A cost-effectiveness strategy for transtelephonic arrhythmia monitoring

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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
Transtelephonic arrhythmia monitoring (TTM).

Type of intervention
Prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Patients referred for TTM, namely patients referred for primarily central nervous system symptoms and patients referred for primarily cardiac symptoms.

Setting
Department of Veterans Affairs Medical Center, Miami, USA.

Dates to which data relate
Effectiveness data were collected between 1990 and 1993. Dates to which costing data relate were unclear. Price dates were not stated.

Source of effectiveness data
Single study.

Link between effectiveness and cost data
Costing was undertaken retrospectively on the same patient sample as that used in the effectiveness analysis.

Study sample
48 consecutive patients (45 men and 3 women, median age 64 years) referred for TTM. A second comparison group of ambulatory ECGs (n = 43) matched for age, sex and indication was also reviewed. No power calculations to determine sample size were reported.

Study design
Case series.
Analysis of effectiveness
The analysis of effectiveness was based on treatment completers only. The primary health outcome used was the usefulness of TTM. TTM was considered useful when it was a diagnostic study (ie, when an explanatory arrhythmia occurred during symptoms) or when it was a pertinent negative study (ie, when symptoms occurred without an explanatory arrhythmia).

Effectiveness results
Of the 48 consecutive patients, 5 had an inadequate database. Of the remaining 43 patients, 4 (9%) had diagnostic studies and 14 (33%) had pertinent negative studies. Overall, TTM was useful in 18 of 43 patients (42%). Also, of the 31 patients who had recent ambulatory ECGs, 5 (16%) had useful studies. The comparison group of 43 ambulatory ECGs showed no diagnostic and 3 pertinent negative studies (7%).

Clinical conclusions
TTM appeared more effective than ambulatory ECG for the detection of arrhythmias associated with intermittent central nervous system or cardiac symptoms.

Measure of benefits used in the economic analysis
The primary health outcome used was the usefulness of TTM. TTM was considered useful when it was a diagnostic study (ie, when an explanatory arrhythmia occurred during symptoms) or a when it was a pertinent negative study (ie, when symptoms occurred without an explanatory arrhythmia).

Direct costs
Direct health services costs were considered, based on $550 per ambulatory ECG and $660 per 1 month of TTM. The cost per useful study was calculated as the number of total studies divided by the number of useful studies multiplied by the cost of the monitoring method. Quantities and costs were not reported separately. No discounting was performed. No price dates were stated.

Statistical analysis of costs
Chi-square analysis was used to compare the number of useful tests in the central nervous system versus cardiac group and the number of diagnostic versus pertinent negative studies.

Currency
US dollars ($).

Sensitivity analysis
Not performed.

Estimated benefits used in the economic analysis
Of the 48 consecutive patients, 5 had an inadequate database. Of the remaining 43 patients, 4 (9%) had diagnostic studies and 14 (33%) had pertinent negative studies. Overall, TTM was useful in 18 of 43 patients (42%). Of the 31 patients who had recent ambulatory ECGs, 5 (16%) had useful studies. The comparison group of 43 ambulatory ECGs showed no diagnostic and 3 pertinent negative studies (7%).

Cost results
The cost per useful study for TTM was $1577. For the 31 patients who had recent ambulatory ECGs, the cost per useful study was $3410. For the matched group of 43 ambulatory ECGs, the cost per useful study was $7883.
Synthesis of costs and benefits
The incremental costs were shown to be negative, while the incremental benefits were positive.

Authors' conclusions
TTM appeared more effective than ambulatory ECG for the detection of arrhythmias associated with intermittent central nervous system or cardiac symptoms. Limiting TTM to patients with primarily cardiac symptoms, and to a 1 week time period, would have optimised cost-effectiveness in this group of patients.

CRD Commentary
The clinical study was interesting. However, the lack of power calculations to determine the sample size may affect the statistical analysis (sample size may be too small to detect statistically significant effects). Information bias may arise from the study methodology (in this sense, a randomised controlled trial is needed). The costing procedures were not stated, nor were price dates, which limits the validity and generalisability of the economic analysis. No sensitivity analysis was performed to allow for uncertainty in the measure of relevant variables. The simplicity and rigour of the analysis was, on the whole very appropriate to answer the question posed.

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None stated.

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