Cost-effectiveness of hormone replacement therapy for menopausal symptoms in the UK
Lekander I, Borgstrom F, Strom O, Zethraeus N, Kanis JA

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 hormone replacement therapy (HRT) in women aged 50 years, who had menopausal symptoms, in comparison with no treatment. The authors concluded that HRT for women with menopausal symptoms was cost-effective. The methods were appropriate, but little information on the sources of the clinical and cost data was provided. The issue of uncertainty was not fully investigated and the authors’ conclusions should be interpreted with this in mind.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to determine the cost-effectiveness of hormone replacement therapy (HRT) compared with no treatment for women, who were aged 50 years and had menopausal symptoms.

Interventions
The treatment was dependent on uterus status. For women who had undergone a hysterectomy, the treatment was oestradiol 1mg and, for those with an intact uterus, the treatment was 1mg oestradiol plus 0.5mg norethisterone. The treatment duration for each population was five years.

Location/setting
UK/primary care.

Methods
Analytical approach:
This economic evaluation was based on a published Markov model with a 50-year time horizon (until death or a maximum age of 100 years). The model contained eight disease states associated with HRT, such as fractures (hip, vertebral, and wrist) and cancer (breast and colorectal). Two separate analyses were conducted based on uterus status (intact or removed). The authors stated that the perspective was that of the UK National Health Service (NHS).

Effectiveness data:
The effects of HRT on disease risk during therapy were derived from the Women's Health Initiative, a randomised controlled trial. The UK disease risk and mortality was based on national and in-patient registries and empirical published studies. The authors made some assumptions when literature-based estimates were not available. The clinical outcomes were death and HRT-related adverse events, such as fracture (hip, vertebral, and wrist), cancer (breast and colorectal), and cardiovascular diseases.

Monetary benefit and utility valuations:
The utilities for each treatment-related adverse event were based on several published studies and all except one of these used the European Quality of life (EQ-5D) questionnaire. The one exception was for stroke, where the utility estimates were from a published meta-analysis of outcomes that were assessed by various methods. The utility gain from menopausal symptom relief was measured using the time trade-off method and derived from a Swedish study (Zethraeus, et al. 1997, see ‘Other Publications of Related Interest' below for bibliographic details).

Measure of benefit:
Quality-adjusted life-years (QALYs) were the benefit measure and were discounted at an annual rate of 3%.
Cost data:
The analysis considered the annual intervention costs, which included drugs and physician consultations. The short-term (within one year) and long-term (if the event persisted for more than a year) costs associated with different disease states were also included. The data were from published studies, the details of which were not provided, and authors’ assumptions. All costs were in UK pounds sterling (£) and the price year was 2006. Future costs were discounted at an annual rate of 3%.

Analysis of uncertainty:
One-way sensitivity analyses tested for the effects of changes in the key parameters, which included cohort ages, treatment duration, and the discount rate. Threshold analysis was conducted to investigate the minimum increase in quality of life required for HRT to become cost-effective.

Results
HRT resulted in a gain of 1.17 QALYs (1.21 undiscounted) for women with an intact uterus and 1.23 QALYs (1.33 undiscounted) for women whose uterus had been removed. The incremental costs were £677 for women with an intact uterus and £252 for women without a uterus.

The cost per QALY gained was £580 for women with an intact uterus and £205 for women without a uterus.

The sensitivity analysis indicated that the results were stable to changes in all the input parameters, except for the effect of therapy on menopausal symptoms. The threshold analysis revealed that HRT was cost-effective if the gain in quality of life exceeded 0.017 units for women with an intact uterus and zero for women without a uterus, which means it was cost-effective without any symptom alleviation.

Authors’ conclusions
The authors concluded that HRT for women with menopausal symptoms was cost-effective.

CRD commentary
Interventions:
The selection of the comparators appears to have been appropriate in that the proposed strategy was compared with usual care (no treatment) in the authors’ setting. The two interventions were clearly described.

Effectiveness/benefits:
The effectiveness data were from various published studies and the methods used to select them were not stated, which makes it difficult to ascertain if the best available evidence was used. Most of the clinical data were estimated from the findings of the Women’s Health Initiative trial and the key details of this trial were not reported, which makes it difficult to objectively assess the validity of these estimates. The benefit measure was appropriate, as QALYs are a validated measure and allow cross-disease comparisons.

Costs:
The costs appear to have reflected those of the UK NHS and their sources were reported. Both the unit costs and the quantities of resources used were from published sources, the key details of which were not reported. This makes it difficult to judge their quality and validity. The authors made some assumptions for the long-term costs, which were clearly reported and justified. The quantities of resources were not reported separately from their costs, which limits the ability to reproduce the study for other settings. Discounting was appropriately conducted and the price year was reported, which aids reflation exercises for other time periods.

Analysis and results:
The model was clearly described and the findings were clearly reported. The health outcomes and net costs were synthesised into incremental cost-effectiveness ratios. The authors provided detailed results of their sensitivity analyses, but probabilistic sensitivity analyses would have more fully ascertained the parameter uncertainty. They compared their findings with those of other studies and explained the reasons for any differences in the results.

Concluding remarks:
The methods were appropriate, but little information on the sources of the clinical and cost data was provided. The issue of uncertainty was not fully investigated and the authors’ conclusions should be interpreted with this in mind.

**Funding**
Supported by a grant from Wyeth Research.

**Bibliographic details**

**PubMedID**
19237618

**DOI**
10.1258/mi.2009.009004

**Original Paper URL**
http://mi.rsmjournals.com/cgi/content/abstract/15/1/19

**Other publications of related interest**

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Cost-Benefit Analysis; Estrogen Replacement Therapy /economics; Female; Great Britain; Hot Flashes /drug therapy; Humans; Markov Chains; Middle Aged; Quality-Adjusted Life Years

**AccessionNumber**
22009101915

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

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