



## Aim

Patients undergoing percutaneous coronary intervention (PCI) are at increased risk of restenosis at the site of the procedure. Approaches to prevent restenosis such as systemic or local drug administration do not efficiently prevent restenosis. Intracoronary brachytherapy interferes with the proliferative and inflammatory responses leading to development of in-stent restenosis. We aimed to undertake a systematic review and metaanalysis, and explore the cost and health consequences of intracoronary brachytherapy for patients with in-stent restenosis.

## Conclusions and results

Nine RCTs were included that analyzed clinical effects of either gamma (5) or beta brachytherapy (4) in patients with in-stent restenosis. In total, 1,700 patients were included in these trials.

*Mortality:* None of the included studies or the metaanalysis of these studies had the statistical power to assess the effect on mortality. The relative risk of cardiac mortality after 8 to 12 months of followup was 1.33 (95% CI 0.61-2.92) for gamma brachytherapy and 1.78 (95% CI 0.58-5.45) for beta brachytherapy compared with placebo.

*Myocardial infarction:* No study, or the meta-analysis, had the statistical power to draw conclusions regarding risk of myocardial infarction following intracoronary brachytherapy.

*Thrombosis:* Patients treated with intracoronary brachytherapy were at increased risk for thrombosis compared with placebo: relative risk 2.18 (95% CI 01.00-4.76).

*Reintervention (PCI or CABG):* Intracoronary brachytherapy (beta or gamma irradiation) reduced the risk for revascularization compared with placebo RR 0.56 (95% CI 0.46-0.68) for gamma brachytherapy and RR 0.66 (95% CI 0.52-0.84) for beta brachytherapy.

*Cost effectiveness:* Intracoronary brachytherapy was not considered cost effective. The incurred costs for avoiding

one revascularization procedure was 626,000 Norwegian kroner (NOK) or around 79,000 €.

## Methods

Eligible studies were identified by searches in MED-LINE from 1966 until March 1, 2004. Nine RCTs comparing intracoronary brachytherapy with placebo were included.

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