Evaluation of a surveillance programme for women with a family history of breast cancer

Reis MM, Tavakoli M, Dewar J, Goudie D, Cook A, McLeish L, Young D, Kenyon J, Steel M

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 cost-effectiveness of a surveillance programme for women with a family history of breast cancer. The authors concluded that the programme was cost-effective and was worthy of wider support. There were a number of limitations to the study, so the authors’ conclusions should be considered with caution.

Type of economic evaluation
Cost-utility analysis

Study objective
This study examined the cost-effectiveness of a screening programme for women with a family history of breast cancer.

Interventions
The intervention was an annual surveillance programme for breast cancer in women with a family history of breast cancer. Screening comprised a clinical examination of the breasts and a two-view mammography. This was compared with no screening.

Location/setting
UK/primary care.

Methods
Analytical approach:
This economic evaluation was based on a single study conducted in Tayside, Scotland, UK. The time horizon appears to have been 11 years. The perspective was not explicitly reported.

Effectiveness data:
The clinical data were derived from a single-centre cohort study, with historical control data, which were mainly from the same centre, but were supplemented with data from published sources. Over an 11-year period the Tayside breast cancer, family clinic, surveillance programme conducted 8,000 annual screens and 46 cases of breast cancer were detected. These patients were followed-up for a period of 30 months. These data were compared against a consecutive series of 40 women, in the authors’ setting, who were under the age of 50 years and were diagnosed with breast cancer, but had never participated in a screening programme. An additional comparative group was formed by identifying 37 relatives of the women who were participating in the screening programme. These relatives were diagnosed with breast cancer before the age of 55 years, but had never had pre-symptomatic screening or were diagnosed at the first round of the UK National Breast Screening Programme. The key clinical outcomes were the five-year disease-free survival and recurrence rates and the proportion of breast cancer detected that was identified as early stage (pathological stage 1 or 2) and node negative.

Monetary benefit and utility valuations:
The utility values were obtained from published studies, but their details were not reported.

Measure of benefit:
Quality-adjusted life-years (QALYs) were the measure of benefit. The authors assumed that pathological stage 1 or 2 (T1/2), node-negative breast cancers had a 70% complete cure rate and, for a woman diagnosed with early breast cancer at 50 years, the complete eradication of the cancer added 25 years of life or 25 QALYs.
Cost data:
The economic analysis included the costs for breast cancer management, separately for late stage (T3/4, node positive) and early stage (T1/2, node negative) cases. These costs included wide local excision, axillary surgery, chemotherapy, total mastectomy and breast reconstruction, second-line drug treatment, palliative care, and radiotherapy. The resource use data were derived from the clinical study and the unit costs were based on UK published data, augmented by estimates supplied by the finance departments of two UK hospitals. All costs were in UK pounds sterling (£).

Analysis of uncertainty:
The methods of the sensitivity analysis were not explicitly reported.

Results
Total costs per patient for the management of breast cancer were £45,328 for late-stage breast cancer and £17,456 for early-stage breast cancer. Based on the assumption that the Tayside programme performed 1,000 screens annually and 1.32 women shifted in diagnosis from late to early stage of cancer, accruing cost savings due to lower management costs, the net annual cost of the screening programme was £63,209.

The expected QALYs gained with the screening programme were estimated to be 13.2 per year, resulting in a cost of £4,789 per QALY.

The authors reported that this result was sensitive to variation in two parameters, which were the number of breast cancers detected annually by screening and the percentage of patients who shifted to early-stage cancer at diagnosis.

Authors’ conclusions
The author concluded that a surveillance programme for women with a family history of breast cancer was cost-effective and worthy of more support.

CRD commentary
Interventions:
The intervention was clearly reported and no screening was used as comparator to allow the active value of the intervention to be evaluated.

Effectiveness/benefits:
The clinical evidence came from the analysis of patient records and was compared with data, from the same hospital database, that was analysed retrospectively. There are a number of potential risks of bias, when undertaking such an analysis, particularly in the accuracy of the data collection and reporting. The baseline characteristics of the two groups were reported, but did not appear to be comparable. Power calculations to ascertain the correct sample size for detecting differences were not performed and no statistical analysis to account for potential confounding was performed. The measure of benefit was QALYs, which are a validated measure and they allow cross-disease comparisons to be made. Little information was provided on the derivation of the utility values and the quality of life estimates were based on authors’ assumptions.

Costs:
The perspective was not explicitly stated, but, from the cost categories and the sources of unit costs, it appears that it was that of the UK National Health Service. Some details of the unit costs and quantities of resources used were reported, which aids transferability. Discounting was relevant for the time horizon, but was not performed. As the price year was not reported, it will be difficult to carry out reflation exercises for other time periods.

Analysis and results:
The costs and benefits were synthesised, but no incremental analysis was performed. The issue of uncertainty was not addressed satisfactorily, which limits the generalisability of the findings. The authors conducted a pragmatic and potentially useful analysis, which was limited methodologically, but a balanced discussion was provided.

Concluding remarks:
There were a number of limitations to the study, so the authors’ conclusions should be considered with caution.
**Funding**
Supported by the Breast Cancer Campaign and the Chief Scientist Office of the Scottish Executive.

**Bibliographic details**

**PubMedID**
19279022

**DOI**
10.1136/jmg.2008.064311

**Original Paper URL**
http://jmg.bmj.com/content/46/5/319.abstract

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Adult; BRCA1 Protein /genetics; BRCA2 Protein /genetics; Breast Neoplasms /economics /genetics /therapy; Cost-Benefit Analysis /methods; Family Health; Female; Humans; Middle Aged; Mutation; Population Surveillance /methods; Quality-Adjusted Life Years; Survival Analysis

**AccessionNumber**
22009101998

**Date bibliographic record published**
02/12/2009

**Date abstract record published**
12/05/2010