

Age-Related Macular Degeneration

What is the Macula?

The back of the eye is lined with a layer of delicate nerve tissue known as the retina. The retina plays a vital part in the way we see. The macula is a small area at the centre of the retina which is essential for enabling central and sharp vision, and is used to see fine details. It helps us in activities such as reading, sewing and driving. Abnormalities in the macula may result in the inability to see what is straight ahead, though peripheral vision still remains good.

What Is Age-Related Macular Degeneration?

Age-Related Macular Degeneration (AMD) is one of the leading causes of severe, irreversible vision loss in the world. As the population of Singapore ages and life expectancy increases, it has become a significant cause of vision loss here as well. It is estimated that 27% of the elderly population here have some form of AMD. It usually affects people aged 50 years and above as a natural result of ageing. These delicate cells become damaged and cease to function effectively.

Depending on the type of degeneration, visual loss from AMD can vary from mild to severe but is not the sole cause of complete blindness. It also has the tendency to affect both eyes. Patients with AMD usually still have enough peripheral (side) vision to remain active and maintain their independence.

What Are The Different Types Of AMD?

Dry AMD

Dry AMD occurs when the eye's waste products are deposited in the region of the macula. This causes the retinal cells to degenerate. Although there is no effective treatment known for this, the risks of vision loss are low unless the disease has reached a very advanced stage. This is the more common form of macular degeneration. It develops slowly over a number of years.

Wet AMD

Wet AMD is the result of abnormal blood vessels developing under the retina. These are fragile and break easily, causing bleeding, scarring and fluid or protein leakage. Unlike dry AMD, various forms of treatment are available but the loss of vision is often severe and permanent. Wet AMD progresses more quickly.

How Will AMD Affect My Eyesight?

Typically, only one eye is affected at first. In the early stages, it is possible that symptoms go unnoticed as the good sight in one eye compensates for the sight problems in the affected eye. If you have AMD, you might find your sight affected in the following ways:

- A reduction in the quality of the central part of your vision, in particular the appearance of a black patch or dark spot.
- Straight lines appearing wavy. The straight edges of doors or floor tiles seem distorted.
- You miss your step often and misjudge distances and heights.
- You have difficulties matching similar shades of the same colour.
- You may need bright lighting conditions to see clearly.
- Generally, moving around from one place to another is not a problem, although crossing busy roads or looking at signs and landmarks may be a challenge.

It is likely that you will have trouble with activities that require detailed vision – sorting out coins or watching television may be difficult. You may find letters of a word missing while reading, or you may not be able to recognise friends from a distance – instead you may see the outline of a face but not the features.

How Will My Eye Be Examined For AMD?

When you come in for your outpatient appointment, you will have a sight test and then a full eye examination to determine the type of AMD you have.

Your ophthalmologist will instill drops into your eyes to make the pupils bigger, allowing them to see the retina and examine the back of your eye in detail. You will find that these eyedrops temporarily blur your vision. Because of this, your eyes may be sensitive to light and you may have difficulty reading. You should also therefore avoid driving on the day of your appointment.

You may also need one or more of the following further tests:

- An Amsler grid test, in which you look at a test page to check for blind spots. These will enable the doctor to see clearly what is happening at the back of the eye.
- A fluorescein or indocyanine green angiogram. A small injection of fluorescent yellow or green dye is injected into a vein in your hand or forearm. As the dye circulates around the body and through the retinal blood vessels, abnormal areas in the capillary network are lit up. This is recorded with a series of flash photos. The dye will not leak out of normal capillaries – if it leaks, this indicates that the vessels are diseased or that new vessels have developed.

How Is AMD Treated?

If AMD is detected early, there are better chances for treatment. Depending on the form of the disease, vision can be improved or deterioration arrested.

Since there is no cure for AMD, prevention is the first approach to reduce the risks of vision loss. A healthy lifestyle can play a role in reducing risk of AMD progression. Studies have shown that control of modifiable risk factors such as smoking, hypertension, and body mass index could reduce the risk of developing age-related macular degeneration by half. Patients with an advanced form of the disease may find low vision aids such as mini telescopes and magnifying glasses helpful. These can

Dry AMD

- Going for eye observations and regular check-ups.
- Taking nutritional supplements containing selenium, zinc and vitamins A, C and E. While they cannot cure AMD nor restore vision, they may play a role in helping people with dry AMD who are at high risk of developing wet / advanced AMD. Taking these supplements in high doses can have side effects and you should consult your doctor before consuming these supplements on a long-term basis.

Wet AMD

Intravitreal Anti-Vascular Endothelial Growth Factor (anti-VEGF) injections such as Ranibizumab have been observed to be successful in the treatment of wet AMD. Growth of new blood vessels and subsequent swelling of macula are the main reasons for vision loss in wet AMD, hence such drugs are able to block the new vessels as well as associated macular edema.

These drugs typically need to be injected into the eye on a monthly basis. They have a 95% success rate in preventing loss of vision, and have a 30 - 40% success rate in improving vision.

The risks of intravitreal injections include infection (approximately 1 in 3,000 cases) and a low risk of stroke. Typically, injections are repeated monthly or every six weeks until macular edema is reduced. The effectiveness of these drugs will vary with the individual, depending on their use in the course of the disease.

Photodynamic Therapy (PDT)

PDT is a treatment method that seeks to maintain existing levels of vision and to prevent further degeneration. The typical duration of PDT treatment is on a tri-monthly basis.

Care must be taken to cover all exposed skin such as the face, hands, head and the eyes for at least 48 hours after treatment has been administered.

Laser Therapy

A high energy laser beam is used to destroy the fragile, leaky blood vessels. Laser treatment may also damage some surrounding healthy retinal tissue due to its photocoagulative effect. Hence, this method is only recommended if the leaky blood vessels have developed away from the fovea (the central part of the macula) and has caused scarring that affects the vision.

The risk of new blood vessels developing after laser treatment is high due to subsequent inflammation. In about 50% of patients, the abnormal blood vessels may persist or recur after laser treatment and re-treatments may be necessary.

While laser treatment usually cannot restore lost vision, it can still prevent further loss of vision.

Surgery

Where there is sub-macular bleeding, surgery can help treat the condition effectively. Gas and a drug known as a tissue plasminogen activator are injected into the eye, moving the blood away from the macula and clearing the site. However, this is a less common treatment method.

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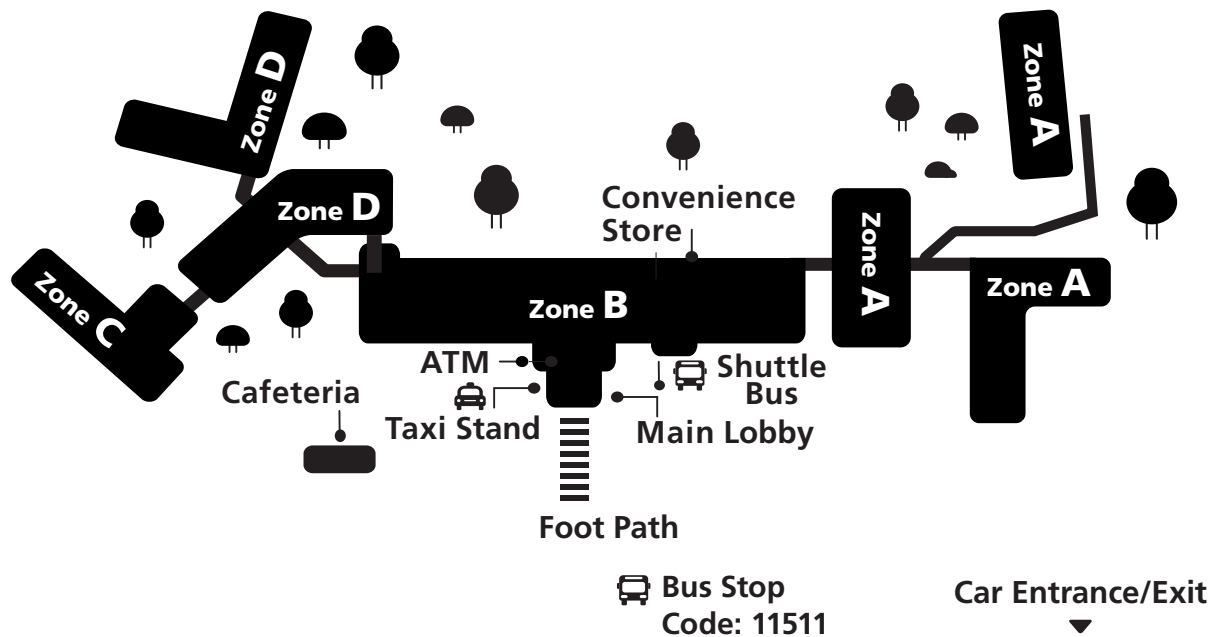
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