

# Assessing the cost-utility of lecanemab for early Alzheimer’s disease treatment and the need for real-world evidence: A Singapore Perspective

RWD102

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## INTRODUCTION

Alzheimer’s Disease (AD) is a growing health crisis in Asia-Pacific (AP), driven by an aging population. In Singapore, approximately 1 in 11 individuals aged 60 and above are affected by dementia, with AD being the most prevalent type.

The current standard of care (SoC) provides symptomatic relief but fails to slow disease progression. The emergence of antibody therapies such as lecanemab shows potential in slowing the disease’s progression.

Real-World Evidence (RWE) is increasingly recognized as crucial in healthcare decision making, but robustness and speed of insight are both essential and not necessarily conflicting goals.

While extensive RWE is available in existing databases, identifying and evaluating reliable sources can be complex, time consuming and susceptible to bias.

## OBJECTIVE

To estimate the cost-utility of lecanemab plus SoC versus SoC alone in patients with early AD, specifically those with mild cognitive impairment due to AD or mild AD dementia, confirmed by beta-amyloid pathology from both the payer and societal perspectives in Singapore.

To identify and evaluate the availability of real-world data (RWD) sources for AD in Singapore for conducting evidence generation studies.

## METHOD

A Markov model was developed to project AD progression and assess the lifetime cost-utility of lecanemab plus standard of care (SoC) compared to SoC alone, using data from the Phase III Clarity AD study. The model incorporates unit costs, mortality rates, and natural history data sourced from published literature and validated by local clinicians in Singapore. It also accounts for treatment discontinuation as patients progress to moderate AD or require nursing home care. Costs and benefits are discounted at a rate of 3.0%, and a lifetime horizon is assumed.

Additionally, an AI-powered systematic literature review leveraging large language models (LLMs) was conducted on academic publications from 2014 to 2024 in PubMed to identify RWD sources for AD in Singapore.

## RESULTS

### Cost-Utility of Lecanemab in Singapore

The inclusion of treatment with lecanemab demonstrated an increase in quality-adjusted life years (QALYs) over the model’s time horizon, although it incurred additional costs for both populations with MCI due to AD and mild AD, compared to SoC.

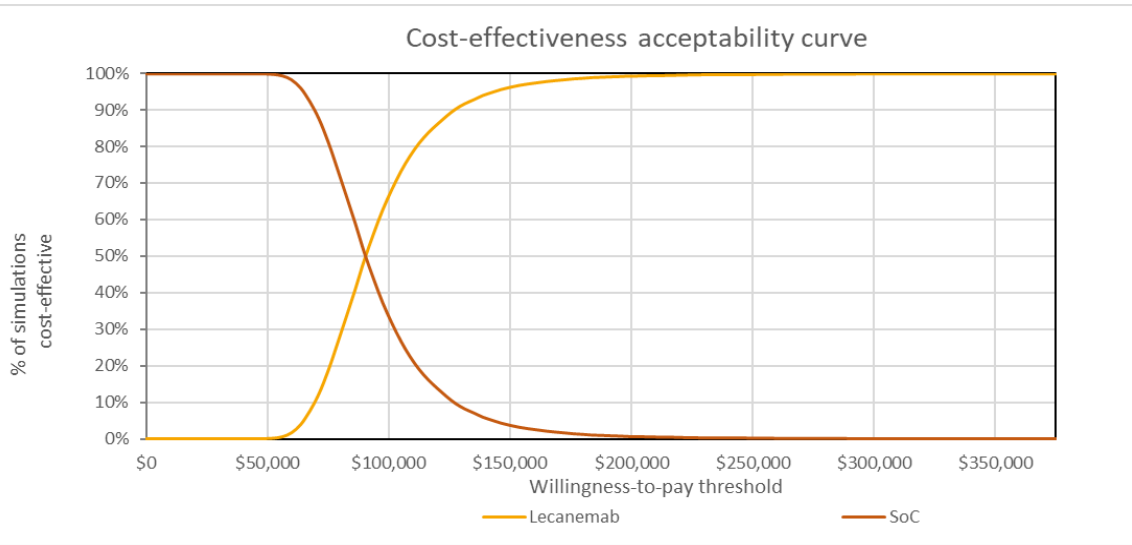
The incremental cost-effectiveness ratio (ICER) was calculated at SGD 87,529 per QALY, which is under the threshold of 1x GDP per capita in Singapore (SGD 120,000). Adopting a societal perspective that factored in the caregiver burden increased the incremental QALYs to 2.43. This reduced the ICER to SGD 34,285 per QALY, underscoring the broader societal value of lecanemab in mitigating productivity losses for caregivers.

Table 1. Cost-utility of lecanemab vs SoC in Singapore

	Lecanemab	SoC	Incremental vs. SoC
Payer Perspective			
Total costs	\$164,448.10	\$73,900.48	\$90,547.62
Total QALYs	7.37	6.33	1.03
ICER	-	-	\$87,529.35
Societal perspective			
Total costs	\$269,419.20	\$186,203.46	\$83,215.74
Total QALYs	18.02	20.45	2.43
ICER	-	-	\$34,285.27

A probabilistic sensitivity analysis (PSA) validated the robustness of the CEA, with the average ICER from 10,000 simulations at SGD 89,594 per QALY, closely matching the deterministic ICER of SGD 87,529 per QALY. The cost-effectiveness acceptability curve (CEAC) shows an 86% probability of cost-effectiveness at a willingness-to-pay threshold of SGD 120,000 per QALY (1x GDP per capita).

Figure 1. Cost-effectiveness acceptability curve of lecanemab vs SoC



### Availability of real-world evidence for AD/dementia in Singapore

Only 2 main real-world data sources (i.e. WiSE Study, BIOCIS) were identified in Singapore

In-depth utility assessment was conducted based on ten key RWD categories:

- |                               |                              |
|-------------------------------|------------------------------|
| 1. Demographics               | 6. Direct cost data          |
| 2. Clinical data              | 7. Indirect cost data        |
| 3. Treatment-related data     | 8. AD-specific outcomes      |
| 4. Lifestyle data             | 9. Insurance claims data     |
| 5. Quality of life (QoL) data | 10. Economic evaluation data |

Overall, Singapore lacks the necessary databases and real-world data for AD to support clinical and policy development, which hinders the ability to conduct comprehensive and impactful research needed to guide healthcare decision-making.

Table 2. Summary table of all real-world data source for AD/dementia in Singapore

Country	Cross-sectional/Longitudinal study <sup>2</sup>	EMR/EHR	Insurance database	Patient registry <sup>3</sup>	Total
Singapore	2	0	0	0	2

Table 3. RWE and HEOR study feasibility based on available data in Singapore

Type of Study	Data requirements	Singapore
Cost of illness/ Burden of illness	1, 2, 6, 7, 8	Feasible with comprehensive RWD
Utility/ HR QoL	4, 5, 8	Feasible with comprehensive RWD
HCRU	3	Feasible with comprehensive RWD
Patient segmentation	1, 3	Feasible with comprehensive RWD
Clinical effectiveness/ safety	2, 3	Feasible with comprehensive RWD
Treatment pathway/ compliance	3	Feasible with comprehensive RWD
Budget impact analysis	9, 10	Feasible with comprehensive RWD
Cost-effectiveness analysis	5, 6, 7, 10	Feasible with comprehensive RWD

Feasible with comprehensive RWD (defined as at ≥ 2 data sources reporting the required variables i.e., robust coverage) Moderate feasibility with some RWD (defined as at least 1 data source reporting the required variables i.e., less robust coverage) Not feasible with no RWD detected in current search

\*Feasibility in Estonia is based on local RWD contributions to regional data sources

## CONCLUSIONS

- Lecanemab proves to be a potentially cost-effective strategy for the early treatment of Alzheimer’s Disease (AD) by effectively delaying disease progression and thereby extending patients’ quality of life.
- Beyond the individual benefits, this approach presents significant societal advantages by potentially reducing the burden on healthcare systems and enabling patients to maintain their independence and productivity for longer periods.
- In the context of real-world evidence and Health Economics and Outcomes Research (HEOR), Singapore significantly lacks the necessary real-world data and databases. This gap hinders the ability to conduct comprehensive and impactful research that can inform healthcare decision-making and policy development.
- By addressing this deficiency in AD/dementia real-world evidence, Singapore can greatly enhance its capacity to generate valuable insights for improving patient outcomes and optimizing healthcare resources especially in the context of an ageing population.

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