Updated Cost-Effectiveness Analysis of Polatuzumab Vedotin Combined with Chemoimmunotherapy for Untreated DLBCL in China: Evidence from Long-Term Follow-Up of the POLARIX Asian Subgroup

Rongjie Shao[1,2,3], Xiaoning He[1,2,3*]

[1] School of Pharmaceutical Science and Technology, Faculty of Medicine, Tianjin University, Tianjin, China
[2] Institute of Health Economics and Policy, Tianjin University, Tianjin, China
[3] Center for Social Science Survey and Data, Tianjin University, Tianjin, China

Tianjin University

EE378

BACKGROUND

- Diffuse large B-cell lymphoma (DLBCL) is the most common aggressive non-Hodgkin lymphoma, accounting for approximately 30–40% of adult NHL cases. Despite R-CHOP being the standard first-line therapy since the early 2000s, about 40% of patients relapse or develop refractory disease, indicating unmet clinical need.[1]
- Polatuzumab vedotin (Pola) is a CD79b-directed antibody–drug conjugate (ADC) that enhances chemosensitivity through selective cytotoxic delivery via the B-cell receptor pathway.[2]
- At the primary analysis of the phase III POLARIX trial (data cut-off: June 28, 2021; median follow-up: 28.2 months), Pola-R-CHP significantly improved progression-free survival (PFS) versus R-CHOP (HR 0.73; 2-year PFS 76.7% vs 70.2%), while overall survival (OS) remained immature (2-year OS 88.7% vs 88.6%; HR 0.94).[3]
- In the Asian subgroup, earlier analyses supported consistent efficacy and safety of Pola-R-CHP in East Asian patients.[4,5] With follow-up to July 5, 2024 (median follow-up: 60.0 months), updated results showed sustained long-term benefit, with 5-year PFS of 64.0% vs 57.3% (HR 0.74), 5-year EFS of 63.4% vs 53.5% (HR 0.72), and 5-year OS of 84.6% vs 77.7% (HR 0.65).[6,7] Together with inclusion in China's National Reimbursement Drug List (NRDL) in 2025, these data warrant a post-reimbursement re-evaluation of cost-effectiveness.

OBJECTIVE

- To re-evaluate the cost-effectiveness of polatuzumab vedotin plus R-CHP versus R-CHOP as first-line therapy for adult DLBCL patients in China within a post-reimbursement context.
- To incorporate updated long-term evidence from the POLARIX Asian subgroup (approximately five years of follow-up) replacing earlier interim analyses.

METHODS

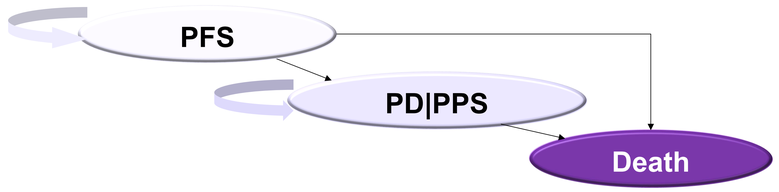
1. Model Settings

Perspective	China healthcare system perspective
Model structure	Partitioned survival model (PSM): progression-free survival (PFS), post-progression survival (PPS), and death
Time Horizon	Lifetime horizon (60 years) with 1-week cycles; half-cycle correction applied
Discount Rate	4.5% for both costs and health outcomes[14]
WTP	1 × China's per capita GDP (2025)
Cost source	Drug cost inputs were informed by national reimbursement–related pricing sources and publicly available pharmaceutical sales databases in China.

2. Study Population and Comparators (PICO)

- **P:** Adult patients with previously untreated diffuse large B-cell lymphoma (DLBCL), consistent with the Asian subgroup of the POLARIX trial;
- **I:** Pola-R-CHP per POLARIX, with TTOT-based treatment duration;
- **C:** R-CHOP standard regimen;
- **O:** PFS, OS, and adverse events; model outputs included costs, LYs, QALYs, and ICERs *Updated 5-year follow-up from the POLARIX Asian subgroup (data cut-off: July 2024)*

Model Structure Illustration:

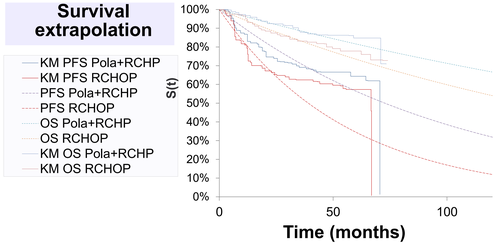


3. Modeling Approach and Key Assumptions

Extrapolation	• Clinical efficacy inputs were derived from the updated POLARIX Asian subgroup, reflecting treatment effects and survival patterns in Asian patients. • PFS and OS were extrapolated using six parametric distributions (Exponential, Weibull, Log-normal, Log-logistic, Gompertz, and Generalized Gamma). • Model selection was informed by goodness-of-fit criteria (AIC/BIC), visual comparison with Kaplan–Meier curves, and clinical plausibility. • Scenario analyses explored alternative distributions, including Log-normal/Weibull. • General population mortality was incorporated into long-term survival projections using an additive hazards approach.
Cost Inputs	• Direct medical costs included drug treatment, administration, adverse event management, subsequent therapies, follow-up, and end-of-life care[8]. • Post-progression treatments were included for both arms. In the R-CHOP arm, a proportion of patients received Pola-BR, immunochemotherapy, CAR-T therapy, or autologous stem cell transplantation, while the Pola-R-CHP arm showed lower use of intensive salvage regimens. • Mean body weight and body surface area were based on the POLARIX Asian subgroup (61.78 kg, 1.63 m²)[7].
Utility Inputs	• Patient utilities were derived from the China DLBCL Survival White Paper, with general population utilities from EQ-5D-5L Chinese norms[9]. Adverse event disutilities were sourced from published studies[10–13].
Sensitivity Analyses	• One-way sensitivity analyses varied key inputs by ±20%. Probabilistic sensitivity analysis assigned appropriate distributions to model parameters and was conducted using 1,000 simulations.
Scenario Analyses	• Key assumptions were tested using alternative survival distributions and different time horizons.

KEY RESULTS

Survival extrapolation



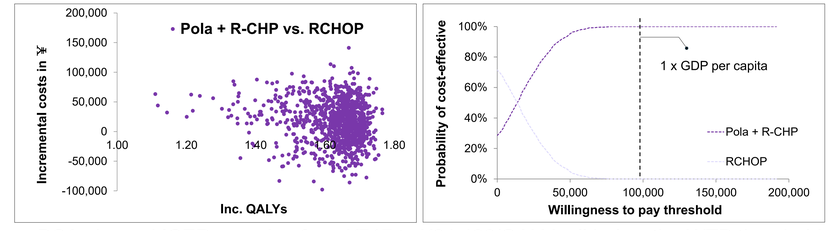
- Exponential was selected as the base-case distribution based on the lowest BIC and acceptable visual fit.
- General population mortality adjustment ensured plausible long-term survival projections.
- Pola-R-CHP demonstrated sustained PFS benefit and an emerging OS advantage versus R-CHOP.

Base-Case Results

Intervention	Total costs	Total QALYs	Incr. costs	Incr. QALYs	ICER
Pola-R-CHP	¥539,936	9.255	¥20,350	1.681	**¥12,107** *~0.12× GDP per capita*
R-CHOP	¥519,586	7.574	-	-	

One-Way Sensitivity Analysis - Top 5 Parameters

Incremental Cost-Effectiveness Plane *(left)*
Cost-Effectiveness Acceptability Curve *(right)*



- DSA showed ICERs ranging from ¥717 to ¥24,426/QALY, all below the WTP threshold.
- PSA indicated >99% probability of Pola-R-CHP being cost-effective versus R-CHOP, with >30% of simulations showing dominance (**more effective and less costly**).

Scenario Analysis Results

- Under log-normal/Weibull extrapolations and alternative time horizons, Pola-R-CHP remained cost-effective, confirming the robustness of results.

CONCLUSIONS

- Based on updated POLARIX Asian subgroup data and the post-reimbursement setting in China, Pola-R-CHP demonstrated sustained PFS and OS benefits and was cost-effective compared with R-CHOP for first-line treatment of adult DLBCL.
- Results from sensitivity and scenario analyses were robust, supporting Pola-R-CHP as a high-value first-line treatment option for adult DLBCL patients in the post-NRDL environment.

REFERENCES

1.Coiffier B, et al. Blood. 2010;116(11):2040–2045.
2.Dornan D, et al. Br J Haematol. 2009;145(1)
3.Tilly H, et al. N Engl J Med. 2022;386:351–363.
4.Song Y, et al. Blood. 2023;142(Suppl 1):A189.
5.Song YQ, et al. Chin J Oncol. 2023;50(10).
6.Salles G, et al. ASH Annual Meeting. 2024.
7.POLARIX Asian subgroup dataset. Data on file.
8.Liu X, et al. Chin Health Econ. 2021;40(9):45–48.
9.Xie F, et al. Value Health Reg Issues. 2022;31:S25–S34.
10.Swinburn P, et al. Qual Life Res. 2015;24(9):2319–2330.
11.Lloyd A, et al. Eur J Health Econ. 2018;19(5):689–697.
12.Hahl J, et al. Clin Ther. 2020;42(8):e155–e165.
13.Lin W, et al. Front Pharmacol. 2021;12:676443.
14.China Guideline for Pharmacoeconomic Evaluation (2025).