

Age-Related Macular Degeneration: What You Need to Know

By Dr Chee Wai Wong, Vitreoretinal Surgeon

Age-related macular degeneration, or AMD, is the leading cause of irreversible central vision loss in people over the age of 50 in the developed world. It is a condition I see every day in my practice, and it is one that generates a great deal of worry among patients and their families. That worry is understandable. The macula is the part of the retina responsible for sharp, central vision, the vision you rely on for reading, recognising faces, and driving. When it deteriorates, daily life becomes significantly more difficult.

But here is what I want patients to know from the outset: while AMD is a serious condition, it is not a death sentence for your vision. With early detection and modern treatments, many patients can maintain useful vision for years. The key, as with so many things in medicine, is awareness and timely action.

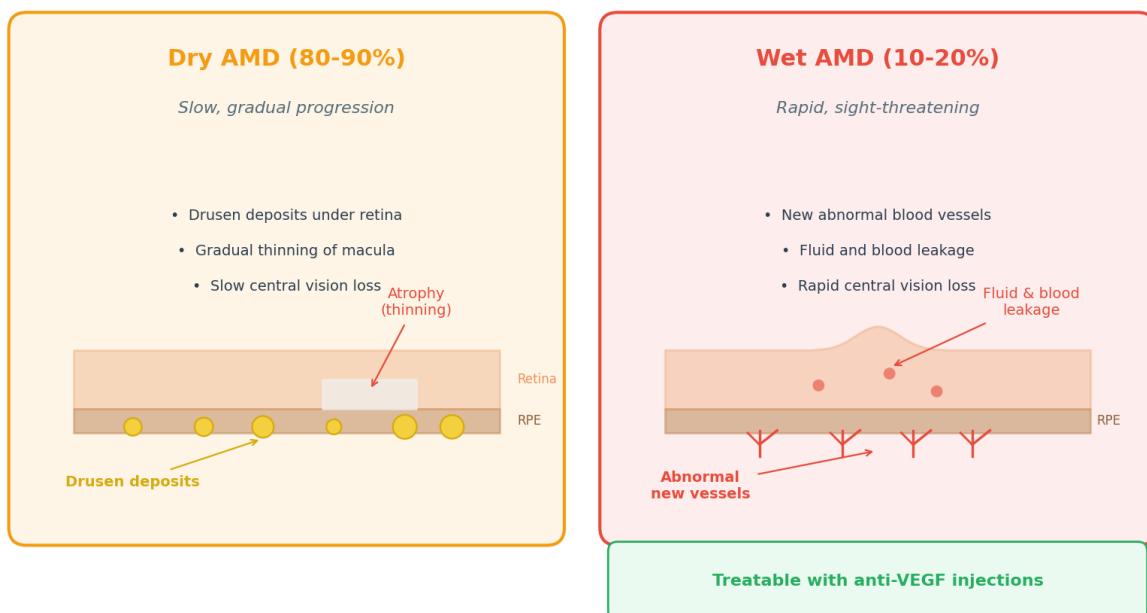
What Is the Macula, and Why Does It Matter?

The retina is the thin layer of tissue at the back of the eye that captures light and converts it into the nerve signals your brain interprets as vision. The macula is a small, specialised area at the very centre of the retina, roughly the size of a pinhead. Despite its tiny size, it is responsible for the detailed central vision that allows you to read this article, recognise a friend across the room, or thread a needle.

The rest of the retina handles your peripheral (side) vision. This is why patients with advanced AMD can often still move around and navigate their environment. They lose the fine, central detail but retain a sense of the broader visual scene.

Dry AMD vs Wet AMD

Dry AMD vs Wet AMD



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AMD comes in two forms, and understanding the difference is important because the treatment and prognosis are quite different.

Dry AMD (Atrophic AMD)

This is the more common form, accounting for about 80-90% of all AMD cases. In dry AMD, the light-sensitive cells in the macula gradually break down over time. Yellow deposits called drusen accumulate under the retina, and the macular tissue slowly thins and atrophies.

Dry AMD tends to progress slowly, often over years. In its early stages, you may not notice any symptoms at all. As it advances, you may experience gradual blurring of central vision, difficulty reading in dim light, or a need for brighter illumination. In advanced dry AMD (known as geographic atrophy), patches of the macula waste away completely, creating areas of missing central vision.

Currently, there is no cure for dry AMD. However, lifestyle modifications and nutritional supplements (discussed below) can slow its progression. Excitingly, new treatments for geographic atrophy have recently become available, offering hope for patients with advanced dry AMD.

Wet AMD (Neovascular AMD)

Wet AMD accounts for only about 10-20% of AMD cases, but it is responsible for the majority of severe vision loss from the disease. In wet AMD, abnormal new blood vessels grow beneath the retina (a process called choroidal neovascularisation). These new vessels are fragile and leaky. They ooze fluid and blood under and into the retina, causing rapid swelling, distortion, and damage to the macular tissue.

Unlike dry AMD, wet AMD can cause sudden and significant vision loss over days to weeks. This is why it requires urgent treatment.

The good news is that wet AMD is the more treatable form. Anti-VEGF injections, delivered directly into the eye, can stop the growth of these abnormal blood vessels, reduce leakage, and in many cases stabilise or even improve vision. I will discuss these injections in more detail below.

What Are the Risk Factors?

Several factors increase your risk of developing AMD:

- Age: The risk increases significantly after 50, and rises sharply after 70. AMD is uncommon before 50.
- Smoking: This is the single most important modifiable risk factor. Smokers are two to four times more likely to develop AMD than non-smokers. If you smoke, stopping is one of the most impactful things you can do for your eye health.
- Family history: If a parent or sibling has AMD, your risk is substantially higher. There is a strong genetic component to the disease.
- Ethnicity: AMD is more common in people of European descent, though it affects all ethnic groups.
- Cardiovascular risk factors: High blood pressure, high cholesterol, obesity, and a diet low in fruits and vegetables have all been associated with increased AMD risk.
- Prolonged sun exposure: There is some evidence that cumulative UV light exposure may contribute, though this is less firmly established than the other risk factors.

What Are the Symptoms?

AMD Symptoms: What You Might Notice



If straight lines appear wavy or distorted, see an eye doctor urgently

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In its early stages, AMD often causes no noticeable symptoms. This is why regular eye examinations are so important, particularly after the age of 50.

As AMD progresses, you may notice:

- Blurred or fuzzy central vision, even with your glasses on
- Distortion of straight lines: door frames, text, or tiles may appear wavy or bent. This is a hallmark symptom, particularly of wet AMD
- A dark or empty area in the centre of your vision
- Difficulty with detailed tasks: reading, sewing, recognising faces at a distance
- Needing brighter light for close-up tasks
- Colours appearing less vivid than before

If you notice sudden distortion of straight lines or a rapid decline in central vision, this may indicate wet AMD and requires an urgent eye examination.

How Is AMD Diagnosed?

Your eye doctor will typically diagnose AMD through:

- Dilated eye examination: Eye drops are used to widen your pupils, allowing a detailed view of the macula and retina.
- Optical coherence tomography (OCT): This is an essential tool. OCT provides high-resolution, cross-sectional images of the retina, allowing us to see drusen deposits, fluid under or within the retina, and areas of atrophy with remarkable detail. It is non-invasive, painless, and takes only a few minutes.

- OCT angiography (OCTA): A newer imaging technique that can visualise blood vessel networks in the retina without the need for dye injection, helping to detect abnormal new vessels.
- Fluorescein angiography: In some cases, a dye is injected into a vein in your arm and photographs are taken as it circulates through the retinal blood vessels. This can precisely identify leaking blood vessels in wet AMD.
- Amsler grid testing: A simple grid of straight lines that you can use at home. If the lines appear wavy, distorted, or missing, this may indicate macular changes and should prompt a visit to your eye doctor.

How Is AMD Treated?

Dry AMD

For early and intermediate dry AMD, the focus is on monitoring and risk reduction:

- AREDS2 supplements: The Age-Related Eye Disease Study (AREDS2) demonstrated that a specific combination of vitamins and minerals (vitamin C, vitamin E, lutein, zeaxanthin, zinc, and copper) can reduce the risk of progression from intermediate to advanced AMD by about 25%. These supplements are widely available and I recommend them for patients with intermediate AMD. They are not beneficial for people who do not yet have AMD.
- Lifestyle modifications: Stop smoking, maintain a healthy weight, eat a diet rich in leafy green vegetables and fish, exercise regularly, and manage blood pressure and cholesterol.
- Regular monitoring: Routine OCT scans and clinical examinations to track any changes. I also encourage patients to use an Amsler grid at home to self-monitor for new distortion.

For advanced dry AMD (geographic atrophy), newer treatments including complement inhibitor injections have recently been approved. These can slow the rate of atrophy progression, though they do not reverse existing damage. Your retinal specialist can discuss whether these are appropriate for your situation.

Wet AMD

Wet AMD is treated primarily with anti-VEGF (vascular endothelial growth factor) injections. VEGF is the protein that drives the growth of abnormal blood vessels. By blocking it, these injections can:

- Stop new blood vessel growth
- Reduce fluid leakage
- Stabilise and often improve vision

The most commonly used anti-VEGF agents include ranibizumab, afibercept, brolucizumab, and faricimab. These are administered as intravitreal injections, meaning they are injected directly into the vitreous cavity of the eye. The procedure is performed in

the clinic and takes only a few minutes (I discuss this in detail in my separate article on intravitreal injections).

Treatment typically begins with a series of monthly injections (usually three), followed by ongoing injections at intervals determined by your response. Some patients require injections every four to eight weeks indefinitely, while newer agents like faricimab may allow longer intervals of up to 16 weeks in some patients. The goal is always to use the minimum number of injections needed to keep the disease under control.

The results of anti-VEGF therapy have been remarkable. Before these treatments became available in the mid-2000s, wet AMD almost invariably led to severe central vision loss. Today, with timely treatment, the majority of patients can maintain stable vision, and about a third experience meaningful improvement.

Living with AMD

AMD affects central vision but spares peripheral vision. Even in advanced cases, most patients retain enough side vision to maintain independence. However, the loss of detailed central vision can be profoundly frustrating.

There are practical things that can help:

- Low vision aids: Magnifying glasses, large-print books, screen magnification software, and talking devices can make a significant difference to daily life.
- Good lighting: Bright, directed lighting helps maximise remaining vision.
- Contrast enhancement: Using high-contrast settings on devices and choosing bold colours for household items can make things easier to see.
- Low vision rehabilitation: Specialised occupational therapists and low vision services can teach techniques to make the most of your remaining vision.

The Bottom Line

AMD is a common condition that becomes more prevalent with age. While it cannot currently be cured, it can be managed. Dry AMD progresses slowly and can be slowed with supplements and lifestyle changes. Wet AMD, though more aggressive, responds well to anti-VEGF injection therapy when treated promptly.

The most important thing you can do is have regular eye examinations, particularly after the age of 50. If you notice any distortion of straight lines, blurring of central vision, or a dark spot in the centre of your visual field, see an eye doctor without delay. Early detection and treatment make a real difference.

Dr Chee Wai Wong is a vitreoretinal surgeon practising at Asia Pacific Eye Centre, Gleneagles Hospital, Singapore. He has a special interest in macular diseases, including AMD and diabetic eye disease. This article is for informational purposes and does not replace professional medical advice. If you have concerns about your eyes, please consult an ophthalmologist.