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Weicheng Lei
Sun Yat-sen University Cancer Center
Huaijin Cao
Zhuojia Chen
Sun Yat-sen University Cancer Center
Weiting Liang
liangwt@sysucc.org.cn

Sun Yat-sen University Cancer Center

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Sacituzumab tirumotecan plus pembrolizumab in PD-L1-negative advanced NSCLC in China: a cost-effectiveness analysis based on OptiTROP-Lung06

Weicheng Lei[1,2,3,4#], Huaijin Cao[5], Zhuojia Chen[1,2,3,4*], Weiting Liang[1,2,3,4*]

[1]Department of Pharmacy, Sun Yat-sen University Cancer Center, Guangzhou, China

[2]Guangdong Key Laboratory of Nasopharyngeal Carcinoma Diagnosis and Therapy, Guangzhou, China

[3]State Key Laboratory of Oncology in South China, Guangzhou, China

[4]Guangdong Provincial Clinical Research Center for Cancer, Guangzhou, China

[5]School of Pharmaceutical Sciences, Sun Yat-sen university, Guangzhou, China

* Corresponding author. E-mail: liangwt@sysucc.org.cn

Keywords: Sacituzumab tirumotecan; Pembrolizumab; PD-L1-negative advanced NSCLC; Antibody-drug conjugates; cost-effectiveness; OptiTROP-Lung06

Abstract

This study evaluated the cost-effectiveness of sacituzumab tirumotecan (sac-TMT) plus pembrolizumab versus pembrolizumab combined with chemotherapy as first-line therapy for PD-L1-negative advanced non-squamous non-small-cell lung cancer (NSCLC) from the Chinese healthcare-system perspective. Using phase-III OptiTROP-Lung06 trial data, we constructed a three-state partitioned survival model with a 42-day cycle length, 10-year time horizon, half-cycle correction, and constrained proportional-hazards extrapolation. The base-case incremental cost-effectiveness ratio (ICER) was $153,313 per quality-adjusted life-year (QALY), far exceeding the willingness-to-pay threshold of $27,917/QALY (twice China's 2025 per-capita gross domestic product). Probabilistic sensitivity analysis demonstrated a below 10 % probability of the combination being cost-effective. Threshold price analysis revealed that simultaneous price cuts for both agents to 18.5 % of their baseline values would be necessary to achieve cost-effectiveness. This early-stage analysis suggests sac-TMT plus pembrolizumab is not cost-effective under current pricing in China, with considerable uncertainty stemming from immature overall-survival data and long-term survival extrapolation.

Introduction

Lung cancer is the most prevalent malignancy and the leading cause of cancer mortality in China, with 1.06 million new cases and 0.73 million deaths annually[1], imposing a substantial disease burden. Non-small cell lung cancer (NSCLC) accounts for 80%–85% of all lung cancers, and most patients are diagnosed at advanced stages with poor long-term survival[2]. Targeted therapy is the preferred first-line treatment for advanced NSCLC harbouring actionable driver mutations[3]; For patients without these mutations, immunotherapy-chemotherapy combinations are favoured[4]. PD-L1-positive tumour may be treated with single-agent immunotherapy or combination regimens, whereas PD-L1-negative tumours are generally managed with immunotherapy plus chemotherapy. Pembrolizumab, a PD-1 inhibitor, combined with chemotherapy, is a standard first-line option for PD-L1-negative advanced NSCLC[5,6].

Sacituzumab tirumotecan (sac-TMT), a TROP2-targeted antibody-drug conjugate (ADC)[7], has demonstrated promising efficacy for advanced NSCLC[8,9]. Studies show that sac-TMT plus pembrolizumab further prolongs progression-free survival (PFS) and overall survival (OS) compared with pembrolizumab combined with chemotherapy in patients with PD-L1-negative advanced disease[10]. To our knowledge, no published economic evaluations have assessed sac-TMT plus pembrolizumab in this population. From the Chinese healthcare system perspective, this study systematically evaluates the cost-effectiveness of first-line sac-TMT plus pembrolizumab for PD-L1-negative advanced NSCLC. Notably, the sac-TMT plus pembrolizumab combination for this patient population is investigational and has not yet received marketing authorization from the National Medical Products Administration (NMPA). The outputs of the present analysis are intended to support future pricing and health-technology assessment (HTA) deliberations, rather than to guide real-world clinical practice in China.

Materials and methods

Patients and interventions

According to the OptiTROP-Lung06 trial (NCT06711900), eligible patients were aged 18-75 years with histologically or cytologically confirmed locally advanced or metastatic non-squamous NSCLC who had not received prior systemic therapy. Patients were required to have a PD-L1 tumour proportion score (TPS) of <1%, no sensitizing epidermal growth factor receptor (EGFR) mutations, anaplastic lymphoma kinase (ALK) rearrangements, or other genomic alterations with approved targeted therapies, and an Eastern Cooperative Oncology

Group performance-status score of 0-1. Patients were randomized 1:1 to sac-TMT 4 mg/kg on days 1, 15 and 29 plus pembrolizumab 400 mg on day 1 of each 6-week cycle , or chemotherapy consisting of pemetrexed 500 mg/m² plus carboplatin (AUC = 5) or cisplatin (75 mg/m²) on days 1 and 22, together with pembrolizumab 400 mg on day 1 of each 6-week cycle; platinum was limited to a maximum of two cycles. Treatment was continued until disease progression, unacceptable toxicity, or protocol-specified discontinuation. We assumed an equal proportion (1:1) of patients receiving cisplatin versus carboplatin in the chemotherapy arm, and all patients received supportive care following disease progression.

Model construction

A partitioned survival model (PSM) with three mutually exclusive health states-PFS, PD, and death-was developed to evaluate the cost-effectiveness of first-line sac-TMT plus pembrolizumab versus chemotherapy plus pembrolizumab among patients with PD-L1-negative advanced NSCLC. The PSM structure is illustrated in Figure 1. Individual patient data (IPD) were reconstructed from the PFS and OS Kaplan-Meier curves reported in the OptiTROP-Lung06 trial using the "IPDfromKM" package in R (version 4.5.1). Five parametric survival distributions (Exponential, Weibull, Lognormal, Loglogistic, and Gamma) were fitted to simulate and extrapolate the K-M curves generated from the reconstructed IPD using the "survHE" package in R. Model fit was judged by the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), with lower values indicating better fit. The best-fitting distribution and corresponding parameters were initially considered for the PSM. However, independent fitting of OS for each arm resulted in biologically implausible crossing of extrapolated OS curves between the sac-TMT plus pembrolizumab arm and the chemotherapy plus pembrolizumab arm, even with the best-fitting distribution (Supplementary Figure S1). Repeating the procedure using the second-best-fitting distribution failed to resolve curve crossing (Supplementary Figure S2). This curve crossing conflicted with the trial OS hazard ratio (HR) of 0.58 (95%CI, 0.38-0.88). Schoenfeld tests for the proportional hazards (PH) assumption on reconstructed PFS and OS IPD did not formally reject the PH assumption within the trial follow-up window (Supplementary Table S3, Figure S3). Accordingly, a constrained-PH extrapolation strategy was adopted as the base-case modelling approach. The optimal distribution was fitted to the chemotherapy plus pembrolizumab control arm, and the hazard function for the sac-TMT plus pembrolizumab experimental arm was derived by multiplying the control arm baseline hazard by the trial-reported OS HR. This approach anchors long-term projections to the relative treatment effect observed in OptiTROP-Lung06, preserves the relative treatment benefit beyond trial follow-up, and complies with established guidance for survival extrapolation in trial-based cost-

effectiveness analyses[11]. This constrained-PH strategy avoids the implausible OS curve crossing that arises under separate parametric fitting for each arm, yet it carries inherent structural uncertainty. A non-significant Schoenfeld test only confirms PH within the observed trial period and cannot guarantee a constant HR over extrapolated long-term follow-up. The marginal OS Schoenfeld P-value of 0.071 signals that a potential violation of the PH assumption beyond the trial horizon cannot be ruled out. To quantify uncertainty from distribution selection and possible non-proportional hazards, independent parametric fitting of OS for both arms was implemented as a scenario analysis. The PSM was programmed in TreeAge Pro (version 2022). A 6-week model cycle length and a 10-year time horizon were specified, consistent with the trial dosing schedule and typical disease progression patterns of advanced NSCLC.

Costs and utilities

Total costs in this analysis were defined as direct medical costs, including drug-acquisition, drug-administration, laboratory-testing, imaging-assessment, adverse-event (AE) management, supportive-care, and hospice-care costs. Drug prices were collected from the governmental drug procurement platform (https://gpo.gzggzy.cn; accessed 2026/10/29). Costs of administration, laboratory tests, imaging, supportive care and hospice care were obtained from published comparable economic studies. For AE-cost estimation, only grade ≥3 serious AEs with incidence ≥5% were incorporated: anemia, leukopenia, neutropenia and thrombocytopenia, occurring at 6.1%, 9.6%, 19.7%, and 3.9% in the sac-TMT plus pembrolizumab arm and 20.4%, 16.4%, 28.8%, and 14.6% in the chemotherapy plus pembrolizumab arm. Respective AE-management costs were abstracted from published literature. Since trial-specific health-state utility values for OptiTROP-Lung06 are unavailable, utility parameters were adopted from comparable published studies. AE-attributable utility decrements were also incorporated; each AE was assumed to affect utility over one model cycle. Mirroring the cost-selection rule, only grade ≥3 serious AEs with incidence ≥5% were considered, with corresponding utility decrements derived from published sources. Both total costs and health outcomes were discounted at an Annually rate of 4.5%[12]. Baseline characteristics including body weight and body surface area (BSA) were applied to compute drug dosages for cost estimation. Modelled patients were assumed to have a weight of 65 kg, BSA of 1.72 m^2[13], and glomerular filtration rate (GFR) of 90 mL/min. All parameters together with their range, distribution, and reference sources are summarized in Table 1.

Base-case analysis

Relevant parameters were input into the PSM to estimate the cost and health-related benefits for the two treatment arms, as well as the incremental cost-effectiveness ratio (ICER) of sac-TMT plus pembrolizumab versus chemotherapy plus pembrolizumab. The resulting ICER was further compared with the predefined willingness-to-pay (WTP) threshold to evaluate the cost-effectiveness of sac-TMT plus pembrolizumab regimen. The WTP threshold was defined as twice China's 2025 national per-capita gross domestic product (GDP) in 2025, equating $27,917 per quality-adjusted life year (QALY)[12]; per-capita GDP data were retrieved from the National Bureau of Statistics of China (https://www.stats.gov.cn/; accessed 2026/10/29). for all economic calculations, the USD-to-CNY exchange rate was fixed at 7.14 (annual average exchange rate) based on official data from the State Administration of Foreign Exchange (http://www.safe.gov.cn/; accessed 2026/10/29).

Sensitivity analysis

This study performed one-way sensitivity analysis and probabilistic sensitivity analysis (PSA) to evaluate the robustness of model outcomes. In one-way sensitivity analysis, cost, utility, and HR parameters were varied within their 95% confidence intervals (CI) or within ± 20% of the base-case values. In PSA, cost parameters were assigned gamma distributions and utility parameters beta distributions, HR parameters lognormal distributions, the discount rate remained fixed. A total of 10,000 Monte Carlo simulations were conducted to obtain the distribution of ICERs.

Scenario analysis

To further verify the robustness of the findings, we conducted a series of scenario analyses.

Scenario 1 (survival extrapolation strategies): Survival curve fitting and extrapolation represented a key source of structural uncertainty in the model. We varied the approaches for survival curve fitting and extrapolation to assess changes in model outputs. Survival curves were refitted, extrapolated, and model outcomes recalculated across five sub-scenarios: (1) The HR values for both PFS and OS were taken as the upper limit of the confidence interval; (2) The HR values for both PFS and OS are taken as the lower limits of the confidence interval; (3) the chemotherapy plus pembrolizumab arm adopted the second-best-fitting distribution; (4) all survival curves were fitted using the best-fitting distribution; (5) all survival curves were fitted using a second-best-fitting distributions.

Scenario 2 (time horizon): To evaluate the impact of analytical time horizon on model outputs, alternative time horizons of 5, 10, 15, and 20 years were tested, and corresponding ICERs were recomputed.

Scenario 3 (sac-TMT's pricing model): In the base-case analysis, sac-TMT was priced per vial to reflect real-world drug wastage. In this scenario, the pricing basis was switched from per-vial to per-milligram to explore the effect of this pricing adjustment.

Scenario 4 (pembrolizumab Patient-assistance program): pembrolizumab is included in China's Key-to-Life Patient Assistance Program (https://smzy.cphcfpap.com/site/?url=AboutProject; accessed 2026/10/29). Under this program, eligible patients receive two free treatment cycles after every two paid cycles, with a maximum duration of 24 months. This patient-support benefit was simulated by halving the unit price of pembrolizumab, and its influence on model results was assessed.

Scenario 5 (threshold price analysis): Given that the costs of sac-TMT and pembrolizumab may substantially affect the ICER, we simultaneously adjusted the prices of both agents to identify their threshold prices at which the ICER equals the WTP threshold.

Results

Base-case results

The total cost of chemotherapy plus pembrolizumab was $90,693, yielding 1.13 QALYs. Compared with chemotherapy plus pembrolizumab, sac-TMT plus pembrolizumab had an incremental cost of $124,291 and an incremental QALY gain of 0.81, resulting in an ICER of $153,313 per QALY, which was substantially higher than the prespecified WTP threshold of $27,917 per QALY. Therefore, sac-TMT combined with pembrolizumab as first-line therapy for advanced PD-L1-negative NSCLC is not cost-effective.

Sensitivity analysis results

One-way sensitivity analysis results are presented in Figures 2. HR for OS, HR for PFS, utility of PFS, cost of pembrolizumab, cost of sac-TMT, and utility of PD exerted the largest impacts on the ICER. Across all parameter ranges, the ICER remained above $10,000 per QALY, exceeding the WTP thresholds. PSA results are illustrated in Figures 3. At the WTP threshold of $27,917 per QALY, the probability that sac-TMT plus pembrolizumab is cost-effective versus chemotherapy was less than 10%. To attain an acceptance probability of 50%, the WTP threshold needs to rise to $165,000 per QALY.

Scenario analysis results

In scenario analysis 1, five survival fitting and extrapolation strategies were evaluated: alternative HR values for PFS and OS, a constrained proportional-hazards approach using the second-best-fitting distribution for the control arm, and independent parametric fitting and extrapolation of survival curves for both treatment arms. Across these alternative survival specifications, ICERs varied widely from $141,723 to $350,062 per QALY (Table 3), demonstrating substantial structural uncertainty stemming from survival extrapolation methods. The base-case ICER of $153,313 per QALY relies on the primary constrained proportional-hazards extrapolation assumption. Although point estimates varied markedly, all ICERs remained well above the prespecified WTP threshold of $27,917 per QALY. Accordingly, the core conclusion that sac-TMT plus pembrolizumab is not cost-effective held across all tested survival modelling strategies, supporting the robustness of the base-case findings.

Results for Scenarios 2-4 are presented in Table 3: ICERs remained above the WTP threshold under alternative time horizons, per-mg pricing of sac-TMT (excluding vial wastage), and a simplified patient-assistance program for pembrolizumab.

In Scenario 5, price reductions for sac-TMT or pembrolizumab alone were insufficient to lower the ICER below the WTP threshold; simultaneous price cuts for both agents were required for the combination to become cost-effective. Our two-way price-threshold analysis showed that the ICER fell below the WTP threshold only when both agents were priced at 18.5% of their base-case values (Table 4). These threshold results carry important policy implications, which are discussed in greater detail in the Discussion section.

Discussion

Studies have validated the efficacy of PD-1/PD-L1 inhibitors combined with chemotherapy in advanced PD-L1-negative NSCLC[14], and PD-1/PD-L1 inhibitor plus chemotherapy represents the standard first-line regimen for this patient population. The advent of ADCs may reshape the first-line treatment landscape for advanced PD-L1-negative NSCLC. Sac-TMT combined with pembrolizumab has demonstrated superior efficacy and safety profiles versus pembrolizumab plus chemotherapy as first-line therapy for this disease setting. To our knowledge, no published economic evaluation has compared sac-TMT plus pembrolizumab with chemotherapy plus pembrolizumab in this first-line population. Accordingly, we performed a systematic cost-effectiveness analysis from the perspective of the Chinese healthcare system, based on the OptiTROP-Lung06 trial. Our results indicated

that sac-TMT plus pembrolizumab is not cost-effective as first-line treatment for advanced PD-L1-negative NSCLC, and both sensitivity and scenario analyses confirmed the robustness of our findings.

Sac-TMT is approved in China for late-line treatment of triple-negative breast cancer (TNBC) and for non-squamous NSCLC that progresses after EGFR-TKI therapy. Previous economic evaluations have shown that sac-TMT monotherapy is not cost-effective in either TNBC or NSCLC settings[15-18]. Consistent with these prior reports, our analysis also identified an unfavorable economic profile for the sac-TMT plus pembrolizumab regimen. A key distinction from earlier single-agent evaluations is that the high cost of pembrolizumab means that price reduction of sac-TMT alone cannot render the combination regimen cost-effective, and concurrent price adjustments for both agents are required to achieve cost-effectiveness. Our two-way price-threshold analysis (Scenario 5, Supplementary: Table S5) yields important policy insights for this dual-agent combination strategy. Reducing the price of sac-TMT or pembrolizumab alone could not bring the ICER below the Chinese WTP threshold; simultaneous price cuts for both agents down to 18.5 % of their baseline prices would be required to achieve cost-effectiveness. This finding highlights a key challenge for combinations consisting of two high-priced innovative agents: price negotiation targeting only one component of the regimen is insufficient to improve overall affordability, and deep synchronous discounts for both drugs would be necessary to satisfy value-based reimbursement criteria. Nevertheless, such a substantial combined price reduction (an 81.5 % cut for each agent) faces considerable real-world feasibility barriers in China. Sac-TMT already has existing marketing approvals for metastatic TNBC and EGFR-TKI-resistant advanced NSCLC, while pembrolizumab is already listed on the National Reimbursement Drug List for several cancer indications. Large additional price concessions for either product are constrained by their current negotiated reimbursement prices for other approved settings. Therefore, from a health-system perspective, the substantial clinical benefit of sac-TMT plus pembrolizumab should be weighed against its high budget impact when considering potential future reimbursement for this investigational first-line indication.

The primary novelty of this study is that it represents the first economic evaluation comparing sac-TMT plus pembrolizumab versus pembrolizumab plus platinum-pemetrexed in patients with PD-L1-negative non-squamous advanced NSCLC. Previous economic studies in NSCLC have largely focused on PD-L1-positive populations, while evidence for chemotherapy-free ADC-immunotherapy regimens in PD-L1-negative patients remains scarce. Drawing on the domestic phase III OptiTROP-Lung06 trial, this study quantifies the cost-effectiveness of this novel regimen. It generates original evidence to support HTA,

reimbursement decisions and clinical decision-making in China, and provides a methodological reference for future economic evaluations of comparable ADC-immunotherapy combinations.

Several limitations of the present analysis should be acknowledged. First, OS data from the OptiTROP-Lung06 trial remain immature, with only 35 OS events in the sac-TMT plus pembrolizumab arm and 54 events in the chemotherapy plus pembrolizumab arm. The limited number of events yields uncertainty in the trial-derived OS HR, which propagates to all long-term survival projections and QALY estimates in our model. Re-evaluation of cost-effectiveness will be required once mature OS follow-up data become available. Second, long-term survival extrapolation introduces structural uncertainty. Even though the Schoenfeld test did not reject the PH assumption within trial follow-up, the marginal P-value of 0.071 for OS raises concern about potential PH violation beyond observed trial time. Independently-fitted parametric curves could cross after the observed trial horizon (Supplementary Figures S1 and S2), which highlights uncertainty in projected long-term survival outcomes. Third, only costs and disutility associated with grade ≥3 serious AEs with incidence ≥5 % were incorporated into the model, while grade 1-2 adverse events were omitted. Because the chemotherapy plus pembrolizumab arm is associated with a higher burden of low-grade toxicities, excluding grade 1-2 AE-related resource consumption may narrow the incremental cost between the two treatment arms. Consequently, our base-case ICER may underestimate the true real-world ICER, and actual ICER would likely be higher in clinical practice. Fourth, health-state utility values and AE-related disutility parameters were abstracted from externally published literature instead of trial-specific patient-reported outcomes. These external estimates may not accurately reflect quality-of-life preferences of Chinese patients with PD-L1-negative advanced NSCLC, bringing additional parameter uncertainty to QALY calculations. Final, the present analysis cannot anticipate future policy adjustments, such as potential reimbursement changes for sac-TMT or pembrolizumab under subsequent iterations of China's National Reimbursement Drug List. Real-world cost-effectiveness may shift substantially if either agent obtains expanded reimbursement coverage.

Conclusion

This early-stage cost-effectiveness analysis demonstrates that sac-TMT plus pembrolizumab is not cost-effective versus pembrolizumab plus chemotherapy for first-line treatment of advanced PD-L1-negative non-squamous NSCLC under current pricing in China.

Of note, this analysis is limited by immature OS trial data and structural uncertainty related to long-term survival extrapolation.

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Author contributions

Weicheng Lei: Conceptualization, Methodology, Formal analysis, Writing – original draft. Huaijin Cao: Data curation, Validation, Writing – review & editing. Zhuojia Chen: Supervision, Writing – review & editing. Weiting Liang: Conceptualization, Supervision, Writing – review & editing.

Declarations

Competing interest

The authors declare no competing interests.

Data availability

The data presented in this study are available on request from the corresponding author.

Ethics approval

This cost-effectiveness analysis is a secondary modelling study relying solely on published data from the OptiTROP-Lung06 trial, no human participants or animals presented in this study.

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389 Table 1. Values, ranges, distributions, and references of parameters input

Parameters	Value (Range)	Distribution	Source
Survival curve parameters			
Chemotherapy+ pembrolizumab PFS	Shape=2.54, Scale=1.13	Lognormal	Model fitting
Chemotherapy+ pembrolizumab OS	Shape=1.89, Scale=0.86	Lognormal	Model fitting
HR for PFS	0.49 (0.36-0.65)	Lognormal	10
HR for OS	0.58 (0.38-0.88)	Lognormal	10
Cost ($)			
Sac-TMT per 200mg	637.25 (509.8-764.7)	Gamma	Procurement Platform
Pembrolizumab per 100mg	2509.52 (2007.62-3011.42)	Gamma	Procurement Platform
Carboplatin per 100mg	23.33 (18.66-28)	Gamma	Procurement Platform
Cisplatin per 30mg	2.68 (2.14-3.22)	Gamma	Procurement Platform
Pemetrexed per 500mg	253.95 (203.16-304.74)	Gamma	Procurement Platform
Drug administration per cycle	68 (54.4-81.6)	Gamma	19
Laboratory test pre cycle	150 (120-180)	Gamma	20
imaging per cycle	472 (377.6-566.4)	Gamma	20
Management of Anemia	422.22 (337.78-506.67)	Gamma	13
Management of leukopenia	423.62 (338.90-508.34)	Gamma	13
Management of neutropenia	358.55 (286.84-430.26)	Gamma	13
Management of thrombocytopenia	933.32 (746.65-1119.98)	Gamma	13
Best support care per cycle	672.36 (537.89-806.83)	Gamma	21
hospice care	2398.56 (1918.85-2878.27)	Gamma	22
Healthy Utility			
Utility of PFS	0.804 (0.643-0.965)	Beta	23
Utility of PD	0.321 (0.257-0.385)	Beta	23
Disutility of anemia	0.07 (0.056-0.084)	Beta	13
Disutility of leukopenia	0.2 (0.16-0.24)	Beta	13
Disutility of neutropenia	0.2 (0.16-0.24)	Beta	13
Disutility of thrombocytopenia	0.2(0.16,0.24)	Beta	13
Other parameter			
Discount rate	4.5% (0-5%)	Fixed in PSA	12

390 *NOTE*: *The parameters for the survival curve distribution are specified in monthly time units*.

391 *Sac-TMT* Sacituzumab tirumotecan; *PFS* progression-free survival; *OS* overall survival; *PSA* probabilistic sensitivity analysis.

392

393 Table 2. Results of base-case

Treatment	Cost ($)	Incr cost ($)	QALYs	Incr QALYs	ICER($/QALY)
Chemotherapy+ Pembrolizumab	90,693		1.13		
Sac-TMT+ Pembrolizumab	214,985	124,292	1.94	0.81	153,313

394 *Incr* increment; *QALY* quality-adjusted life year; *ICER* The incremental cost-effectiveness ratio; *sac-TMT* Sacituzumab
395 tirumotecan.

396 Table 3 Results of scenario analysis 1-4

Scenario	Choice	ICER($/QALY)
1, Curves fitting and extrapolation	base-case	153,313
	HR for PFS=0.65, HR for OS=0.88	232,618
	HR for PFS=0.36, HR for OS=0.38	141,723
	CG: Second-best-fitting distributions; EG: CG baseline × HR	166,810
	All Curves: the best-fitting distributions	260,901
	All Curve: second-best-fitting distributions	350,062
2, Time-horizon	5 years	185,408
	10 years(base-case)	153,313
	15 years	140,243
	20 years	133,863
3, Sac-TMT pricing model	Charged per milligram	130,532
4, Patient-assistance program	Pembrolizumab price drops by half	108,720

397 *ICER* the incremental cost-effectiveness ratio; *CG* chemotherapy plus pembrolizumab; *EG* sac-TMT plus pembrolizumab;*HR*
398 hazard ratio, *sac-TMT* Sacituzumab tirumotecan.

399 Table 4. ICERs under alternative price scenarios for sac-TMT and pembrolizumab

Price scenario	Sac-TMT price (% of the base case)	PEMB price (% of the base case)	ICER($/QALY)
Base-case	100	100	153,313
Sac-TMT reduce to $0 only	0	100	88,223
Pembrolizumab reduce to $0 only	100	0	64,127
Both prices reduce to 50%	50	50	76,175
Both prices reduce to 20%	20	20	29,892
Both prices reduce to 18.5%	18.5	18.5	27,578

400 *sac-TMT* Sacituzumab tirumotecan; *ICER* incremental cost-effectiveness ratio, *QALY* per quality-adjusted life year

401

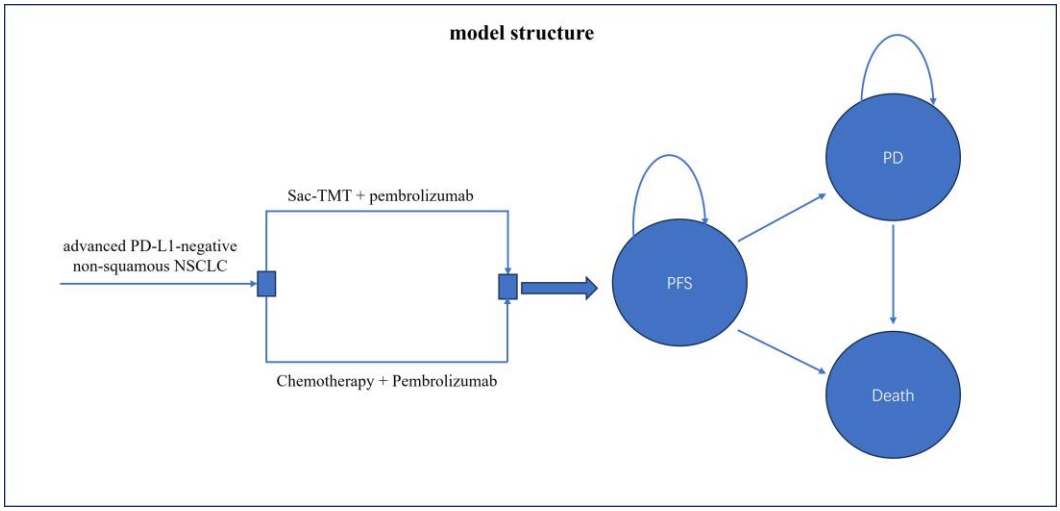

Figure 1. Schematic diagram of the partitioned survival model. The model included three mutually exclusive health states: progression-free survival (PFS), progressive disease (PD), and Death. Patients with advanced PD-L1-negative non-squamous non-small cell lung cancer (NSCLC) entered the model and received either sacituzumab tirumotecan (sac-TMT) plus pembrolizumab (PEMB) or chemotherapy plus PEMB. Patients remained in the PFS state until disease progression or death; those who progressed transitioned to the PD state and could subsequently die. Patients in the PD state could stay in this state or transition to Death.

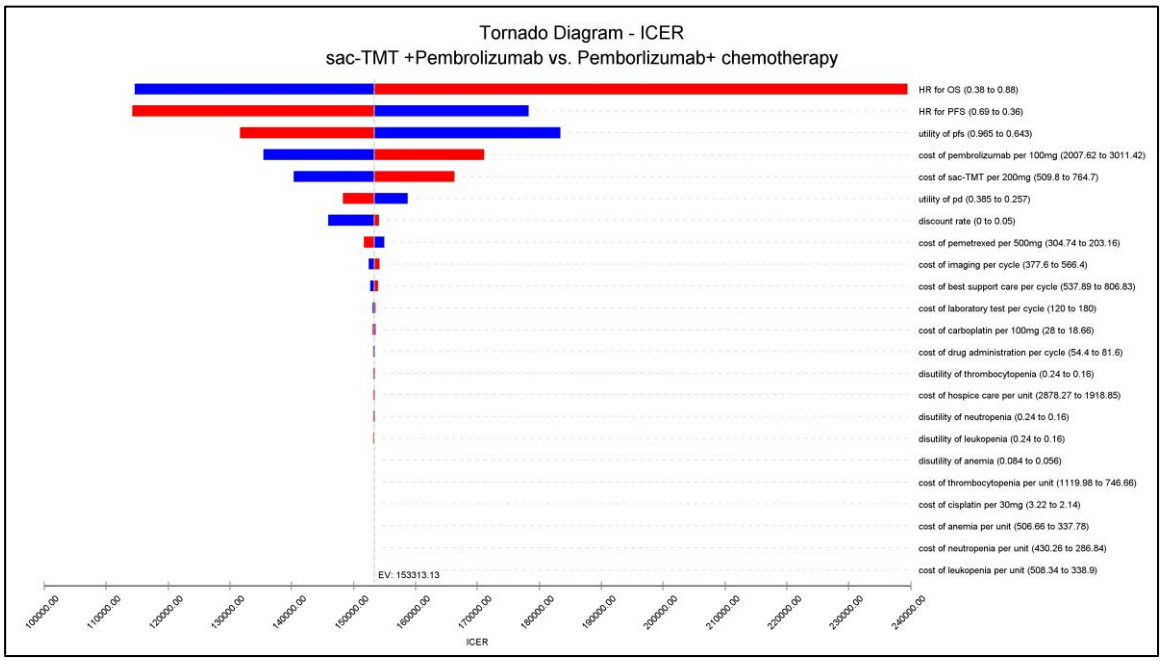

Figure 2. Tornado diagram of one-way sensitivity analysis for the incremental cost-effectiveness ratio (ICER) of sac-TMT plus pembrolizumab versus pembrolizumab plus chemotherapy. EV, expected value. The horizontal bars illustrate the variation in ICER when each parameter is varied across its predefined range. The length of each bar represents the magnitude of the influence of that parameter on the ICER. Red bars indicate decreased ICER, and blue bars indicate increased ICER relative to the base-case ICER

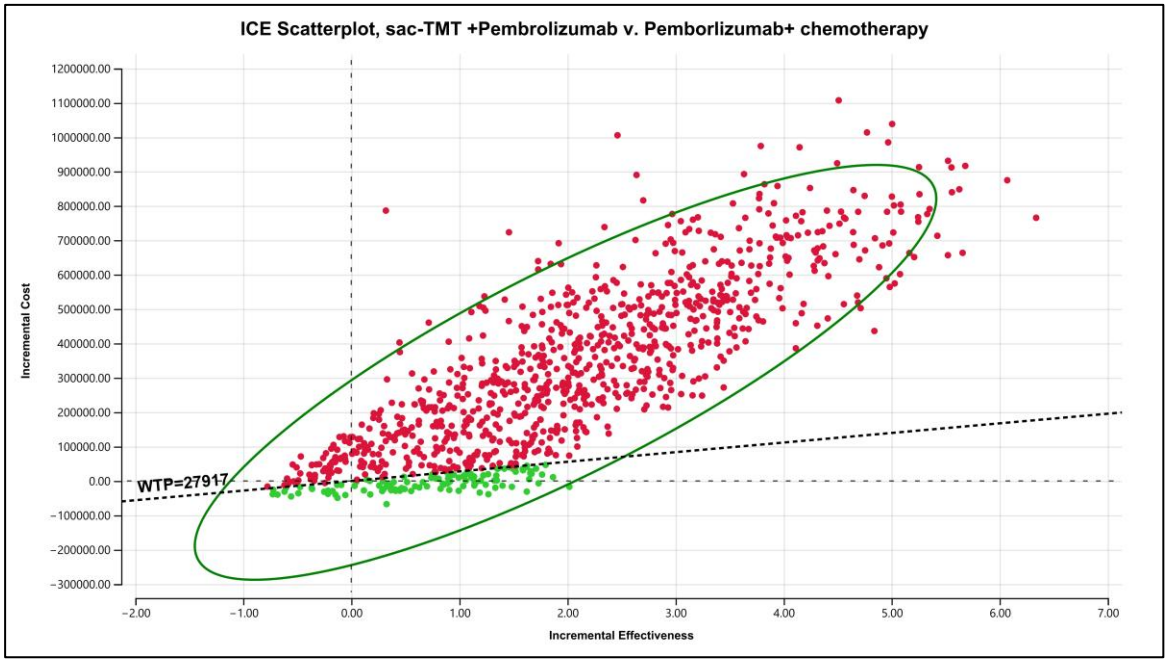

Figure 3. Incremental cost-effectiveness (ICE) scatter plot of sac-TMT plus pembrolizumab versus pembrolizumab plus chemotherapy from the probabilistic sensitivity analysis (PSA). Each red dot represents one simulation iteration. The horizontal axis denotes incremental effectiveness (incremental QALYs), and the vertical axis denotes incremental cost. The green ellipse indicates the 95% confidence ellipse of the PSA simulations. The dashed diagonal line corresponds to the willingness-to-pay (WTP) threshold of $27,917 per QALY.

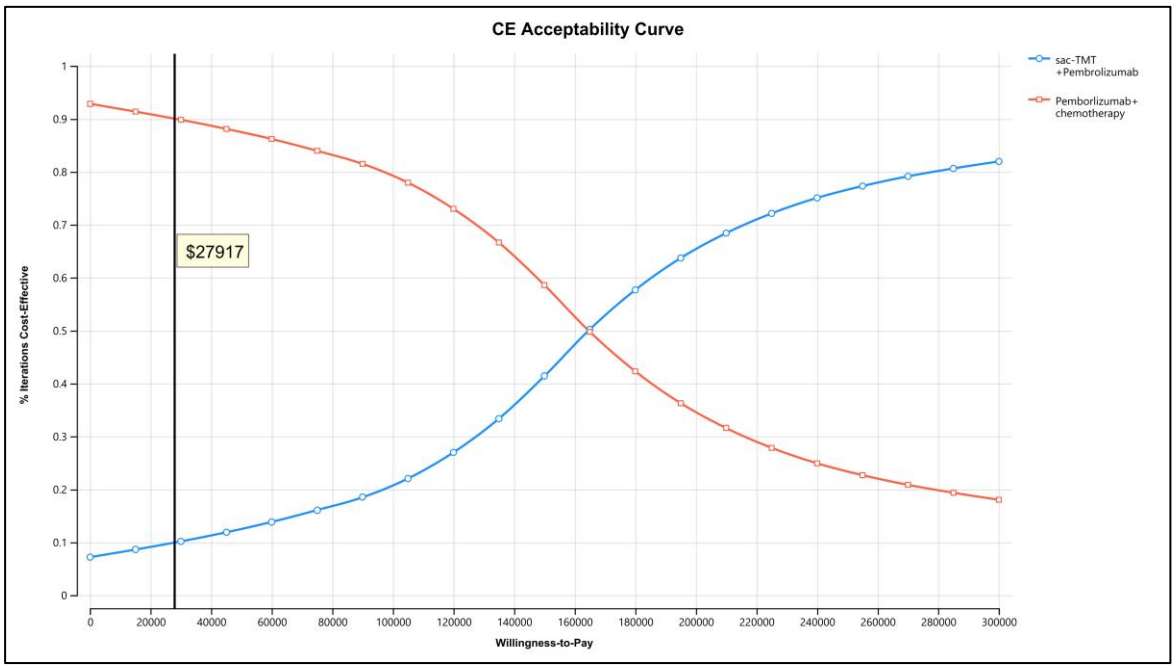

Figure 4. Cost-effectiveness acceptability curve (CEAC) comparing sac-TMT plus pembrolizumab and pembrolizumab plus chemotherapy. The y-axis represents the proportion of probabilistic sensitivity analysis iterations in

which each regimen is cost-effective, and the x-axis represents the willingness-to-pay (WTP) threshold per quality-adjusted life year (QALY). The vertical solid line marks the prespecified WTP threshold of $27,917 per QALY for China.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Table2.docx
- Table3.docx
- Table4.docx
- Table1.docx
- supplymentary.pdf
- CHEERS2022checklist.docx
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