The Health Technology Report Series has been developed by the Institute of Family Medicine and Public Health at the University of Tartu.

CAR-T therapy in the treatment of refractory or relapsed diffuse large B-cell lymphoma

Summary

Objective: To evaluate the effectiveness, cost-effectiveness, and budget impact of CAR-T therapies as a third-line treatment in adults with refractory or relapsed (r/r) diffuse large B-cell lymphoma (DLBCL) compared to standard of care in Estonia.

Methods: To meet the objective, a systematic literature review on the effectiveness and safety of the three CAR-T therapies with European Union marketing authorisation (axicabtagene ciloleucel (axi-cel), lisocabtagene maraleucel (liso-cel) and tisagenlecleucel (tisa-cel)) and of decentralised CAR-T products indicated for r/r DLBCL was conducted. Additionally, the effectiveness and safety of the best available third-line treatment option for r/r DLBCL in Estonia, glofitamab, were evaluated. An overview of previously published cost-effectiveness studies comparing CAR-T therapies to alternative r/r DLBCL treatments or to each other was compiled. Estonian cost-effectiveness and budget impact calculations were performed comparing axi-cel, liso-cel, and a decentralised CAR-T product to glofitamab. Tisa-cel was omitted from the analysis as it was less effective than the comparator treatment. A cost-effectiveness analysis with a lifetime horizon was performed by combining a decision tree and a partitioned survival model. The decision tree was used to model processes preceding CAR-T cell infusion; the partitioned survival model was applied to model the course of disease following alternative treatments. The effectiveness data for the compared treatments was derived from randomised controlled trials. Drug costs were estimated from published literature, and treatment costs from Estonian Health Insurance Fund data, whose perspective the analysis employed. Quality-of-life estimates were derived from published literature. Costs and effects were discounted using an annual discount rate of 3.5%. Results were evaluated in terms of costs, life years (LY), quality-adjusted life years (QALY) and incremental cost-effectiveness ratios (ICER). In addition, a budget impact analysis from the healthcare payer's perspective was conducted.

Results: In the base-case scenario, all CAR-T therapies analysed enabled prolongation of LY-s and QALY-s at a higher cost compared to glofitamab. The ICERs for axi-cel, liso-cel, and the decentralised CAR-T product were 254,333, 249,436, and 57,611 euros, respectively. In deterministic sensitivity analysis, the results for all CAR-T therapies were most influenced by CAR-T cost, the discount rate, and data on glofitamab use. In probabilistic sensitivity analysis, at a 40,000-euro threshold, the probability of the decentralised CAR-T product being cost-effective was 13,3%, while the probability of axi-cel and liso-cel being cost-effective was 0%. Budget impact analysis showed that if the annual number of patients eligible for CAR-T treatment were 20, the total additional treatment cost would be 3.5–4.4 million euros for liso-cel and up to 1 million euros for the decentralised CAR-T product.

Conclusions: All CAR-T therapies evaluated in the cost-effectiveness analysis are more effective and costly than glofitamab in the third-line treatment of r/r DLBCL in Estonia. Decentralised CAR-T production could be cost-effective at a 40,000-euro threshold if the product price is reduced by 16%.

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