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**

**Impact of stopping statins on plaque changes**
To evaluate statin adherence on plaque changes, 100 consecutive patients were divided into three groups and followed for one year. Group A (N=29) continued using statins, group B (N=39) used statin intermittently, and group C discontinued statins (N=32). All patients underwent coronary angiography (CAG) at baseline and after one-year CAG. Patient characteristics were not significantly different at baseline. The most severe plaques were analyzed for volume change and rate of progression/regression. Only those that used statins continuously showed significant plaque regression (P<0.001). The observed changes correlated with plasma LDL-c levels, but only in the patients that were statin adherent.; R=0.362; P=0.13). Patients that used statins intermittently or stopped using statins failed to show regression. Instead, coronary plaque volume increased. There were no differences in adverse cardiovascular events between the three groups, but the small sample size lacked sufficient power to evaluate endpoint differences; however, a trend towards increased events in groups B and C was noted. These findings emphasize the importance of statin adherence in high CVD risk patients with manifest...

Risk of ICH reduced in patient that used antiplatelets or statins - ARIC study

The bleeding risk associated with commonly used medication for ASCVD was assessed in the ARIC (Atherosclerosis Risk in Communities) study participants. Individual patient data were collected in 4 US communities between 1987 and 1989, with follow-up information from 2011 to 2013. Brain MRI imaging was performed in 1942 ARIC participants, allowing them to detect intracerebral hemorrhages (ICH) as well as cerebral microbleeds (CMB). The time-varying use of antiplatelets, anticoagulants, and statins was evaluated to determine their impact on ICH and CMB. ICH was observed in 130 ARIC participants; risk for this complication was significantly lower in patients that were taken antiplatelet drugs; HR: 0.53 (0.30-0.92). This was also noted for statin used; HR:0.13 (0.05-0.34). For CMB, no association with the use of antiplatelets, anticoagulants, and statins was detected. These findings suggest different risk profiles for bleeding risk exist and need to be managed with different strategies. The ARIC study findings provide the support that statin use is associated with reduced ICH risk; based on the observational design of this analysis, confirmation in well-designed prospective follow-up studies remains detrimental to solidify this evidence.


Statin and aspirin use in elderly patients - NHANES data

Reducing CVD risk is not a one-size-fits-all. This National Health and Nutrition Examination Survey (NHANES) evaluated adults aged 50 years and older. Those patients that used aspirin or statins were divided into primary prevention and secondary prevention categories. Eligibility for primary prevention therapy increased with age, from 31.8% age 50-54 to 52.0% age 75 and older. For secondary prevention, a similar trend was noted, 2.7% for those aged 50-54 years to 21.1% in patients 75 years or older. The use of low-dose aspirin increased with age as well (P<0.001); 45.3% of those > 75 years used daily aspirin for primary prevention purposes. Statins were used more frequently by elderly patients as well (P<0.001), and in a secondary prevention setting, 56.4% of patients 75 years and older used statins. The authors concluded that despite the evidence of a lack of benefit, many patients >75 years of age continued to use aspirin for preventing a first ASCVD event. In contrast, despite the well-established benefit of statins in secondary prevention in elderly (> 75 years) patients, almost half of those were not taking statins. Education of both healthcare providers and older adults is warranted to ensure the appropriate use of both aspirin and statins.
Managing ASCVD recurrences warrants strict LDL-c control

Recurrences of ASCVD events are undervalued in terms of the urgency of risk factor management. In this real-world analysis of a Finnish hospital health registry, patients admitted for an ASCVD event (2004-2016) were monitored for consecutive cardiovascular events or cardiovascular death, low-density lipoprotein cholesterol, and statin purchases. Duration for subsequent events and factors that predicted a recurrence were evaluated. The interindividual variation for ASCVD recurrences was considerable; each additional event was associated with increased risk. The median time for a recurrence decreased from 7 to 1 year when comparing the 2nd and 5th events. Event rates swelled from 12/100 patient-years to 43/100 patients-years. The most vulnerable period was the first year after a subsequent ASCVD event. An increased risk was noted in patients that did not use the appropriate statin or statin dosage. A target LDL-c <1.8 mmol/L was reached by 18% of the patients in the year following the ASCVD event. High-intensity statins, six months post-event, were used by 22% of the participants. The authors concluded that event rates are not stable over time but increase 1.2-1.9-fold per consecutive event. A more intensive multifactorial strategy is warranted to address insufficient LDL-c control reflecting inadequate dosing and statin potency.


Real world data on lipid management of European ACS patients

How well are lipids managed in European ACS patients? Using an online questionnaire, data of 2775 ACS patients (acute and follow-up patients) from 7 European countries were collected. Lipid measurements were performed in 91% of hospitalized ACS patients. Lipid-lowering drugs were used by 93% of the admitted patients, high-intensity statins in only 63% (at discharge). During the first follow-up visit and LDL-c < 70 mg/dL was observed in 22.4%, and 41% of the patients used the same lipid-lowering prescribed at discharge. At the second follow-up visit, no significant change was observed. In patients with ≤2 follow-up visits, the percentage of patients who reached an LDL-c goal of <70 mg/dL increased from 9% to 37%. An LDL-c goal of <100mg/dL was reached by 23% and 72% respectively. Of 2775 admitted ACS patients, 44 (1.6%) were diagnosed with familial hypercholesterolemia (FH); only 499 (18%) of all ACS patients were screened for FH. In this contemporary cohort of very high-risk ACS patients, lipid management remained inadequate in the majority of patients. Efforts to improve Guideline dictated standards of lipid management are urgently warranted.

Landmesser U, Pirillo A, Farnier M et al. Lipid-lowering therapy and low-density lipoprotein cholesterol goal achievement in patients with acute coronary syndromes: The

### Relevant publications


phantom embolus or local endothelitis. European heart journal. Case 

23. Alings M, Descamps O, Guillon B et al. Implementation of clinical practices and 
pathways optimizing ACS patients lipid management: Focus on eight European 

24. Zhu F, Ang JY. 2021 Update on the Clinical Management and Diagnosis of 

25. Wong YJ, Qiu TY, Ng GK et al. Efficacy and Safety of Statin for Hepatocellular 
Carcinoma Prevention Among Chronic Liver Disease Patients: A Systematic 

Myofibroblast Differentiation of Graves’ Ophthalmopathy-Derived Orbital 
Fibroblasts via RhoA-Mediated ERK and p38 Signaling Pathways. Frontiers in 
endocrinology 2020; 11:607968. 

27. Sommer IE, Gangadin SS, de Witte LD et al. Simvastatin Augmentation for 
Patients With Early-Phase Schizophrenia-Spectrum Disorders: A Double-Blind, 
Randomized Placebo-Controlled Trial. Schizophr Bull 2021. 

28. Saillant K, Langeard A, Kaushal N et al. Statin use moderates the beneficial 
effects of aerobic exercise on older adults' performances on the Stroop test: A 
subanalysis. Experimental gerontology 2021; 147:111277. 

29. Qian Y, Lei T, Patel P et al. Direct activation of endothelial cells by SARS-CoV-2 
nucleocapsid protein is blocked by Simvastatin. bioRxiv 2021. 

30. Pagani FD. Commentary: Untangling the Mystery of Statin Therapy in Treating 
Postoperative Atrial Fibrillation: Does the Underlying Cardiac Pathology 

Fibrillation, Statin and Septal Myectomy. Seminars in thoracic and 
cardiovascular surgery 2021. 

phospholipase A2 levels, endothelial dysfunction and arterial stiffness in 
patients with stable coronary artery disease. Lipids Health Dis 2021; 20:12. 


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**Basic Science publications**

1. Zheng N, Wei A, Wu T et al. Triptolide and atorvastatin synergistically promote hepatotoxicity in cultured hepatocytes and female Sprague-Dawley rats by inhibiting pregnane X receptor-mediated transcriptional activation of
CYP3A4, Toxicology letters 2021; 342:85-94. 


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- P.J. Lansberg