CRD summary
This review concluded that the risk of stent thrombosis and in-stent late post-implantation of a drug-eluting stent was not related to in-stent late loss values. Despite the limitations of the review, there were a large number of included studies with similar and consistent results and the conclusions are likely to be reliable. Generalisability of the results was uncertain.

Authors' objectives
To evaluate the relationship between in-stent late loss and the risk of stent thrombosis in patients treated with drug-eluting stents.

Searching
MEDLINE, EMBASE, Pascal, CINAHL, DARE and The Cochrane Library were searched from 2000 to January 2007; search terms were reported.

Study selection
Randomised controlled trials (RCTs) that provided clinical and angiographic follow-up and reported in-stent late loss and stent thrombosis in patients after implantation of bare-metal stents and drug-eluting stents or different drug-eluting stents were eligible for inclusion. Studies had to administer dual antiplatelet therapy after the percutaneous coronary intervention (PCI). Studies in patient post-myocardial infarction were excluded.

All the included studies defined in-stent late loss as the difference between the minimum lumen diameter post-implantation and at angiographic follow-up. The most commonly used drugs in the drug-eluting stents were sirolimus and paclitaxel (which accounted for 80% of stents). Angiographic and clinic follow-ups ranged from six to 16 months; most were six or nine months. Where reported, patients received one or two stents, 5% to 100% of patients had diabetes mellitus, 29% to 99% had B2 or C lesions, mean lesion length ranged from 9.6mm to 34.5mm and mean duration of antiplatelet treatment ranged from two to 12 months. Age, gender and ethnicity across studies were not reported.

The authors did not state how many reviewers selected studies.

Assessment of study quality
The authors did not state that they assessed study quality.

Data extraction
Mean and standard deviations for the outcomes of interest were extracted from studies. Stent thrombosis was classified as early (less than 30 days after implantation) or late (more than 30 days after implantation).

The authors did not state how many reviewers performed the data extraction.

Methods of synthesis
Meta-regression, weighted on inverse variance, was used to investigate the relationship between in-stent late loss and the risk of stent thrombosis and late stent thrombosis. $R^2$ and beta-coefficients with their 95% confidence intervals (CI) were calculated. To investigate heterogeneity, studies that showed greater changes in the regression co-efficient were excluded from analyses.

Results of the review
Twenty-six RCTs (36 subgroups) met the inclusion criteria (n=8,971, range across subgroups 12 to 684).
There was no significant association between in-stent late loss and the risk of stent thrombosis ($R^2$ 0.16, beta-coefficient -0.82, 95% CI -1.92 to 0.28) and late stent thrombosis ($R^2$ 0.05, beta-coefficient -0.002, 95% CI -0.008 to 0.003) despite adjusting for variables known to impact on stent thrombosis occurrence. No significant heterogeneity was observed.

**Authors' conclusions**
Risk of stent thrombosis and in-stent late loss after drug-eluting stent implantation was not related to in-stent late loss values; a very low mean value of in-stent late loss was not associated with a higher risk of stent thrombosis.

**CRD commentary**
The review addressed a clear research question supported by appropriate inclusion criteria. The search for published studies was comprehensive. However, there was no specific search for unpublished studies and it was unclear whether language restrictions were applied, so there was potential for language and publication biases. The authors did not report use of methods during the review process that would have reduced the potential for error and bias, and so these could not be ruled out. Study quality was not assessed and insufficient details were provided for the reader to make a judgement. Appropriate methods of synthesis were employed and heterogeneity was investigated.

Despite the limitations of the review, there were a large number of included studies that showed similar and consistent results and the conclusions are likely to be reliable. The lack of reporting of the baseline characteristics of the participants meant there was some question regarding the generalisability of these results.

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

**Research:** The authors stated that the reliability of late loss as a marker of the true efficacy of drug-eluting stents needed to be investigated.

**Funding**
None stated.

**Bibliographic details**

**PubMedID**
19112789

**Original Paper URL**
http://www.biomedsearch.com/nih/Lower-levels-in-stent-late/19112789.html

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Angioplasty, Balloon, Coronary /adverse effects /statistics & numerical data; Coronary Artery Disease /epidemiology /radiography /therapy; Coronary Restenosis /epidemiology /radiography; Coronary Thrombosis /epidemiology /radiography; Drug-Eluting Stents /adverse effects /statistics & numerical data;Humans;Risk Factors

**AccessionNumber**
12009104232
Date bibliographic record published
05/08/2009

Date abstract record published
12/01/2011

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.