



This is a repository copy of *PSS25 Mapping from visual acuity to utility in patients with macular oedema due to central retinal vein occlusion using data from the LEAVO trial*.

White Rose Research Online URL for this paper:  
<http://eprints.whiterose.ac.uk/155210/>

Version: Accepted Version

---

### Proceedings Paper:

Pennington, B., Alshreef, A. [orcid.org/0000-0003-2737-1365](http://orcid.org/0000-0003-2737-1365), Flight, L. [orcid.org/0000-0002-9569-8290](http://orcid.org/0000-0002-9569-8290) et al. (4 more authors) (2019) PSS25 Mapping from visual acuity to utility in patients with macular oedema due to central retinal vein occlusion using data from the LEAVO trial. In: Value in Health. ISPOR Europe 2019, 02-06 Nov 2019, Copenhagen, Denmark. Elsevier , S891-S891.

<https://doi.org/10.1016/j.jval.2019.09.2587>

---

Article available under the terms of the CC-BY-NC-ND licence  
(<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

### Reuse

This article is distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND) licence. This licence only allows you to download this work and share it with others as long as you credit the authors, but you can't change the article in any way or use it commercially. More information and the full terms of the licence here: <https://creativecommons.org/licenses/>

### Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing [eprints@whiterose.ac.uk](mailto:eprints@whiterose.ac.uk) including the URL of the record and the reason for the withdrawal request.

## Objectives

Our economic model predicted long-term best corrected visual acuity (BCVA) in both eyes using data from the 100 week LEAVO study, which compared intravitreal therapy with ranibizumab, aflibercept and bevacizumab for macular oedema (MO) due to central retinal vein occlusion (CRVO). Utilities in LEAVO were collected using EuroQol Five Dimension (EQ-5D), EQ-5D with vision bolt-on (EQ-5D-V), and Visual-Functioning Questionnaire Utility Index (VFQ-UI). We developed mappings to predict utilities beyond the study period using better-(BSE) and worse-seeing eye (WSE) BCVA, age and sex.

## Methods

We estimated adjusted-limited dependent variable mixture models with one to four components. To predict utility within the components we included BSE BCVA, WSE BCVA BSE-WSE BCVA interaction, age and sex as independent variables. We considered BSE and WSE BCVA as determinants of component membership. Models were compared using the mean error, mean absolute error (MAE), root mean square error (RMSE), Akaike information criteria (AIC), Bayesian information criteria (BIC) and visual inspection. We plotted predicted versus observed utilities by BSE and WSE BCVA and simulated data to compare cumulative distribution functions.

## Results

For all utility measures, including the BSE-WSE BCVA interaction worsened model fit according to BIC. Using BSE and WSE BCVA to predict component membership improved model fit. Including more than 1 component consistently improved model fit. For each utility measure, the mean error, MAE and RMSE were similar between the 2, 3, and 4 component models, but the BIC was lowest for the 2 component models for EQ-5D and EQ-5D-V, and for the 3 component model for the VFQ-UI.

## Conclusions

EQ-5D, EQ-5D-V and VFQ-UI are best predicted using models with multiple components in MO due to CRVO. This is consistent with findings from other disease areas, and builds on previous research in visual acuity which have been limited to ordinary least squares regression.