Management of patients with wet age-related macular degeneration

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Cover image: iStock
Introduction

AGE-RELATED macular degeneration (AMD) is the leading cause of irreversible blindness in people aged 50 years and over in the Western world (Congdon et al 2004). In the UK, AMD accounts for more than half of all registered blindness (Owen et al 2003, Bunce and Wormald 2008). In the case of wet (neovascular) AMD – the most rapidly progressing form – an accurate and early diagnosis followed by rapid referral and treatment is essential for the best patient outcomes.

Guidance from the National Institute for Health and Clinical Excellence (NICE) and the Scottish Medicines Consortium (SMC) recommending intravitreal treatment for the disease, irrespective of lesion type, has meant the number of patients eligible for treatment and the number of clinic visits required for each patient have dramatically risen. In many regions AMD services have needed additional funding and resources to increase the number of wet AMD clinics.

Nurses have always played a key role in the counselling and treatment of patients with AMD at different stages of the care pathway, but this role is evolving, with more emphasis on extra responsibilities and sharing roles. This guide discusses the requirements of a patient care pathway that reflects best practice, and offers practical advice for general and ophthalmic nurses in light of NICE and SMC guidance for the treatment of wet AMD.

Because of the rapid progression associated with this potentially blinding disease this guide highlights, in particular, a need for heightened awareness of the signs and symptoms of wet AMD for all nurses involved in the care of older people. It also illustrates the significant contributions that general and ophthalmic nurses can make at each stage of the AMD care pathway to help optimise efficiency and resources and, ultimately, ensure better patient outcomes (Box 1, Figure 1).

Dry and wet age-related macular degeneration

There are two types of AMD: dry (atrophic or geographic) AMD – a slow progressive disease; and wet (neovascular or exudative) AMD – a less prevalent but more aggressive disease. **Dry AMD** In patients who have dry AMD, gradual, insidious visual loss with central or pericentral visual scotomas (blind spots) typically develop – usually over the course of months or years (Jager et al 2008). Little is available in the way of treatment options for patients with dry AMD (Finger et al 2008). However, stopping smoking, a healthy diet rich in dark, leafy vegetables and controlling blood pressure and body mass index can be recommended to maintain eye health. The

**Wet AMD** This can have the most devastating consequences if left untreated because severe vision loss may be rapid – frequently occurring in just a few weeks (Jager et al 2008). The prevalence of wet AMD is lower than that of the dry form (about 20 per cent of all cases of AMD), but it is increasing with the ageing population. Because of its aggressive nature, wet AMD accounts for 80 to 90 per cent of all registered blind patients with AMD (Ferris et al 1984, Congdon et al 2004).

The latest figures show that there are 243,000 people with wet AMD in the UK and 26,000 new cases are predicted each year (Lottery et al 2007, NICE 2008). This equates to 450 new cases per million of the total UK population per year (Royal College of Ophthalmologists (RCO) 2009). As dry AMD can also convert without warning to the wet form, patients with dry AMD need monitoring regularly (Nowak 2006).

Wet AMD is characterised by growth of new abnormal blood vessels, known as choroidal neovascularisation (CNV), which eventually invade the retina. Sudden and rapid loss of vision is caused by bleeding and/or fluid leakage from blood vessels and, in advanced stages of wet AMD, CNV is commonly associated with permanent fibrous scarring of the macula (Wong et al 2008).

**Symptoms** The symptoms of wet and dry AMD include impairment of central vision or visual scotomas, decreased contrast sensitivity and problems adjusting to dim lighting (Box 2) (Kanski 2006, Jager et al 2008). Additionally, patients with wet AMD often report a distortion of straight

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**BOX 1**

**Key points**

- Age-related macular degeneration (AMD) is a serious eye disease and is the leading cause of blindness in the UK.
- The wet form of AMD is aggressive and requires urgent diagnosis and treatment.
- Current recommended treatment for wet AMD is effective in halting decline in visual function and, in some cases, vision can even improve.
- Key symptoms of wet AMD are central vision loss that occurs suddenly, and visual distortion.
- All nurses involved in the care of older people should be familiar with the symptoms of AMD and the referral pathway.
- The evolving AMD care pathway provides opportunities for sharing roles and professional development of nurses.

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Age-Related Eye Disease Study (AREDS) found that high levels of antioxidants and zinc significantly reduce the risk of advanced AMD and its associated vision loss particularly in patients at high risk of developing advanced AMD (AREDS 2001, Kanski 2006, Jager et al 2008, AMD Alliance International 2009).
lines, such as door frames, pillars or posts (metamorphopsia) (Bressler 2002) (Figure 2a, b).

The Amsler grid is a quick and simple diagnostic aid which is commonly used to check for these disturbances in the central visual field that are characteristic of AMD (Figure 3a, b) (Kanski 2006). Distortions and scotomas can be perceived as waviness, missing portions, or breaks in the gridlines (Jager et al 2008).

Because of the sudden and severe effect on sight, untreated wet AMD profoundly affects a person’s ability to perform even the most basic tasks of everyday life (Chang et al 2007). Patients with the disease can experience loss of independence and are at significant risk of suffering anxiety and depression (Soubrane et al 2007).

At least 10 per cent of patients with AMD also develop visual hallucinations – known as Charles Bonnet syndrome. This can be disturbing and is caused by a lack of visual stimuli and does not indicate any kind of mental dysfunction (RCO 2008).

The symptoms and risk factors (Box 2, Table 1) of AMD are relevant to all nurses involved in caring for older people. It is important to be vigilant for warning signs, particularly of wet AMD, due to its rapidly progressing nature and potentially devastating effect on vision if left untreated. Patients might not describe symptoms exactly as they are worded in the clinical literature, but some possible patient interpretations are shown in Box 3.

In the early stages of AMD patients might not notice symptoms because the ‘healthy’ eye can compensate for vision loss in the affected eye. Both eyes should therefore be examined carefully. Of particular note is the timing of onset of symptoms with wet AMD. Patients with wet AMD are likely to describe their symptoms as occurring ‘suddenly’ or ‘waking up with it’, whereas dry AMD progresses very slowly.

**Developments in treatment**

Treatment for wet AMD involving the fovea has historically depended on the type of lesion present. CNV in wet AMD is classified according to the appearance of the lesion and on fluorescein angiography. ‘Classic’ lesions can be seen clearly and fluoresce brightly in the early stages of the procedure, whereas ‘occult’ lesions are poorly defined and ‘stippled’ in appearance (Figure 4a, 4b) (Kanski 2006).

Until the introduction of anti-vascular endothelial growth factor (VEGF) drugs, treatment was limited to verteporfin photodynamic therapy (vPDT) (Visudyne®), and before that thermal laser photocoagulation, both of which were only suitable for a small proportion of eyes (NICE 2003, 2007).

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**BOX 2**

**Symptoms of AMD**

Symptoms may include:

- Visual blindspots (scotomas).
- Decreased contrast sensitivity.
- Problems adapting to dim lighting.
- Difficulty reading small print without magnification or bright lighting.

**Dry AMD**

- Possible mild distortion.
- Gradual visual loss over months or years.

**Wet AMD**

- Blurred or distorted vision (metamorphopsia).
- Sudden and severe visual loss over weeks.

**NB:** Early AMD is often asymptomatic and where symptoms do occur they are usually mild
(Source: Jager et al 2008)

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**BOX 3**

**Typical comments from patients with AMD**

- ‘The print seems blurred when I read the newspaper.’
- ‘It feels like I’ve got something in the way, obstructing my view.’
- ‘I’ve got vision loss but I haven’t had any headaches.’

In addition, wet AMD patients may say:

- ‘I woke up with a dark shadow in my vision but it disappeared during the day, so I ignored it.’
- ‘It came on suddenly.’
- ‘Out of the blue, the edges of doors and buildings started to look wavy.’

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FIGURES 2A - 2B

Representation of visual disturbances in AMD

A – metamorphopsia

B – scotoma

Images courtesy of AMD Alliance International

FIGURES 3A - 3B

Example of a) an Amsler grid and b) representation of an Amsler grid as viewed by a patient with AMD

A

B

Metamorphopsia (Distortion)

Scotoma (Blind spot)

Images adapted from, and courtesy of, AMD Alliance International

TABLE 1

Risk factors for AMD

<table>
<thead>
<tr>
<th>Non-modifiable</th>
<th>Ocular</th>
<th>Modifiable</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genetic factors/family history.</td>
<td>Lens opacities.</td>
<td>Low intake of antioxidants and zinc.</td>
</tr>
<tr>
<td>Female gender.</td>
<td></td>
<td>High body mass index.</td>
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<tr>
<td>Caucasian race.</td>
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<td>High dietary fat intake.</td>
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<td></td>
<td></td>
<td>Atherosclerosis.</td>
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<td></td>
<td>Hypertension.</td>
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</tbody>
</table>

Nowak 2006). Patients with minimally classic and occult lesions, accounting for 55 to 70 per cent of all patients with wet AMD, were not eligible for treatment (RCO 2007).

Anti-VEGF drugs have heralded significant advances in the treatment of all lesion types in wet AMD. Ranibizumab (Lucentis®) and pegaptanib (Macugen®) are both administered by intravitreal injection and have been shown to stabilise vision in most patients with wet AMD (Gragoudas et al 2004, Brown et al 2006, D’Amico et al 2006, Rosenfeld et al 2006, Regillo et al 2008, Brown et al 2009).

Ranibizumab can also significantly improve vision in more than a third of patients (Brown et al 2006, Rosenfeld et al 2006), and is recommended by NICE for the treatment of wet AMD where there is evidence of recent disease progression and visual acuity is between 6/12 and 6/96 (NICE 2008). The SMC has also accepted ranibizumab for the treatment of wet AMD for use in NHS Scotland and, additionally, permitted restricted use of pegaptanib where visual acuity is between 6/12 and 6/60 (SMC 2006, 2007).

Because anti-VEGF drugs are potentially effective against wet AMD of any lesion type, the number of patients eligible for treatment has dramatically increased (RCO 2007). Patients receiving anti-VEGF treatments also need to visit the clinic more often than those treated with vPDT, resulting in a possible six to ninefold increase in the AMD workload (RCO 2007).

NICE guidelines for vPDT recommend that patients are re-evaluated every three months after initial treatment, whereas patients receiving anti-VEGF treatment require visits to the clinic every four weeks for ranibizumab, and every six weeks for pegaptanib (NICE 2003, 2008, Electronic Medicines Compendium (eMC) 2008, 2009).

The potential impact of the NICE and SMC guidance on the efficient running of an AMD clinic, and timely treatment of patients, is clear. Higher patient numbers and number of clinic visits present significant challenges for resources and logistics.

But the introduction of the anti-VEGF treatments provide better clinical prognoses and exciting opportunities for nurses to expand their role across all stages of the pathway (including screening, diagnosis, treatment, follow up and support), and help provide an efficient service.

There is also a need for specialist ophthalmic nurses to be proactive in helping to develop strategies that ensure the best outcome for patients. Without doubt nurses will continue to play an increasingly pivotal role in implementing and maintaining an efficient AMD service (Box 4).

**Referrals: the patient’s journey**

The patient’s journey differs depending on whether he or she has wet or dry AMD (Figure 5). Patients with dry AMD can be offered only dietary and lifestyle advice and best supportive care, including monitoring for conversion to wet AMD. Patients with the wet form need rapid treatment.

To provide an efficient treatment service for wet AMD, the transition from vPDT to anti-VEGF therapies means that clinics find it necessary to review their resource requirements in terms of finances, staffing, clinic frequency and, in some cases, additional equipment, such
as optical coherence tomography (OCT) machines – which use an imaging technique to create detailed images of retinal structure.

As a result, many nurses and other clinic staff have had the opportunity to learn other skills, such as developing a business plan or liaising with hospital management and NHS primary care trusts. However, the addition of extra responsibilities inevitably comes with an associated increase in workload and potential stress. It is sensible to adopt a role-sharing approach to minimise these pressures among staff and to make full use of the knowledge and skills that many individuals have gained from running a vPDT service.

Nurses are involved in the AMD care pathway, not only at the level of secondary care, but throughout the patient journey. All nurses (general, ophthalmic and those working with older people, as well as other specialist nurses) should be aware of AMD. They should be able to recognise:

- Wet and dry AMD.
- Who is most at risk of developing AMD.
- Where and how to refer patients.

It is also a key role for nurses to manage patient expectations at every step – from those who are newly diagnosed and those who are about to undergo treatment for the first time, to those who have had AMD or have been on treatment for some time. Nurses can help ensure a co-ordinated service is provided at all stages of the patient pathway.

**Presentation**

Patients can present with signs or symptoms of AMD at primary care to either a GP or, more frequently, to a community optometrist. So that treatment can be initiated quickly in the case of wet AMD, these patients must be appropriately referred – that is, by direct referral from

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**BOX 4**

**How treatment is given***

- Intravitreal anti-VEGF treatment must be administered by a qualified ophthalmologist experienced in intravitreal injections.
- Check the patient’s history of hypersensitivity reactions. The intravitreal procedure must be carried out under aseptic conditions and should include:
  - Surgical hand disinfection.
  - Use of sterile gloves.
  - Use of a sterile drape.
  - Use of a sterile eyelid speculum (or equivalent).
  - Availability of sterile paracentesis (if required).
  - Disinfection of perocular skin, eyelid and ocular surface.
  - Administration of adequate anaesthesia.
- Monitoring for 1-2 weeks (as per the product information) after injection for signs of infection and instructing patients to report any symptoms.

* Full details can be obtained from Lucentis and Macugen Summary of Product Characteristics (eMC 2008, 2009)

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**FIGURE 5**

**The wet AMD referral pathway for new patients***

Referral

Patient

Optometrist

GP

Local eye unit

Eye casualty

A&E

Local referral hospital

Local referral

hospital

Fast track macular clinic or medical retina clinic

Intervention

Low vision aid assessment and support counselling

Treatment plan

*Bold arrows indicate the optimal and most common patient route.
optometrist to a macular clinic, and in an appropriate time frame (ideally 24 to 48 hours).
In 2004 the Department of Health (DH) in England recommended that referral was not made via GPs as this slows the process down; however, this still occurs occasionally. The RCO recommends that the time from initial presentation to beginning treatment should be, ideally, a maximum of two weeks (RCO 2007). For patients with dry AMD, diagnosis should be confirmed by a retinal specialist, and in addition to providing advice and supportive care, the importance of self-monitoring for progression to the wet form of AMD should also be discussed with the patient.

As already described, all nurses should be vigilant for, and aware of, symptoms of AMD and know where to refer patients. Patients might delay seeking referral because they are frightened of having their fears confirmed (McBride 2005) and, therefore, might not be forthcoming with information about their symptoms. Some questions that you could ask older patients, especially those suspected of having AMD, are shown in Box 5.

**Reflection point 1**
- Revise the normal structure and function of the eye.
- Based on the incidence figures quoted in this supplement, consider how many patients with wet AMD you would expect to have in your locality.
- Reflect on your current plan of action for a patient suspected of having wet AMD. How would you change this plan, or develop one if you do not already have one?
- Find out what support is available to patients with visual impairment in your area.

**Diagnosis**
Wet AMD clinics are generally run either as a one-stop clinic, where patients receive treatment (if required) on the same day, or a two-stop clinic, where patients are examined on the first visit and then a return appointment is made for treatment on a different day. Each model has advantages and disadvantages.
A one-stop clinic allows treatment to begin as quickly as possible to maximise the chance of halting progressive vision loss. However, a one-stop service must be organised to prevent the patient being there all day and/or being sent to many different parts of the hospital. It is also difficult to predict how many patients will require treatment on any one day with a one-stop clinic, meaning that sometimes treatment slots for theatres or clean rooms may be overbooked or underused.

A two-stop clinic may offer the advantage of a more easily manageable workload and some patients say that they prefer a two-stop model because it can be very tiring to be assessed and treated in one session. Each clinic should choose which model they adopt based on their resources and experience of what works best for their patients.

There is an emphasis in the NHS on meticillin-resistant *Staphylococcus aureus* (MRSA) screening for all surgical patients. Intraocular anti-VEGF therapy is considered a surgical case in this respect, so nurses’ workloads have further increased as all patients must be swabbed for MRSA. Same-day results need to be obtained for a one-stop clinic, so a special arrangement with the local microbiology department needs to be made to ensure this happens. Whichever model is adopted, specialist nurses have a significant role to play at the diagnosis stage. This role can include:

- Holistic assessment and screening of the presenting patient (assess general health and document health history, medication and presenting ocular symptoms).
- Assistance with assessing the visual acuity of the patient using the LogMAR test (Bailey and Lovie 1976).
- Triage of patients and, where necessary, a regular clinical case conference can be held to assist with this process.
- Treatment planning with medical staff.
Obtaining informed consent from patients.

Providing information and counselling patients, including the breaking of bad news.

Patients look to health professionals not only for accurate and understandable information about their condition and the help available, but also for sympathy or comfort (McBride 2005). Because AMD is a potentially blinding disease, the impact that a positive diagnosis can have on patients is substantial, and often underestimated by healthcare professionals and the patient’s family (Stein et al 2003). Family and friends also need to adjust to what the diagnosis means for themselves as well as for the patient (McBride 2005), and nurses should consider involving them in discussions.

One simple way to help patients and their relatives is to take time to manage properly expectations, and to educate them about the disease (including the possibility of developing Charles Bonnet syndrome) and its treatment using straightforward language. Ideally this should be supplemented with written information for patients to consider later, once they have had time to recover from the initial shock, as well as details of where to find help and receive visual support. The Macular Disease Society and the Royal National Institute of Blind People publish this kind of information and each runs a telephone helpline for patients (www.maculardisease.org, www.rnib.org.uk). AMD Alliance International also provides useful resources for patients (www.amdalliance.org).

Reflection point 2

Do you gain patient consent yourself? If not, reflect on whether you could do so and the impact this might have on your clinic processes.

Research the drug ranibizumab (and pegaptanib in Scotland) so that you know how it works, how effective it is, how it is administered and any associated side effects.

List what should be discussed in patient consultations before they consent to receive the drug.

Treatment

Figure 6 shows the vital contribution that nurses make to the patient flow at the time of treatment. If the clinic is operating under a two-stop model, nurses should re-check that the patient is well and happy to proceed. It is easy to overlook the importance of preparing the patient psychologically or to assume wrongly that this has been covered in a previous visit. Furthermore, the patient’s AMD, general health or social aspects might have changed since the last appointment. With a two-stop model, the nurse should gain informed consent at this point. Intraocular pressure (IOP) should also be measured if it has not been documented at the assessment visit, to obtain a baseline reading. Transient increases in IOP can occur following intravitreal injection and should be monitored (eMC 2008, 2009).

In preparation for the wet AMD treatment, the equipment and clean room must be made ready. The nurse can also physically and emotionally prepare the patient for the treatment. This can be done by:
Clinical Ophthalmology

- Counselling patients so that they know exactly what to expect and are as comfortable and relaxed as possible.
- Marking the eye(s) for the surgeon, if required.
- Dilating.
- Cannulation if a patient is to receive vPDT.

In addition to assisting the consultant during the procedure, the nurse’s role also includes holding the patients’ hands and attending to their needs.

Follow up

Patients’ expectations should be managed during follow-up visits. One study found that patients with wet AMD are more likely to be depressed and are four times more likely to require assistance with activities of daily living than age-matched controls (Soubrane et al 2007). Patients can also experience side effects from the treatment and this should be discussed during the follow up.

For those patients who are unsuitable for treatment – for example those who initially present with very advanced disease – assistance with low vision aid assessment and support should be initiated with a counselling plan. This is an area where the nurse can excel because of the profession’s emphasis on putting the patient at the centre of care and the experience nurses have in discussing information with patients.

Tests that are performed during the follow-up visit can include:

- Visual acuity (LogMar recommended).
- Optical coherence tomography.
- Fluorescein angiography.
- Intraocular pressure measurements.
- Fundoscopy – an examination of the back of the eye.

Conclusion

Wet AMD is a rapidly progressing, potentially blinding disease that can significantly reduce quality of life. Anti-VEGF agents represent improved treatment options for patients. As well as halting the progressive vision loss associated with wet AMD, anti-VEGF treatment has led to improvements in vision in some patients. This has not been reported with either vPDT or thermal laser photocoagulation.

NICE and SMC guidelines for wet AMD have necessitated expansion and development of AMD clinics to accommodate the increased number of patients now eligible for treatment with ranibizumab and in Scotland, for a smaller group of patients, pegaptanib, and this is likely to continue with the ageing population.

Nurses play a key role in recognising the signs and symptoms of AMD in older patients and ensuring that they are directed appropriately for rapid referral to a macular clinic. Furthermore, nurses who are involved in the modern wet AMD clinic can help to maintain and improve the management and smooth running of the care pathway, provide support and education for patients and relatives and, ultimately, achieve better patient experiences and outcomes.

Counselling patients so that they know exactly what to expect and are as comfortable and relaxed as possible.

Marking the eye(s) for the surgeon, if required.

Dilating.

Cannulation if a patient is to receive vPDT.

In addition to assisting the consultant during the procedure, the nurse’s role also includes holding the patients’ hands and attending to their needs.

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Email your entry to practiceprofile@rcnpublishing.co.uk and type ‘Practice Profile’ in the email subject field.

With your entry you also need to include your full name, address including postcode, the title of the article, your job title and place of work.

A certificate is awarded for successful completion of the practice profile.
References


**Product information**

**VISUDYN® (verteporfin)** ABBREVIATED PRESCRIBING INFORMATION

Presentation: Glass vial containing 15 mg of verteporfin as powder. 

Indications: Treatment of age-related macular degeneration in patients with predominantly classic subfoveal choroidal neovascularisation or subfoveal choroidal neovascularisation secondary to pathological myopia. 

Dosage and administration: A 1-minute intravenous infusion of Visudyne (30 ml solution) at a dose of 6 mg/m² body surface area. This is followed by the activation of Visudyne 15 minutes after the start of the infusion using a diode laser generating non-thermal red light (wavelength 689 nm ±3 nm). 

A dose of 6 mg/m² body surface area is administered by a qualified ophthalmologist experienced in intravitreal injections under aseptic conditions. The recommended dose is 0.5 mg (0.05 ml). 

Contraindications: Porphyria, known hypersensitivity to verteporfin or to any of the excipients, or severe hepatic impairment. 

Precautions: Due to photosensitivity, avoid exposure of unprotected skin, eyes or other body organs to direct sunlight or bright indoor light for 48 hours after infusion. UV screens are not effective at protecting against photodynamic reactions. 

Exercise caution in moderate hepatic impairment, biliary obstruction, unstable heart disease, uncontrolled arterial hypertension and treatment under general anaesthesia. If severe decrease of vision (equivalent to four lines or more) occurs within one week after treatment, do not re-treat at least until vision completely recovers to pre-treatment level. 

If extravasation occurs, stop infusion immediately. Protect the affected area thoroughly from bright direct light until swelling and discoloration have disappeared. Patients should be under close medical supervision during Visudyne infusion. Chest pain, vasovagal reactions (posture related) and hypotension and respiratory reactions have been reported.

Interactions: No specific drug–drug interaction studies have been conducted in humans.

Concomitant use of other photosensitising agents should not be administered concurrently with other anti-VEGF agents (systemic or ocular). 

Withhold dose and do not resume treatment earlier than the next scheduled treatment in the event of the following: a decrease in best corrected visual acuity (BCVA) of ≥10 letters compared with the last assessment of visual acuity; an intracocular pressure of >25 mmHg; a retinal break; a subretinal haemorrhage located at the centre of the fovea; or if the size of the haemorrhage is 50% of the total lesion area; performed or planned intravitreal surgery within the previous or next 24 hours. 

Discontinue treatment in cases of rhegmatogenous retinal detachment or stage 3 or 4 maculopathy.

Interactions: No formal interaction studies have been performed. 

Adjunctive use of verteporfin photodynamic therapy (PDT) and Lucentis in an open study showed an increase in intraocular inflammation following initial combined treatment of 6.3% (2 of 32 patients). 

Pregnancy and lactation: Visudyne should be used in pregnant women only if the benefit justifies the potential risk to the foetus. Do not administer to nursing mothers or stop breast-feeding for 48 hours after administration. 

Effects on ability to drive and use machines: Do not drive or use machines as long as symptoms such as abnormal vision persist. 

Undesirable effects: Ocular: Common (1–10%): Abnormal vision such as blurry, hazy, fuzzy vision, or flashes of light, decreased vision, visual field defects such as grey or dark haloes, scotoma and black spots, severe but usually transient vision reduction. 

Uncommon (0.1–1%): Retinal detachment (non-rhegmatogenous), subretinal haemorrhage, vitreous haemorrhage. Rare (<0.1%): Retinal or choroidal vessel non-perfusion. 

Injection site side effects: Common (1–10%): Pain, oedema, extravasation, inflammation. Uncommon (0.1–1%): Haemorrhage, hypersensitivity, discoloration. 

Systemic side effects: Common (1–10%): Nausea, photosensitivity reaction, back pain, pain in the pelvis, shoulder girdle or rhibcage during infusion, asthenia, pruritus, hypercholesterolaemia. 

Uncommon (0.1–1%): Pain, hypertension, hypotension, fever (<0.1%): chest pain, vasovagal reactions (posture related), hypotension (syncope, sweating, dizziness, rash, dyspnoea, flushing, changes in blood pressure and heart rate).

Adverse events should be reported. Reporting forms and information can be found at www.yellowcard.gov.uk. Events should also be reported to Novartis Pharmaceuticals UK Ltd on (01276) 698370. 


Marketing authorisation number: EU/1/06/374/001 

Marketing authorisation holder: Novartis Europharm Limited, Wimblehurst Road, Horsham, West Sussex, RH12 5AB, United Kingdom. 

Date of preparation: October 2008. 

Visudyne is a registered Trade Mark. Full prescribing information, including SmPC, is available from: Novartis Pharmaceuticals, Frimley Business Park, Frimley, Camberley, Surrey, GU16 7SR. Telephone: 01276 692255. Fax: 01276 692508. 

Date of Preparation: October 2008.

**LUCENTIS® (RANIBIZUMAB) ABBREVIATED UK PRESCRIBING INFORMATION**

Please refer to the SmPC before prescribing Lucentis 10mg/ml solution for injection. 

Presentation: A glass single-use vial containing 0.25 ml solution containing 2.3 mg of ranibizumab (10 mg/ml). 


Dosage: Single-use vial for intravitreal use only. 

Lucentis must be administered by a qualified ophthalmologist who has previous experience in intravitreal injections under aseptic conditions. The recommended dose is 0.5 mg (0.05 ml). 

Treatment should be initiated with a dose of 2 mg/m² body surface area. 

Before treatment, evaluate the patient's medical history for hypersensitivity. The patient should not be treated if there is a history of photochemical reactions, phototoxicity, or known photosensitivity. 

Contraindications: Porphyria, known hypersensitivity to ranibizumab or to any of the excipients, or severe hepatic impairment. 

Special precautions: Do not administer to patients with a history of endophthalmitis, subconjunctival haemorrhage, or conjunctival injection. 

Precautions: Due to photosensitivity, avoid exposure of unprotected skin, eyes or other body organs to direct sunlight or bright indoor light for 48 hours after infusion. 

UV screens are not effective at protecting against photosensitivity reactions. 

Exercise caution in moderate hepatic impairment, biliary obstruction, unstable heart disease, uncontrolled arterial hypertension and treatment under general anaesthesia. 

If severe decrease of vision (equivalent to four lines or more) occurs within one week after treatment, do not re-treat at least until vision completely recovers to pre-treatment level. 

If extravasation occurs, stop infusion immediately. Protect the affected area thoroughly from bright direct light until swelling and discoloration have disappeared. Patients should be under close medical supervision during Visudyne infusion. Chest pain, vasovagal reactions (posture related) and hypotension and respiratory reactions have been reported. 

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Concomitant use of other photosensitising agents should not be administered concurrently with other anti-VEGF agents (systemic or ocular). Withhold dose and do not resume treatment earlier than the next scheduled treatment in the event of the following: a decrease in best corrected visual acuity (BCVA) of ≥10 letters compared with the last assessment of visual acuity; an intracocular pressure of >25 mmHg; a retinal break; a subretinal haemorrhage located at the centre of the fovea; or if the size of the haemorrhage is 50% of the total lesion area; performed or planned intravitreal surgery within the previous or next 24 hours. 

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Pregnancy and lactation: Lucentis should be administered with caution. 

Effects on ability to drive and use machines: Do not drive or use machines as long as symptoms such as abnormal vision persist. 

Undesirable effects: Ocular: Common (1–10%): Abnormal vision such as blurry, hazy, fuzzy vision, or flashes of light, decreased vision, visual field defects such as grey or dark haloes, scotoma and black spots, severe but usually transient vision reduction. 

Uncommon (0.1–1%): Retinal detachment (non-rhegmatogenous), subretinal haemorrhage, vitreous haemorrhage. Rare (<0.1%): Retinal or choroidal vessel non-perfusion. 

Injection site side effects: Common (1–10%): Pain, oedema, extravasation, inflammation. Uncommon (0.1–1%): Haemorrhage, hypersensitivity, discoloration. 

Systemic side effects: Common (1–10%): Nausea, photosensitivity reaction, back pain, pain in the pelvis, shoulder girdle or rhibcage during infusion, asthenia, pruritus, hypercholesterolaemia. 

Uncommon (0.1–1%): Pain, hypertension, hypotension, fever (<0.1%): chest pain, vasovagal reactions (posture related), hypotension (syncope, sweating, dizziness, rash, dyspnoea, flushing, changes in blood pressure and heart rate).

Adverse events should be reported. Reporting forms and information can be found at www.yellowcard.gov.uk. Events should also be reported to Novartis Pharmaceuticals UK Ltd on (01276) 698370. 


Marketing authorisation number: EU/1/06/374/001 

Marketing authorisation holder: Novartis Europharm Limited, Wimblehurst Road, Horsham, West Sussex, RH12 5AB, United Kingdom. 

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Visudyne is a registered Trade Mark. Full prescribing information, including SmPC, is available from: Novartis Pharmaceuticals, Frimley Business Park, Frimley, Camberley, Surrey, GU16 7SR. Telephone: 01276 692255. Fax: 01276 692508. 

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