

**NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE**

**Health Technology Appraisal**

**Dexamethasone intravitreal implant for the treatment of macular oedema caused by retinal vein occlusion**

**Final scope**

**Remit/appraisal objective**

To appraise the clinical and cost effectiveness of dexamethasone intravitreal implant within its licensed indication for the treatment of macular oedema caused by retinal vein occlusion (RVO).

**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.

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. BRVO is caused by venous thrombosis at an arteriovenous crossing, where an artery and vein share a common lining of connective tissue.

Thrombosis of the retinal veins causes an increase in retinal capillary pressure resulting in increased capillary permeability and the discharge of blood and plasma into the retina. This leads to the development of macular oedema and varying levels of ischaemia through non-perfusion of capillaries. These changes trigger an increased amount of vascular endothelial growth factor (VEGF), which increases vascular permeability and new vessel proliferation.

No prevalence or incidence data has been identified for England and Wales; however a recent US study reported a 15 year incidence of 500 new cases per 100,000 population for CRVO and 1800 cases per 100,000 population for BRVO. Incidence of RVO increases with age. Other risk factors for RVO include hypertension, hyperlipidaemia, glaucoma, thrombophilia and diabetes.

Both CRVO and BRVO 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. BRVO presents with a variable degree of visual loss; approximately 50-60% of untreated eyes with

BRVO retain a visual acuity of 6/12 or better after one year, whilst 25% will have a vision of less than 6/20. 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 vascular causes of death.

The aim of current management is to halt the decline in visual acuity associated with CRVO and BRVO. A grid pattern of photocoagulation (a type of surgery that uses an intense beam of light) is a proven effective treatment only for non-ischaemic BRVO where visual loss is not severe. For those people who are unlikely to benefit from photocoagulation, there is no licensed effective treatment that will alter the visual prognosis and the mainstay of treatment is best supportive care. Some specialist centres in the NHS currently use unlicensed pharmacological treatments, including intravitreal injections of triamcinolone acetonide and bevacizumab. Laser anastomosis and optic nerve sheathotomy are surgical procedures which have been studied in clinical trials but these are rarely undertaken in current clinical practice.

### The technology

Dexamethasone intravitreal implant (Ozurdex, Allergan) is a corticosteroid which suppresses inflammation, leakage from the retinal blood vessels, and macular oedema by inhibiting the expression of VEGF. It is a biodegradable implant which is delivered by intravitreal (IVT) injection where it delivers dexamethasone to the posterior segment of the eye for up to 6 months.

Dexamethasone intravitreal implant does not have a UK marketing authorisation for the treatment of macular oedema secondary to RVO. It has been compared with sham injections in two clinical trials in people with macular oedema secondary to CRVO and BRVO.

<b>Intervention(s)</b>	Dexamethasone intravitreal implant
<b>Population(s)</b>	People with macular oedema caused by RVO

<b>Comparators</b>	<p>For CRVO:</p> <ul style="list-style-type: none"> <li>• Triamcinolone acetonide (IVTA; 'Kenalog' formulation or equivalent)</li> <li>• Bevacizumab</li> <li>• Best supportive care</li> </ul> <p>For BRVO:</p> <ul style="list-style-type: none"> <li>• Triamcinolone acetonide (IVTA; 'Kenalog' formulation or equivalent)</li> <li>• Bevacizumab</li> <li>• Best supportive care (ischaemic only)</li> <li>• Grid pattern photocoagulation (non-ischaemic only)</li> </ul>
<b>Outcomes</b>	<p>The outcome measures to be considered include:</p> <ul style="list-style-type: none"> <li>• Visual acuity (the affected eye)</li> <li>• Visual acuity (the whole person)</li> <li>• Contrast sensitivity</li> <li>• Adverse effects of treatment</li> <li>• Health-related quality of life</li> </ul>
<b>Economic analysis</b>	<p>The reference case stipulates that the cost effectiveness of treatments should be expressed in terms of incremental cost per quality-adjusted life year.</p> <p>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.</p> <p>Costs will be considered from an NHS and Personal Social Services perspective.</p>

<p><b>Other considerations</b></p>	<p>If the evidence allows, consideration will be given to subgroups according to:</p> <ul style="list-style-type: none"> <li>• BRVO and CRVO;</li> <li>• the presence or absence of ischaemia;</li> <li>• baseline visual acuity;</li> <li>• baseline structural damage to the central fovea;</li> <li>• degree of perfusion at the back of the eye</li> <li>• duration of macular oedema (time since diagnosis).</li> </ul> <p>Guidance will only be issued in accordance with the marketing authorisation.</p>
<p><b>Related NICE recommendations</b></p>	<p>Related Technology Appraisals:</p> <p>Technology Appraisal No. 155, Aug 2008, 'Ranibizumab and pegaptanib for the treatment of age-related macular degeneration'. Review date: Aug 2011</p> <p>Technology Appraisal No. 68, Sep 2003, 'Guidance on the use of photodynamic therapy for age-related macular degeneration'.</p> <p>Proposed Technology Appraisal 'Ranibizumab for the treatment of macular oedema caused by retinal vein occlusion'.</p> <p>Proposed Technology Appraisal 'Ranibizumab for the treatment of diabetic macular oedema'.</p> <p>Related Interventional Procedures:</p> <p>Interventional Procedure No. 72, Jul 2004, 'Arteriovenous crossing sheathotomy for branch retinal vein occlusion'.</p> <p>Interventional Procedure No. 48, Mar 2004, 'Macular translocation for age-related macular degeneration'.</p> <p>Interventional Procedure No. 49, Mar 2004, 'Radiotherapy for age-related macular degeneration'.</p> <p>Interventional Procedure No. 58, Jun 2004, 'Transpupillary thermotherapy for age-related macular degeneration'.</p> <p>Interventional Procedure No. 272, Aug 2008, 'Implantation of miniature lens systems for advanced age-related macular degeneration'.</p>