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 assessed the long-term costs and quality of life of patients with multiple sclerosis, who received disease-modifying treatments (DMTs), compared with those who did not. The authors found that the cost increase with DMTs was moderate because some of their costs were off-set by a slower progression to severe disease. The methods were appropriate, but a full incremental analysis and an adequate evaluation of uncertainty were neither presented nor discussed and the conclusions should be interpreted with caution.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to assess the long-term costs and quality of life of patients with multiple sclerosis (MS) who were given disease-modifying treatments (DMTs) compared with those who were not.

Interventions
DMTs reduce the frequency of relapse for MS patients and relapse is one of the criteria that are associated with a poor prognosis and disease progression in MS. This study compared MS patients receiving DMTs with a group of patients for whom DMTs were not available. The study also included, as a comparator, a partly treated group of patients where 55% received DMTs.

Location/setting
France/primary care.

Methods
Analytical approach:
The data were synthesised, using a Markov model, which included three disease states of mild, moderate, and severe MS, and a state of death, for each of the comparators. This model was constructed to represent the disease assessments recorded in the European Database for Multiple Sclerosis (EDMUS). The time horizon was 20 years and the results for a 10-year time horizon were also reported. The authors stated that the main study perspective was societal.

Effectiveness data:
The clinical data for natural progression without treatment were from the French cohort of the EDMUS, which looked at the burden of MS in Europe. A questionnaire based on the EDMUS study and adapted to the French setting was used to collect background information on the participants, their quality of life, and disease information for MS patients in France, as well as their resource use and productivity losses. The effectiveness data for patients with access to DMTs were estimated from clinical practice data for patients in the Karolinska hospital in Stockholm. The main clinical effectiveness estimate was the Expanded Disability Status Scale (EDSS) score.

Monetary benefit and utility valuations:
The French survey included the generic preference-based European Quality of life (EQ-5D) questionnaire, which translated combinations of answers into utilities, using the time trade-off technique, based on the UK general population. The utilities for the Stockholm population were also estimated, in the same way.
Measure of benefit:
The measure of benefit was the quality-adjusted life-year (QALY) and these benefits were discounted at a rate of 3% per annum.

Cost data:
The resource use data for home care and major investments, such as wheel chairs and house alterations, were collected by the French questionnaire. Informal care was estimated, using a human capital approach, on the questionnaire data for the number of hours provided to the MS patients and disposable income estimates. The unit costs were from hospital activity tariffs, national health insurance tariffs, the national price list, and national health insurance tariffs. The annual costs for DMTs were estimated based on the weighted annual cost of the treatments that were used in the French survey. The costs were reported in Euro (EUR), at 2007 prices, and discounted at a rate of 3% per annum.

Analysis of uncertainty:
Sensitivity analysis was performed to examine how robust the model was to variations in the age and gender proportions of the simulated cohort. The base-case results were also reported from the public payer’s perspective.

Results
Over the 20-year period, the total discounted costs to society, were estimated at EUR 428,750 without treatment, EUR 431,200 with partial treatment, and EUR 433,200 with full treatment. From the public payer perspective, they were EUR 158,500 without treatment, EUR 169,200 with partial treatment, and EUR 177,900 with full treatment. The incremental costs with treatment were larger from the public payer perspective because treatment was a larger proportion of the costs and the off-set costs were less.

The total discounted QALYs were estimated at 8.96 without treatment, 9.11 with partial treatment, and 9.24 with full treatment. The cost per QALY gained with full treatment compared with no treatment was EUR 16,000.

Changing the proportion of females, allowing for higher mortality, or both in the simulated cohort had little impact on the overall costs and utilities. Increasing the age of the cohort led to an increase in the costs and a decrease in the utilities.

Authors’ conclusions
The authors found that the cost increase with DMTs was moderate as part of their costs were off-set by a slower progression to severe disease, which incurred high costs and a low quality of life.

CRD commentary
Interventions:
It appears that all the relevant comparators were assessed, including the usual care, where only a proportion of the patient population received DMTs. The comparators were not well described and there were no details of what the DMTs were nor the combinations in which they were given.

Effectiveness/benefits:
The effectiveness data were from sources that were highly relevant and appear to have been of good quality, but there was no indication that a systematic review was conducted, so it is unclear whether all the relevant sources of information were included. The details of the sources used to derive the utility estimates, the instrument used, and the source population were provided and they appear to have been appropriate.

Costs:
It appears that all the relevant costs were included for both the societal and the public payer perspectives. The sources from which these cost data were derived were adequately reported, along with the price year, time horizons, and discount rate.

Analysis and results:
The analytic approach was satisfactorily reported, with adequate details of the decision analytic Markov model and a diagram. The results were also clearly reported, except for the incremental cost-effectiveness ratios, which received one
The authors adequately described the main limitations of their study and they found their results to be very similar to the results of studies in other European countries. There was a limited sensitivity analysis and no probabilistic sensitivity analysis, which makes it unclear how robust the results were to plausible variations in the parameters.

Concluding remarks:
The methods were appropriate, but a full incremental analysis and an adequate evaluation of uncertainty were neither presented nor discussed, so the conclusions should be interpreted with caution.

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