



Research Article

Anti-VEGF drugs compared with laser photocoagulation for the treatment of diabetic retinopathy: a systematic review and meta-analysis

Mark Simmonds,^{1*} Alexis Llewellyn,¹ Ruth Walker,¹ Helen Fulbright,¹
Matthew Walton,¹ Rob Hodgson,¹ Laura Bojke,² Lesley Stewart,¹ Sofia Dias,¹
Thomas Rush,³ John G Lawrenson,⁴ Tunde Peto⁵ and David Steel⁶

¹Centre for Reviews and Dissemination, University of York, York, UK

²Centre for Health Economics, University of York, York, UK

³Patient Representative, Belfast, UK

⁴Department of Optometry and Visual Sciences, City University of London, London, UK

⁵Centre for Public Health, Queen's University Belfast, Belfast, UK

⁶Biosciences Institute, Newcastle University, Newcastle upon Tyne, UK

*Corresponding author mark.simmonds@york.ac.uk

Published December 2024

DOI: 10.3310/PCGV5709

Plain language summary

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Health Technology Assessment 2024

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This article should be referenced as follows:

Simmonds M, Llewellyn A, Walker R, Fulbright H, Walton M, Hodgson R, *et al.* Anti-VEGF drugs compared with laser photocoagulation for the treatment of diabetic retinopathy: a systematic review and meta-analysis. [published online ahead of print December 11 2024]. *Health Technol Assess* 2024. <https://doi.org/10.3310/PCGV5709>

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People with diabetes are at risk of gradually losing their sight. This is because blood vessels in the part of the eye called the retina may become damaged, leading to sight loss. This condition is called diabetic retinopathy. People with a more severe type of retinopathy, called proliferative diabetic retinopathy, are usually offered laser treatment to reduce the risk of further sight loss. Recently, drugs called anti-vascular endothelial growth factor drugs, which are injected directly into the eye, have been used to treat other eye conditions, and might be useful to treat retinopathy.

This project investigated whether anti-vascular endothelial growth factor therapy is effective by identifying and re-analysing all the clinical trials that used the three main anti-vascular endothelial growth factor drugs (called aflibercept, bevacizumab and ranibizumab) to treat diabetic retinopathy. We identified 14 relevant clinical trials, including approximately 1800 persons.

Our analyses found that anti-vascular endothelial growth factor injections were slightly better than laser therapy at maintaining vision. After 1 year, people with proliferative retinopathy who received anti-vascular endothelial growth factor injections could, on average, read three or four more letters on a standard eye test chart than people who had received laser therapy. This difference may be too small to make anti-vascular endothelial growth factor injections worthwhile. People with less severe forms of retinopathy saw no benefit in vision after receiving anti-vascular endothelial growth factor therapy.

We did find that people who received anti-vascular endothelial growth factor injections were substantially less likely to experience some of the more severe consequences of vision loss, including where vision is lost in the centre of the eye (called diabetic macular oedema), and where blood leaks into the eye (called vitreous haemorrhage).

Most of the trials lasted for 1 year or less, so the long-term impact of using anti-vascular endothelial growth factor injections is still not well understood. This long-term impact of anti-vascular endothelial growth factor use requires further clinical research.