Fracture liaison services for the evaluation and management of patients with osteoporotic fracture: a cost-effectiveness evaluation based on data collected over 8 years of service provision
McLellan AR, Wolowacz SE, Zimovetz EA, Beard SM, Lock S, McCrink L, Adekunle F, Roberts D

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 evaluated the cost-effectiveness of a fracture liaison service (FLS) for the prevention of further fractures in patients who had experienced a fragility fracture. The authors concluded that the FLS was cost-effective compared with the usual prevention procedures. There were a few limitations, but the selection of the clinical and economic data and the reporting of the model inputs and results were satisfactory. The authors’ conclusions appear to be appropriate.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
The objective was to determine the cost-effectiveness of a fracture liaison service (FLS) for the prevention of further fractures in patients who had experienced a fragility fracture.

Interventions
The FLS was responsible for case finding, assessment, diagnosis, and recommendations for treatment to prevent secondary osteoporotic fractures in patients aged 50 years or older, who were identified by an osteoporosis nurse specialist. This was compared with no FLS, with no identification and assessment and only opportunistic hospital or primary care assessment, which was the usual care.

Location/setting
UK/primary and secondary care.

Methods
Analytical approach:
A state-transition model was constructed to determine the clinical and economic impact of the two evaluation and management programmes, using local and national audit data and published literature. A lifetime horizon was adopted. The authors stated that the perspective was that of the UK NHS.

Effectiveness data:
The clinical data for the FLS came primarily from audits of the West Glasgow FLS, while those for usual care were mainly from two national audit datasets. Treatment efficacy was from published literature. The health states and effectiveness parameters were from an existing model of osteoporosis, called the School of Health and Related Research (ScHARR) Economic Model of Osteoporosis (SHEMO). The key clinical parameters were the type of treatment, subsequent fractures, health-related quality of life, and survival.

Monetary benefit and utility valuations:
The utility estimates for patients with osteoporosis and utility-weight multipliers for fracture states were from systematic reviews.

Measure of benefit:
The benefit measure was the number of quality-adjusted life-years (QALYs), which were discounted at an annual rate of 3.5%. Life-years were reported.
Cost data:
The analysis included the direct medical costs of the FLS, usual care, treatment and rehabilitation of fractures, and preventive treatments. The FLS cost items included the consultant and nurse specialist time, dual energy X-ray absorptiometry, and patient transport. The costs were from audits for the FLS and usual care, and published sources for treatment and prevention. They were presented in 2009 UK pounds sterling (£), with an annual discount rate of 3.5%.

Analysis of uncertainty:
Alternative structural assumptions were tested in a sensitivity analysis. Deterministic sensitivity analysis was performed to assess the impact of different input values on the results, and probabilistic sensitivity analysis was performed to explore the impact of overall parameter uncertainty.

Results
The total estimated cost for a cohort of 1,000 patients was £2,404,717 with the FLS, compared with £2,426,169 with usual care. The cost saving with the FLS, compared with usual care, was £21,452 (95% CI -156,101 to 154,494).

The estimated QALYs were 7,257 with the FLS compared with 7,235 with usual care; a gain of 22 QALYs (95% CI 7 to 37) with the FLS.

Efficacy was the most influential variable. Using efficacy data that were least favourable towards the FLS, the incremental cost-effectiveness ratio was £5,740 per QALY.

Authors' conclusions
The authors concluded that the FLS was cost-effective compared with the usual prevention of further fractures in patients who had experienced a fragility fracture.

CRD commentary
Interventions:
The interventions were appropriate comparators; the proposed FLS was compared with the usual practice in the authors' setting, which did not include a FLS.

Effectiveness/benefits:
UK administrative data were combined with published evidence to produce clinical estimates that were relevant to the UK NHS. The methods used to identify the sources and their methods were not described, making it difficult to assess their quality and if they were representative. It was unclear whether expert opinion was used to validate the key clinical estimates that were from published sources, but ranges of estimates were used. The methods used to determine the utility data were not described, but the estimates were from published systematic reviews. QALYs and life-years were appropriate benefit measures, given the impact of fractures on quality of life and survival.

Costs:
The perspective was stated and it appears that all the relevant costs were considered. A detailed breakdown of the cost items was given, which should allow the replication of the cost analysis for other settings. The costs were from appropriate sources and details, such as the price year, sources of data, and discount rate, were given.

Analysis and results:
An incremental analysis was appropriate for determining the cost-effectiveness of the two strategies. The impact of uncertainty was assessed in both deterministic and probabilistic sensitivity analyses. The results of the base-case and these sensitivity analyses were sufficiently reported and the findings should be generalisable to other settings. The authors highlighted the strengths and limitations of their analysis.

Concluding remarks:
There were a few limitations, but the selection of the clinical and economic data and the reporting of the model inputs and results were satisfactory. The authors' conclusions appear to be appropriate.
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