



# Cost-Effectiveness Analysis of Anti-VEGF Agents for the Treatment of Neovascular Age-Related Macular Degeneration (nAMD) in Taiwan: A Microsimulation Study

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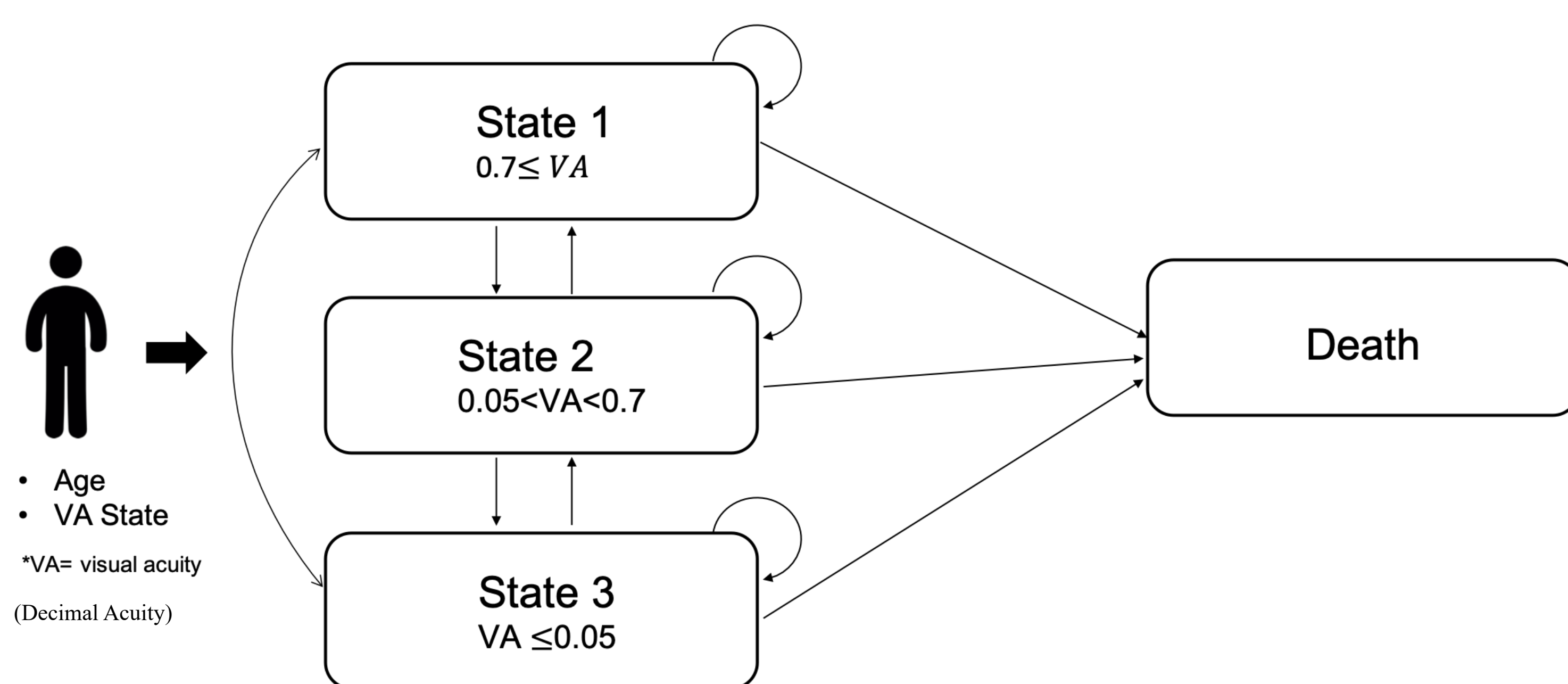
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## Objectives:

Anti-VEGF therapy is the primary treatment for neovascular age-related macular degeneration (nAMD). Compared to Ranibizumab and Aflibercept, previous CEA studies have demonstrated that off-label use of Bevacizumab is a cost-effective treatment option for AMD with the ICERs less than willingness to pay threshold in many countries but Taiwan. Considering the comparable efficacy and significant price difference of anti-VEGF agents in Taiwan, it is important to investigate the cost-effectiveness among all.

## Material and Methods:

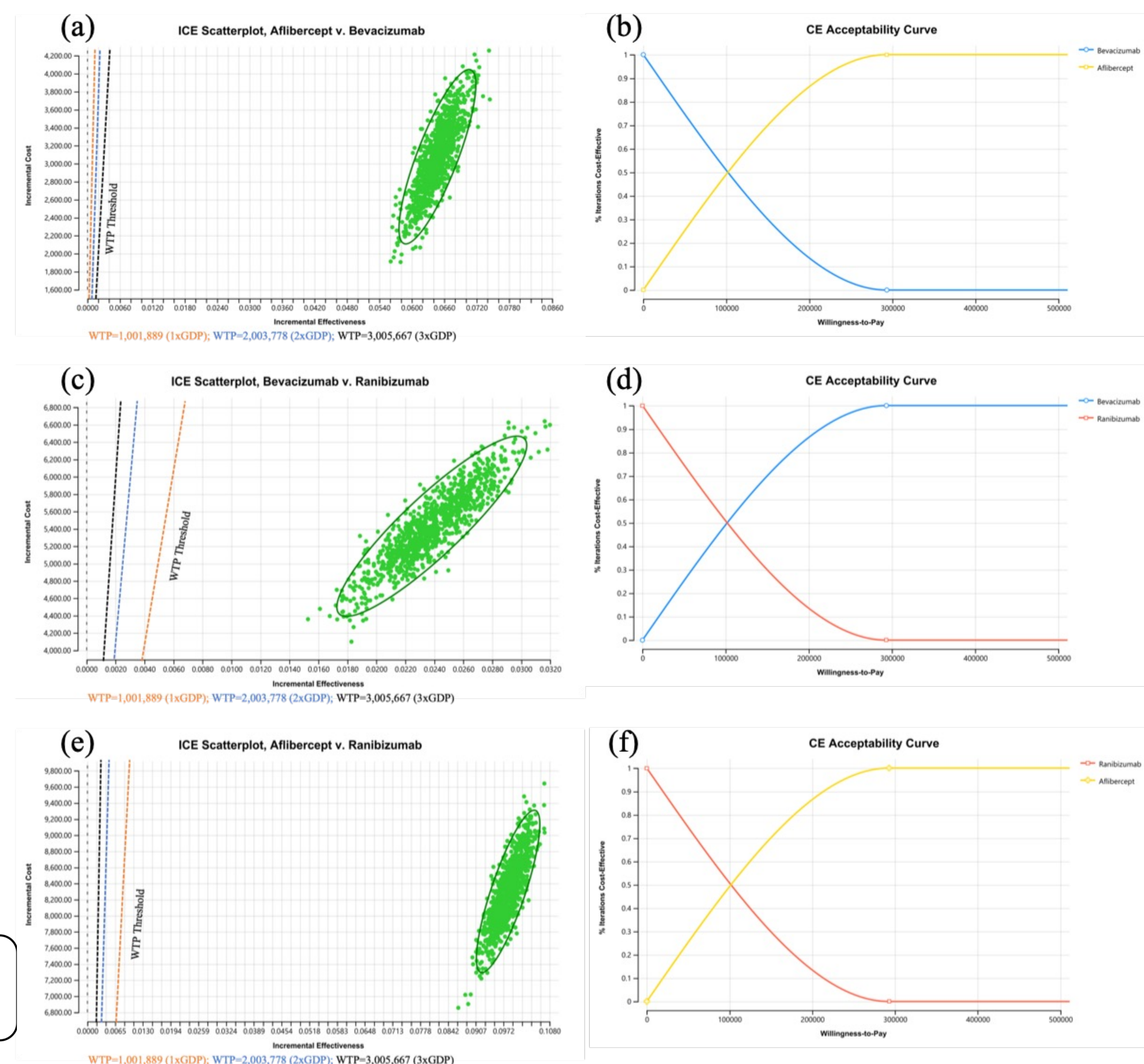
Microsimulation was performed to evaluate the cost-effectiveness of three anti-VEGF agents from payer perspective in Taiwan. Real world visual acuity data from three treatments were collected to evaluate the effectiveness and costs. Direct costs were derived from the information provided by National Health Insurance Administration; utilities scores were derived from previous published studies; ICERs were calculated among three treatments' comparisons. Three-times of GDP per capita in 2023 was used as the threshold. The time horizon was 1 year with no discount. Sensitivity analyses were performed for the parameters uncertainty.



**Figure 1.** Microsimulation structure in a model analysis of the cost-effectiveness of anti-VEGF treatments for nAMD in Taiwan from payer perspective of National Health Insurance Administration. Patients entered the model at a given health state of visual acuity (VA). In each cycle, transition to another VA state and death state was possible.

## Results:

Direct cost of Aflibercept, Ranibizumab, and Bevacizumab were USD\$2,372, USD\$2,089, and USD\$2,241, respectively while the QALYs were 0.44, 0.35, and 0.38, respectively. When comparing with Ranibizumab, ICERs of Aflibercept and Bevacizumab were USD\$3,018 and USD\$4,927, respectively. ICERs of Aflibercept compared to Bevacizumab was only USD\$2,077.7. One-way sensitivity analysis revealed that drug costs had the most impact on ICERs, and PSA demonstrated that when the WTP was higher than USD\$625, the cost-effective probability of Aflibercept became to be the highest.



**Figure 2.** Incremental cost-effectiveness scatterplot and cost-effectiveness acceptability curves. (a), (b) Aflibercept vs. Bevacizumab; (c), (d) Bevacizumab vs. Ranibizumab; (e), (f) Aflibercept vs. Ranibizumab

## Conclusion:

The results showed that both Aflibercept and off-label use of Bevacizumab are cost-effective compared to Ranibizumab in Taiwan. But the ICER was much higher in Bevacizumab vs Ranibizumab due to similar limited effectiveness gain for both Bevacizumab and Ranibizumab. This microsimulation using real world data may suggest a reason why Bevacizumab did not seek official approval for treating nAMD reimbursement in Taiwan.

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