

 the  
**science**  
of **AMD**

[www.scienceofamd.org](http://www.scienceofamd.org)



Our vision is to save your vision

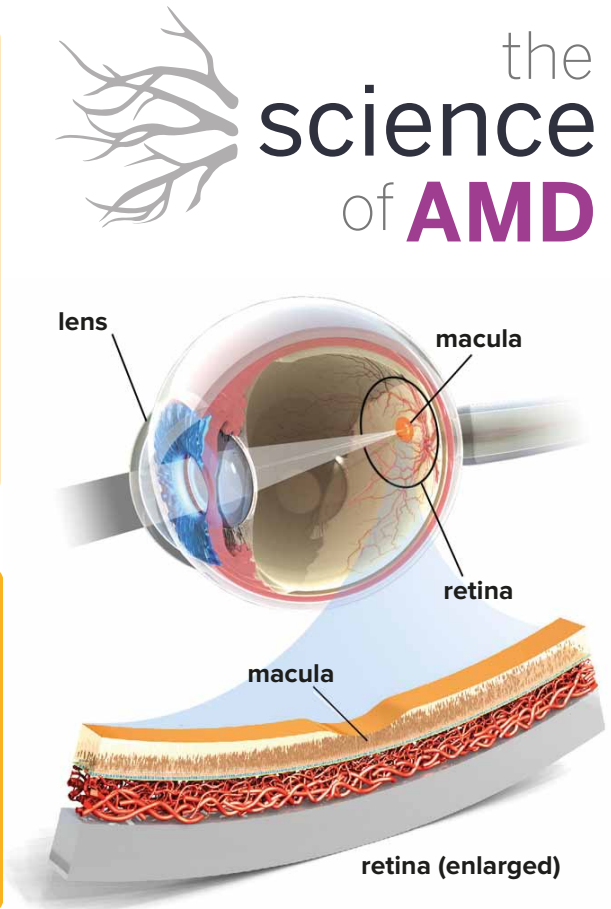
# Introduction: The Science of AMD

## OVERVIEW

Age-Related Macular Degeneration (AMD) affects more than 30 million people worldwide. It is the leading cause of blindness in people over the age of 50 in developed countries. Those affected by AMD may have difficulty with daily activities such as reading, driving, and recognizing faces. AMD has two forms, wet and dry, that both affect the macula—the part of the eye responsible for central vision.

## OUR MISSION

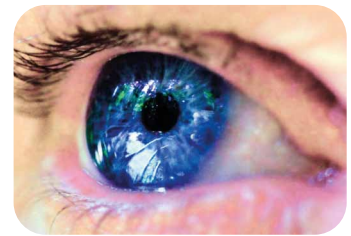
The mission of the Angiogenesis Foundation is to prevent blindness and enhance the quality of life for people with wet AMD. We seek to empower patients worldwide, their advocates, and their healthcare providers with knowledge about antiangiogenic treatments for wet AMD.



## TAKE ACTION

The Science of AMD resource is here to inspire you to take the steps necessary to prevent vision loss:

1. **LEARN** about wet AMD.
2. **ASK** your eye doctor to test for wet AMD
3. **GET** the right treatment for wet AMD. Early detection and treatment of AMD are crucial to preserving your vision.
4. **KEEP UP** with the treatment – wet AMD is a chronic disease, so saving your vision requires lifelong treatment.
5. **SPREAD** the word about wet AMD to your friends, family, and colleagues.



# LEARN: The Science of AMD

## WHAT IS AMD?

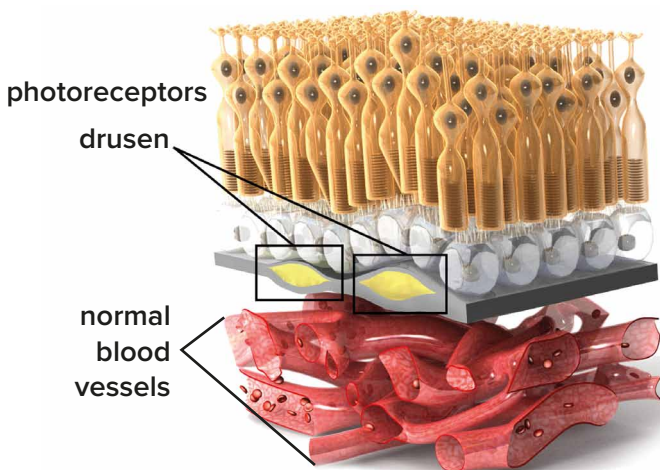
Age-related macular degeneration (AMD) is a disease associated with aging that gradually destroys the sharp, central vision needed to read, recognize faces, drive a car, and in general see objects clearly. AMD affects the macula, which is located in the center of the retina, the light-sensitive tissue at the back of the eye. The macula is the part of the eye needed to see fine details.

## DRY AMD

Dry AMD is the most common form of AMD and occurs in multiple stages. In the early stages of dry AMD, yellow deposits known as drusen begin to accumulate in the back of the eye. Drusen can vary in size and number, and are considered a natural part of the eye's aging process.

Over time, the disease can progress into advanced dry AMD and eventually wet AMD. In advanced dry AMD, the progressive increase in the number and/or size of drusen is accompanied by the deterioration of the light-sensing cells and surrounding tissue in the macula. This causes significant vision problems.

One eye or both eyes may be affected by AMD. When only one eye is affected, vision loss is harder to detect because the "good eye" works harder to compensate for the affected eye. Thus, frequent self eye exams and regular visits to a retinal specialist are needed.



Macula with Dry AMD

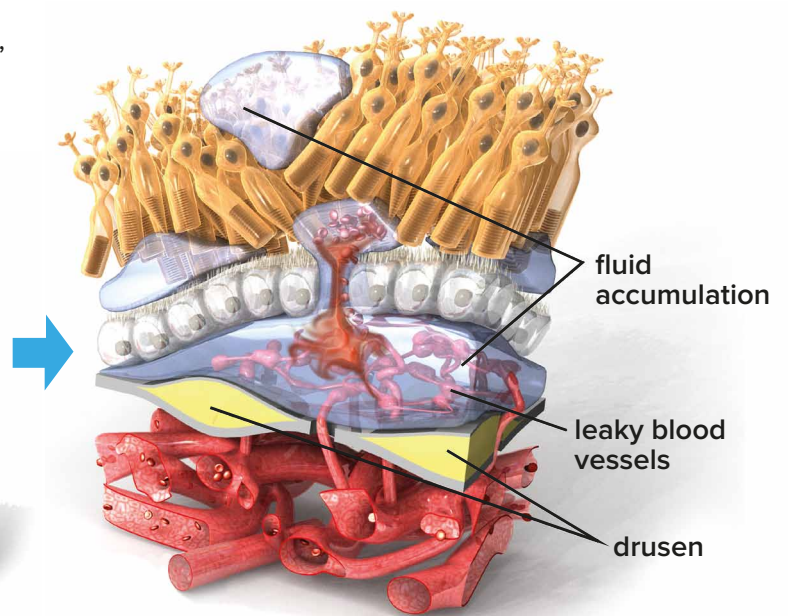
## WET AMD

Wet AMD, also called neovascular macular degeneration, is the most severe form of AMD. About 10% to 15% of people with dry AMD will progress to the wet form.

In wet AMD, blood vessels grow abnormally beneath the macula. These vessels leak fluid and blood, which may cause a blister-like pocket to form beneath the macula. These blisters distort vision in the affected eye, making straight lines appear wavy. The patient may see a dark spot or various spots in the center of their vision. This is due to blood or fluid collecting under the macula.

Wet AMD can rapidly progress and damage the macula, causing a loss of central vision. If left untreated, bleeding in the eye can cause scar tissue to form, leading to irreversible vision loss. Periodic eye examinations are crucial for people at risk for wet AMD.

The good news is that there are now several effective, approved treatments for wet AMD. These treatments can stabilize or, in some cases, reverse vision loss if used before scar tissue forms.



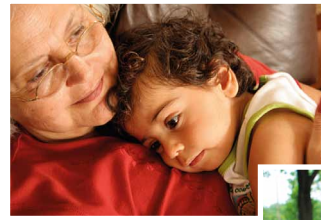
Macula with Wet AMD

# Wet AMD and You: Risk Factors

## AM I AT RISK FOR AMD?

There are several factors that can put you at risk for Age-Related Macular Degeneration:

- ▶ **Age** is the greatest risk factor. Your risk starts increasing at age 50.
- ▶ If you have **immediate family members who have been diagnosed** with AMD, you are at a higher risk of developing the disease.
- ▶ If you have **AMD in one eye**, you are at higher risk of developing AMD in the other eye.
- ▶ **Smokers** are two to three times more likely to develop AMD than non-smokers.
- ▶ **Women** have a slightly higher risk of developing AMD.
- ▶ **Obesity** increases the progression of early AMD to advanced AMD.
- ▶ Uncontrolled **high blood pressure** increases the risk of developing AMD.
- ▶ **Genetic** factors also contribute to risk of AMD.



## WHAT CAN I DO TO DECREASE MY RISK?

- ▶ Do not smoke.
- ▶ Maintain a healthy body weight.
- ▶ Monitor your blood pressure.
- ▶ Exercise regularly.
- ▶ A diet high in dark leafy green vegetables and fruit lowers the risk of developing AMD. These foods contain substances that naturally balance angiogenesis.
- ▶ Eat food high in omega-3 fatty acids like fish and flax seed and avoid unhealthy sources of fat to lower your risk.

# Wet AMD and You: Symptoms

## MAIN SYMPTOMS OF AMD

In its early stages, AMD may not cause any noticeable symptoms. Over time, you may notice blurring of vision, particular difficulty seeing sharp details, both up close and from a distance. Straight lines appear wavy or fractured in parts of the visual field. You may notice distortions of lines and shapes in everyday objects, such as crooked doorframes.

### Here are some other warning signs of vision loss due to AMD:

- ▶ A blurry or dark spot appears in the center of your vision
- ▶ Faces begin to blur
- ▶ It becomes difficult to distinguish colors
- ▶ Contrast sensitivity decreases
- ▶ Adjusting from bright to dim lighting becomes challenging
- ▶ Depth perception is impaired
- ▶ Sensitivity to bright lights increases
- ▶ Vision improves at night
- ▶ Close work like threading a needle becomes impossible

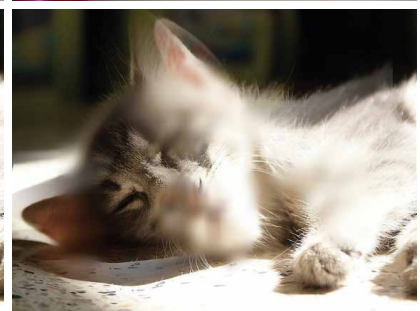
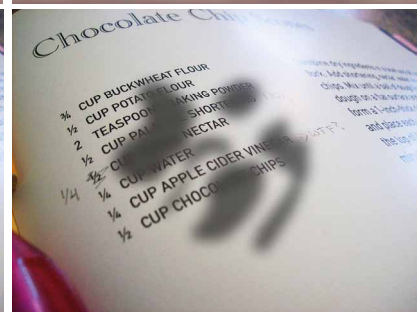
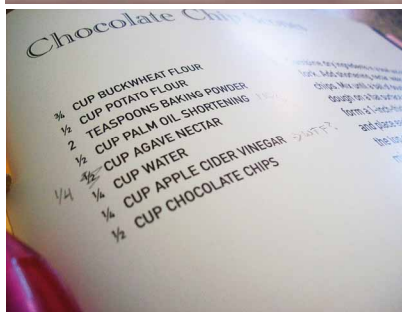


Note: these symptoms may change from day to day.

Normal



Wet AMD



Types of visual distortions with wet AMD

Sometimes only one eye loses vision while the other eye continues to see fairly well for a long period of time. This is why it is important to visit your eye doctor for regular checkups.

# TREAT: Getting Diagnosed

## IMPORTANCE OF EARLY DIAGNOSIS

Wet AMD is associated with impaired quality of life, social isolation, clinical depression, increased risk of accidental falls and hip fractures, and premature admission to nursing homes. The important thing to know is that wet AMD can be treated. You must recognize the symptoms and take immediate action to seek effective treatment.

Early detection is the key to saving as much vision as possible. Regular eye exams are critical because in the early stages of AMD, symptoms may be subtle or barely noticeable. Going to a retinal specialist to get tested for AMD is the most important first step.



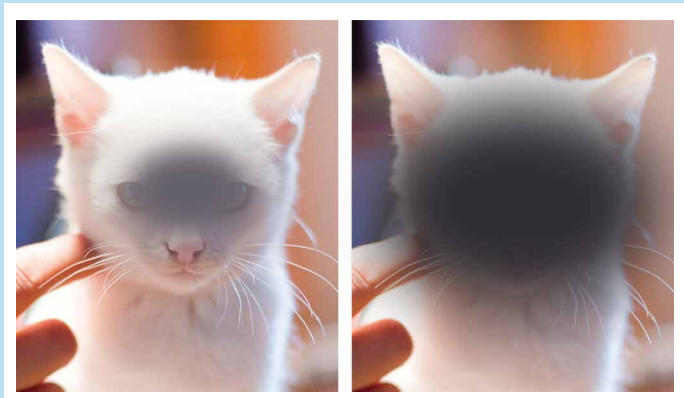
## TESTING

Initially, your eye doctor will look at the retina in the back of your eye with an instrument called an ophthalmoscope to see if any abnormalities are present in the macula. If any damage is seen, additional tests are performed to photograph the retina. These tests can reveal whether there is any fluid leaking under the retina and if there are changes in the amount of accumulated fluid.

(Pictured left: OCT scanning)

## Wet AMD WITHOUT TREATMENT

In wet AMD, fluid and blood leaking from abnormally growing blood vessels damage the light-sensing nerve layers in the back of the eye that are responsible for vision. If left untreated, the accumulation of fluid and blood can lead to the development of scar tissue in the macula, resulting in permanent loss of central vision. Even then, vision loss can still get worse (with the gray spot getting darker and expanding). The scar can get bigger if the leaking and bleeding continues. Treatment can still help, even if there is irreversible damage.



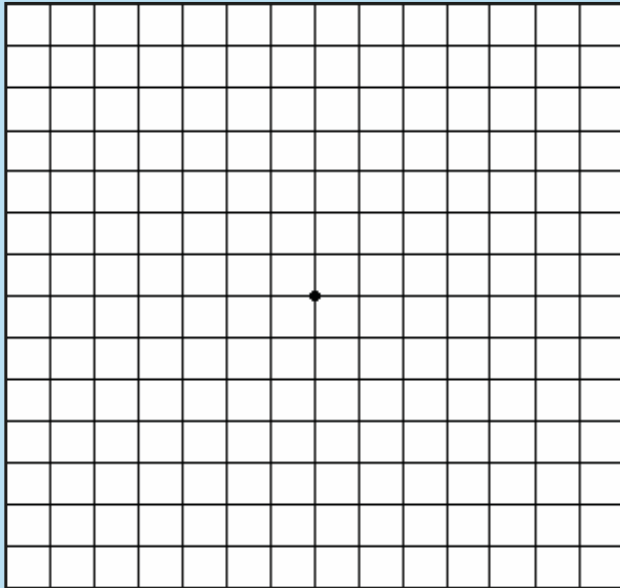
Example of increased damage to vision over time

# TREAT: Amsler Grid and Self Testing

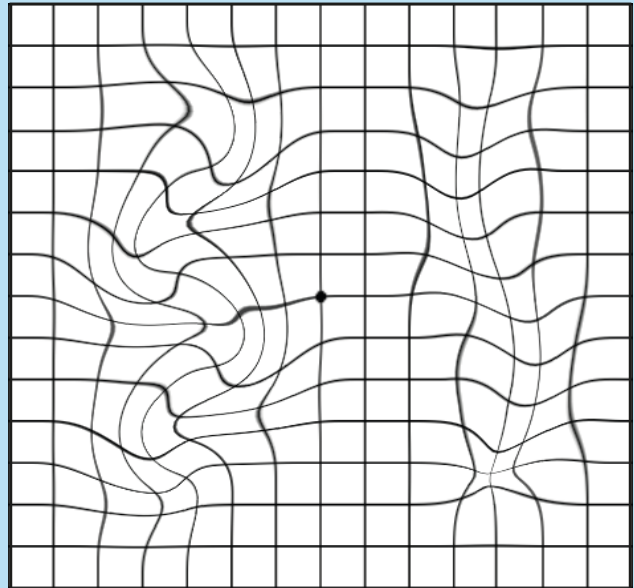
## HOW DOES A DOCTOR TEST FOR AMD?

Distortions in vision can be detected through a simple test using an Amsler grid. Your eye doctor will look for signs of blind spots and visual distortions when viewing the grid. Using an Amsler allows for detection of very subtle changes in your vision, which can occur even when there is a small amount of fluid under your macula.

**Amsler Grid**



**Example of Visual Distortion**



The Amsler grid can also be used at home. To perform the Amsler grid self-test, follow these steps:

- 1) Wear your reading glasses. If you wear bifocals, use the bottom reading portion.
- 2) Attach the Amsler grid to a wall at eye level and stand back at a comfortable reading distance.
- 3) Cover one eye. With the other eye, look at the center dot on the Amsler grid.
- 4) The first time you observe the grid, mark any gray, blurry, or blank spots, or any distorted areas.
- 5) Every morning, look at the same center dot. If you notice any new areas of distortion, wavy lines, or enlargement of the blank spots toward the center, call your eye doctor to make an urgent appointment. Additional bleeding can cause scarring and permanent vision loss.

Test yourself at home for wet AMD by checking your vision in each eye individually and looking for signs of distortions. You can use a print-out of an Amsler grid or simply look at your surroundings and pay close attention to how things appear.



**Self Test**



Learn more and download a free Amsler grid at [scienceofamd.org](http://scienceofamd.org)

The Angiogenesis Foundation is the world's first and leading nonprofit organization dedicated to conquering diseases using a groundbreaking approach based on angiogenesis, the growth of new blood vessels in the body. Angiogenesis is the “common denominator” in society's most feared diseases, including wet AMD.

Understanding the science behind wet AMD and its treatment guides patients, their advocates, and ophthalmologists to understand the consequences of complacency and the evidence-based need for proactive care. We believe everyone at risk for wet AMD should be empowered with understanding of the practical steps they can take to protect their vision.



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translations available in multiple languages:



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### Acknowledgements

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AJA Foundation  
John and Vicky Miller

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