

The cost-effectiveness of immunotherapy for metastatic lung cancer in Estonia

SUMMARY

Objectives: To evaluate the cost-effectiveness and budget impact of atezolizumab, durvalumab and pembrolizumab in combination with chemotherapy in the first-line treatment of small cell lung cancer (SCLC) and squamous non-small-cell lung cancer (NSCLC) with a tumour proportion score (PD-L1) of 1-49%, respectively.

Methods: A literature review on the effectiveness and cost-effectiveness of immunotherapy was conducted from April to July of 2021. A partitioned survival model was developed to estimate the costs and health benefits of atezolizumab and durvalumab in the treatment of SCLC and pembrolizumab in the treatment of NSCLC in combination with first-line chemotherapy compared to chemotherapy alone from the Estonian Health Insurance Fund's (EHIF) perspective. Time horizons of five years and ten years were chosen for SCLC and NSCLC, respectively. Progression-free and overall survival data and quality of life estimates were sourced from published literature. Costs were based on EHIF's health care service prices. Costs and QALYs were discounted using an annual discount rate of 5%. Results were presented in terms of costs, quality adjusted life-years (QALY) and incremental cost-effectiveness ratios (ICER). A 5-year budget-impact analysis was carried out from the healthcare payer perspective.

Results: Treatment with atezolizumab, durvalumab and pembrolizumab in combination with chemotherapy would enable to gain 0.13, 0.18 and 0.50 QALYs, respectively, compared to the chemotherapy alone. Respective ICERs were estimated at €101,380 per QALY for atezolizumab plus chemotherapy, €87,008 per QALY for durvalumab plus chemotherapy and €66,110 per QALY for pembrolizumab plus chemotherapy. The results were most sensitive to the drug prices and utility values. According to the budget impact analysis, the additional cost of atezolizumab and durvalumab in combination with the first-line chemotherapy would be 2.23 and 2.69 million euros per five years, respectively. Adding pembrolizumab to the first-line chemotherapy would result in increased costs of 7.12 million euros.

Conclusions: Adding atezolizumab or durvalumab to the first-line chemotherapy in SCLC and pembrolizumab to the first-line chemotherapy in NSCLC with PD-L1 1-49% would result in QALY gain and substantial increase in the treatment costs compared to the chemotherapy alone.

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