The effect of statins on cardiovascular outcomes by smoking status: A systematic review and meta-analysis of randomized controlled trials(Article)

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Abstract_[View references \(55\)](#)

Smoking is an important risk factor for cardiovascular disease (CVD) morbidity and mortality. The impact of statin therapy on CVD risk by smoking status has not been fully investigated. Therefore we assessed the impact of statin therapy on CVD outcomes by smoking status through a systematic review of the literature and meta-analysis of available randomized controlled trials (RCTs). The literature search included EMBASE, ProQuest, CINAHL and PUBMED databases to 30 January 2016 to identify RCTs that investigated the effect of statin therapy on cumulative incidence of major CVD endpoints (e.g. non-fatal myocardial infarction, revascularization, unstable angina, and stroke). Relative risks (RR) ratios were calculated from the number of events in different treatment groups for both smokers and non-smokers. Finally 11 trials with 89,604 individuals were included.

The number of smokers and non-smokers in the statin groups of the analyzed studies was 8826 and 36,090, respectively. The RR for major CV events was 0.73 (95% confidence interval [CI]: 0.67–0.81; $p < 0.001$) in nonsmokers and 0.72 (95%CI: 0.64–0.81; $p < 0.001$) in smokers. Moderate to high heterogeneity was observed both in non-smokers ($I^2 = 77.1\%$, $p < 0.001$) and in smokers ($I^2 = 51.6\%$, $p = 0.024$) groups. Smokers seemed to benefit slightly more from statins than non-smokers according to the number needed to treat (NNT) analysis (23.5 vs 26.8) based on RRs applied to the control event rates. The number of avoided events per 1000 individuals was 42.5 (95%CI: 28.9–54.6) in smokers and 37.3 (95%CI: 27.2–46.4) in non-smokers. In conclusion, this meta-analysis suggests that the effect of statins on CVD is similar for smokers and non-smokers, but in terms of NNTs and number of avoided events, smokers seem to benefit more although non-significantly. © 2017

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Author keywords

- Cardiovascular outcomes
- Meta-analysis
- Smoking
- Statins
- Systematic review

EMTREE drug terms:

atorvastatin, cerivastatin, fluindostatin, hydroxymethylglutaryl coenzyme A reductase inhibitor, mevinolin, pitavastatin, placebo, pravastatin, rosuvastatin, simvastatin

EMTREE medical terms:

Article, cardiovascular disease, cardiovascular risk, cerebrovascular accident, heart infarction, revascularization, human meta analysis, outcome assessment, priority journal, randomised controlled trial, (topic) sensitivity analysis, smoking, systematic review, unstable angina pectoris

Chemicals and CAS Registry Numbers:

atorvastatin, 134523-00-5, 134523-03-8; cerivastatin, 143201-11-0; fluindostatin, 93957-54-1; mevinolin, 75330-75-5; pitavastatin, 147526-32-7; pravastatin, 81093-37-0, 81131-70-6; rosuvastatin, 147098-18-8, 147098-20-2; simvastatin, 79902-63-9

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