Cost effectiveness of Apomorphine in the treatment of advanced Parkinson Disease in the UK and Germany: Results from a multicountry decision analytic model

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Objective

Parkinson Disease (PD) is the second commonest cause of neurological disability. Approximately, 5.2 million men and women are affected worldwide. Continuous subcutaneous apomorphine (CSAI) represents an alternative treatment option of advanced PD with motor fluctuation. The purpose of this analysis was to evaluate the cost-effectiveness of CSAI compared with Levodopa/carbidopa intestinal gel (LCIG), Deep-Brain-Stimulation (DBS) and Standard-of-care (SOC).

Methods

We developed a Markov-Model to simulate the long-term consequences, disease progression (Hoehn&Yahr-stages 3-5, percentage of waking-time in the OFF-state), complications and adverse-events. The model is adopted based on models which have been published for the UK and Sweden. Complications are different for the alternatives (e.g. pump problems in case of LCIG, temporary/permanent complications in case of DBS). Moderate and severe adverse-events (e.g. motor fluctuation, dyskinesia, nausea, dizziness, hallucination, skin problems, depression, anxiety) and death were included. Including 25 health-states, the model comprises moderate and severe health conditions. Probabilities derived from RCT and open-label studies. Direct costs (2012) were estimated from the perspective of the national health care systems.

Ressource use and costs

The cost assessment is based on the assignment of costs to the health states. The costs of each health state are determined by the resource utilisation associated with a health state. Resource use (e.g. the type and frequency of medical goods and services rendered to the patient) and monetary value associated with a health state. Resource use and costs were used to calculate the total direct costs.

Results

UK life-time costs associated with CSAI amounts to 70,258 £ and generates 2.85 QALYs and 6.28 Lys (106,530 €, 2.92 QALYs and 6.49 Lys for Germany). Costs for DBS are 88,361.61 £, associated with 2.75 QALYs and 6.38 LYs. Costs for LCIG are 71,069 £ and generates 2.13 QALYs and 4.92 Lys (121,388 €, 2.68 QALYs and 6.61 Lys for Germany).

Conclusion

Funding the maternal toxoplasma screening saves money and is cost-effective for the society and the Austrian health care system.

References


Costs for DBS are 38,361.61 £, associated with 2.75 QALYs and 6.38 Lys (121,988 €, 2.85 QALYs and 6.61 Lys for Germany). CSAI dominates DBS. SOC associated UK costs are 68,082.92 €; 2.62 QALYs and 5.76 Lys were reached (91,588 €, 2.7 3QALYs and 6 Lys for Germany).

Probabilistic sensitivity analysis of 500 trial plots revealed that CSAI is cost effective compared to LCIG in more than 69.6% of the simulations with a willingness to pay threshold of 20,000 €. Patients treated with CSAI spent 69% of their remaining life-time in OFF I stage, 24% in OFF II, 6% in OFF III and 1% in OFF IV. Patients treated with LCIG spent 76% of their life-time after treatment start in OFF I, 20% in OFF II, 1% in OFF III and 1% in OFF IV. DBS patients spent 78% of time in OFF I state, 19% in OFF II, 25% in OFF III and 0.5% in OFF IV. In comparison to that, patients remaining on SOC therapy spend 27% of time in OFF II, 57% in OFF III and 16% in OFF IV stage.

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