Amiodarone cost effectiveness in preventing atrial fibrillation after coronary artery bypass graft surgery
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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.

CRD summary
This study examined the clinical and economic impact of using postoperative amiodarone for the prevention of atrial fibrillation in patients undergoing a coronary artery bypass graft for stable angina. The authors concluded that the prophylactic use of amiodarone reduced the risk of atrial fibrillation and decreased costs in comparison with no therapy. The analysis was based on a well-conducted clinical trial, but caution may be required when interpreting the authors' conclusions, due to limited external validity.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study examined the clinical and economic impact of using postoperative amiodarone for the prevention of atrial fibrillation in patients undergoing coronary artery bypass graft (CABG) surgery for stable angina.

Interventions
Amiodarone 300mg was administered intravenously over 20 minutes the morning after surgery, followed by amiodarone 600mg orally twice a day for five postoperative days. This amiodarone strategy was compared against placebo.

Location/setting
Denmark/hospital.

Methods
Analytical approach:
This economic evaluation was based on data from a single study. A short time horizon was considered. The authors stated that the perspective of the payer was adopted.

Effectiveness data:
The clinical data came from a double-blind randomised placebo-controlled trial (RCT) conducted in a single centre (the Aarhus University Hospital in Denmark), which enrolled 125 patients in each group. Randomisation was in blocks of four patients and was subgrouped by age (65 and younger or over 65 years) and by preoperative use of beta-blockers. The median age was 67 years in both groups and 86% of the amiodarone group and 80% of the placebo group were male. The inclusion and exclusion criteria were clearly reported. The length of follow-up was the length of hospital stay. The key clinical endpoint was the occurrence of postoperative atrial fibrillation.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
No summary benefit measure was used. The primary endpoint was the occurrence of postoperative atrial fibrillation.

Cost data:
The economic analysis included all the costs associated with amiodarone prophylaxis, CABG, and its complications.
The resource use data was derived from the actual consumption of hospital services in the RCT. The unit costs were based on market prices and hospital accounts and they were reported for all items. All costs were in Danish kroner and converted into Euros (EUR) at a rate of 7.8 kroner equals one EUR. The price year was 2005.

Analysis of uncertainty:
A deterministic one-way sensitivity analysis was undertaken to examine the impact of variations in the cost estimates on total costs. The ranges of values were arbitrarily set by the authors.

Results
The rate of postoperative atrial fibrillation was 11.2% with amiodarone and 25.6% with placebo (p<0.01).

Total mean total costs per patient were EUR 7,639 with amiodarone and EUR 7,814 for the control group (p<0.01). The lower cost of the amiodarone treatment was due to the reduced requirement for laboratory tests, doctor and nurse time, radiology examinations, intensive care treatment, and medication for converting atrial fibrillation.

The sensitivity analysis confirmed the base-case findings.

Authors' conclusions
The authors concluded that the prophylactic use of amiodarone reduced the risk of atrial fibrillation and decreased costs in comparison with no therapy.

CRD commentary
Interventions:
The selection of the comparators was appropriate. The amiodarone strategy was based on the actual regimen administered in the authors' setting.

Effectiveness/benefits:
The clinical evidence came from a well-conducted and well-presented clinical trial, which was published in a companion paper (Zebis, et al. 2007, see 'Other Publications of Related Interest' below for bibliographic details). The study design should ensure a high internal validity and the characteristics of the eligible population were clearly reported. Details of the study design, patient selection, and randomisation procedure were extensively presented and the baseline comparability of the groups will have made the comparison more robust. No summary benefit measure was used and, in effect, a cost-consequences analysis was conducted.

Costs:
The economic analysis was consistent with the perspective. A breakdown of cost items and their sources were reported for most of the costs together with the price year. The economic data were treated deterministically, but alternative cost estimates were appropriately tested in the sensitivity analysis. The resource use reflected the actual consumption of health services in the study sample. The authors acknowledged that the assessment of resource use might have been inaccurate due to the retrospective analysis and the imprecision of the hospital accounting system.

Analysis and results:
The cost-consequences framework precluded a synthesis of the costs and benefits, but the better economic and clinical profile of amiodarone suggests its dominance over placebo. The potential uncertainty in the analysis was investigated using a partial approach that focused on cost variations. The study appears to have limited external validity due to the use of local data and the restricted use of sensitivity analysis. The authors acknowledged that a limitation of their study was that only clinical atrial fibrillation was considered and not subclinical atrial fibrillation.

Concluding remarks:
The analysis was based on a well-conducted clinical study, although some caution will be needed when interpreting the authors' conclusions, given the limited external validity.

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**Other publications of related interest**


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