CRD summary
The authors concluded that their results suggested that statin treatment reduced the risk of sudden cardiac death. Evidence from this clearly-reported review appeared to support the authors’ conclusions, but the limited search and lack of assessment of trial quality made it difficult to comment on the reliability of the conclusions.

Authors’ objectives
To evaluate the effects of statin treatment on the risk of sudden cardiac death.

Searching
MEDLINE was searched from inception to July 2006. Search terms were reported. No language restrictions were applied. In addition, reference lists from original studies and reviews were screened.

Study selection
Parallel-group randomised controlled trials (RCTs) that compared the effects on sudden cardiac death of at least six months of single treatment with a statin versus placebo or no treatment, were eligible for inclusion. Trials had to include more than 100 patients and had to report the number of sudden cardiac deaths in each treatment group.

All trials included patients with evidence of cardiovascular disease and most were conducted in North America or Europe. Studies evaluated daily doses of atorvastatin (10 to 20 mg), fluvastatin (80 mg), pravastatin (20 to 40 mg) and simvastatin (20mg). The mean duration of follow-up was 4.4 years. The mean age of included patients was 60 years and most (80%) were male. The mean total cholesterol at baseline of patients was 231 mg/dL. Where reported, 8 to 42% of patients smoked, 0% to 100% of patients had diabetes, 26 to 48% of patients had hypertension and 12 to 100% of patients had a previous myocardial infarction.

Two reviewers independently selected studies and resolved disagreements in conference with a third reviewer.

Assessment of study quality
The authors did not state that they assessed validity but they did report on the use of blinding.

Data extraction
For each trial, the percentage decrease in total blood cholesterol in the statin group and the mean duration of follow-up (where required) were calculated (methods were reported).

Two reviewers independently extracted data and resolved disagreements through discussion with a third reviewer.

Methods of synthesis
Pooled odds ratios and 95% confidence intervals were calculated using the fixed-effect Mantel-Haenszel method. For studies with zero reported sudden cardiac death events, 0.25 was added to each cell. Statistical heterogeneity was assessed using the Q-test (p<0.10) and the $I^2$ statistic.

The mean effect of statins on serum lipids was calculated using a fixed-effect model. Sensitivity analysis was undertaken by examining the relationship between the effect of statins (measured as the relative risk of sudden cardiac death) and explanatory variables including baseline characteristics of patients and the risk of death in each control group. Meta-regression was used to examine the relationship between cholesterol reduction and sudden cardiac death.

Results of the review
Ten randomised controlled trials were included (n=22,275 patients; range 205 to 9014). Blinding was used in nine
Statin treatment was associated with a statistically significant reduction in risk of sudden cardiac death compared to no statin treatment: 3.0% event rate (337 deaths) in patients with statin treatment versus 3.8% event rate (421 deaths) in patients with no statin treatment (odds ratio 0.81, 95% confidence interval: 0.71 to 0.93; p=0.003). No significant heterogeneity was found (p=0.6, I^2 0%).

There was no apparent relationship between the risk reduction in sudden cardiac death and the change in lipid levels.

**Authors' conclusions**
Results suggested that statin treatment decreased the risk of sudden cardiac death.

**CRD commentary**
The review question was clearly stated. Limiting the search to one database plus reference lists raised the possibility of publication bias, which may have resulted in the omission of other relevant studies. Appropriate methods were used to minimise reviewer error and bias during the review process. Only randomised controlled trials were included, but validity was not assessed. This made it difficult to judge the reliability of the results. Appropriate methods were used for the meta-analyses. Heterogeneity was assessed. The influence of various factors on sudden cardiac death was examined. Apart from the limited search and the lack of validity assessment, the review was clearly reported. Evidence appeared to support the authors' conclusions, but the limited search and lack of assessment of trial quality made it difficult to comment on the reliability.

**Implications of the review for practice and research**
The authors did not state any implications for practice or further research.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.