Costs and effectiveness of a nurse specialist anticoagulant service

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
A nurse specialist service in anticoagulation treatment.

Type of intervention
Secondary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Patients referred to anticoagulant clinics for anticoagulation treatment.

Setting
Institution. The economic study was performed in the UK.

Dates to which data relate
The authors did not clearly establish the dates to which effectiveness data referred (publication date was 1997). Cost data were reported in 1995 prices.

Source of effectiveness data
Effectiveness data were derived from a single study.

Link between effectiveness and cost data
Cost data were collected retrospectively on the same patient sample as that used in the effectiveness study.

Study sample
Two groups of patients were analysed. Consecutive patients newly referred to the anticoagulant clinic (group A) and randomly selected patients who had been attending the anticoagulant clinic for a year or more. 211 patients were seen by the consultant anticoagulation service (CAS) and 229 patients were seen by the nurse specialist anticoagulation service (NSAS). No power calculations were presented.

Study design
This was a retrospective case series study with a six-month follow up period, and a prospective consecutive case series with a three month follow up period. Two centres were involved.
Analysis of effectiveness
The analysis of the clinical study was based on intention to treat. The primary health outcome of the study was the mean proportion of time that patients spend in the therapeutic range. The number of GP consultations and inpatient episodes arising from adverse events related to anticoagulant treatment, the number of drugs being taken that could interact adversely and/or inhibit haemostatic function, and patient and GP satisfaction with both services were included in the analysis as secondary outcomes. On analysis, no difference was found between the two groups at baseline.

Effectiveness results
The mean proportion of time spent by patients in the therapeutic international normalised ratio (INR) range was similar for the two services. Fewer patients in the nurse specialist service were taking drugs that might interact and/or inhibit haemostatic function and a greater proportion of patients was satisfied with the service. There was no significant difference in GP satisfaction between the two services.

Clinical conclusions
There is no significant difference in outcomes between the consultant and nurse specialist services.

Modelling
No model was used to estimate cost-benefits.

Measure of benefits used in the economic analysis
The authors produced no single measure of benefit. The primary health outcome of the study was the mean proportion of time that patients spend in the therapeutic range. The number of GP consultations and inpatient episodes arising from adverse events related to anticoagulant treatment, the number of drugs being taken that could interact adversely and/or inhibit haemostatic function, and patient and GP satisfaction with both services were included in the analysis as secondary outcomes.

Direct costs
Mean cost/quantities were reported separately. Direct costs included: blood test, clinic visits, transport visits, domiciliary visits, related GP visits, drugs that may adversely interact and/or inhibit haemostatic function, treatment days, nurse training costs and hospitalisation. Nurse training costs were discounted at a 6% rate over 5 years, but other costs were not discounted as the follow up period was less than one year. The boundary assumed was that of the health service. The estimation of quantities was based on actual data. The estimation of costs was based on standard prices. The source of quantity data was this study, and the cost data came from the hospital finance department for hospital related costs, national figures for GP costs, and the British National Formulary for drug costs. These costs were in 1995 prices.

Statistical analysis of costs
Costs were considered stochastically, in that mean and standard errors were reported. 95% confidence intervals were calculated. Mean and standard errors were reported for quantities, and p-values were calculated. Average and incremental costs were presented. Costs that were excluded because they were common to both groups were the travel cost and costs to patients of lost work, as well as the costs of the premises.

Indirect Costs
Not stated.

Currency
UK pounds sterling (£).
Sensitivity analysis
A one-way, simple sensitivity analysis was performed on transport and domiciliary visits, and staffing cost (varied by 15%).

Estimated benefits used in the economic analysis
The time spent in the therapeutic range was 58% for CAS versus 61% for NSAS in group A, (p=0.65). In group B the numbers were 73% (CAS) versus 74% (NSAS), (p=0.09). For secondary measures, the only significant differences were found in the number of patients taking drugs that might interact with their anticoagulation therapy: 26% CAS versus 11% NSAS, (p=0.01) and patient satisfaction with the service (87% CAS, 96% NSAS; p = 0.04). The authors considered there was no difference in effectiveness between the two services.

Cost results
The mean total cost per service and 95% confidence intervals were reported as follows in study group A:

- total CAS cost, 42.2 (-10.89 to 3.91),
- total NSAS cost without hospitalisation, 45.7 (95% CI not reported),
- total NSAS with hospitalisation, 53.1 (-28.53 to 6.66).

In study group B, these numbers were:

- total CAS cost, 49.7 (-5.09 to 9.54),
- total NSAS cost without hospitalisation cost 47.4 (95% CI not reported),
- total NSAS with hospitalisation, 53.4 (-18.54 to 11.12).

Synthesis of costs and benefits
A synthesis of costs and benefits was not completed, as the authors assumed the effectiveness to be equal and performed a cost-minimisation analysis.

Authors’ conclusions
The authors concluded that the provision of outpatient anticoagulation by the nurse specialist service was not more expensive than the consultant service. Based on the evidence the authors recommended NSAS as a viable alternative model of anticoagulant service provision.

CRD COMMENTARY - Selection of comparators
The selection of the comparator was clearly established and justified.

Validity of estimate of measure of effectiveness
Selection bias as well as lack of randomisation could have strongly influenced primary health outcomes, and the results should therefore be treated with some caution. A small sample size and short average follow up period (5 weeks for new patients) limit the generalisability of the results.

Other issues
The issue of the generalisability of the results to other settings was not investigated, although the authors emphasised the relevance of the results to monitoring the care of patients with other chronic diseases.

Implications of the study
The safety and cost-effectiveness of nurse specialist anticoagulant service, outside of the setting presented here, needs to be further investigated.

**Source of funding**
None stated.

**Bibliographic details**

**PubMedID**
9462263

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Aged; Anticoagulants /therapeutic use; Cost-Benefit Analysis; England; Hematology /economics; Hospital Costs; Hospital Units /economics /manpower; Humans; Nurse Practitioners /economics /utilization; Retrospective Studies; Thromboembolism /prevention & control

**AccessionNumber**
21997001450

**Date bibliographic record published**
31/08/1999

**Date abstract record published**
31/08/1999