

Cost-Effectiveness of Psilocybin-Assisted Therapy (PAT) for Patients with Treatment-Resistant Depression

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INTRODUCTION

- The Burden:** TRD affects ~30% of MDD patients, imposing a massive clinical and economic burden.
- The Opportunity:** PAT demonstrates rapid antidepressant effects, but its long-term economic value remains uncertain.
- Objective:** Evaluate the cost-effectiveness of PAT vs. Standard of Care (SoC) from a U.S. Healthcare Payer perspective.

METHODS

Study Design & Perspective

- Model:** Markov state-transition with 5 health states.
- Perspective & Horizon:** U.S. Healthcare Payer; 6-month base-case with 10 and 30-year projections.
- WTP Threshold:** \$50,000/QALY (U.S. benchmark).
- Compliance:** Reported in accordance with CHEERS 2022 guidelines.

Data & Inputs

- Efficacy:** COMP005 Phase 2b trial (Goodwin et al., 2022).
- Costs (2023 USD):** Payer-based micro-costing; CPT Category I proxies (90837, 99213) for PAT administration.
- Utilities:** Literature-derived; 3% annual discounting.

Robustness & Scenarios

- Uncertainty:** DSA (95% CIs) and PSA (10,000 Monte Carlo simulations; Beta/Gamma distributions).
- Regimens:** 2-dose induction (Weeks 0 and 3) and Week 12 retreatment.
- Stress Tests:** 30-year efficacy waning (70%, 50%, 30% floors).
- Price-Point:** Threshold analysis (\$500–\$10,000 price range).

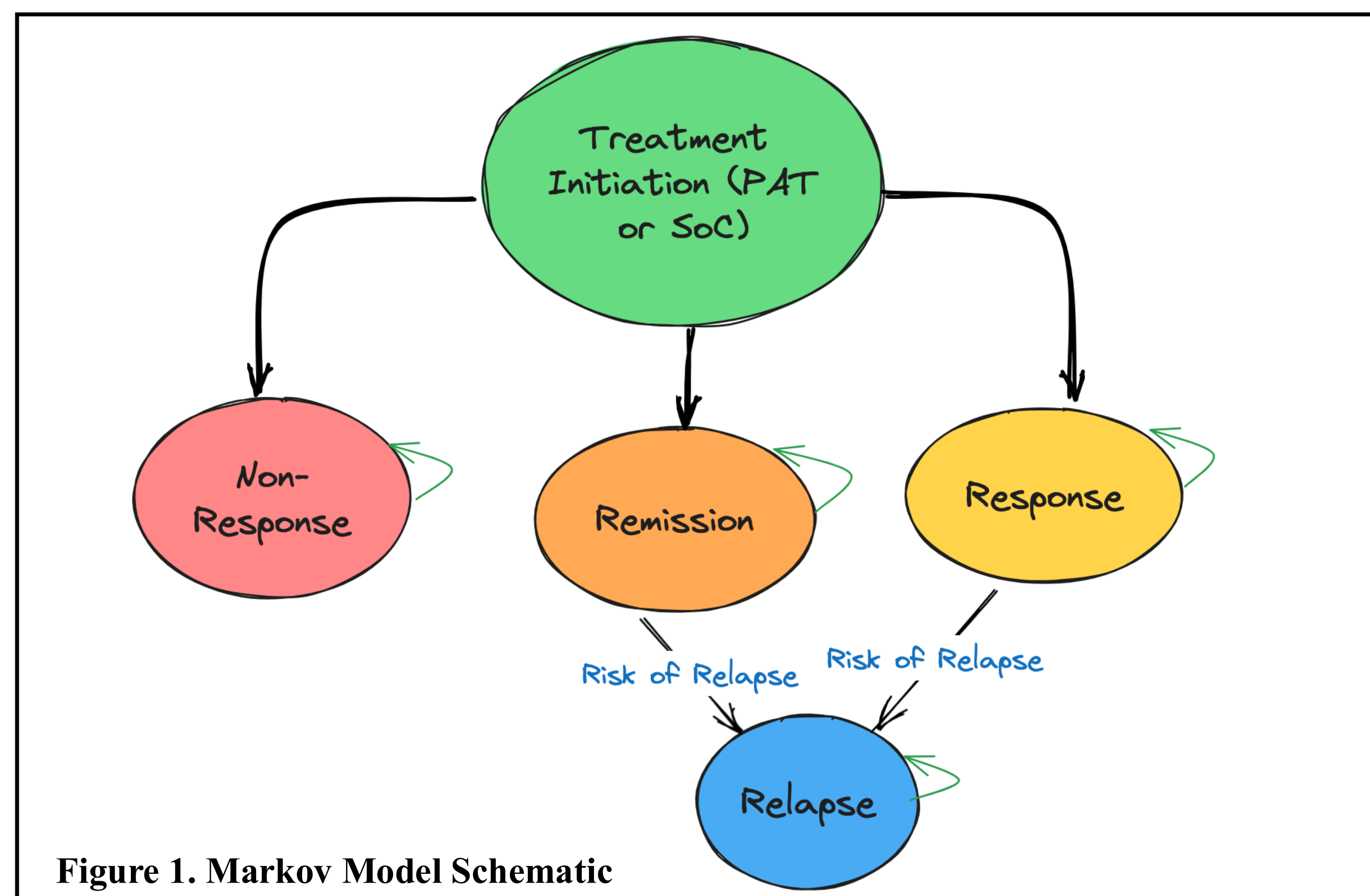


Figure 1. Markov Model Schematic

RESULTS

Base-Case Outcomes: PAT is a DOMINANT Strategy

- PAT is more effective and less costly than SoC, positioned in the Southeast Quadrant (Dominance).

Strategy	Total Cost	Health Gain (QALYs)	Incremental Result
Standard of Care	\$8,335	0.101	—
Psilocybin (PAT)	\$1,298	0.200	DOMINANT

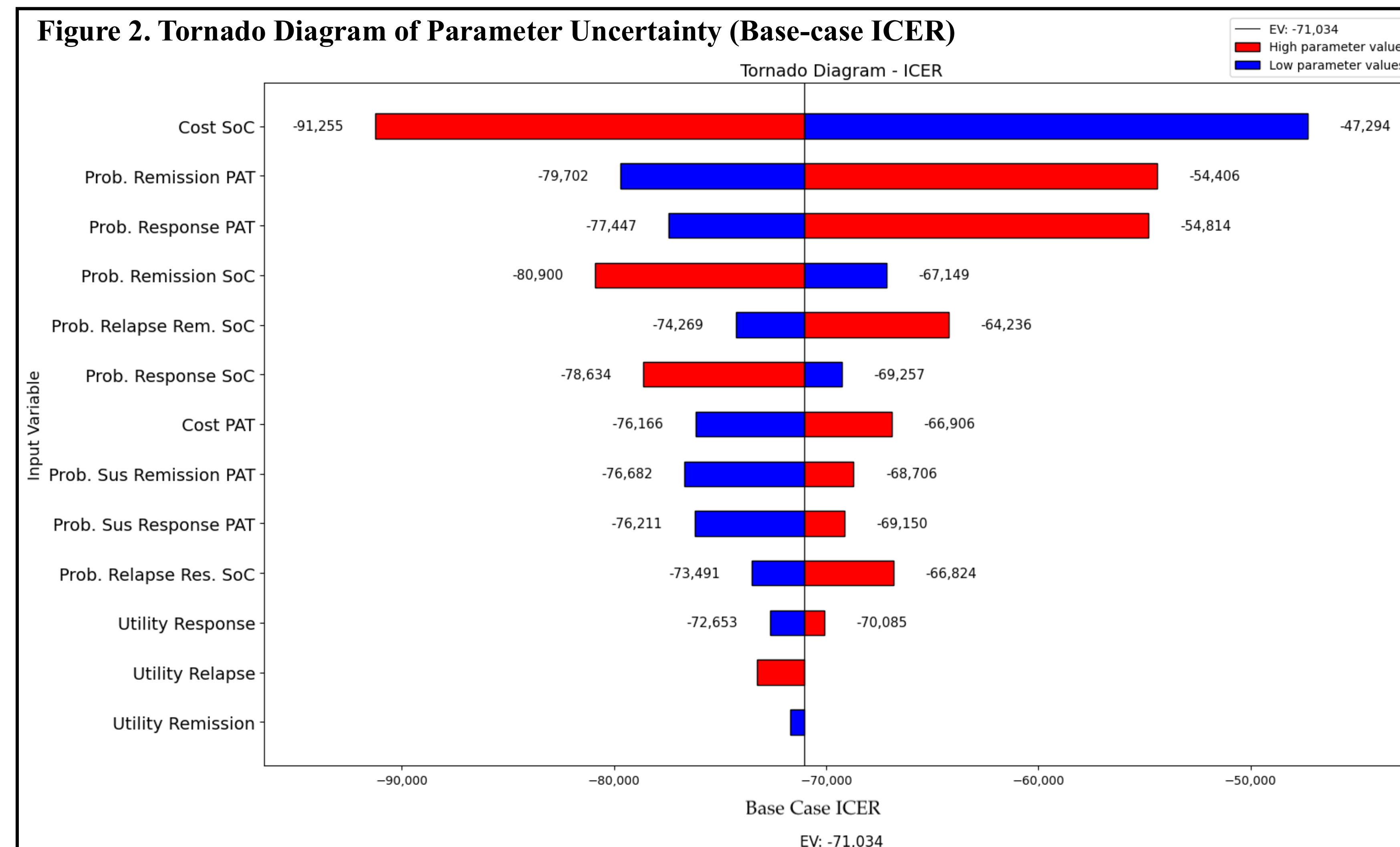
The Bottom Line (per patient):

- Economic Win: \$7,037 Total Savings** (2023 USD).
- Clinical Win: 0.10 QALY Gain;** Remission (+3.2%) and Response (+7.8%).

Sensitivity & Uncertainty Analysis

❖ Deterministic (DSA / Tornado):

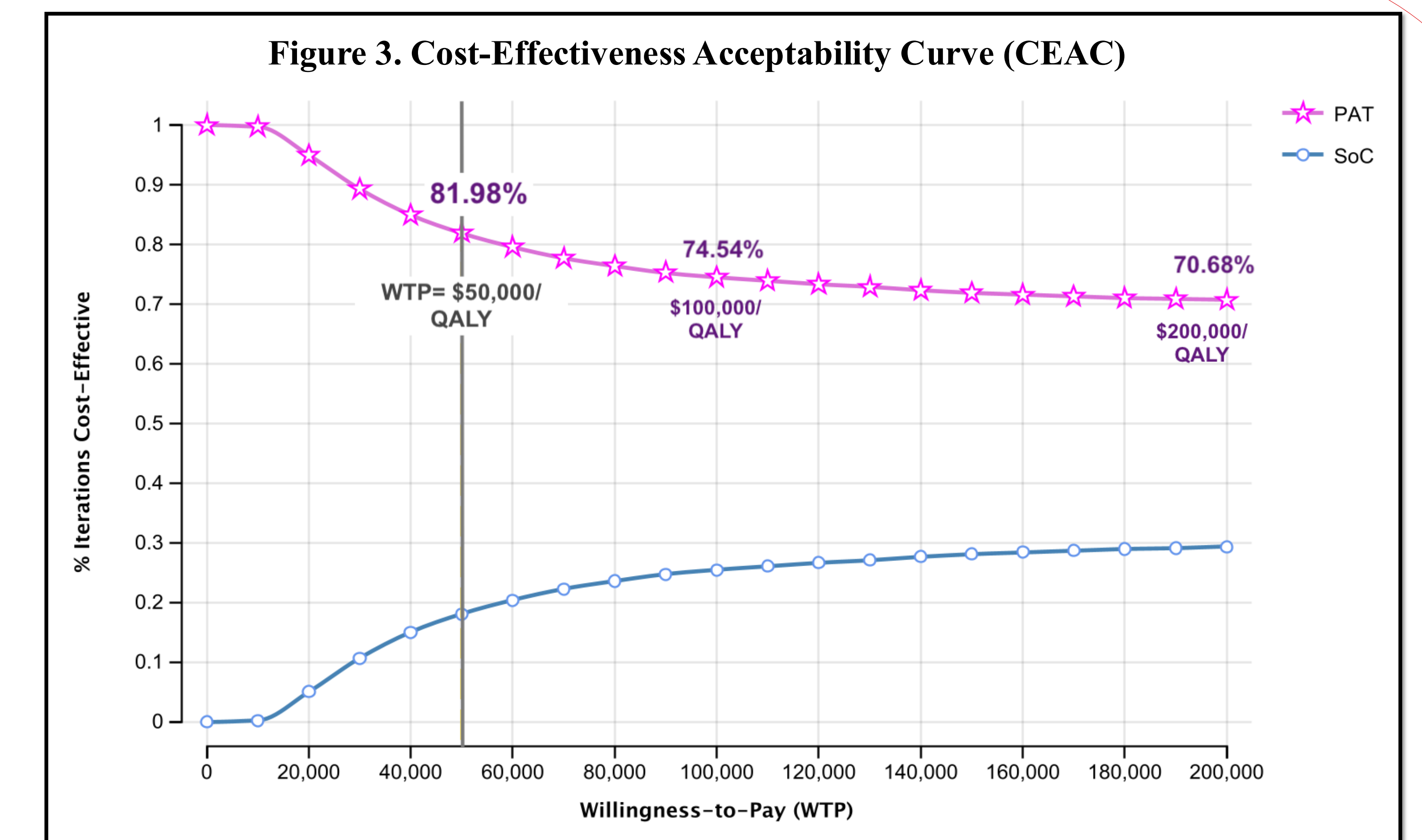
- Consistency:** PAT remained cost-saving across all tested parameter ranges.
- Key Drivers:** Cost of SoC and PAT clinical probabilities
- Threshold:** PAT remains cost-effective for any drug price up to \$10,000.



❖ Probabilistic (PSA/Monte Carlo):

- Certainty:** 82% probability of PAT being optimal at the \$50k/QALY.
- High-Threshold Trend:** The slight decline (71% at \$200k) is driven by a subset of cost-saving but marginally less effective simulations.

RESULTS (cont'd)



Structural Robustness & Long-Term Projections

❖ Dosing & Strategy Robustness:

- 2-Dose Induction: DOMINANT** (\$6,401 savings; 0.11 QALY gain).
- Week 12 Retreatment: DOMINANT** (\$6,835 savings; 0.10 QALY gain).

❖ Extended Time Horizons:

- 10-Year Projection: \$95,722** in savings | +3.13 QALY gain.
- 30-Year Projection: \$215,873** in savings | +9.87 QALY gain.

❖ Long-Term Durability: Resilience to Efficacy Waning:

- 70% Durability Floor: Dominant** (\$215k Savings).
- 30% Durability Floor: Dominant** (\$187k Savings).

STUDY LIMITATIONS

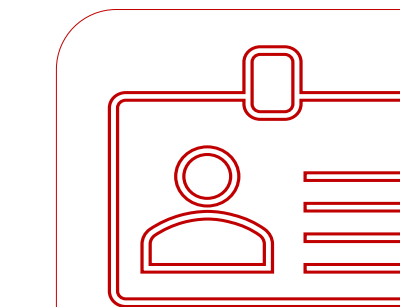
- Relies on RCT efficacy data; real-world administration logistics may vary.
- Long-term durability (30 years) is projected based on clinical trial evidence.
- Payer perspective excludes societal costs (e.g., productivity loss).

CONCLUSION

- Dominant Value:** PAT provides a superior clinical profile while significantly reducing total healthcare costs for TRD.
- Economic Driver:** Rapid, early clinical benefits (Remission +3.2%, Response +7.8%) effectively offset downstream chronic care utilization.
- Policy Impact:** Robustness across regimens and efficacy-waning scenarios supports PAT as a high-value intervention for U.S. insurance formularies.

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