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Cost-effectiveness analysis of anti-amyloid monoclonal antibodies (anti-Aβ mAbs) for early Alzheimer's Disease in Singapore

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Introduction

- Anti-amyloid monoclonal antibodies are disease-modifying treatments aimed at reducing amyloid beta plaques in the brain, a pathological feature in the amyloid cascade hypothesis of Alzheimer's disease.
- Lecanemab and donanemab are anti-amyloid monoclonal antibodies approved by HSA for use in patients who have early AD with confirmed amyloid pathology. Clinical trials of lecanemab and donanemab, CLARITY-AD and TRAILBLAZER-ALZ 2 respectively, demonstrated some potential in delaying progression in early AD.
- The Agency for Care Effectiveness (ACE) is the national health technology assessment (HTA) agency in Singapore to guide health policy, drive appropriate use of treatments and inform technology funding decisions. With the emergence of this new therapeutic class, we assessed the cost-effectiveness of the interventions with standard of care vs standard of care alone from Singapore healthcare system's perspective

Methods

- Separate Monte Carlo Markov models with five health states (Figure 1) were constructed for each intervention.
- Transition probabilities between health states were informed by published literature. Effectiveness of the intervention in delaying AD progression were informed by their respective phase III trials
- Health state utilities were sourced from literature while costs were sourced from public healthcare institutions in Singapore. Specific cost components unique to the models were the additional diagnostic testing cost to determine eligibility for treatment and monitoring costs for known adverse events to reflect real-world implementation requirements.

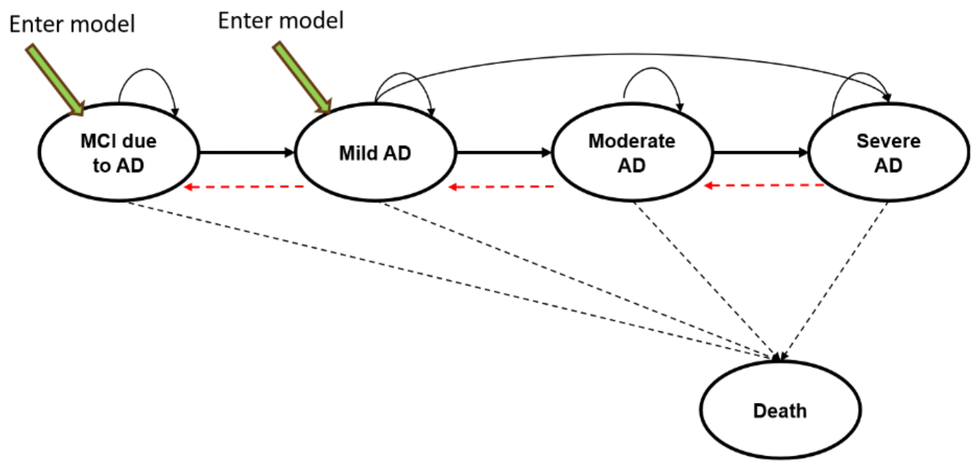

Figure 1. Model structure

Results

- Preliminary base case analysis showed both treatments providing health gains compared to standard of care alone, primarily through delayed progression to more severe AD health states.
- Health gains were achieved at substantial additional costs to the healthcare system. The majority of incremental costs were attributed to drug acquisition (>50%) and diagnostic testing requirements (10-20%).
- ICERs of both models (>$300k/QALY gained) remained above conventional cost-effective thresholds across sensitivity and scenario analysis.
- Potential key barriers to cost-effectiveness were identified: substantial testing costs, uncertainty in long-term effectiveness, and the high cost of interventions.

Conclusion

- Ongoing analyses indicates that both lecanemab and donanemab would face substantial challenges in achieving cost-effectiveness for early AD in Singapore under current conditions.
- These current findings align with international economic evaluations and would contribute to the evidence base to inform decision-making on resource allocation within Singapore's healthcare system.