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**

**Review on the use of omega 3-fatty acids to reduce ASCVD risk**

Statins have spurred unprecedented reductions in ASCVD risk in primary and in secondary prevention settings. Despite these successes, residual risk remains a formidable challenge with potential, impressive gains in survival and morbidity. Triglycerides have surfaced not only as powerful predictors of residual CVD risk but have also become a therapeutic target. One class of lipid-lowering drugs, the omega-3 fatty acid/fish oils, has risen from obscurity and is now a powerful new asset in the residual risk battle. The authors provide a comprehensive overview of our current understanding and the conflicting evidence. Promising results from recent studies showed impressive reductions in CV complications that could not be explained by the mild TG reductions observed in the participating patients. Higher dosages and specific formulations are likely to play a pivotal role in the observed benefits. However, safety issues such as the increased risk for atrial fibrillation (AF) and hemorrhagic complications underline that omega 3-fatty acids have not been wholly embraced in daily clinical practice. The authors recommend using high dose omega 3-fatty acids, based on the formulations in the recent secondary prevention trials, in statin-treated hyper-triglyceridemic patients classified as high or very-high CVD risk.

Tadic M, Sala C, Grassi G et al. Omega-3 Fatty Acids and Coronary Artery Disease: More

One third of low-risk individuals have sub-clinical atherosclerosis

Lipid-lowering guidelines recommend statins for patients at high or very high risk for ASCVD. The authors of this article evaluated Korean individuals considered low risk and their 5-year probability of developing CVD complications based on CTA imaging. Participants (N=3272) had a voluntary general health examination and lacked an indication for statins. A cardiac event was defined as a composite of cardiac death, nonfatal myocardial infarction, unstable angina requiring hospitalization, or late coronary revascularization. Patients were classified as normal coronary arteries, non-obstructive coronary artery disease (CAD), with diameter stenosis <50% and obstructive CAD, diameter stenosis >50%. These changes were observed in 2338 (71%), 809 (24.7%), and 125 (3.8%), respectively. The calculated 6-year event-free survival year were 99.2% ±0.2% in subjects with normal coronary arteries, 98.2% ±0.6% in those with non-obstructive CAD, and 90.2% ±2.7% in those with obstructive CAD (log-rank p < 0.001). Predictors for subclinical obstructive CAD, based on multivariable regression analysis, were LDL-C, OR: 1.012 (1.005−1.019); HDL-C, OR: 0.968; (0.952−0.984); age OR: 1.080 (1.040−1.121) and male sex, OR: 3.102 (1.866−5.155); all p < 0.05. The authors suggested a stricter LDL-c control to improve primary prevention in a relatively low-risk population based on these findings. Park HW, Kim YG, Park GM et al. Cholesterol Control for Subclinical Coronary Atherosclerosis in Subjects Without Indication for Statin Therapy. *Am J Cardiol* 2021; 153:51-57. http://www.ncbi.nlm.nih.gov/pubmed/?term=34176598

Impact of optimal medical therapy on 10-year survival in post-CABG/PCI patients

This sub-analysis of the SYNTAXES (Synergy Between PCI With Taxus and Cardiac Surgery Extended Survival) study showed the impact of optimal medical therapy (OMT) on 10-year survival. OMT was defined as the combination of 4 types of medications: at least 1 antiplatelet drug, statin, angiotensin-converting enzyme inhibitor/angiotensin receptor blocker, and beta-blocker. OMT was stratified by the number of OMT medications used after 5-years and assess mortality after 5-years. Of the 1472 patients on OMT at 5-years, survival was significantly better compared to those on ≤2 types of medications; 13.1% vs. 19.9%; adjusted HR: 0.470 (0.292-0.757; P=0.002). No difference in mortality was noted between those on OMT and patients using 3 types of medication. Post-CABG patients using statins and antiplatelet medication at 5-years had lower 10-year mortality than those without. The authors concluded that patients with 3-vessel disease and or left-main disease that underwent PCI or CABG showed improved survival after 10-years follow-up if guideline-recommended OMT was used at 5-years.

The LDL-c/Apo B ratio predicts MACE in secondary prevention patients

Lipid management guidelines focus on LDL-c as a primary target for reducing ASCVD risk. Despite adequate LDL-c reduction, the risk for cardiac events remains high in those classified as high- or very-high ASCVD risk. This residual risk is partly captured by determining the qualitative properties of LDL particles, and LDL particle size is considered an important parameter. Each LDL carries a single apo B molecule, and the ratio of LDL-c/Apo B provides a reasonable estimate of LDL particle size. The impact of this ratio on ASCVD risk was estimated in 1678 patients with cardiovascular disease. Prospective MACE (cardiovascular death, non-fatal myocardial infarction, and non-fatal stroke) were prospectively recorded over a 9.9 ±4.6 years period (>16,000 patient-years). The baseline LDL-C/ApoB ratio was 1.36 ± 0.28. In total, 558 first events were recorded during the follow-up period. Univariate Cox proportional hazard analysis showed an HR of 0.90 (0.82–0.98; p = 0.014). After adjustment for age, gender, the intensity of statin treatment, hypertension, history of smoking, type 2 diabetes, body mass index, and Apo B, an HR: 0.87 (0.78–0.97; p = 0.013) was observed. The authors concluded that the LDL-c/Apo B ratio was an independent predictor of subsequent MACE in patients with established CVD. Drexel H, Larcher B, Mader A et al. The LDL-C/ApoB ratio predicts major cardiovascular events in patients with established atherosclerotic cardiovascular disease. Atherosclerosis 2021; 329:44-49. http://www.ncbi.nlm.nih.gov/pubmed/?term=34183170

Barriers to lipid lowering medication adherence in Jordanian dyslipidemic patients

Medication adherence remains the major barrier to minimize CVD risk in patients eligible for statin treatment. In this investigation of lipid-lowering drug adherence study, 228 dyslipidemic Jordanian patients were evaluated. They also shared their beliefs about medication by using the Beliefs about Medicines Questionnaire. The majority of patients (78%) were non-adherent. Ost important negative associations consisted of concerns of prescription drug use (B = -0.41, p-value < 0.01), duration of dyslipidaemia (B = -0.22, p-value < 0.01), and the number of medications (B = -0.64, p-value < 0.01). Predictors of improved adherence included the necessity of prescription drug use (B = 0.43, p-value < 0.01), taking statin and fibrate (B = 2.04, p-value < 0.01), and moderate-intensity statin (B = 2.34, p-value < 0.01). The most frequently cited belief for non-adherence was “My medicine to lower my cholesterol disrupted my life” (3.50 ±0.99). In this Jordanian dyslipidemic
population, adherence to lipid-lowering medication was very poor. Strategies addressing predictors of adherence and changing believes on medication use could help to overcome these barriers, improve adherence and reduce serious ASCVD outcomes.


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**Relevant publications**


Basic Science publications


3. Sivasinprasasn S, Wikan N, Tocharus J et al. Pelargonic acid vanillylamide and rosvastatin protect against oxidized low-density lipoprotein-induced endothelial dysfunction by inhibiting the NF-κB/NLRP3 pathway and improving cell-cell
7. Peng WY, Huang AC, Ting CT, Tsai TH. Preclinical Pharmacokinetics and Pharmacodynamics of Coptidis Preparation in Combination with Lovastatin in High-Fat Diet-Induced Hyperlipidemic Rats. ACS omega 2021; 6:15804-15815.

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