

WHAT IS MACULAR DEGENERATION?

Age related macular degeneration (AMD) is a disease that may either suddenly or gradually destroy the macula's ability to maintain sharp, central vision. Interestingly, one's peripheral or side vision remains unaffected. AMD is the leading cause of "legal blindness" in the United States for persons over 65 years of age. AMD is present in approximately 10 percent of the population over the age of 52 and in up to 33 percent of individuals older than 75. The macula allows alone gives us the ability to have: sharp vision, clear vision, color vision, central vision, and daytime vision.

WET: Found in approximately 20% of AMD patients. Wet AMD occurs when abnormal retinal blood vessels start to grow beneath the macula. These new blood vessels are very fragile and consequently leak blood and fluid. The leaked blood and fluid raise the macula from its normal place at the back of the eye causing rapid macular damage and a loss of central vision. Wet AMD is also known as advanced AMD and it does not have stages such as dry AMD.

DRY: Dry AMD occurs in about 80% of patients and its development is related to the light-sensitive cells slowly breaking down in the macula, gradually blurring central vision. As dry AMD progresses, you may see a blurred spot in the center of your vision. With advanced dry AMD, less and less of the macula functions properly and central vision is gradually lost.

SYMPTOMS OF AGE RELATED MACULAR DEGENERATION:

WET: The following symptoms may appear and progress rapidly: Straight lines appearing

wavy or crooked, visual distortions, doorway or street signs seem bowed, or objects may appear smaller or farther away than they should, decrease in or loss of central vision, and a central blurry spot.

DRY: Progression with dry AMD is typically slower de-gradation of central vision: need for increasingly bright illumination for reading or near work, difficulty adapting to low levels of illumination, worsening blur of printed words, decreased intensity or brightness of colors, difficulty recognizing faces, gradual increase in the haziness of overall vision, and a profound drop in your central vision acuity.

WHAT CAUSES AGE RELATED MACULAR DEGENERATION?

The macula, located at the very back of your eye, must be healthy to have normal quality central vision acuity. The macula is made up of densely packed light-sensitive cells called cones and rods. These cells, particularly the cones, are essential for central vision. The choroid, an underlying layer containing blood vessels sits posterior to a thin layer of tissue forming the outermost surface of the retina known as the retinal pigment epithelium (RPE). The RPE is a critical passageway for nutrients from the choroid to the retina and helps remove waste products from the retina to the choroid.

As we grow into our latter years, the RPE may deteriorate and lose pigment and eventually thin (atrophy). This thinning causes a series of events to occur. Primarily, the nutritional and waste-removing cycles between the retina

and the choroid are interrupted causing waste deposits to form. Lacking proper nutrients, the light-sensitive cells of the macula become damaged. The damaged cells can no longer send normal signals from the macula through the optic nerve to your brain, and consequently your vision becomes blurred

In either form of AMD, your vision may remain fine in one eye up to several years even while the other eye's vision has degraded. Most patients don't realize that one eye's vision has been severely reduced because your brain compensates the bad eye. Once both eyes become involved, life may dramatically be affected.

RISK FACTORS:

Researchers don't know the exact causes of macular degeneration, but they have identified some contributing factors. The greatest risk factor is age. Although AMD may occur during middle age, studies show that people over age 60 are clearly at greater risk than other age groups. Other risk factors include:

Age: In the United States, macular degeneration is the leading cause of severe vision loss in people age 60 and older.

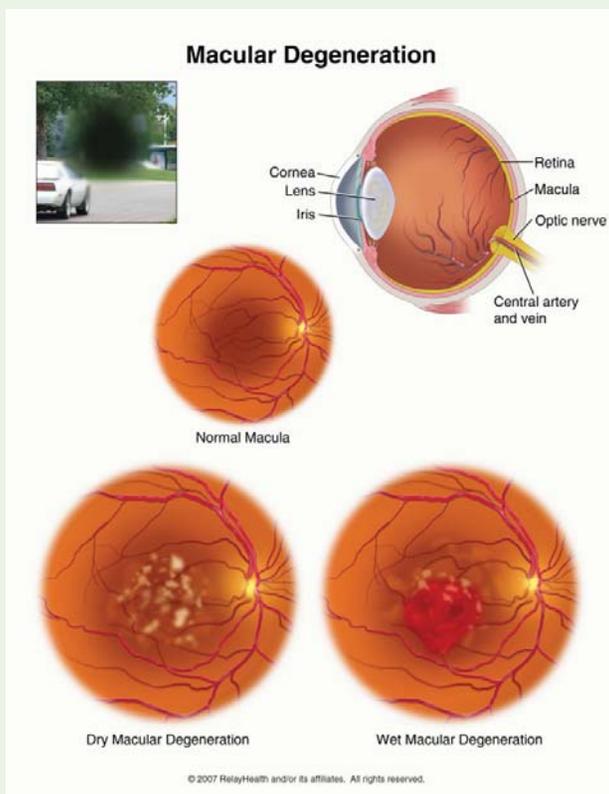
Family History: If someone in your family had macular degeneration, your odds of developing macular degeneration are higher. In recent years, researchers have identified some of the genes associated with macular degeneration. In the future, genetic screening tests may be helpful for assessing early risk of the disease.

Race: Macular degeneration is more common in whites than it is in other groups, especially after age 75.

Sex: Women are more likely than men are to develop macular degeneration, and because they tend to live longer, women are more likely to experience the effects of severe vision loss from the disease.

Cigarette smoking: If you smoke, stop. Exposure to cigarette smoke doubles your risk of macular degeneration. Cigarette smoking is the single most preventable cause of macular degeneration.

Obesity: Being severely overweight increases the chance that early or intermediate macular



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degeneration will progress to the more severe form of the disease.

Light-colored eyes: People with light-colored eyes appear to be at greater risk than do those with darker eyes.

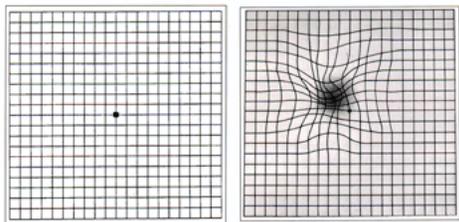
Sunlight Exposure: The retina is more sensitive to shorter wavelengths of light, including ultraviolet (UV) light, only a small percentage of ultraviolet light actually reaches the retina. Most ultraviolet light is filtered by the transparent outer surface of your eye (cornea) and the natural crystalline lens in your eye. It's possible that long-term exposure to ultraviolet light may increase your risk of developing macular degeneration, but this risk has not been proved and remains controversial.

Low Nutrient levels: This includes low blood levels of minerals, link zinc, and antioxidant vitamins, such as A, C and E. Antioxidants may protect your cells from oxygen damage (oxidation), which may partially be responsible for the effects of aging and for the development of certain diseases such as macular degeneration.

Cardiovascular: These diseases include high blood pressure, stroke, heart attack and coronary artery disease with chest pain (angina).

HOW IS AMD DIAGNOSED?

To look for signs of the disease, your doctor will use eye drops to dilate your pupils to obtain a better view of the macula in the back of your eye. AMD may be detected during a comprehensive eye exam that includes a visual acuity test to measure how well you see and when the pupils are dilated, the doctor will use a special lens to examine the retina, optic nerve, and macula for signs of AMD. An Amsler Grid (see picture below) tracks changes within the macula. The pattern of the grid resembles a checkerboard. Any distortions, missing squares, or if the pattern appears wavy this may indicate a macular issue like AMD.



TREATMENT OPTIONS:

Wet AMD can be treated with laser surgery, photodynamic therapy, and injections with cutting-edge products (anti-VEGF therapy) into the eye. Examples of injection therapy are Macugen, Lucentis, and Avastin. Unfortunately, none of these treatments are a complete cure for wet AMD. The disease and loss of vision may progress despite timely and appropriate treatment.

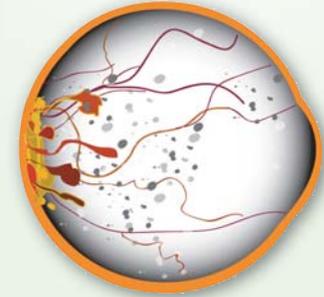
Current dry AMD treatment cannot reverse dry macular degeneration. This doesn't necessarily mean you'll lose all of your sight. Fortunately, dry macular degeneration generally progresses slowly, and many people live with this condition relatively normally, having productive lives, especially if only one eye is affected. One treatment strategy focuses on anti-oxidant therapy. It was found by the National Eye Institute that taking a specific high-dose formulation of antioxidants and zinc significantly reduces the risk of advanced AMD and its associated vision loss. Slowing AMD's progression from the intermediate stage to the advanced stage will save the vision of many people.

Additional therapies on the horizon for AMD are the use of Kenalog injections, Rheophoresis transfusions and even implantable optical devices.

RESOURCES:

<http://www.amd.org/site/PageServer>
http://www.nei.nih.gov/health/maculardegen/armd_facts.asp
<http://www.macular.org/>
<http://www.blindness.org/MacularDegeneration/>
<http://www.macular-degeneration.org/>

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