Cost-effectiveness of Delayed-Release Dimethyl Fumarate Compared With Glatiramer Acetate and Fingolimod for the Treatment of Relapsing-Remitting Multiple Sclerosis

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OBJECTIVE

• To estimate the cost-effectiveness of delayed-release dimethyl fumarate compared with glatiramer acetate and fingolimod in treatment of relapsing-remitting multiple sclerosis (RRMS) in the United States (US).

BACKGROUND

• A cohort-based Markov model tracking patients through EDSS health states with a time horizon of 1 year was developed in Microsoft Excel. Each patient can transition to better or worse EDSS health states, seize a relapse, transition from RRMS to secondary progressive multiple sclerosis (SPMS), and die. Disease-modifying therapy (DMT) was assumed to reduce the risk of EDSS progression and the annual relapse rate for the risk of transitioning to a higher EDSS state (Figure 1).

• Annual discount rates were assumed to be the same for all DMTs (5% in years 1 and 2, 3% in all subsequent years). All patients were assumed to stop DMT when their EDSS level reached 7.

• The model was designed to estimate the discounted (at 3%) cost and quality-adjusted life-years (QALYs) associated with treatment with delayed-release dimethyl fumarate compared with glatiramer acetate or fingolimod in RRMS.

• One-way sensitivity analyses were performed changing input parameter values and model assumptions.

METHODS

• Populations characteristics matched those in the delayed-release dimethyl fumarate phase 3 clinical trials (Table 1).

• The univariate rate of transition between the EDSS health states and annualized relapse rates were estimated using data from the placebo arms of the phase 3 clinical trials.

• The time at which the DMTs showed disease progression and reduced annualized relapse rates was estimated using a mixed treatment comparison (MTC) analysis (Table 2).

• Sensitivity analyses showed that delayed-release dimethyl fumarate was less costly and more effective than glatiramer acetate and fingolimod, with variation within the ranges of values tested (Figure 2).

• Cost-effectiveness analyses were performed using a Markov model, applying population-level disease progression rates and utility weights estimated in a previous study.

RESULTS

• Results were presented for a 10-year time horizon.

• Compared with glatiramer acetate and fingolimod, delayed-release dimethyl fumarate increased QALYs (by $0.14–0.16 QALYs), and was less costly by $9,879 and $16,462, respectively (Table 5).

• Thus, delayed-release dimethyl fumarate was dominant (lower total costs and higher QALYs gained) compared with glatiramer acetate and fingolimod (Table 5).

• No clinical or modeling assumptions were used to model quality of life.

CONCLUSIONS

• Delayed-release dimethyl fumarate is a cost-effective DMT when compared with glatiramer acetate and fingolimod.

• Sensitivity analyses supported the robustness of the model results.

REFERENCES