

Bevacizumab is an economically attractive alternative to ranibizumab and aflibercept for the treatment of Macular Oedema due to Central Retinal Vein Occlusion

Intravitreal Therapy with Ranibizumab vs Aflibercept vs Bevacizumab For Macular Oedema Due To Central Retinal Vein Occlusion - A Within Trial Cost-utility Analysis

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Objectives

To evaluate the short term cost-effectiveness of aflibercept (Eylea) and bevacizumab (Avastin) compared to ranibizumab (Lucentis) for the treatment of macular oedema (MO) secondary to central retinal vein occlusion (CRVO) using data from the LEAVO study, a UK-based, multicentre, double-masked, randomised, non-inferiority trial.

Methods

- Health-related quality of life (HRQoL) data were measured using the Visual-Functioning Questionnaire Utility Index (VFQ-UI), EQ-5D and EQ-5D with vision bolt-on (EQ-5D V), at baseline, 12, 24, 52, 76 and 100 weeks.
- EQ-5D 5L health states were converted on to the three level scale as preferred by NICE.
- Resource use data were collected using a bespoke, patient reported questionnaire including; hospital admissions, healthcare contacts, continuous care and support relating to their eye condition.
- A within trial cost-utility analysis was carried out from the UK NHS and Personal Social Services perspective. Costs and QALYs were discounted at 3.5% annually.
- The base-case analysis used the VFQ-UI and the price per injection of £28 for bevacizumab, £551 for ranibizumab and £816 for aflibercept.
- Sensitivity analyses assessed 30% and 50% discounts to drug costs for ranibizumab and aflibercept and utilities calculated using EQ-5D questionnaires.

| | Total (SD) | | Incremental (95% CI) | | ICER (£) |
|---|----------------|----------------|-------------------------|-----------------------------|-----------|
| | Costs (£) | QALYs | Costs (£) | QALYs | |
| Base case analysis: VFQ-UI utilities | | | | | |
| Bevacizumab | 6,292 (3,371) | 1.666 (0.2426) | - | - | - |
| Ranibizumab | 13,014 (3,605) | 1.627 (0.2471) | 6,734 (5,970, 7,498) | -0.019 (-0.065, 0.0284) | Dominated |
| Aflibercept | 14,328 (3,773) | 1.651 (0.2374) | 7,984 (7,209, 8,759) | -0.015 (-0.0618, 0.0322) | Dominated |
| Scenario analysis: EQ-5D for utilities | | | | | |
| Bevacizumab | 6,273 (3,384) | 1.535 (0.3759) | - | - | - |
| Ranibizumab | 13,068 (3,636) | 1.513 (0.3744) | 6,769 (5,987, 7,550) | -0.010 (-0.0710, 0.0504) | Dominated |
| Aflibercept | 14,271 (3,857) | 1.560 (0.3801) | 8,035 (7,246, 8,824) | 0.008 (-0.0529, 0.0683) | 104,1476 |
| Scenario analysis: EQ-5D V for utilities | | | | | |
| Bevacizumab | 6,268 (3,368) | 1.500(0.3757) | - | - | - |
| Ranibizumab | 13,000 (3,661) | 1.472 (0.3666) | 6,748 (5,948, 7,547) | -0.035 (-0.1172, 0.0480) | Dominated |
| Aflibercept | 14,273 (3,720) | 1.516 (0.3856) | 8,012 (7,232, 8,793) | 0.0032 (-0.0837, 0.0902) | 2,483,943 |

Table 1: Summary of incremental analysis using VFQ-UI, EQ-5D and EQ-5D V. (CI; confidence interval, ICER; incremental cost-effectiveness ratio, QALY; quality adjusted life year, SD; standard deviation)

Results

- Data from 462 patients were included in the analysis.
- In the base-case analysis, there were small, but uncertain, differences in QALYs between the three treatments (Table 1).
- Bevacizumab was dominant when compared to ranibizumab and aflibercept (Table 1), with the highest probability of being most cost-effective for a range of willingness to pay thresholds (Figure 1).
- The conclusions regarding cost-effectiveness were unchanged when using EQ-5D and EQ-5D V utilities (Table 1) or when discounts on drug prices were applied.
- Bevacizumab caused significant and sustained improvements in visual acuity but was not non-inferior to ranibizumab and aflibercept.

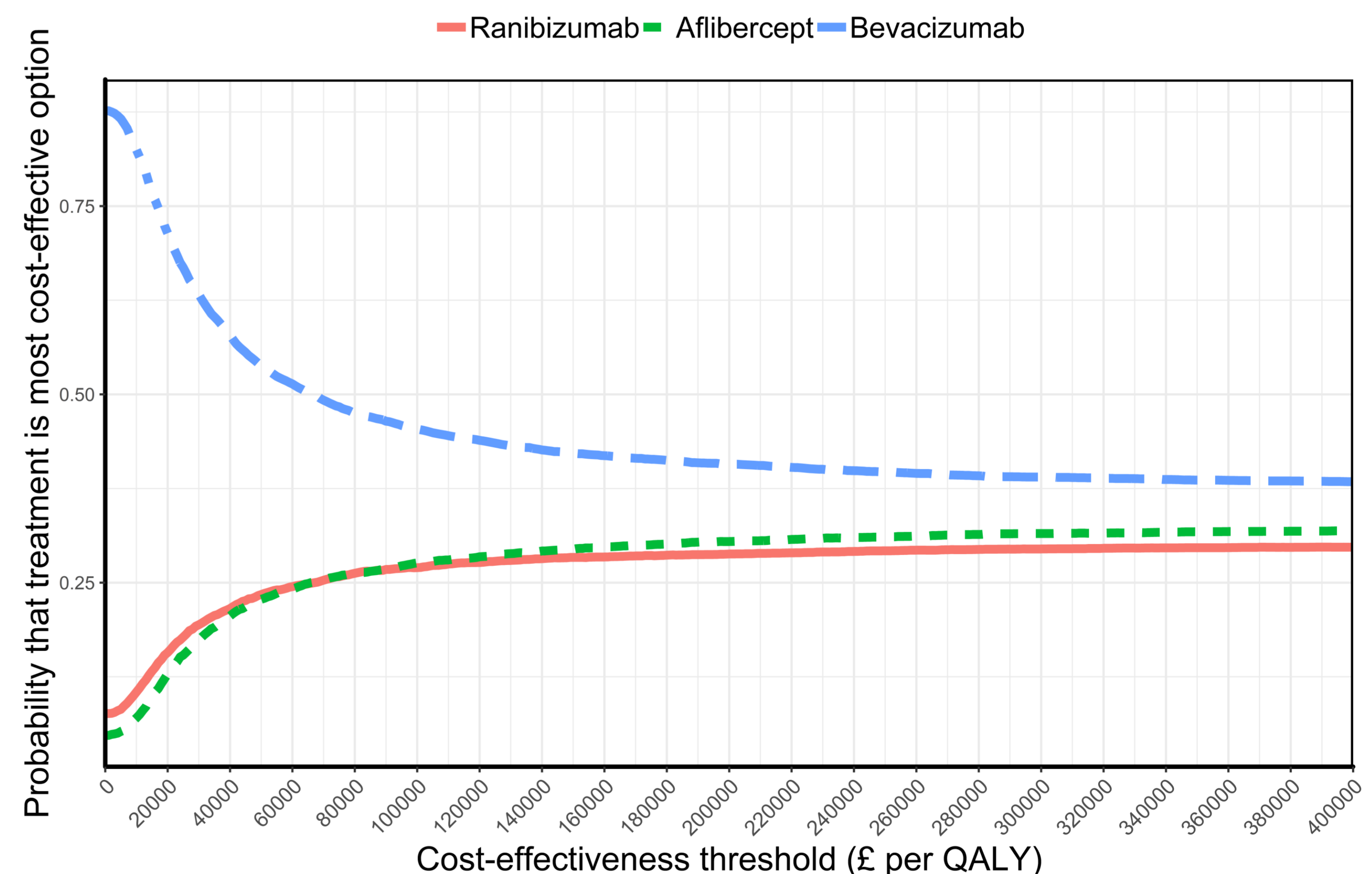


Figure 1: Probability each treatment is most cost-effective at a range of willingness to pay thresholds

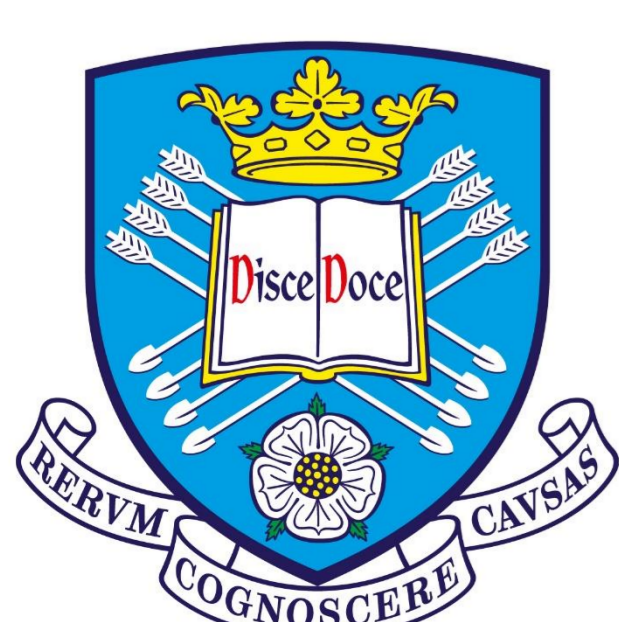
For further information: Alshreef A et al. LEAVO Health Economic and Decision Modelling Analysis Plan (HEDMAP) 2019. Available from: <https://doi.org/10.15131/shef.data.7988303.v1>

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Conclusions

Provided patients are well-informed that bevacizumab, currently used off-label, is not non-inferior to the licensed agents, its wider adoption in common retinal disorders could result in substantial savings to healthcare systems worldwide.



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