

# N OW YOU SEE IT

**Certain eye diseases, such as age-related macular degeneration (AMD), are a likely condemnation to loss of vision, but early detection coupled with new treatments and devices provide a light at the end of the tunnel.**

Visual impairment imposes a massive burden on health care systems and economies worldwide. In April 2010, AMD Alliance International estimated the global cost of vision loss at nearly \$3 trillion US dollars for the 733 million people living with low vision and blindness worldwide, \$343 billion due to AMD alone. Without effective prevention and treatment strategies, these costs are set to rise dramatically with continued population growth and life expectancy, and the increased incidence of diabetes.

Whilst AMD does not usually lead to total blindness, one form of the disease, wet AMD, can lead to severe sight loss within as little as a few weeks or days, compromising everyday activities such as recognising faces, driving and watching TV. It is estimated that over 1.6 million individuals have advanced AMD in the US, with half of those affected in both eyes. Wet AMD is caused by the growth of abnormal blood vessels under the macula, the small central area of the retina responsible for central vision. These abnormal vessels leak fluid and blood into the tissue at the back of the eye, causing a blister to form in the retina. The resulting scar tissue leads first to distortion and eventually to loss of central vision.

There is currently no cure for AMD, with treatment options limited to therapies that halt the progress of the condition, sometimes restoring only partial vision. Until recently, the only treatment was to seal the leaking vessels with laser photocoagulation. However, as this can cause scarring it is no longer widely used and has been replaced by Photodynamic

Therapy (PDT) which involves injecting the patient with a special drug that becomes active when exposed to laser light. The drug flows into the abnormal vessels in the macula and a special cold laser is used to destroy those vessels.

A breakthrough in the last five years is the anti-VEGF (vascular endothelial growth factor) treatment. This involves a drug delivered by intravitreal injection into the eye which targets a protein involved in causing blood vessel formation.

Investigational devices offer further hope to AMD sufferers. A recently CE-marked system, a stereotactic radiosurgical robotic device, delivers a precise dose of radiation non-invasively to the macula, destroying the leaky vasculature while minimising injury to surrounding critical anatomical structures. Another device, which received FDA approval in July 2010 for end-stage AMD, is an implantable miniature telescope, a 4 mm long prosthetic implant which focuses images on healthy areas of the central and peripheral retina rather than directly on the diseased macula.

Regular eye exams are important as early detection is linked with improved prognosis and outcome. Technology is advancing new drugs, surgical treatments and better diagnostics to enable earlier intervention to restore vision and reverse the disease, not just halt or slow down its progress.

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