501319221148635. http://www.ncbi.nlm.nih.gov/pubmed/?term=36688423
38. Azimi SZ, Alizadeh N, Ramezanzadeh E *et al.* The impact of underlying diseases-related drugs on the chronic kidney disease-associated pruritus in hemodialysis patients. Journal of research in medical sciences : the official journal of Isfahan University of Medical Sciences 2022; 27:86. http://www.ncbi.nlm.nih.gov/pubmed/?term=36685022
39. Caiano LM, Drury T, Zahrai A *et al.* Role of statins in the prevention of post-thrombotic syndrome after a deep vein thrombosis event: a systematic review and meta-analysis. Journal of thrombosis and haemostasis : JTH 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36696186
40. Sanders KM, Nacario JH, Smith EJT *et al.* Structured Discharge Documentation Reduces Sex-based Disparities in Statin Prescription in Vascular Surgery Patients. Journal of vascular surgery 2023. http://www.ncbi.nlm.nih.gov/pubmed/?term=36682597
41. van Rosendael SE, van den Hoogen IJ, Lin FY *et al.* Clinical and Coronary Plaque Predictors of Atherosclerotic Nonresponse to Statin Therapy. JACC. Cardiovascular imaging 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36648046
42. Imamura T, Hori M, Narang N *et al.* Prognostic Implication of Small Dense LDL-Cholesterol Levels following Acute Coronary Syndrome. Medicina (Kaunas, Lithuania) 2023; 59. http://www.ncbi.nlm.nih.gov/pubmed/?term=36676782
43. Makarevičius G, Rinkūnienė E, Badarienė J. National Trends in Statin Use in Lithuania from 2010 to 2021. Medicina (Kaunas, Lithuania) 2022; 59. http://www.ncbi.nlm.nih.gov/pubmed/?term=36676661
44. Dong S, Liu Q, Zhou X *et al.* Effects of Losartan, Atorvastatin, and Aspirin on Blood Pressure and Gut Microbiota in Spontaneously Hypertensive Rats. Molecules (Basel, Switzerland) 2023; 28. http://www.ncbi.nlm.nih.gov/pubmed/?term=36677668
45. Wang Q, Zhi Z, Han H *et al.* Statin use improves the prognosis of ovarian cancer: An updated and comprehensive meta-analysis. Oncology letters 2023; 25:65. http://www.ncbi.nlm.nih.gov/pubmed/?term=36644149
46. Chang CH, Yeh ST, Ooi SW *et al.* The relationship of low-density lipoprotein cholesterol and all-cause or cardiovascular mortality in patients with type 2 diabetes: a retrospective study. PeerJ 2023; 11:e14609. http://www.ncbi.nlm.nih.gov/pubmed/?term=36643628
47. Liao G, Wang X, Li Y *et al.* Antidyslipidemia Pharmacotherapy in Chronic Kidney Disease: A Systematic Review and Bayesian Network Meta-Analysis. Pharmaceutics 2022; 15. http://www.ncbi.nlm.nih.gov/pubmed/?term=36678635

48. Al Faraidy K, Akbar M, Shehri M *et al.* Multizonal observational study conducted by clinical practitioners on evolocumab use in subjects with hyperlipidemia in Saudi Arabia and Kuwait: Results from the ZERBINI study. PLoS One 2023; 18:e0278821. http://www.ncbi.nlm.nih.gov/pubmed/?term=36662739
49. Al-Ashwal FY, Sulaiman SAS, Sheikh Ghadzi SM *et al.* Physicians and pharmacists' clinical knowledge of statin therapy and monitoring parameters, and the barriers to guideline implementation in clinical practice. PLoS One 2023; 18:e0280432. http://www.ncbi.nlm.nih.gov/pubmed/?term=36662695
50. Chaudhry H, Lin J, Atefi R *et al.* A tough pill to swallow: Two cases of statin-induced necrotizing autoimmune myopathy manifesting as dysphagia and transaminitis. SAGE Open Med Case Rep 2023; 11:2050313x221150583. http://www.ncbi.nlm.nih.gov/pubmed/?term=36686203
51. Joentausta RM, Siltari A, Rannikko A, Murtola TJ. Incidence of erectile dysfunction treatment after radical prostatectomy by Statin use in Finnish Nationwide Cohort Study. Scandinavian journal of urology 2023:1-7. http://www.ncbi.nlm.nih.gov/pubmed/?term=36683437
52. Ibrahim S, Reeskamp LF, Hovingh GK. Studies into the association between LDL-C lowering and cognitive function: time to forget about it? Sci Bull (Beijing) 2021; 66:1614-1615. http://www.ncbi.nlm.nih.gov/pubmed/?term=36654293
53. Sarfo FS, Nichols M, Opare-Addo PA, Ovbiagele B. Polypill Programs to Prevent Stroke and Cut Costs in Low Income Countries: Moving From Clinical Efficacy to Pragmatic Implementation. Stroke 2023; 54:407-414. http://www.ncbi.nlm.nih.gov/pubmed/?term=36689592
54. Gao Y, Pan Y, Han S *et al.* Rationale and design of a randomised double-blind 2×2 factorial trial comparing the effect of a 3-month intensive statin and antiplatelet therapy for patients with acute mild ischaemic stroke or high-risk TIA with intracranial or extracranial atherosclerosis (INSPIRES). Stroke Vasc Neurol 2023. http://www.ncbi.nlm.nih.gov/pubmed/?term=36707080
55. Jeeyavudeen MS, Pappachan JM, Arunagirinathan G. Statin-related Muscle Toxicity: An Evidence-based Review. touchREV Endocrinol 2022; 18:89-95. http://www.ncbi.nlm.nih.gov/pubmed/?term=36694885
56. Singh H, Sikarwar P, Khurana S, Sharma J. Assessing the Incidence of New-onset Diabetes Mellitus with Statin Use: A Systematic Review of the Systematic Reviews and Meta-analyses. touchREV Endocrinol 2022; 18:96-101. http://www.ncbi.nlm.nih.gov/pubmed/?term=36694884

Basic Science

1. Sarmah D, Sarkar A, Datta A *et al.* Cardiolipin-Mediated Alleviation of Mitochondrial Dysfunction Is a Neuroprotective Effect of Statin in Animal Model of Ischemic Stroke. ACS Chem Neurosci 2023; 14:709-724. http://www.ncbi.nlm.nih.gov/pubmed/?term=36706354
2. Yao H, Zhao X, Wang L, Ren Y. Atorvastatin ameliorated PM(2.5)-induced atherosclerosis in rats. Arch Environ Occup Health 2023:1-6. http://www.ncbi.nlm.nih.gov/pubmed/?term=36660941
3. Liu M, Gao T, Jiang L *et al.* Enhancing the biopharmaceutical attributes of atorvastatin calcium using polymeric and lipid-polymer hybrid nanoparticles: An approach for atherosclerosis treatment. Biomedicine & pharmacotherapy = Biomedecine & pharmacotherapie 2023; 159:114261. http://www.ncbi.nlm.nih.gov/pubmed/?term=36689837
4. Clarke R, Von Ende A, Schmidt LE *et al.* Apolipoprotein Proteomics for Residual Lipid-Related Risk in Coronary Heart Disease. Circulation research 2023; 132:452-464. http://www.ncbi.nlm.nih.gov/pubmed/?term=36691918

5. Rahimi S, Ghasemi N, Davoudi P *et al.* Antimicrobial effects of different concentrations of simvastatin versus triple antibiotic paste on Enterococcus faecalis biofilms at different stages of development. Journal of dental research, dental clinics, dental prospects 2022; 16:153-158. http://www.ncbi.nlm.nih.gov/pubmed/?term=36704189
6. Gajjar S, Bora V, Patel BM. Repositioning of simvastatin for diabetic colon cancer: role of CDK4 inhibition and apoptosis. Molecular and cellular biochemistry 2023. http://www.ncbi.nlm.nih.gov/pubmed/?term=36703094
7. Huang TS, Wu T, Wu YD *et al.* Long-term statins administration exacerbates diabetic nephropathy via ectopic fat deposition in diabetic mice. Nature communications 2023; 14:390. http://www.ncbi.nlm.nih.gov/pubmed/?term=36693830
8. Feng Y, Lang J, Sun B *et al.* Atorvastatin prevents endoplasmic reticulum stress-mediated apoptosis via the Nrf2/HO-1 signaling pathway in TBI mice. Neurol Res 2023:1-13. http://www.ncbi.nlm.nih.gov/pubmed/?term=36681943
9. Españo E, Kim JK. Effects of Statin Combinations on Zika Virus Infection in Vero Cells. Pharmaceutics 2022; 15. http://www.ncbi.nlm.nih.gov/pubmed/?term=36678679
10. Atay MS, Sari S, Bodur E. Molecular and Computational Analysis Identify Statins as Selective Inhibitors of Human Butyrylcholinesterase. Protein J 2023. http://www.ncbi.nlm.nih.gov/pubmed/?term=36648628

To subscribe to the Statin Literature Update Service Click HERE

Facebook Twitter Website

mailing address:
lansberg@gmail.com