RWD240

Cost-effectiveness Analysis of Adjuvant Atezolizumab or Pembrolizumab in Stage II–IIIA Non–Small Cell Lung Cancer Patients with PD-L1 ≥1% Expressing in Taiwan

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Background

- Lung cancer is the most common cancer and the leading cause of cancer-related death in Taiwan.
- Clinical evidence from the IMpower010 and KEYNOTE-091 trials has demonstrated the efficacy of atezolizumab and pembrolizumab in the adjuvant setting for NSCLC.
- The cost-effectiveness of immuno-oncology therapies in the adjuvant setting for NSCLC in Taiwan has yet to be determined.

Objective

- To evaluate the cost-effectiveness of atezolizumab and pembrolizumab versus best supportive care (BSC) as adjuvant treatments for patients with resected stage II-IIIA non-small cell lung cancer who have PD-L1 tumor cell expression ≥1% and have received platinum-based adjuvant chemotherapy, from Taiwan's National Health Insurance perspective.

Methods

- A five-state Markov model was constructed, incorporating: 1. disease-free survival; 2. locoregional recurrence (managed with curative-intent, palliative, or no treatment); 3. first-line distant metastatic recurrence (with treatment, palliative care, or no treatment); 4. second-line distant metastatic recurrence (with treatment, palliative care, or no treatment); and 5. death. (**Figure 1**)
- The model adopted a 40-year horizon with an annual discount rate of 3%, and the WTP threshold was set at USD 102,120/QALY (3 times Taiwan's per capita GDP in 2024).
- The analysis encompassed both pairwise and three-way comparative assessments.
- **Efficacy parameters** were derived from IMpower010 and KEYNOTE091 clinical trial data, integrated through network meta-analysis.
- **Cost parameters** were obtained through Taiwan's National Health Insurance Research Database(NHIRD), reflecting the standard of care costs in Taiwan.
- **Utility parameters** were extracted from published literature encompassing health utility data related to non-small cell lung cancer.
- Sensitivity and scenario analyses were performed to evaluate the robustness of the model outcomes.

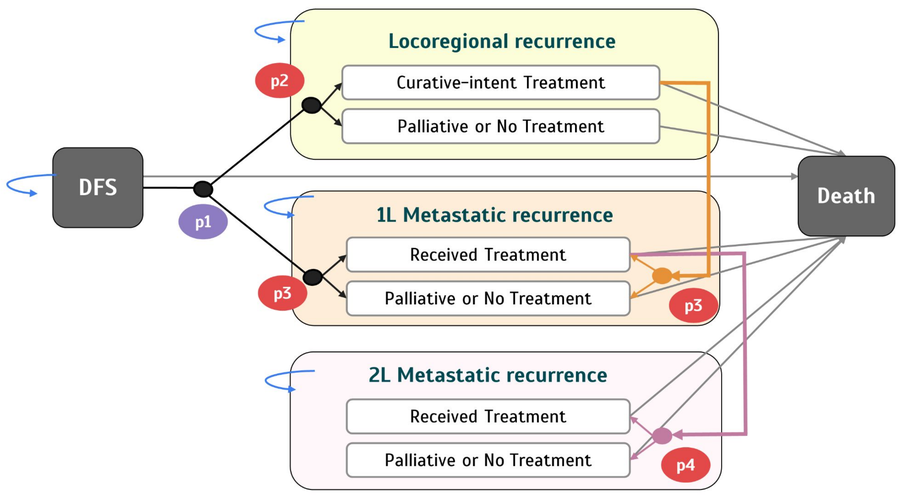
Results

- Base case analysis showed that atezolizumab and pembrolizumab compared to best supportive care (BSC), yielded ICERs of USD 66,771/QALY and USD 84,211 /QALY, respectively. Moreover, comparing pembrolizumab with atezolizumab treatment, the ICER was USD 36,321/QALY. (**Table 1**)
- Among the three treatment strategies, pembrolizumab demonstrated the most favorable cost-effectiveness.
- Sensitivity analyses, consistent with the base case results, demonstrated that the costs of pembrolizumab and atezolizumab in the DFS state had the most substantial impact on the overall outcomes. (**Figure 2**)
- Among the three therapies, pembrolizumab demonstrated a 91% probability of cost-effectiveness, compared with 6% for BSC and 3% for atezolizumab at the WTP threshold. **(Figure 3**)

Table 1 Base case results

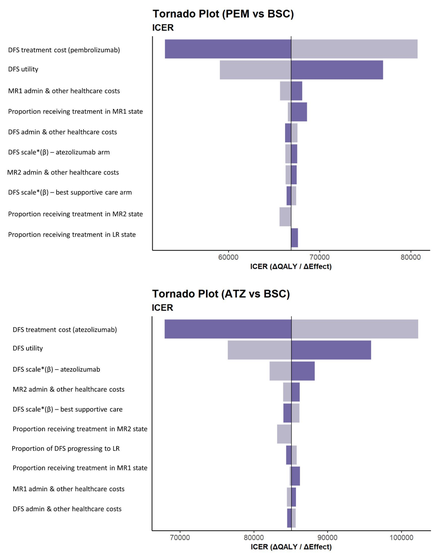
Strategy	Incremental Costs (USD)	Incremental QALYs	ICER (USD/QALY)
Pembrolizumab vs. BSC	47,894	0.7	66,771
Atezolizumab vs. BSC	38,406	0.5	84,211
Pembrolizumab vs. Atezolizumab	9,488	0.3	36,321
Pembrolizumab vs. Atezolizumab vs. BSC	47,894	0.7	66,771

Figure 1 Model structure



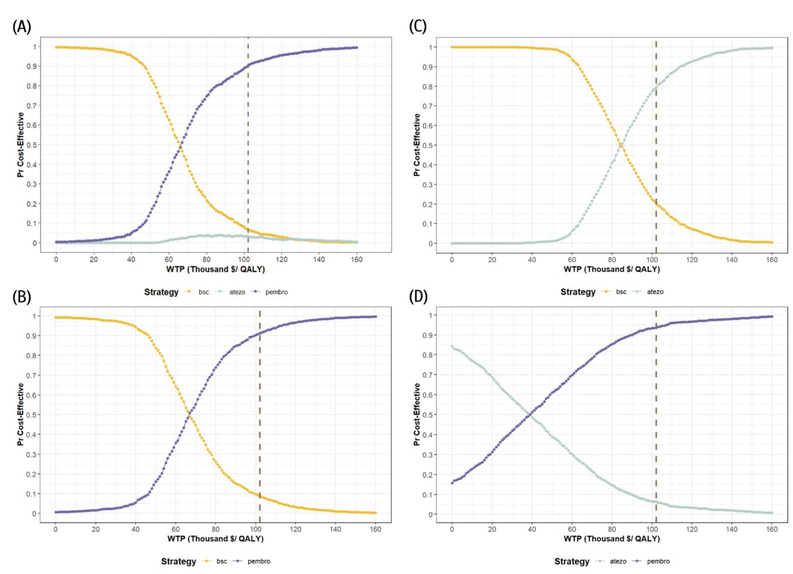
p, proportion; 1L, first line; 2L, second line; DFS, disease free survival; CT, Chemotherapy

Figure 2 Tornado Diagram



*log-logistic model parameter

Figure 3 Cost-effectiveness acceptability curve



Conclusion

- In Taiwan, pembrolizumab demonstrated the most favorable cost-effectiveness among the three adjuvant treatment strategies for resected stage II–IIIA NSCLC patients with PD-L1 tumor cell expression ≥1% following platinum-based adjuvant chemotherapy.
- Pairwise comparisons further indicated that pembrolizumab versus BSC, atezolizumab versus BSC, and pembrolizumab versus atezolizumab were all cost-effective.

Abbreviations: NSCLC, non-small cell lung cancer; TKI, tyrosine kinase inhibitors; PD-L1, Programmed Death-Ligand 1; WTP, Willingness to pay; QALY, Quality-adjusted life years; ICER, incremental cost-effectiveness ratio; ATZ, atezolizumab; PEM, pembrolizumab; BSC, best supportive care; DFS, disease-free survival; LR, local recurrence; MR1, First-line distant metastatic recurrence; MR2, Second-line distant metastatic recurrence;

Conflict of Interest: All authors declared having no conflicts of interest that are directly relevant to the content of this study.

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