

Age-related Macular Degeneration (AMD)

Fact Sheet

Age-related macular degeneration is a degenerative eye disease that is a leading cause of severe vision loss in people over the age of 50 in the Western world. Specifically, AMD affects central vision that is necessary to recognize faces and to do everyday activities such as reading, shopping, sewing and telling time. Prior to Lucentis® (ranibizumab), treatments approved for the treatment of wet AMD only slowed vision loss. Lucentis is the first drug shown in Phase III clinical trials to improve vision and vision-related quality of life in a significant number of wet AMD patients.

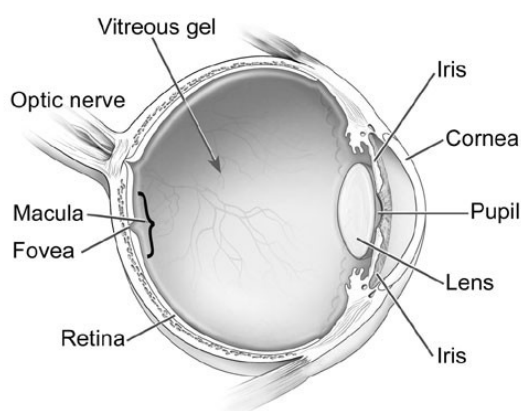
Vision loss is increasing worldwide as the population ages

Blindness and low vision are increasing with longer life span. The World Health Organization estimates that by 2020 approximately 75 million individuals will be blind (<3/60) and approximately 270 million individuals will have low vision (<6/18 – 3/60).

Currently, glaucoma (12.3 percent), age-related macular degeneration (8.7 percent) and diabetic retinopathy (4.8 percent) are the leading conditions associated with blindness and vision loss in the aging population.

AMD is a leading cause of blindness among the aging population

Age-related macular degeneration (AMD) is a leading cause of vision loss in people over 50 years in the Western world, currently affecting an estimated 25 to 30 million people worldwide, and about 27% of those above 60 years old in Singapore*. As the size of the elderly population increases, AMD is likely to cause more loss of vision than glaucoma and diabetic retinopathy combined.



The “wet” form of AMD accounts for most of the vision loss among AMD patients

AMD is a degenerative eye disease that affects the macula – the central part of the retina at the back of the eye that is responsible for the “straight ahead” central vision necessary for identifying faces and everyday activities like reading, driving and sewing.

There are two types of AMD: dry and wet. While dry AMD is most common, accounting for approximately 85 percent of all AMD cases, wet AMD accounts for the majority of vision loss. Wet AMD is associated with the growth of pathological new vessels underneath the macula. These vessels are fragile and leak fluid and blood, leading to the development of edema (excessive fluid accumulation in tissues). If left untreated, scar tissue may develop that

destroys the macula. Typically, a blind spot (scotoma) develops and causes a decrease in central vision.

AMD symptoms may include:

- Metamorphopsia (distortion of objects and lines)
- Blurring and reduced visual acuity
- Decreased color vision
- Increased glare sensitivity (resulting from sensitivity to changing light conditions)
- Scotoma (a dark spot in the center of a visual field surrounded by a distorted image)

* Study published in Singapore Medical Journal (April 1997)

Vision impairment as it may be experienced by wet AMD sufferers is illustrated in the figures below.



Risk factors for AMD

The etiology of AMD is not clearly known though several risk factors are recognized, of which age is the strongest. Other risk factors for AMD include family history, sex (females have higher risk), race (caucasians have higher risk), light colored irises, high blood pressure, high blood cholesterol, smoking, exposure to sunlight and diet (low intake of anti-oxidants).

Angiogenesis – the formation of new blood vessels – is an underlying cause of wet AMD

Wet AMD is characterized by the growth of new blood vessels (angiogenesis) underneath the retina. The process of angiogenesis is normally regulated throughout development and adult life, stimulated by growth factors such as vascular endothelial growth factor (VEGF). However, an imbalance in VEGF levels in the eye would lead to uncontrolled formation, growth and leakage of new vessels, and lead to the development of the wet form of AMD and subsequent vision loss.

VEGF-A is one type of VEGF, and there are several biologically active forms of VEGF-A, which are all thought to play a role in abnormal blood vessel formation in the eye that leads to wet AMD disease progression and vision loss.

Clinical Performance Tests for AMD

The Amsler Grid can facilitate the early detection of AMD; this simple test can be carried out by the patient at home (Mattice and Wolfe, 1986). The Amsler grid is a qualitative test used to detect subtle abnormalities in central vision caused by fluid in the sub-retinal space. Macular abnormalities may manifest as metamorphopsia (grid lines may appear broken or wavy), blurring, darkening or discoloration of the grid lines and the inability to fixate on the central dot, as represented in the figure below.

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