

A Cost-Effectiveness Analysis of a Triple-Agent Topical Fixed-Dose Combination of 1.2% Clindamycin Phosphate, 0.15% Adapalene, and 3.1% Benzoyl Peroxide Gel for the Treatment of Moderate-to-Severe Acne Vulgaris in the United States

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BACKGROUND

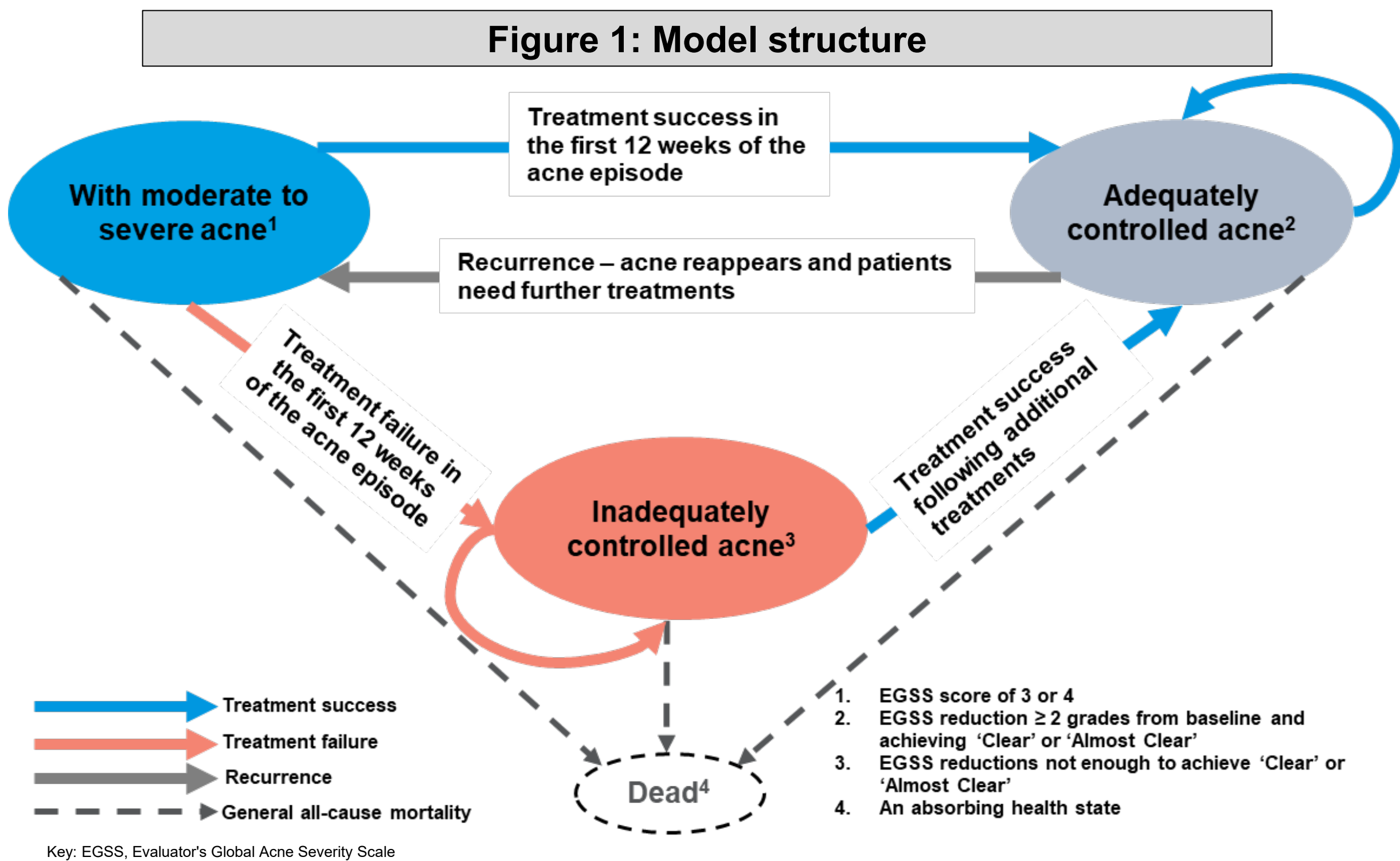
- Acne Vulgaris (AV) is a common and chronic skin disease involving blockage and/or inflammation of pilosebaceous units with a prevalence rate of 30.2 per 1,000 people in the United States (US).^{1,2}
- AV has a significant impact on Health-Related Quality of Life and is associated with substantial economic costs.^{3,4}
- Among the recommended treatment options for acne, the potential of Fixed-Dose Combination (FDC) topical therapies is gaining traction due to the concerns of side effects associated with systematic treatment options.^{4,5}
- Cabtreo®, a novel topical triple-agent, an FDC of 1.2% clindamycin phosphate, 0.15% adapalene, and 3.1% benzoyl peroxide (BPO) was approved by the US FDA on October 20, 2023, for the treatment of AV in adult and pediatric patients 12 years of age and older.⁶ Results from phase 3 trials of Cabtreo demonstrated superior efficacy and safety compared to vehicle gel.⁷

OBJECTIVE

- To estimate the cost-effectiveness of the topical triple-agent FDC compared to other topical FDCs for the treatment of moderate-to-severe AV from the perspective of a commercial third-party payer in the US.

METHODS

- A Markov model (with a 12-week model cycle) was developed to estimate the costs and benefits of FDCs over a 15-year time horizon for patients who were 12 years or older.
- Acne severity in the model was measured using Evaluator's Global Acne Severity Scale (EGSS) or equivalent scales. All patients entered the model with an EGSS score of 3 (moderate) or 4 (severe).
- Treatment success in the model was defined as the percentage of patients who achieved at least a 2-grade reduction at week 12 from baseline in the EGSS (or an equivalent scale) and had an EGSS at week 12 that equated to 'Clear' (EGSS score 0) or 'Almost Clear' (EGSS score 1).
- Treatment success rate for triple-agent FDC was derived from a pooled analysis of two phase-3 randomized controlled trials⁷ and treatment success rates for other comparators were derived by applying odds ratios from a Network Meta-Analysis (NMA) of 12 studies.⁸
- Patients who achieved treatment success at the end of 12 weeks progressed to 'With adequately controlled acne' health state. These patients may have a recurrence and the recurrence rate was modelled based on the rates reported by Poulin et al. 2011.⁹
- Patients who did not achieve treatment success at the end of 12 weeks progressed to 'With inadequately controlled acne' health state and received subsequent treatments for 12 weeks more. The treatment success for these patients was modelled based on the rates reported by Stein Gold et al. 2019.¹⁰
- Since acne does not lead to any mortality, only background mortality was modelled using 'Death' as an absorbing state to capture general all-cause mortality in the US population.¹¹
- Healthcare resource utilization cost (HCRU) inputs in the model were obtained from a claims database analysis of commercially insured patients in the US.¹² A Wholesale Acquisition Cost (WAC) of \$950 per 50g pump of Cabtreo was used in the model.¹³
- The Quality of Life (QoL) weights reported in the guideline by the National Institute for Health and Care Excellence (NICE) were considered in the model as a proxy in the absence of preference-based QoL weights for AV health states from a representative sample of the US population.¹⁴
- Costs and benefits were discounted at a 3% rate per annum and half-cycle corrections were made. We followed recommendations by ISPOR-SMDM Modeling Good Research Practices Task Force to develop the model.¹⁵



RESULTS

- In the base case (Table 1), patients on Cabtreo (compared to topical retinoid/BPO-FDCs) accrued higher Quality-Adjusted Life Years (QALYs) of 0.17 but also incurred incrementally higher incrementally HCRU costs of \$5,665, resulting in an Incremental Cost-Effectiveness Ratio (ICER) of \$32,764/QALY gained. As treatments for AV are not associated with any gain in life expectancy, the 0.17 QALY gain reflected a substantial improvement in the quality of life for patients on Cabtreo.
- WAC of Cabtreo was ~31%, ~63%, and ~75% below the price to exceed the Willingness-to-Pay (WTP) thresholds of \$50,000, \$100,000, and \$150,000 per QALY gained, respectively.
- In the one-way sensitivity analysis, the ICER for Cabtreo remained below the WTP threshold of \$100,000 per QALY gained (Figure 2a) and Net Monetary Benefit (NMB) remained positive across all parameters (Figure 2b), except for the upper bound value of treatment success (odds ratio) of topical retinoid/BPO-FDCs in 0-12 weeks. The uncertainty was primarily due to the limited number of studies included in the NMA.
- The probabilistic analysis showed a 96.5% chance of Cabtreo being cost-effective given a WTP threshold of \$100,000 per QALY gained (Figures 3A and 3B).
- Scenario analysis suggests that Cabtreo is also cost-effective compared to topical retinoid/antibiotic – FDCs (ICER: \$13,762/QALY gained) and topical antibiotic/BPO FDCs (ICER: Dominant*).

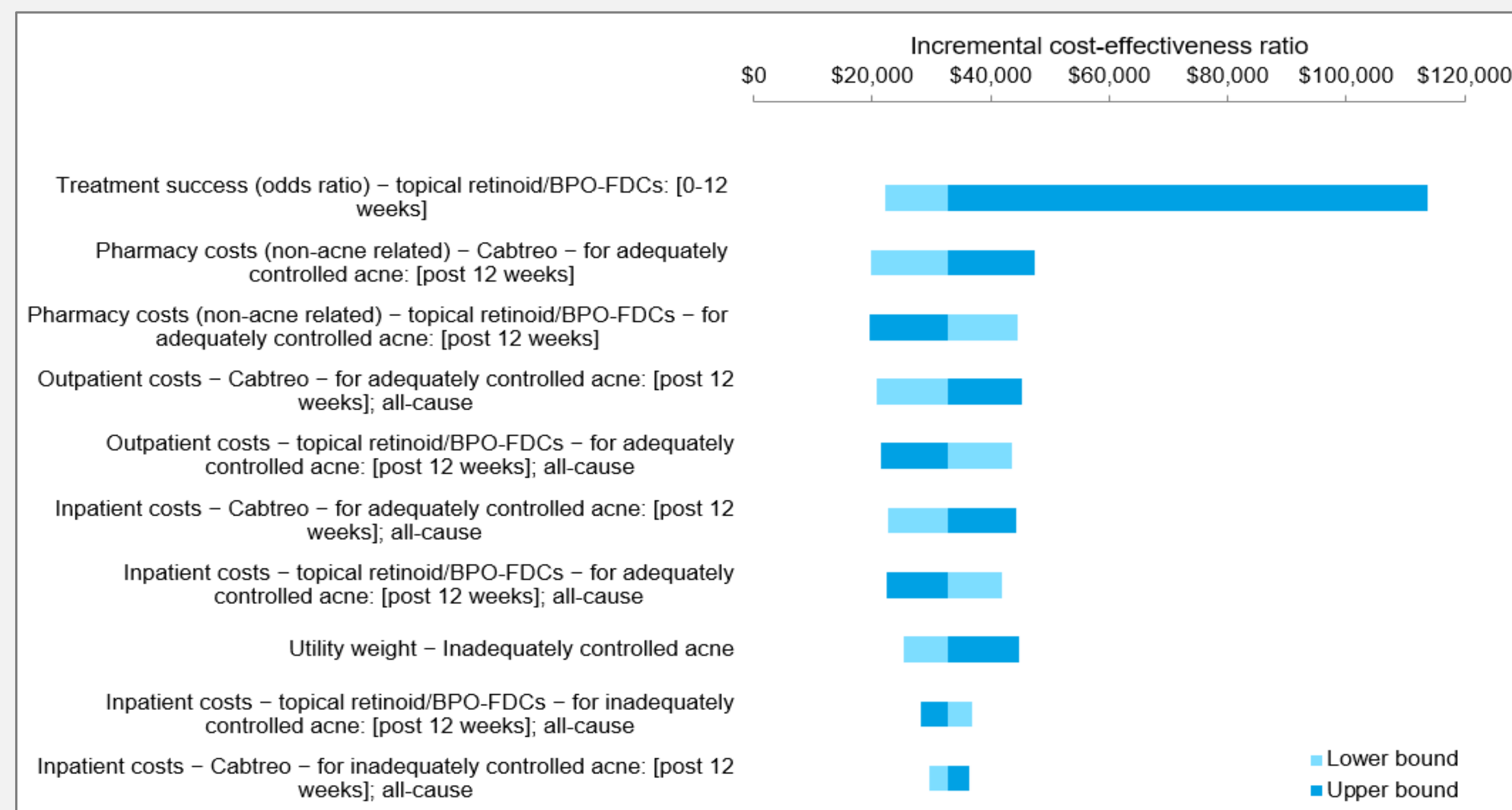
* Dominant cost-effectiveness implies that Cabtreo is more effective but less costly.

Table 1: Base case results

Treatment arm	Costs	QALYs	Incremental		ICER (Cost per QALY gained)	NMB @ \$50,000/QALY gained	NMB @ \$100,000/QALY gained	NMB @ \$150,000/QALY gained
			Costs	QALYs				
Topical retinoid/BPO-FDCs	\$64,540	10.25	-	-	-	-	-	-
Cabtreo	\$70,206	10.42	\$5,665	0.17	\$32,764	\$2,980	\$11,626	\$20,272

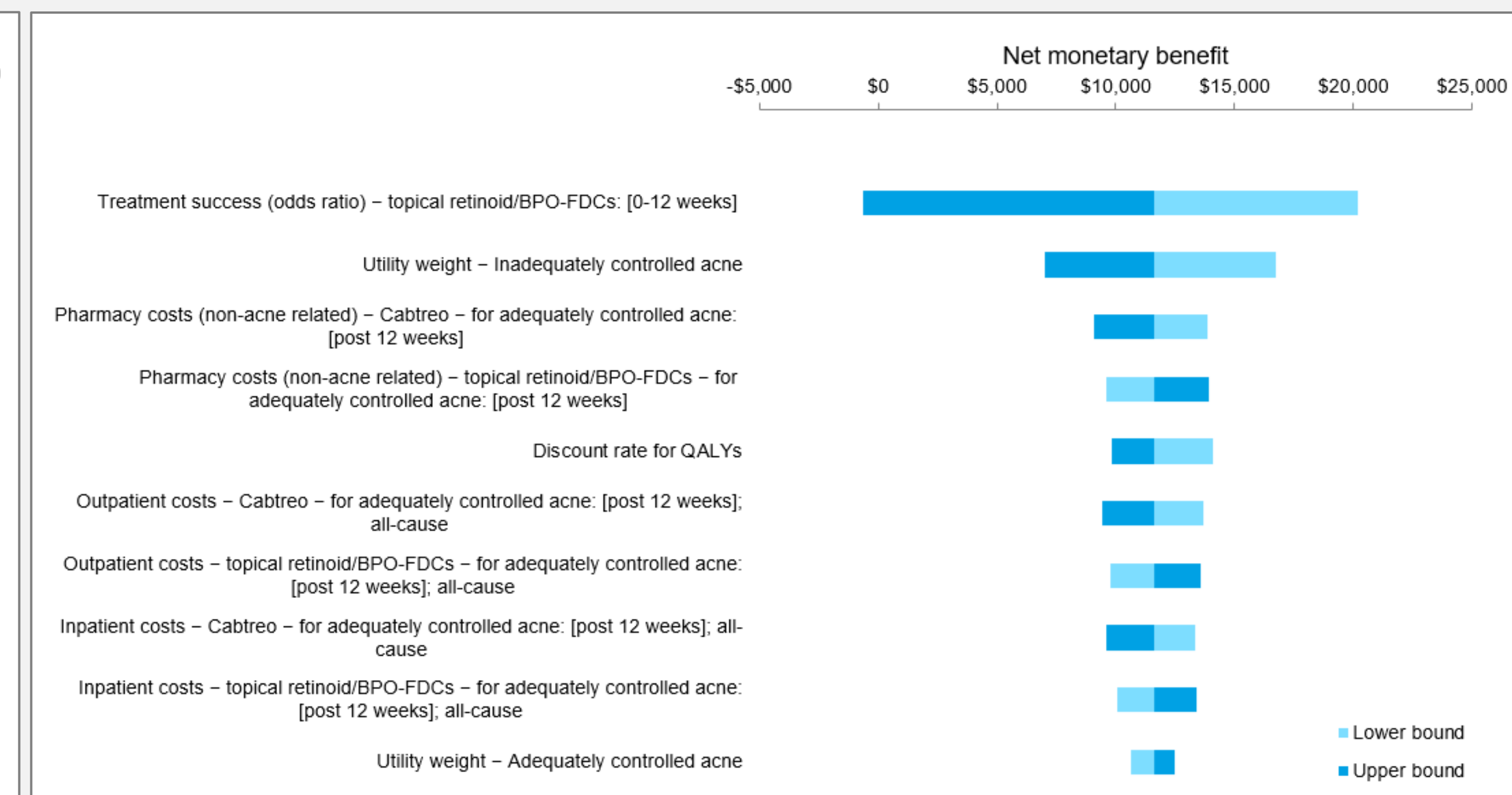
Keys: BPO, Benzoyl Peroxide; FDC, Fixed-Dose Combination; ICER, Incremental Cost-Effectiveness Ratio; NMB, Net Monetary Benefit; QALY, Quality-Adjusted Life Year

Figure 2a: Tornado diagram for ICER



Keys: BPO, Benzoyl Peroxide; FDC, Fixed-Dose Combination; ICER, Incremental Cost-Effectiveness Ratio

Figure 2b: Tornado diagram for NMB



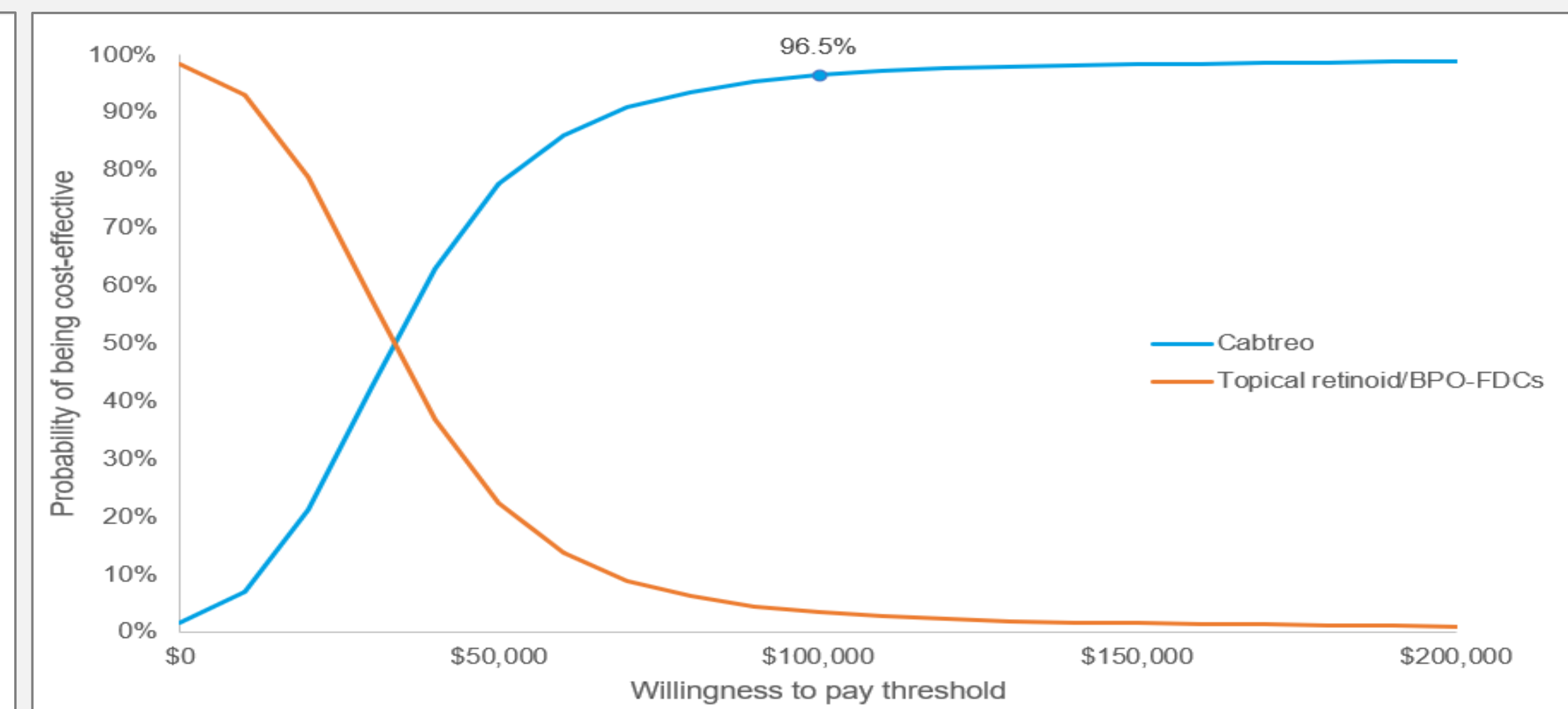
Keys: BPO, Benzoyl Peroxide; FDC, Fixed-Dose Combination; QALY, Quality-Adjusted Life Year

Figure 3a: PSA – Scatter plot for Cabtreo vs. topical retinoid/BPO-FDCs



Keys: BPO, Benzoyl Peroxide; FDC, Fixed-Dose Combination; ICER, Incremental Cost-Effectiveness Ratio; PSA, Probabilistic Sensitivity Analysis; QALY, Quality-Adjusted Life Year; WTP, Willingness-to-Pay

Figure 3b: PSA – Cost-effectiveness acceptability curve



Keys: BPO, Benzoyl Peroxide; FDC, Fixed-Dose Combination; PSA, Probabilistic Sensitivity Analysis

CONCLUSION

- Our findings suggest that the triple-agent topical FDC gel Cabtreo could be a cost-effective treatment option for patients with moderate-to-severe acne, compared to topical retinoid/BPO-FDCs from the perspective of a third-party commercial payer in the US.

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