Costs and effects of long-term oral anticoagulant treatment after myocardial infarction

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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Oral anticoagulant drug treatment programme, including monitoring as well as drugs administered.

Type of intervention
Secondary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Survivors of myocardial infarction, average age 61, 80% male.

Setting
Outpatient clinics. The economic study was carried out in the Netherlands.

Dates to which data relate
Effectiveness and resource data were collected during the period 1985-1994. Price date was not specified.

Source of effectiveness data
Single study.

Link between effectiveness and cost data
Costing was undertaken prospectively, on the same patient sample as that used in the effectiveness study.

Study sample
A total of 3404 survivors of MI were selected from a number of hospitals for randomisation after a median of 4 days after hospital discharge. Power calculation was not reported. 1700 patients were allocated to the treatment group, 1704 to the placebo group, and both groups were monitored.

Study design
Randomised double blind placebo-controlled trial, multicentre study (19 outpatient clinics). Patients were followed up for a mean period of 37 months. There was no loss to follow-up.

Analysis of effectiveness
Intention-to-treat analysis. Major clinical events were: death, recurrent MI, cerebrovascular events and bleeding complications. Patients in both groups were shown similar with respect to characteristics at baseline.

**Effectiveness results**
The anticoagulant programme yielded a reduction of death of 10% (95% CI: -11% to 27%); reduction of recurrent MI of 53% (95% CI: 41% to 62%); reduction of cerebrovascular events of 40% (95% CI: 10% to 60%); relative risk of bleeding complications in intervention group was 3.9 (95% CI: 2.3 to 6.4).

**Measure of benefits used in the economic analysis**
Death, recurrent MI, cerebrovascular events and bleeding complications.

**Direct costs**
Costs and quantities were reported separately. The costs were the hospital costs to the Dutch Health Service. Costs were discounted at 5%. Actual patient hospital days were derived from individual patient records and the cost was based on 1993 cost guidelines irrespective of treatment intensity and exclusive of the cost of additional cardiologic interventions. The cost of the latter was estimated on the basis of a weighted average of published unit-cost estimates in Dutch hospitals. Anticoagulant costs included all procedures of monitoring, visits per year and cost of drug supply (1990 data). Costs of bleeding complications were considered. No costs are given for the placebo programme monitoring.

**Currency**
Dutch guilders (Dfl). Final results were converted into 1994 US$.

**Sensitivity analysis**
A sensitivity analysis was carried out to test the impact of a change in costs of main variables (hospital days, angiography, CABG, angioplasty, or anticoagulant treatment) on the total cost of treating each group.

**Estimated benefits used in the economic analysis**
The anticoagulant programme yielded a reduction of death of 10% (95% CI: -11% to 27%); reduction of recurrent MI of 53% (95% CI: 41% to 62%); reduction of cerebrovascular events of 40% (95% CI: 10% to 60%); relative risk of bleeding complications in intervention group was 3.9 (95% CI: 2.3 to 6.4). 37 months of follow-up was the benefit direction.

**Cost results**
The total cost was Dfl 17,671,813 for the intervention group and Dfl 19,222,590 for the placebo group. The savings per patient due to intervention, discounted at 5%, was Dfl 906 ($525.48). The period of analysis was a median of 37 months.

**Synthesis of costs and benefits**
The incremental cost of intervention was negative. The final impact of clinical outcomes on effectiveness of intervention was not given.

**Authors’ conclusions**
The administration of oral anticoagulants reduced overall costs compared to placebo, because of the substantial reduction in the rate of recurrent myocardial infarction and related interventions. Therefore, long-term anticoagulant treatment was cost-effective for the prevention of cardiovascular complications after myocardial infarction.
CRD Commentary
The authors correctly pointed to the problems of extrapolating from this study, based on a highly organised system of thrombosis centres, because presumably monitoring increases both the effectiveness and the efficiency of drug administration. However, their conclusion was weak. There is no means of determining the cost-effectiveness of anticoagulant therapy from this study, because a synthesis of effectiveness taking into account complications due to the intervention was not measured.

Implications of the study
An analysis based on a synthesis of (final) outcomes and comparing the anticoagulant treatment with other cheaper antithrombotic drugs, such as aspirin, is needed.

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None stated

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