NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

Single Technology Appraisal

Aflibercept solution for injection for the treatment of wet age-related macular degeneration

Scope

Remit/appraisal objective

To appraise the clinical and cost effectiveness of aflibercept solution for injection, within its licensed indication, for the first-line treatment of wet age-related macular degeneration.

Background

The macula is the central part of the retina responsible for colour vision and perception of fine detail. Age-related macular degeneration refers to the deterioration in the cells of the retinal pigment layer at the macula area, which can lead to severe visual impairment in the affected eye. Age-related macular degeneration usually affects both eyes.

Age-related macular degeneration is a common cause of vision loss in people aged over 50 years and is associated with the loss of central vision and visual distortion. There are two main types of age-related macular degeneration, wet (neovascular) and dry (non-neovascular). Wet age-related macular degeneration is characterised by the formation of immature blood vessels that grow between the retinal pigment epithelial cells and the photoreceptor cells in the centre of the retina. These new blood vessels are fragile and more likely to haemorrhage, which causes scarring of the macula leading to vision impairment. Choroidal neovascularisation can be subdivided into classic and occult forms according to its appearance on investigation by fluorescein angiography. Choroidal neovascularisation can also be described in terms of its location in relation to the fovea, which is a small depression in the macula that provides the clearest vision: subfoveal (extending behind the middle of the fovea); juxtafoveal (in the remainder of the fovea but not the middle) and extrafoveal (in the macula excluding the fovea). Wet age-related macular degeneration usually progresses much more quickly than dry age-related macular degeneration, making serious changes to central vision in a short period of time.

Approximately 10-15 per cent of people who develop age-related macular degeneration have wet age-related macular degeneration. There are an estimated 26,000 new cases of wet age-related macular degeneration in the UK each year. Risk factors for the development of age-related macular degeneration include increasing age, sex (it is more common in women), cigarette smoking (smokers having a 3.6 times greater risk of developing age-related macular degeneration compared with people who have never smoked), and exposure to high levels of UV light.

The aim of current management of age-related macular degeneration is to improve or halt the decline in visual acuity associated with age-related macular degeneration. Treatment needs to be given rapidly before new blood vessels cause excess damage to the macula, leading to scarring and permanent sight loss. NICE technology Appraisal No. 68 recommends the use of photodynamic therapy (laser activation of verteporfin which causes cell death in new blood vessels) in individuals with a confirmed diagnosis of classic with no occult subfoveal choroidal neovascularisation and a best-corrected visual acuity 6/60 or better. NICE Technology Appraisal No. 155 recommends the use of intravitreal ranibizumab for the treatment of wet age-related macular degeneration in certain people. The Royal College of Ophthalmologists has issued a statement that supports the use of intravitreal bevacizumab rather than ranibizumab for the treatment of wet age-related macular degeneration if it is in the patient's best interest, the ophthalmologist sources the bevacizumab from a reputable pharmacy and the patient gives informed consent (December, 2011). Current patient management also involves social support, visual rehabilitation and the provision of aids to help with low vision.

The technology

Aflibercept solution for injection (Eylea, Bayer Pharma) is a soluble vascular endothelial growth factor (VEGF) receptor fusion protein which binds to all forms of VEGF-A, VEGF-B, and the placental growth factor (PlGF). VEGF-Trap prevents these factors from stimulating the growth of fragility and permeable new blood vessels associated with wet age-related macular degeneration. It is administered by intravitreal injection.

Aflibercept solution for injection does not have a UK marketing authorisation for the treatment of wet age-related macular degeneration. It is currently being evaluated in several clinical trials in comparison with ranibizumab as first-line treatment in adults with active primary or recurrent subfoveal choroidal neovascularisation lesions secondary to age-related macular degeneration, including juxtafoveal lesions.

Intervention	Aflibercept solution for injection
Population	Adults with wet age-related macular degeneration
Standard comparators	• Ranibizumab • Bevacizumab • Photodynamic therapy

Outcomes	Outcomes should include: • Visual acuity (the affected eye) • Visual acuity (the whole person) • Adverse effects of treatment • Health-related quality of life.
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 economic evaluation should be based on an appropriate time horizon over which the main costs and benefits of treatment are likely to differ from the standard comparator. Costs will be considered from an NHS and Personal Social Services perspective.
Other considerations	If evidence allows, potential subgroups could be defined according to the composition of the lesion in terms of classic and occult choroidal neovascularisation. Guidance will only be issued in accordance with the marketing authorisation.

Related NICE recommendations	Related Technology Appraisals: Technology Appraisal TA155. August 2008. Ranibizumab and pegaptanib for the treatment of age-related macular degeneration. Re-issued after a change to the patient access scheme: May 2012. Review date: February 2014. Technology Appraisal TA68. September 2003. The clinical effectiveness and cost effectiveness of photodynamic therapy for age-related macular degeneration. Review date: August 2011 Related Interventional Procedures: Interventional Procedure Guidance No. 48. March 2004. Macular translocation for age-related macular degeneration Interventional Procedure Guidance No. 49. March 2004. Radiotherapy for age-related macular degeneration. Interventional Procedure Guidance No. 58. June 2004 Transpupilary thermotherapy for age-related macular degeneration. Interventional Procedure Guidance No. 272. August 2008. Implantation of miniature lens systems for advanced age-related macular degeneration. Interventional Procedure Guidance No. 340. May 2010. Macular translocation with 360° retinotomy for wet age related macular degeneration. Interventional Procedure Guidance No. 339. May 2010. Limited macular translocation for wet age-related macular degeneration.