NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Single Technology Appraisal

Aflibercept for treating visual impairment caused by macular oedema secondary to central retinal vein occlusion

Final scope

Remit/appraisal objective

To appraise the clinical and cost effectiveness of aflibercept within its licensed indication for the treatment of visual impairment due to macular oedema caused by central retinal vein occlusion.

Background

The macula is the central part of the retina responsible for colour vision and perception of fine detail. Macular oedema refers to the accumulation of fluid within the retina at the macular area, which can lead to severe visual impairment in the affected eye.

Retinal vein occlusion (RVO) is a common cause of reduced vision due to retinal vascular disease. It is classified into central retinal vein occlusion (CRVO) and branch retinal vein occlusion (BRVO). CRVO results from thrombosis of the central retinal vein where it passes through the back of the optic nerve through a mesh-like structure called the lamina cribrosa.

Thrombosis of the retinal veins increases retinal capillary pressure leading to increased capillary permeability and the discharge of blood and plasma into the macula. These changes trigger an increased amount of vascular endothelial growth factor (VEGF), which increases vascular permeability and mediates new vessel proliferation.

RVO affects 1–2% of people aged over 40 years. Macular oedema, which is the most frequent cause of vision loss in people with RVO, occurs in 84% of all CRVO cases. In England and Wales, it has been estimated that for every 100,000 population, approximately 17 people aged 40 years or over will require treatment for macular oedema following CRVO annually. CRVO typically increases with age, with over 90% of people with CRVO aged above 50 years. It occurs slightly more frequently in males than females and shows no racial preference.

CRVO can be broadly divided into two sub-categories: ischaemic and non-ischaemic, the former being the more severe. Non-ischaemic CRVO may resolve completely without any complications or may progress to the ischaemic type. In more than 90% of patients with ischaemic CRVO, final visual acuity may be 6/60 or worse that means patients only see things at a distance of 6 meters or less compared with a person without any visual problem should be able to see at 60 meters. The impact of vision loss

associated with RVO can have a profound effect on vision-related quality of life. Patients may struggle with daily tasks, lose confidence and become increasingly dependent on family and carers. RVO is also associated with an increase in the risk of vascular causes of death.

Current treatment options aim to preserve vision and prevent complications. NICE technology appraisal no. 283 recommends ranibizumab and NICE technology appraisal no. 229 recommends dexamethasone implant for the treatment of macular oedema following either CRVO or BRVO. Other medical interventions may include intravitreal injections of bevacizumab, which is not licensed for the treatment of any ocular condition. There is currently no established treatment for ischemic macular oedema secondary to CRVO in the UK.

The technology

Aflibercept (Eylea, Bayer) is a fully human, soluble VEGF receptor fusion protein that binds to VEGF-A and Placental Growth Factor. This may prevent the inappropriate growth of new blood vessels in the retina, decrease vascular permeability and reduce oedema. Aflibercept is administered via intravitreal injection.

Aflibercept solution for injection does not currently have a UK marketing authorisation for the treatment of macular oedema caused by CRVO. It has been studied in clinical trials as first-line treatment in adults with centre-involved macular oedema secondary to CRVO compared with sham intravitreal injections.

Intervention(s)	Aflibercept
Population(s)	Adults with visual impairment due to macular oedema caused by central retinal vein occlusion.
Comparators	• dexamethasone implant • ranibizumab • bevacizumab (for intravitreal injection) • clinical observation

Outcomes	The outcome measures to be considered include: • visual acuity (the affected eye) • visual acuity (the whole person) • need for pan-retinal photocoagulation • adverse effects of treatment • health-related quality of life • mortality.
Economic analysis	The reference case stipulates that the cost effectiveness of treatments should be expressed in terms of incremental cost per quality-adjusted life year. The reference case stipulates that the time horizon for estimating clinical and cost effectiveness should be sufficiently long to reflect any differences in costs or outcomes between the technologies being compared. Costs will be considered from an NHS and Personal Social Services perspective. The availability of any patient access schemes for the intervention or comparator technologies should be taken into account.
Other considerations	If the evidence allows, consideration will be given to subgroups according to: • the presence or absence of ischaemia • baseline visual acuity • central macular thickness. Guidance will only be issued in accordance with the marketing authorisation.
Related NICE recommendations	Related Technology Appraisals: Technology Appraisal No. 283, May 2013, 'Ranibizumab for treating visual impairment caused by macular oedema secondary to retinal vein occlusion'. Review proposal date March 2016. Technology Appraisal No. 229, Jul 2011, 'Dexamethasone intravitreal implant for the

	treatment of macular oedema caused by retinal vein occlusion'. Review proposal date Jan 2014.