RWD 283

Cost-Effectiveness Analysis of Durvalumab and Atezolizumab With Chemotherapy Versus Chemotherapy Alone for First-Line Treatment of Extensive-Stage Small-Cell Lung Cancer in Taiwan

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BACKGROUND

- Durvalumab (DEP) or Atezolizumab (AEB) plus chemotherapy have shown efficacy over chemotherapy alone (EP) as a first-line treatment for extensive-stage small cell lung cancer (ES-SCLC) patients in the IMpower133[1] and CASPIAN[2] trials.
- Prior US studies[3-5] show inconsistent results for the relative effectiveness of DEP vs. AEB, leading to controversial cost-effectiveness findings.
- The cost-effectiveness landscape of first-line ES-SCLC therapies is unknown from Taiwan's National Health Insurance (NHI) perspective.

OBJECTIVE

- The study aims to evaluate the cost-effectiveness of AEB vs. EP, DEP vs. EP, and DEP vs. AEB as firs-line therapy for ES-SCLC patients from Taiwan's NHI perspective.

METHODS

Model Construction

- A three-state partitioned survival model with a 10-year horizon was developed to compare DEP, AEB, and EP from the perspective of Taiwan's NHI. [Figure 1]
- A willingness-to-pay threshold of NTD 3,224,166 (three times Taiwan 2023 GDP per capita) and a 3.5% discount rate were applied to both costs and QALYs.

Effectiveness Inputs and Indirect Comparison

- Survival curves for DEP, AEB, and EP were extracted from clinical trials and converted these into pseudo-individual patient data (IPD).
- Under a network meta-analysis framework, the pseudo-IPD was fitted to standard parametric and fractional polynomial models to estimate survival parameters. [Figure 2]

Cost Inputs

- Medication costs were derived from reimbursement price of NHI.
- Non-medication and subsequent costs were estimated from the ES-SCLC patient population using data from Taiwan's NHI Research Database.

Utility Inputs

- Utility estimates were sourced from literature on Taiwanese lung cancer patients.

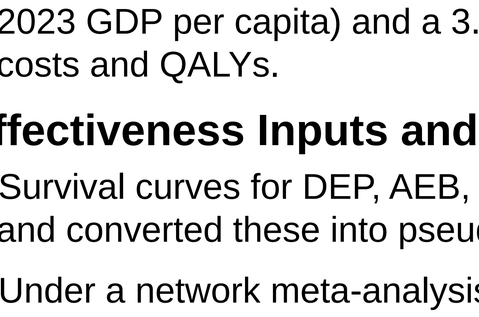

FIGURE 1. Model Structure

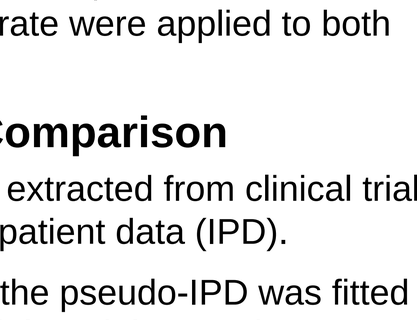

FIGURE 2. Indirect Comparison

RESULTS

- EP, AEB, and DEP yielded 0.299, 0.373, and 0.388 QALYs at costs of NTD 988,535, 1,920,318, and 2,479,368, respectively. The ICERs were NTD 12,484,903 for AEB vs. EP, NTD 16,745,951 for DEP vs. EP, and NTD 38,340,080 for DEP vs. AEB per QALY. [Figure 3,Table 1]
- The impact of different assumptions on the results was explored through two scenario analyses. [Table 2]

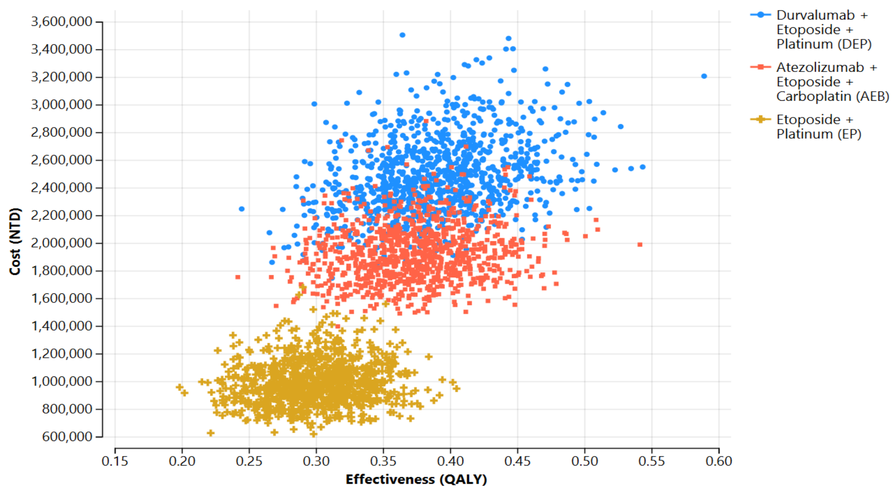

FIGURE 3. Base-Case CE Scatterplot

TABLE 1. Base-Case Results

Outcomes	EP	AEB	DEP	Incremental		
				AEB vs. EP	DEP vs. EP	DEP vs. AEB
LYs	1.261	1.595	1.792	0.333	0.531	0.197
PF State	0.465	0.571	0.561	-	-	-
PP State	0.797	1.024	1.231	-	-	-
QALYs	0.299	0.373	0.388	0.075	0.089	0.014
PF State	0.219	0.273	0.268	-	-	-
PP State	0.079	0.101	0.119	-	-	-
Cost (NTD)	988,535	1,920,318	2,479,368	931,786	2,999,967	2,068,181
Drug Cost	21,747	721,218	1,136, 281	-	-	-
Medical Cost	966,785	1,199,100	1,343,087	-	-	-
ICER (NTD/QALY)	-	-	-	12,484,903	16,745,951	38,840,080
INMB (NTD)	-	-	-	-691,157	-1,203,799	-512,643

TABLE 2. Scenario Analysis Results

Scenario	AEB vs. EP		DEP vs. EP		DEP vs. AEB	
	ICER	INMB	ICER	INMB	ICER	INMB
Base-Case	12,484,903	-691,157	16,745,951	-1,203,799	38,840,080	-512,643
Patients Without BM	12,568,985	-697,432	16,887,366	-1,216,389	39,278,780	-518,957
LY As Effectiveness	3,091,289	40,052	3,188,653	16,604	3,365,316	-23,448

CONCLUSION

- Base-case results show that neither DEP nor AEB are cost-effective for ES-SCLC patients under Taiwan's NHI system when compared to EP or each other.
- Scenario analysis results reveal that the cost-effectiveness landscape changes significantly when effectiveness is measured in LYs instead of QALYs. DEP and AEB are both found to be cost-effective compared to EP.

References

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