



Macular  
Disease  
Foundation  
AUSTRALIA



# **AGE-RELATED MACULAR DEGENERATION (AMD)**

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# Macular Disease Foundation Australia (MDFA)

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MDFA is the national peak body for the macular disease community. Its mission is to reduce the incidence and impact of macular disease in Australia. MDFA is committed to working on behalf of the macular disease community through awareness, education, guidance and support, research and representation.

Macular disease covers a range of painless conditions that affect the central retina (the macula) at the back of the eye. It's the leading cause of blindness and severe vision loss in Australia. MDFA funds world leading research into macular disease ultimately seeking to find cures.

As a charity we rely upon donations, bequests and fundraising efforts to support our work. If you would like to donate to support us, our research grants program, or arrange for a bequest, please contact us.

For further information, support and guidance, or to register to receive newsletters and invitations to free education sessions or other events, please contact us.



## Macular Disease Foundation Australia

**National Helpline:** 1800 111 709

**E:** [info@mdfoundation.com.au](mailto:info@mdfoundation.com.au)

**W:** [www.mdfoundation.com.au](http://www.mdfoundation.com.au)

**W:** [www.CheckMyMacula.com.au](http://www.CheckMyMacula.com.au)

## Introduction

Our sight is a precious sense. We use it to access, appreciate and interpret the world, so we need to look after and protect our eyes, especially as we grow older. Therefore, it's important to be aware of age-related macular degeneration (AMD), the most common macular disease in Australia.

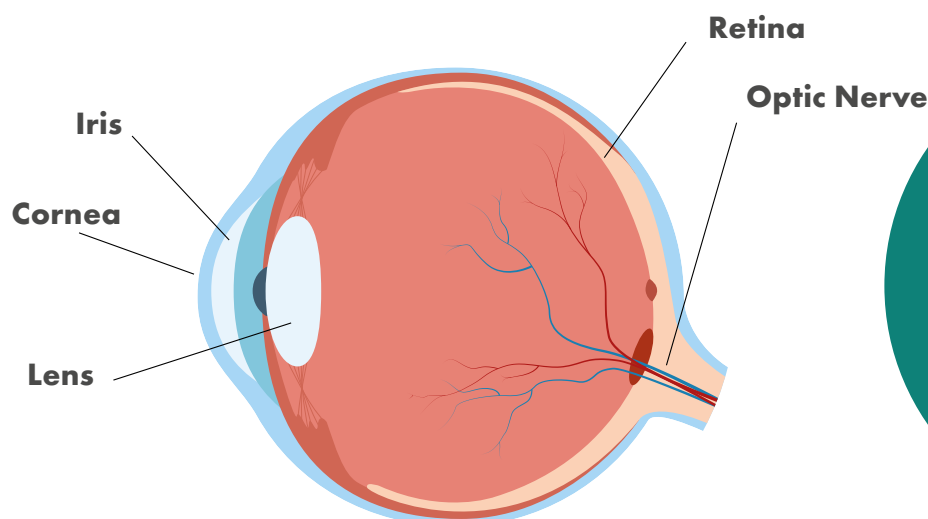
This booklet is designed to provide you with general information about AMD. It describes how the eye works and why the macula is

so important. It also includes an overview on how AMD affects vision, risk factors, identifying symptoms, explanations about the stages of AMD, risk reduction and treatment options.

This publication is one of a series produced by Macular Disease Foundation Australia (MDFA) to raise awareness about macular disease. Further resources can also be found on our website at [www.mdfoundation.com.au](http://www.mdfoundation.com.au).

## How does the eye work?

Your eye works very much like an old-style film camera. The front of your eye, made up of the cornea, iris, pupil and lens, focuses the image onto the retina, which lines the back of your eye. The retina is a light sensitive tissue that acts like the film in a camera, capturing images and then sending them via the optic nerve to the brain, where the images are interpreted.



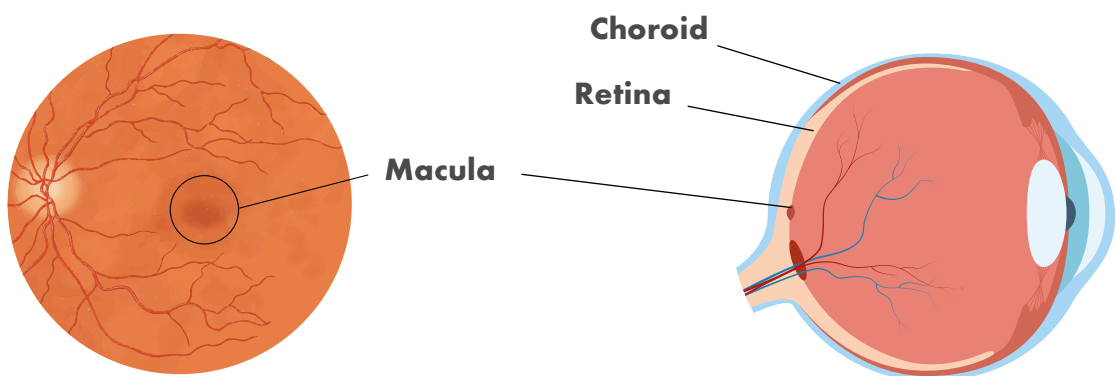
AMD is the most common macular disease in Australia. Approximately one in seven Australians over the age of 50 have some evidence of AMD.

## What is the macula?

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You're using your macula to read this booklet. The macula is the name given to the area at the centre of the retina. This region is only about 5.5mm in diameter and is responsible for detailed central vision and most of your colour vision. You use your macula to read, recognise faces, drive a car, see colours

clearly, and perform any other activity that requires detailed central vision. The rest of the retina is called the peripheral retina. Peripheral vision (or side vision), which is not as clear as central vision, is used to see general shapes and surroundings.



## What is age-related macular degeneration (AMD)?

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AMD is the most common macular disease in Australia. Approximately one in seven Australians over the age of 50 have some evidence of AMD.

It's a chronic and painless disease of the macula that causes progressive loss of central vision, leaving the peripheral vision intact. It affects the ability to perform activities that require detailed central vision but does not result in total vision loss (black blindness).

AMD is related to ageing and affects people over 50 years of age, however it's not a normal or inevitable consequence of ageing.

In some people, AMD advances very slowly and may not impact vision. For others, AMD may progress faster and lead to vision loss in one or both eyes.



## Stages of AMD

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The first signs of AMD start when the retinal cells do not efficiently remove waste products from the retina. These waste products, called drusen, build up under the centre of the retina (macula).

AMD is classified into three stages: early, intermediate and late AMD.

**Early and intermediate AMD** are caused by the build-up of waste material (drusen) under the retina.

Typically, with **early AMD**, you will notice little or no impact on your vision.

With **intermediate AMD**, the drusen will be larger and you may notice some changes to your central vision, but progression is slow. Progression to late AMD may or may not occur. Most people with AMD are in the early and intermediate stages.

**Late AMD** is the vision threatening stage and is divided into dry (atrophic) AMD and wet (neovascular) AMD.

- **Dry (atrophic) AMD**, also known as geographic atrophy, is when retinal cells gradually die (atrophy), leading to patches of 'missing' retina and loss of central vision. Some people with dry (atrophic) AMD may go on to develop the wet (neovascular) form.
- **Wet (neovascular) AMD** is the most aggressive form of AMD and central vision changes are often sudden and severe. In wet (neovascular) AMD, abnormal blood vessels grow underneath the retina. These new vessels ('neovascular' means new vessels) are fragile and can leak fluid and blood, which may damage the macula retina. It often leads to a rapid loss of central vision.

It's possible to have AMD in only one eye, or for each eye to be in different stages of AMD. It's also possible to have both dry (atrophic) AMD and wet (neovascular) AMD in the same eye.

## Risk factors for AMD

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AMD is caused by genetic and environmental factors. Major risk factors include age, family history and smoking. The risk of AMD increases significantly with age. If you have an affected first-degree family member (e.g. parent or sibling), you are at greater risk of developing AMD. If you have AMD, it's critical that you inform your siblings and children of the hereditary risk and encourage them to have their eyes examined and macula checked.

Studies have shown that if you smoke, you are three to four times more likely to develop AMD. Smokers may also develop the disease five to 10 years earlier than non-smokers. Smoking can also increase the risk of disease progression. If you have wet (neovascular) AMD and continue to smoke, you may not respond as well to treatment.

## How do you know if you have AMD?

You can have early signs of AMD (drusen) without knowing, which is why it's so important to have regular eye examinations, including a check of the macula. During the early and intermediate stages, you may not notice any symptoms.

However, as the disease progresses, symptoms may appear and can include one or more of the following:

- difficulty reading or any other activity which requires fine vision (despite wearing glasses)
- distortion, where straight lines may appear wavy or bent
- difficulty distinguishing faces
- dark or blurred patches in the centre of your vision.

The need for increased illumination, sensitivity to glare, decreased night vision and reduced colour vision may also indicate that there's something wrong.

If you experience any changes in vision, never dismiss this as just part of getting older. The earlier a diagnosis is made, the better.

It's essential to have an eye examination including a check of your macula by an eye health professional (optometrist or ophthalmologist) with regular follow-up according to their recommendation.

If you experience any changes in vision, never dismiss this as just part of getting older.



Normal Vision



Distorted Vision

## Detecting and monitoring changes in vision

If you notice any sudden changes in your vision, it's important you see your eye health professional as a matter of urgency. It could be a sign of wet (neovascular) AMD. Early action and treatment is crucial to saving sight, while delayed treatment increases the likelihood of vision loss.

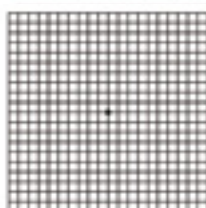
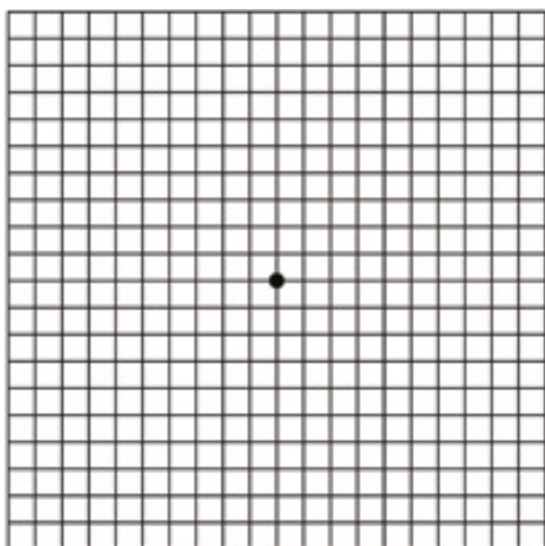
An Amsler grid is an essential and 'easy-to-use' self-monitoring tool used to detect changes in your central vision. These changes may include distortion (straight lines appearing wavy), blurred patches or dark patches. If you notice any sudden changes in your vision while using an Amsler grid, contact your eye health professional immediately.

When using an Amsler grid, it is important that you test one eye at a time and hold the grid at your normal reading distance. If you use reading glasses, you should wear them when using an Amsler grid. Anyone 50 years or older can use an Amsler grid regularly to check for changes in vision. If you're already diagnosed with AMD, you should use an Amsler grid every day. You can obtain a free Amsler grid by calling our National Helpline on **1800 111 709**.

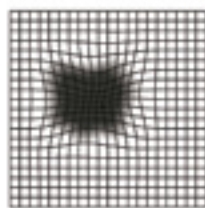
It's important that you don't rely on an Amsler grid for diagnosis or as a substitute for regular eye examinations.

### The Amsler Grid

This can be used to test for the symptoms of age-related macular degeneration (AMD)



Normal Vision



Consult your eye care provider immediately

### What do I do?

1. Do not remove glasses or contact lenses you normally wear for reading
2. Stand approximately 33cm from the grid in a well-lit room
3. Cover one eye with your hand and focus on the centre dot with your uncovered eye
4. If you see wavy, broken or distorted lines, or blurred or missing areas of vision you may be displaying symptoms of AMD and should contact your eye care professional immediately

## Nutrition for AMD

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Studies show that diet is important in reducing the risk of AMD and in slowing its progression. Eating a healthy, well balanced diet high in antioxidants, vitamins and other nutrients can help keep your eyes healthy.

Important antioxidants for eye health include lutein and zeaxanthin. These are present in high concentrations in a healthy macula and help to protect your eyes. They are found in dark green leafy vegetables such as spinach, kale and silverbeet, and to a lesser extent in other vegetables such as corn, yellow capsicum, peas, pumpkin and Brussels sprouts. In addition, vitamin C, vitamin E, zinc and selenium are important antioxidants for a healthy macula.

Omega-3 fatty acids are also important to eye health. All fish and shellfish contain Omega-3s but higher concentrations are found in oily varieties of fish such as salmon, mackerel, anchovies and trout.

People who eat a higher proportion of carbohydrates with a low glycaemic index (GI) compared to high GI, have a lower risk of developing AMD. Low GI carbohydrates include most fruit and vegetables, whole grain cereals and whole grain breads.

You can find more information about nutrition on our website [www.mdffoundation.com.au](http://www.mdffoundation.com.au) or by calling our National Helpline on **1800 111 709**.





## Supplements for AMD

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Supplements are vitamins, minerals or other substances taken in tablet or capsule form. The use of supplements for macular health are broadly divided into two areas:

- **Dietary supplements:** If dietary intake of nutrients, particularly eye health nutrients, is inadequate a general dietary supplement may be useful. This can be appropriate whether or not you have been diagnosed with AMD. In particular, if you do not obtain enough lutein through a daily diet including dark green leafy vegetables, you may consider a **lutein supplement**. If you're unable to eat two to three serves of fish each week you may consider a **fish oil (Omega-3) supplement**. However, there is currently a lack of good evidence confirming the benefits of supplements versus eating actual fish.

Consideration of dietary supplements should be undertaken in consultation with your doctor, as some vitamins, whether obtained through food or supplements can interfere with certain medications.

- **AREDS2 supplements:** For people with intermediate AMD in one or both eyes, or late stage AMD in one eye only, a supplement based on the Age-Related Eye Disease Study #2 (AREDS2) may be considered. It's important to speak to your eye health professional about whether AREDS2 supplements are appropriate for you.

You can find more information about supplements on our website [www.mdfoundation.com.au](http://www.mdfoundation.com.au) or by calling our National Helpline on **1800 111 709**.





## Eye health checklist

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Although you can't change your family history or your age, the following simple practices can help optimise your macular health and reduce your risk of vision loss:

- have regular eye examinations, including a check of the macula
- don't smoke
- live a healthy lifestyle, control weight, and exercise regularly
- eat fish two to three times a week, dark green leafy vegetables and fresh fruit daily, and a handful of nuts a week, and limit your consumption of fats and oils
- choose low glycemic index (GI) carbohydrates instead of high GI whenever possible
- in consultation with your doctor, consider taking a dietary supplement if food intake is inadequate
- ask your eye health professional if AREDS2 supplements are appropriate for you
- use adequate protection for your eyes from the sun
- use an Amsler grid regularly to check for changes in your vision

**Please note:** Any changes in diet or lifestyle should be



## How is AMD diagnosed?

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An eye examination performed by an eye health professional is required to diagnose AMD. If you are 50 years or older you should consider having an eye examination, including a check of your macula, every two years (every year if over 65), or as advised by your eye health professional. Once AMD is diagnosed, the frequency of eye examinations will be individually determined by your eye health professional. Tests that are used to assist in diagnosing AMD include:

### **Pupil dilation**

Your eye health professional may dilate (enlarge) your pupils using eye drops to examine the retina at the back of the eye. After your pupils have been dilated, it is normal for your eyes to be blurry and sensitive to light for a few hours. You shouldn't drive while your eyes are still dilated.

### **Retinal photography**

Retinal photographs are commonly used by eye health professionals as part of an eye examination. They provide a detailed image of your retina and a basis for comparison for future eye examinations.

### **Optical coherence tomography**

An optical coherence tomography (OCT) scan is now a standard procedure in the diagnosis and ongoing management of macular disease.

An OCT scan is a quick, painless and non-invasive imaging technique that uses light to produce very high-resolution cross-sectional images of the layers of the retina, as well as blood vessels that are affected in AMD. OCT scans are also used to monitor your individual response to treatment.

### **Angiography**

If your eye health professional suspects you have wet (neovascular) AMD, a fluorescein angiogram may be performed. Fluorescein is an orange dye that is injected into the blood via a vein in your arm. This dye rapidly reaches the eye through the bloodstream and circulates through the retina. This dye highlights any abnormalities or damage to blood vessels. A special camera will be used to take a series of images of your retina. This procedure only takes a few minutes.

In a very small number of cases, they may perform an indocyanine green angiogram, where a green dye is injected into a vein in your arm in the same way as a fluorescein angiogram.



Studies have shown that diet and lifestyle changes may slow down the progression of the disease.

## Treatment for AMD

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There is no cure for AMD. Treatment options are dependent on the stage of disease and aim to stabilise and maintain best vision for as long as possible.

### **Is there a treatment for early and intermediate AMD?**

Currently, there are no medical treatments for early and intermediate AMD. However, studies have shown that diet and lifestyle changes may slow down the progression of the disease. Any changes to diet or lifestyle should be undertaken in consultation with a doctor. The appropriateness of AREDS2-supplements should be discussed with your eye health professional. Research is ongoing to develop treatments that stop or slow progression to late AMD.

### **Is there a treatment for dry (atrophic) AMD?**

Currently there are no medical treatments available for dry (atrophic) AMD, however research is ongoing to develop treatments.

### **Is there a treatment for wet (neovascular) AMD?**

There is highly effective medical treatment available for wet (neovascular) AMD.

In wet (neovascular) AMD, the protein vascular endothelial growth factor (VEGF) is predominantly responsible for the abnormal growth of blood vessels and fluid leakage under the retina.

Standard treatment involves an injection of anti-VEGF medication into the eye (intravitreal injection) that blocks the activity of this protein, thereby stopping the growth of abnormal blood vessels and fluid leakage. For most people, treatment usually begins with injections at monthly intervals. Depending on the response, the interval between injections may be extended. For most patients, ongoing or indefinite treatment is required.

Laser photocoagulation and photodynamic therapy (PDT) are treatments that are now rarely used for wet (neovascular) AMD. They are occasionally used as adjuncts to treatment with intravitreal injections, usually for a type of new blood vessels called polypoidal choroidal vasculopathy (PCV).

In some people, treatment can improve vision. However, these treatments don't cure the disease. You can find out more information about treatment on our website [www.mdfoundation.com.au](http://www.mdfoundation.com.au) or by calling our National Helpline on **1800 111 709**.

If received early enough, treatment can help prevent vision loss and maintain your best vision for as long as possible.

## Vision loss from AMD

Some people with AMD may experience vision loss, which can be difficult to cope with. It can take time to adjust to this, and it's not unusual to experience a range of different feelings ranging from disbelief to acceptance, or even anger or sadness.

If you do experience vision loss, there is a lot of support and advice available to help you overcome this challenge and maintain quality of life and independence.



## Need more information?

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Learn more about macular disease at [www.mdffoundation.com.au](http://www.mdffoundation.com.au).

How's your macula? Take the quiz at [www.CheckMyMacula.com.au](http://www.CheckMyMacula.com.au).

You can also access our free, personalised support services and order information kits and Amsler grids by calling our National Helpline on **1800 111 709**.

M DFA has a free newsletter and you can sign up to receive invitations to education sessions and events in your area.

Macular Disease Foundation Australia is committed to reducing the incidence and impact of macular disease, by providing up-to-date information, advice and support.

Our National Helpline can provide further information about your condition.



**Disclaimer:** Information in this publication is considered by Macular Disease Foundation Australia to be accurate at the time of publication. While every care has been taken in its preparation, medical advice should always be sought from a doctor and individual advice about your eye health should be sought from your eye health professional. MDFA cannot be liable for any error or omission in this publication or for damages arising from it, and makes no warranty of any kind, either expressed or implied in relation to this publication.



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Disease  
Foundation**  
AUSTRALIA

**Macular Disease  
Foundation Australia**

Suite 902, Level 9,  
447 Kent Street  
Sydney NSW 2000

**T** 1800 111 709 (free call)

**E** [info@mdfoundation.com.au](mailto:info@mdfoundation.com.au)

**W** [www.mdfoundation.com.au](http://www.mdfoundation.com.au)

**W** [www.CheckMyMacula.com.au](http://www.CheckMyMacula.com.au)

**ABN** 5209 6255 177