Economic evaluation of tislelizumab in combination with gemcitabine and cisplatin as first-line treatment in patients with recurrent or metastatic nasopharyngeal cancer in Thailand

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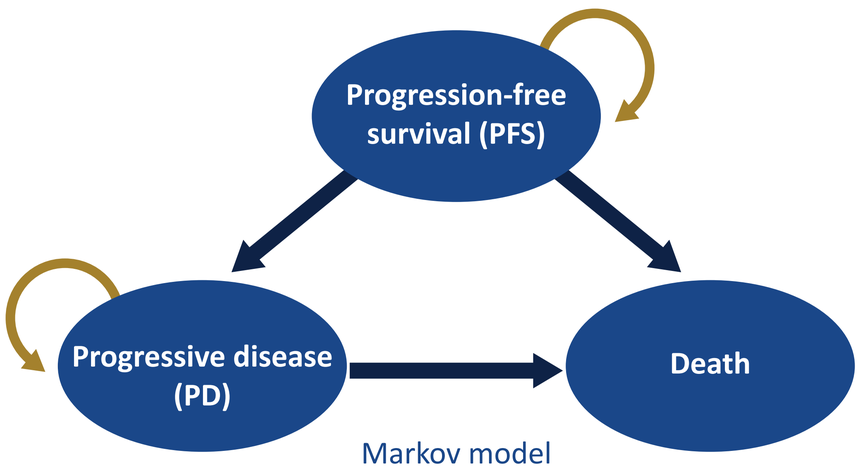
BACKGROUND

- Nasopharyngeal carcinoma (NPC) is highly endemic in Asia, which accounts for >83% of global incident cases, with Southeast Asia bearing nearly 36% of the global burden.[1,2]
- Gemcitabine plus cisplatin (GP) is the current standard first-line treatment for recurrent/metastatic NPC (RM-NPC) in Thailand.
- PD-1 inhibitor–based chemoimmunotherapy improved progression-free survival over chemotherapy alone in phase 3 trials, including RATIONALE-309, and is now the preferred first-line approach internationally.[3,4]
- Given the lack of reimbursement and local economic evidence, we assessed the cost-utility of tislelizumab plus GP versus GP alone in Thailand to inform reimbursement decision-making.

OBJECTIVE

To evaluate the cost-utility of tislelizumab in combination with gemcitabine–cisplatin compared with chemotherapy alone in adults with recurrent or metastatic nasopharyngeal cancer (RM-NPC) in Thailand.

METHODS

Study design	Cost-utility analysis using Markov model.
Population	Patients with recurrent or metastatic nasopharyngeal cancer.
Intervention	Tislelizumab plus gemcitabine–cisplatin (GP) every 3 weeks for 6 cycles, followed by tislelizumab maintenance monotherapy.
Comparator	Gemcitabine–cisplatin (GP) alone.
Perspective	Societal perspective.
Time horizon	Lifetime with monthly cycle length.
Discounting	Costs and health outcomes were discounted at an annual rate of 3%.
Parameters	1. Transition probabilities were derived from the RATIONALE-309 trial.[3,4] 2. Costs were estimated in 2025 Thai baht (THB) and converted to US dollars (USD) at 33.73 THB = US$1. Drug acquisition costs were estimated excluding patient access programs. 3. Health-state utility values were obtained from published literature.[5]
Health outcome	Quality-adjusted life year (QALY).
Uncertainty analysis	One-way and probabilistic sensitivity analyses.
Cost-effectiveness threshold	160,000 THB (US$4,744) per QALY gained.
Model	 Markov model
Assumptions	1. Tislelizumab: Administered every 3 weeks until disease progression or a maximum of 2 years. 2. Chemotherapy: Six cycles administered in both treatment arms. 3. Post-progression: Palliative care provided to all patients. 4. Treatment effect: Reflected in modelled transition probabilities; no additional treatment waning assumed.

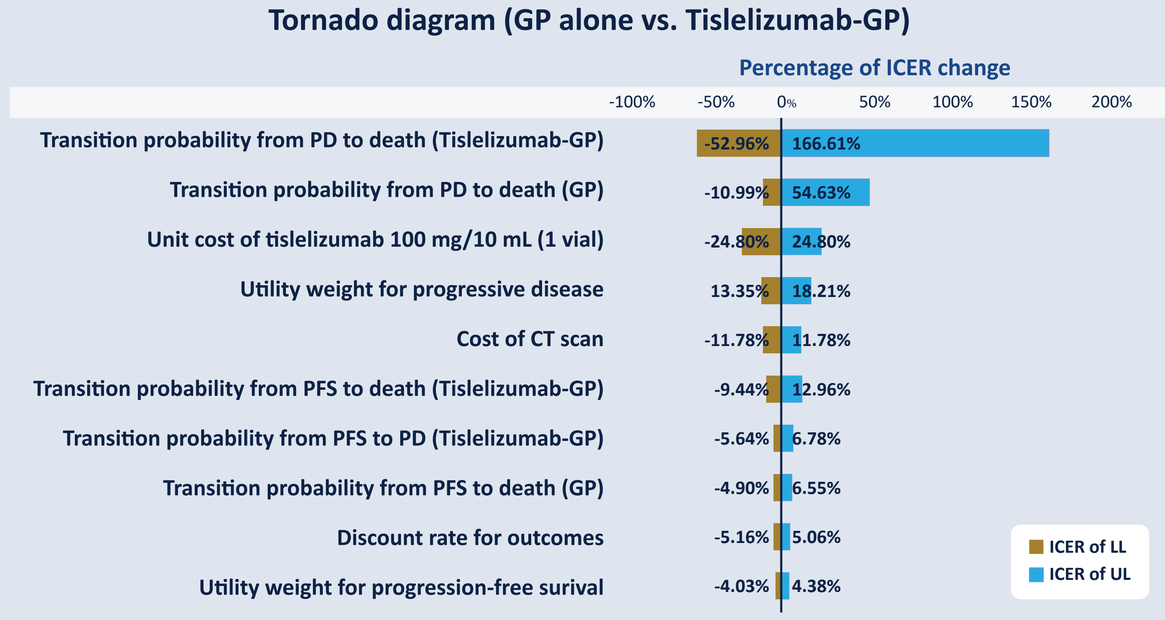
RESULTS

1. Cost-utility analysis results

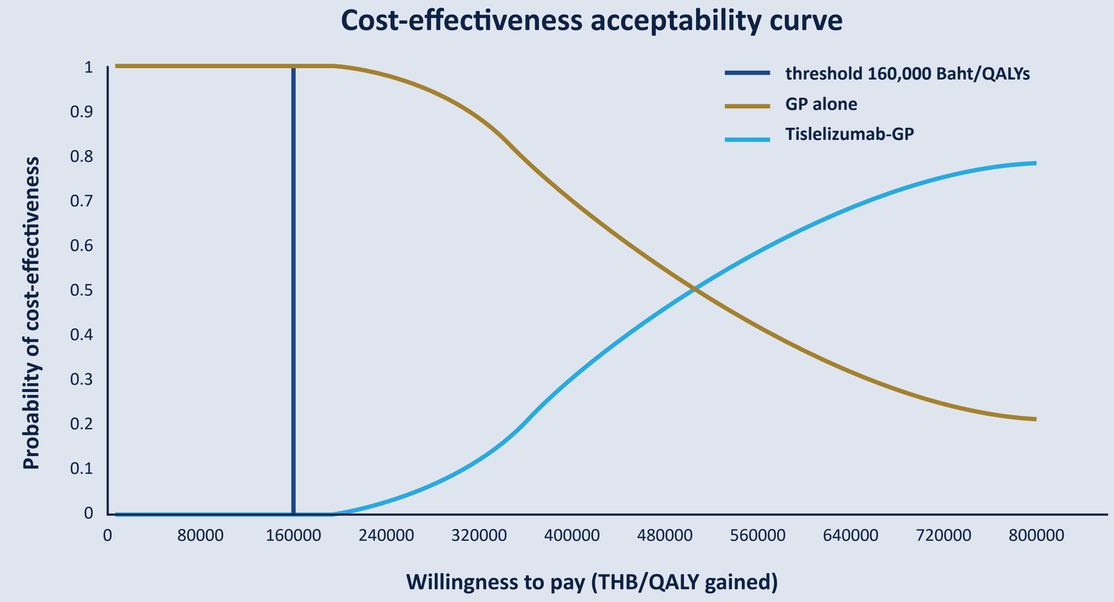
Intervention	QALY	Cost (USD)	Incremental QALY	Incremental cost (USD)	ICER (USD per QALY gained)
GP alone	1.29	9,778	Reference	Reference	Reference
Tislelizumab + GP	2.75	32,511	1.46	22,733	15,537

GP, gemcitabine–cisplatin; ICER, incremental cost-effectiveness ratio; QALY, quality-adjusted life year; USD, US dollars. Costs were converted from 2025 THB at an exchange rate of 33.73 THB = US$1.

2. One-way sensitivity analysis: Tornada diagram



3. Probabilistic sensitivity analysis: Cost-effectiveness acceptability curve



CONCLUSION

- At the Thai cost-effectiveness threshold of 160,000 THB (US$4,744) per QALY gained, tislelizumab plus GP is unlikely to be a cost-effective first-line treatment for RM-NPC in Thailand.
- Innovative pricing and reimbursement mechanisms, such as patient access programs or risk-sharing agreements, may improve its cost-effectiveness and support broader patient access.

FUNDING

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