

Economic Evaluation of Mepolizumab and Benralizumab for Adults with Severe Eosinophilic Asthma in Thailand

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INTRODUCTION

Severe Eosinophilic Asthma (SEA): A highly debilitating respiratory condition that severely impairs patients' health-related quality of life and imposes a profound economic burden on national healthcare systems.

Limitation of Biologics: While global clinical evidence demonstrates excellent efficacy and safety profiles for mepolizumab and benralizumab, their extremely high market prices severely limit patient access in resource-constrained countries like Thailand.

Study Objective: This study evaluated the lifetime cost-utility of mepolizumab and benralizumab as an add-on therapy to standard of care (SoC) for adult patients suffering from uncontrolled SEA in Thailand.

METHODS

Economic Evaluation Model: A state-transition Markov model was constructed to simulate patient health states over a lifetime horizon.

Analytical Perspective: The evaluation was conducted from a societal perspective to capture all relevant direct medical and direct non-medical costs.

Interventions of Interest: Mepolizumab + SoC and Benralizumab + SoC compared directly against SoC alone for adult patients.

Model Inputs & Data: Sourced from a comprehensive literature review to ensure clinical and economic parameters accurately reflect real-world evidence.

Discounting & Threshold: Both costs and outcomes (QALYs) were discounted at a standard 3% annual rate. Thailand's official willingness-to-pay (WTP) threshold of 160,000 THB/QALY (\$4,903/QALY) was used to determine value for money.

TABLE 1: BASE-CASE & SCENARIO RESULTS

Interventions	Total Cost	QALY	Inc. Cost (THB)	Inc. QALY	ICER (THB/QALY)
Base-case analysis (Treatment Duration = 2 Years)					
Standard of Care (SoC)	390,588	9.51	Ref.	Ref.	Ref.
Mepolizumab + SoC	698,828	9.94	308,240	0.43	711,787
Benralizumab + SoC	555,033	9.58	164,446	0.08	2,141,023
Scenario analysis (Treatment Duration = 3 Years)					
Standard of Care (SoC)	390,588	9.51	Ref.	Ref.	Ref.
Mepolizumab + SoC	948,536	10.15	557,948	0.64	868,298
Benralizumab + SoC	683,858	9.69	293,270	0.18	1,614,484
Scenario analysis (Treatment Duration = 5 Years)					
Standard of Care (SoC)	390,588	9.51	Ref.	Ref.	Ref.
Mepolizumab + SoC	1,319,874	10.45	929,286	0.95	982,251
Benralizumab + SoC	817,700	9.79	427,113	0.29	1,483,838

RESULTS (Pairwise comparison)

Mepolizumab + SoC vs. SoC: Generated an incremental lifetime cost of 308,240 THB (\$9,446) and an incremental QALY of 0.43, resulting in an ICER of 711,787 THB/QALY (\$21,813/QALY).

Benralizumab + SoC vs. SoC: Generated an incremental lifetime cost of 164,446 THB (\$5,040) and an incremental QALY of 0.08, resulting in an ICER of 2,141,023 THB/QALY (\$65,613/QALY).

Threshold Price Analysis: At current prices with 2-year treatment duration, neither biologic is cost-effective under Thailand's threshold. Price reductions of approximately 39.1% for mepolizumab and 31.9% for benralizumab are necessary to reach the WTP threshold.

FIGURE 1: STATE-TRANSITION MARKOV MODEL

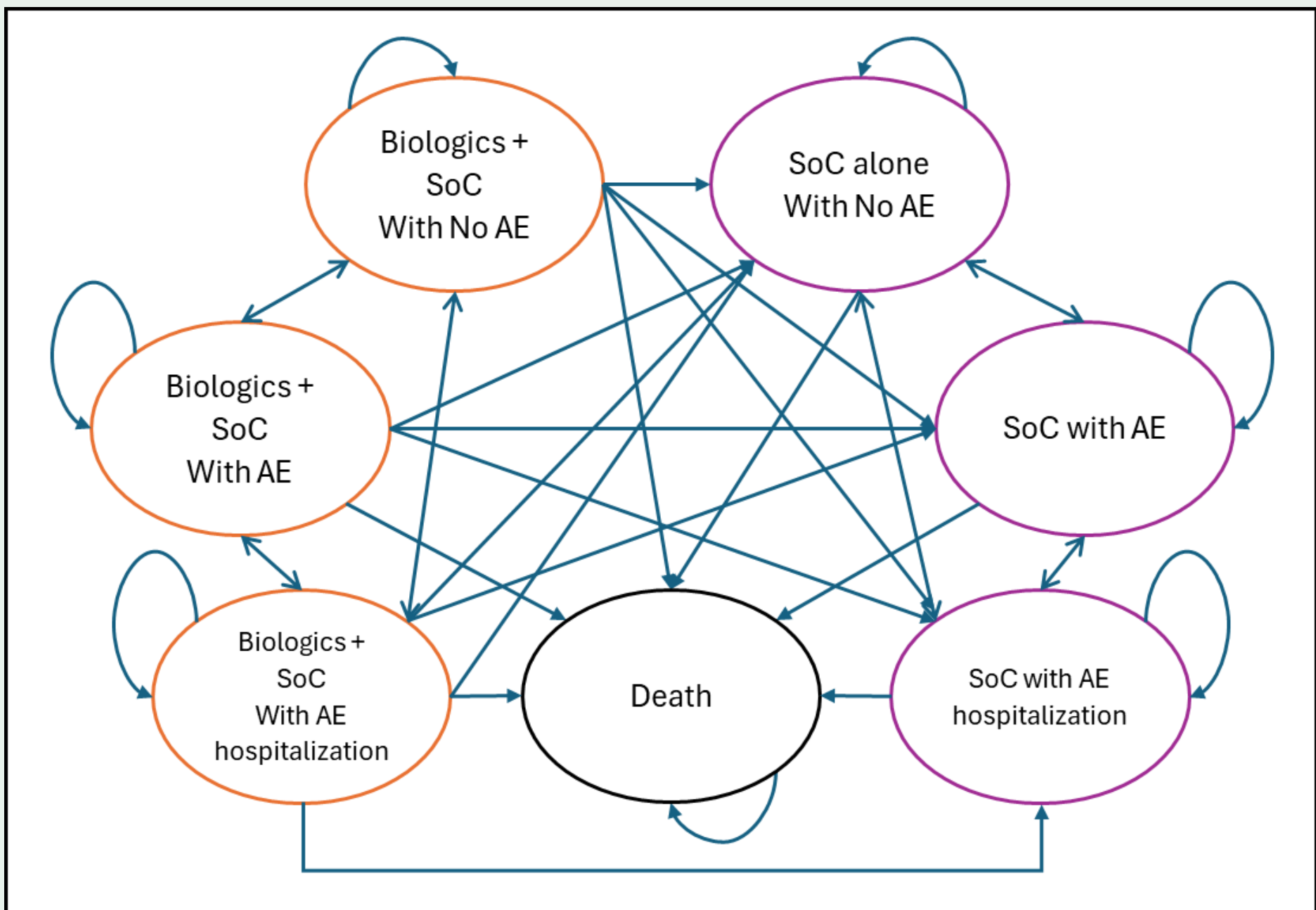


Figure 1: State-transition Markov model structure for patients with severe eosinophilic asthma.

FIGURE 2: COST-EFFECTIVENESS ACCEPTABILITY

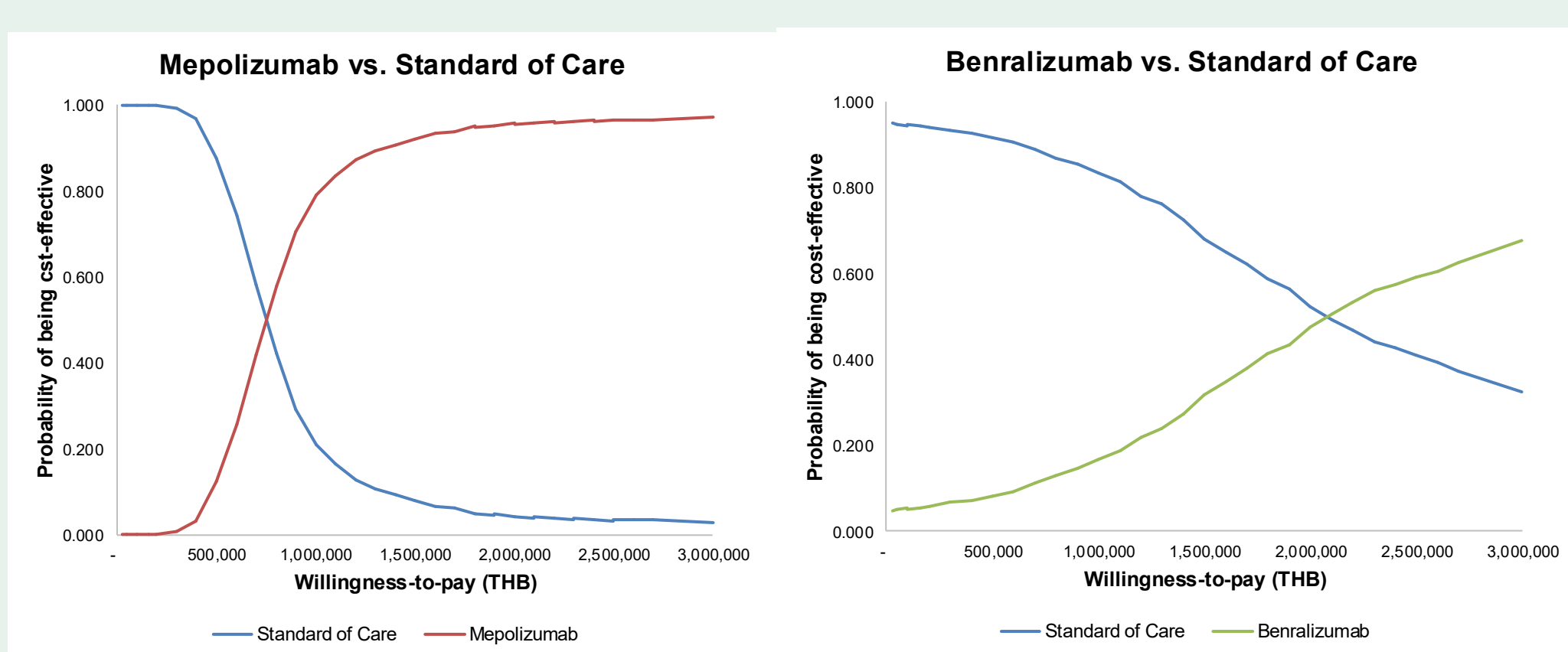


Figure 2: Cost-effectiveness acceptability curve (CEAC) for base-case analysis. Thailand's willingness-to-pay threshold of 160,000 THB/QALY.

CONCLUSIONS

Conclusion: From a societal perspective, both mepolizumab and benralizumab are not cost-effective at their current market prices for adult patients with severe eosinophilic asthma (SEA) in Thailand.

Policy Recommendation: To enhance patient access and ensure value for money, the Thai government should implement strategic price negotiation or risk-sharing agreements to lower these biologic prices.

Fundings

This study was funded by the Easy Asthma and COPD Clinic Network (EACC), Faculty of Medicine, Khon Kaen University.