Cost Utility Analysis of Alemtuzumab Compared With Chlorambucil in Untreated Patients With High-Risk (17p−) Chronic Lymphocytic Leukaemia in the United Kingdom

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Objective: To compare costs and outcomes of alemtuzumab and chlorambucil for first-line treatment of patients with high-risk (17p−) chronic lymphocytic leukemia (CLL) in the United Kingdom.

Methods: A Markov model was developed to simulate patients with previously untreated high-risk CLL. The model compared alemtuzumab (30 mg 3 times a week for up to 12 weeks vs chlorambucil 40 mg/m² PO once every 28 days for up to 12 cycles) in the United Kingdom. The model was validated with data from the CAM307 trial. The analysis focused on the sub-group of patients with 17p− CLL. Costs and outcomes were discounted at 3.5%.

Results: Compared with an alkylating agent, alemtuzumab was associated with increased costs of administration but significantly improved survival in the 17p− subgroup of CAM307 study. This study found that in the United Kingdom, the cost per QALY gained with alemtuzumab instead of chlorambucil increased lifetime cost per patient by around £5,893 and increased QALYs per patient from £10,957 to £17,938 and increased QALYs per patient from £10,957 to £17,938.

Conclusion: The analysis focused on the sub-group of patients with 17p−. Although costs and outcomes of alemtuzumab were higher than those of chlorambucil, the difference in costs was not significant enough to outweigh the benefits of alemtuzumab in terms of survival.


INTRODUCTION

Background: Measurement of mortality in chronic lymphocytic leukemia (CLL) requires long-term follow-up and is confounded by comorbidity and non-leukemia mortality.

Methods: A randomized phase II trial (CAM307) was conducted to evaluate the efficacy and safety of alemtuzumab monotherapy compared with chlorambucil in patients with CLL.

Results: The main cost drivers relate to therapeutic interventions and hospital care; therefore, a direct NHS cost approach is justified.

Conclusions: The study found that in the United Kingdom, the cost per QALY gained with first-line alemtuzumab therapy over chlorambucil is £14,788 in high-risk (17p−) CLL patients.

METHODS

Model

- A Markov Model was developed. Patients were modeled as receiving treatment and moving through post-treatment response or progressive disease (Figure 1).
- The model allows transitions between disease states including treatment failure, death, and death. The choice of therapy and duration of the model was informed by consultation with clinical experts and data available in the literature.
- The primary outcome measure for the UK economic evaluation is cost per quality-adjusted life year (QALY) gained to capture the incremental cost-effectiveness of treatment and moving from one health state to another.

Utility

- A recent review concluded that “the literature on the quality of life of CLL patients is very limited.”
- No preference-based utility values that meet the UK standards were available in the literature.

Figure 1. Schema of lifetime Markov model

Comparator

- Alemtuzumab 10 mg 3 times a week for up to 12 weeks in chlorambucil 40 mg/m² PO once every 28 days for up to 12 cycles.

Currently, the most widely used first-line treatment for CLL in the United Kingdom (17p−) is chlorambucil 15 mg/m² PO once every 28 days for up to 12 cycles.

Results: Compared with an alkylating agent, alemtuzumab was associated with increased costs of administration but significantly improved survival in the 17p− subgroup of CAM307 study. This study found that in the United Kingdom, the cost per QALY gained with alemtuzumab instead of chlorambucil increased lifetime cost per patient by around £5,893 and increased QALYs per patient from £10,957 to £17,938. When OS is allowed to vary to reflect differences in PFS, treatment with alemtuzumab instead of chlorambucil increases cost per patient by around £5,893 and increases QALYs by 0.75, at a cost per QALY gained of £18,788.

Costs and Outcomes

- The analysis focused on the sub-group of patients with 17p−. Although costs and outcomes of alemtuzumab were higher than those of chlorambucil, the difference in costs was not significant enough to outweigh the benefits of alemtuzumab in terms of survival.

Conclusion: The analysis focused on the sub-group of patients with 17p−. Although costs and outcomes of alemtuzumab were higher than those of chlorambucil, the difference in costs was not significant enough to outweigh the benefits of alemtuzumab in terms of survival.

REFERENCES