

# RGH Pharmacy E-Bulletin

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A joint initiative of the Patient Services Section and the Drug and Therapeutics Information Service of the Pharmacy Department, Repatriation General Hospital, Daw Park, South Australia. The RGH Pharmacy E-Bulletin is distributed in electronic format on a weekly basis, and aims to present concise, factual information on issues of current interest in therapeutics, drug safety and cost-effective use of medications.

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## Age-related macular degeneration

Age related Macular Degeneration (AMD) is a degenerative disorder of the macula (the central part of the retina) which leads to progressive, painless loss of central vision, affecting a person's ability to see fine detail, drive, read and recognise faces. In Australia, AMD is responsible for nearly 48% of vision loss in the population, affecting nearly 1 in 7 people over the age of 50 and is the leading cause of blindness in the older population.

AMD is a multifactorial disease and its exact aetiology is unknown. Risk factors include advancing age, hypertension, smoking and a positive family history. With advancing age, cells in the retinal pigment epithelium lose function. The retina can not receive nourishment and accumulates waste material which leads to amorphous deposits referred to as drusen. The retinal pigment membrane cells degenerate slowly and atrophy, and central vision is lost. This process is known as dry AMD and progresses slowly over many years.

The wet type of AMD occurs when the integrity of Bruch's membrane is broken, and neovascular complexes from the choroid grow into sub pigment epithelial tissue and sub-retinal spaces in a process called choroidal neovascularisation. The new blood vessels are leaky and cause oedema which disrupts visual function. These blood vessels are prompted to grow by a protein: Vascular Endothelial Growth Factor (VEGF). This leads to a dense fibrovascular scar that may involve the entire macular area. Wet AMD is more sight-threatening than dry type and is responsible for 90% of cases of severe visual loss in the elderly.

From August 2007, two new treatments for wet AMD have been for subsidised supply through the Australian Pharmaceutical Benefits Scheme (PBS):

### *Ranibizumab*

Ranibizumab is a humanised recombinant monoclonal antibody fragment targeted against human vascular endothelial growth factor A (VEGF-A). It binds with high affinity to VEGF-A isoforms, thereby preventing binding of VEGF-A to receptors. This binding inhibition prevents endothelial cell proliferation, neovascularisation and vascular leakage, all of which are thought to contribute to the progression of Wet AMD. Ranibizumab is administered by intravitreal injection once a month. Common adverse events include headache, conjunctival haemorrhage, eye pain, vitreous floaters, and increase in intra-ocular pressure. Patients should be treated with antibiotic eye drops before and after each injection.

### *Verteporfin*

Verteporfin (Visudyne) therapy is a two stage process requiring administration of verteporfin via a 10 minute intravenous infusion, and light activation using a diode laser, generating non-thermal red light. Light activation of Visudyne results in local damage to neovascular endothelium, resulting in vessel occlusion. Verteporfin preferentially accumulates in choroidal neovascularisation. Patients will become photosensitive for 48 hours after infusion and should avoid exposure to direct sunlight or bright indoor light. UV sunscreens do not afford protection. Patients treated with verteporfin photodynamic therapy will continue to lose vision in the first six months of treatment, which stabilises and does not progress to severe vision loss.

With the introduction of these new drugs to the PBS in Australia, approximately 12,000 people with wet AMD are expected to benefit, with associated cost being around \$630 million to PBS and RPBS expenditure between 2007 and 2010.

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