The IAS statin literature update will keep you up-to-date with all recent statin publications, using a curated approach to select relevant articles.

**Key publications**

**Are hydrophilic statins less likely to produce muscle symptoms**

Muscle-related adverse events are commonly reported in real-world clinical encounters and observational registries. This contrasts with reported muscle side effects in randomized clinical trials. In this retrospective analysis of the United Kingdom-based Clinical Practice Research Datalink (CPRD) GOLD, a UK registry with >15 million primary care patients. The objective was to compare the frequency of muscle-related events between equipotent lipophilic and hydrophilic statins. Using a propensity score-matched study design, 3 cohorts were created comparing 1) pravastatin 20-40 mg (hydrophilic) with simvastatin 10-20 mg; 2) rosuvastatin 5-40 mg (hydrophilic) with atorvastatin 10-80 mg and 3) simvastatin 40-80 mg with atorvastatin 10-20 mg. The study’s primary outcome was the first reported muscular event (myopathy, myalgia, myositis, rhabdomyolysis) during a 1-year follow-up. The propensity-matched cohorts consisted of 9 703, 7 032, and 37 434 matched pairs of first-time statin users. The risk for developing muscular events resulted in an HR: 0.86 (0.64-1.16) for group 1, an HR: 1.17 (0.88-1.66) for group 2, and an HR: 1.33 (1.16-1.53) for group 3. Based on these findings, the authors concluded that equipotent hydrophilic statins were not

Statin use associated with prolonged graft patency after lower extremity arterial by-pass

Long term graft patency after a lower extremity arterial by-pass (LEAB) was evaluated in this Korean single institute registry that collected data on 957 LEAB's. Patients were divided into 2 groups: graft patency <2-years and graft patency >5 years. In total 259 limbs were included: in group I, 125 limbs and in group II 134 limbs. Based on univariate analysis, long term patency was associated with younger age (69 years vs. 66 years, P = 0.024), hypertension (60.8% vs. 74.6%, P = 0.017), claudication (51.2% vs. 70.9%, P = 0.001), absence of prior intervention (50.4% vs. 73.9%, P < 0.001), common femoral artery-based bypass (57.6% vs. 70.1%, P = 0.035), above-the knee bypass (36.8% vs. 64.2%, P < 0.001), postoperative graft salvage procedure (3.2% vs. 14.8%, P = 0.001), and statin use (75.2% vs. 88.8, P = 0.004) were A multivariate analysis showed the following risk factors to be associated with reduced graft patency; hypertension OR: 1.91 (P = 0.038), claudication OR: 2.08 (P = 0.032), no prior intervention OR: 2.48 (P = 0.001), vein graft OR: 4.36 (P = 0.001), above-the knee bypass OR: 4.68 (P < 0.001), and graft salvage procedures OR: 7.70; P < 0.001) were identified as independent factors. Jung KS, Heo SH, Woo SY et al. Factors associated with long-term graft patency after lower extremity arterial bypasses. Ann Surg Treat Res 2021; 100:175-185. http://www.ncbi.nlm.nih.gov/pubmed/?term=33748031

Effect of statin intensity on residual risk in ODYSSEY OUTCOMES trial

In this sub-analysis of the ODYSSEY OUTCOMES trial, the impact of statin intensity on outcomes. Of the 18 924 ACS patients included in the study, most used high-intensity statins 88.8%, 8.7% used moderate/low-intensity statins, and 2.4% did not use statins. The median baseline LDL-c in these three groups was 86,89 and 139 mg/dL. (P<0.001). The addition of alirocumab produced similar relative LDL-c reductions in all patients. However, the absolute LDL- reductions were significantly different; 52.9 mg/dl, 56.7 mg/dl, and 86.1 mg/dl, respectively (P<0.001). In the control arm, the incidence of MACE was highest in patients that did not use a statin (10.8%, 10.7%, and 26.0%, respectively). Patients that used alirocumab were able to reduce their risk of MACE in all three groups; HR: 0.88 (0.80–0.96); HR:0.68 (0.49–0.94); and HR: 0.65 (0.44–0.97), respectively. A gradient in the absolute risk
reduction was observed, 1.25% (0.34–2.16); 3.16% (0.38–5.94) and 7.97% (0.42–15.51); Pinteraction=0.106. Using high-intensity statins is vital to prevent recurrences after an ACS; the addition of alirocumab can substantially reduce residual risk, but patients that did not use statins remained to have a high absolute risk for a recurrent MACE event. Diaz R, Li QH, Bhatt DL et al. Intensity of statin treatment after acute coronary syndrome, residual risk, and its modification by alirocumab: insights from the ODYSSEY OUTCOMES trial. Eur J Prev Cardiol 2021; 28:33-43. http://www.ncbi.nlm.nih.gov/pubmed/?term=33755145

Statins and skin cancer – unexpected finding in Icelandic whole population registries

A few reports have suggested that statin use is associated with an increased risk of developing keratocyte carcinoma (KC). By combining the Icelandic Cancer Registry and Icelandic Prescription Medicine Register, a whole population case-control study was designed to probe the relationship between statin used and the incidence of basal cell carcinoma (BCC; N= 4700), in situ squamous cell carcinoma (SCC Is; N=11167) and invasive SCC (N=1013). Between 2003 and 2017. Each case was paired with ten age- and sex-matched controls. Overall statin use was associated with an increased risk of invasive SCC and SCCIs but not BCC; aOR: 1.29 (1.11–1.50); 1.43 (1.24–1.64); 1.03 (0.95–1.120, respectively. Age was a significant modifier of this increased risk, patients>60 years of age were at increased risk, but this was not observed in younger (<60 years) patients. A disparity in risk was noted for different statins; atorvastatin use was associated with an increased risk for SCC is compared to simvastatin users that had a higher risk for developing SCCIs and SCC. This study in the entire Icelandic population showed an association between statin use and the risk of developing certain skin cancer types in a low UV environment. This study's observational design can only point out associations; additional research is warranted to determine causality and explore the potential causes of these findings.


CVD risk reduction with equipotent atorvastatin 40 mg vs simvastatin 20 mg + ezetimibe 10 mg

Are there differences in CV outcome when comparing a high-intensity statin (atorvastatin 40 mg) with a moderate-intensity statin (simvastatin 20 mg) + ezetimibe 10 mg? Using the Taiwan National Health Insurance Research Database. Clinical outcomes were evaluated in 3 372 post-ACS diabetic patients diagnosed between January 1, 2007, and December 2013,
2013. The primary composite outcome includes CV death, non-fatal myocardial infarction, and non-fatal stroke. The secondary composite outcome includes hospitalization for unstable angina (HUA), percutaneous coronary intervention (PCI), and coronary artery bypass grafting (CABG). After a mean follow-up time of 2.4 years, the primary outcomes were not significantly different in the two cohorts, HR:1.09 (0.95–1.25). For the secondary outcomes, atorvastatin 40 mg showed a more pronounced benefit; HUA HR: 0.50 (0.35–0.72), PCI; HR: 0.82; (0.69–0.97) and CABG; HR: 0.62 (0.40–0.97). The authors noted that LDL-c reductions are comparable; the reduction of LDL-c by Atorvastatin 40 mg is less than that by ezetimibe 10 and simvastatin 20 mg, 48.3–49% vs. 50.6–51.9% respectively. The authors concluded that this study’s results support the key role of LDL-C in the pathogenesis of ASCVD, and LDL-C lowering potency is the primary concern to reduce this risk. Kao YC, Chen TH, Liu CH et al. Similar major cardiovascular outcomes between pure statin and ezetimibe-statin in comparable intensity for type 2 diabetes with extremely atherosclerotic risks. Scientific reports 2021; 11:6697. http://www.ncbi.nlm.nih.gov/pubmed/?term=33758291

Relevant publications


20. Welty FK, Schulte F, Alfaddagh A et al. Regression of human coronary artery plaque is associated with a high ratio of (18-hydroxy-eicosapentaenoic acid + resolvin E1)


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Basic Science publications


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