

(NIH) in October 2001. It concluded that certain antioxidant vitamins and minerals are effective at slowing the progression of the disease. This study has become a milestone that helps establish the use of dietary supplements as part of the standard of care for patients with macular degeneration. More recently, studies have shown lutein, a naturally occurring carotenoid found in fruits and dark green leafy vegetables, is an essential nutrient in macular health. It is the predominant pigment in the macular area of the retina where it functions as a powerful antioxidant and as a blocking agent for damaging ultraviolet light. Lutein is not produced in the human body so it has to be consumed from foods or supplements. A landmark study involving lutein, **The Veterans Lutein Antioxidant Supplementation Trial (LAST Study)**, showed a therapeutic benefit in all stages of dry macular degeneration using 10 mg of elemental lutein per day. This is the first conclusive study showing lutein may improve visual function in all stages of dry macular degeneration. **This is extremely important information for patients with macular degeneration and will certainly influence what doctors recommend.** Studies using 6 mg of lutein per day, considered in the prevention and maintenance range, have shown significant reduction in the prevalence of AMD. Studies using 10 to 20 mg of elemental lutein per day have shown benefits in AMD and RP (retinitis pigmentosa). *Lutein may be one of the most important discoveries in the prevention and treatment of macular degenerative disease.*

Most eye care professionals recommend supplements containing high concentrations of lutein in an attempt to prevent, stabilize and retard further progression of macular degeneration. The ultimate goal is to preserve functional vision for a person's natural life. Some experts also believe supplements with lutein may help prevent the "dry" AMD from converting into the more devastating "wet" AMD.

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The initials **AMD** are an abbreviation for a disease called **Age-Related Macular Degeneration**. AMD is generally associated with aging, arteriosclerosis, hereditary factors, eye trauma, nutrition and other conditions that are not yet completely understood. It is the leading cause of irreversible vision loss after age 50. The frequency of the disease rises dramatically with increasing age. Macular degeneration is the leading cause of legal blindness and is considered a major national health problem in the United States today.

What Is AMD?

Macula is an anatomical term denoting the central area of the retina located in the posterior portion of the eye. The macular area is one of the most highly specialized and sensitive areas in the human body and therefore very susceptible to functional problems. It is responsible for a person's central vision. When the macular area is damaged by AMD, the central area of a person's vision will become blurred, distorted or develop a complete central blind spot which is very destructive to a person's vision.

There are two major types of AMD, the "dry" form and the "wet" or exudative form. While the "wet" form is responsible for the vast majority of severe vision loss due to AMD, it is less common than the "dry" form. It is called "wet" because in advanced stages of the disease, tiny abnormal blood vessels grow rapidly

beneath the macular area of the retina and often break or rupture and leak blood and fluid. This leads to scar tissue causing destruction of a person's central vision. The "wet" type can generally be treated with laser therapy. In the "dry" type, the macular area undergoes a deterioration of function as part of the natural aging process and other factors including nutrition. The "dry" form is the most common, accounting for 85 to 90 percent of the cases of AMD. Vision loss with "dry" AMD tends to be moderate to severe. AMD generally starts as the "dry" form but may progress into the more severe "wet" form at any time. This progression can occur rapidly in some cases.

Although one eye may be more involved than the other, AMD progresses at various rates and generally affects both eyes. Macular degeneration rarely results in total blindness because involvement is limited to the central visual area. However, when central vision is affected, patients find it very difficult if not impossible to do simple everyday activities that require good vision, such as reading, sewing, recognizing faces, driving, or watching television. This is very destructive to a person's lifestyle and is very difficult to deal with emotionally. Most people are generally able to maintain their independence and should be able to see well enough to perform most of the basic living activities with the use of Low Vision Aids which range from simple and inexpensive to complex and expensive.

Symptoms of AMD

Macular degeneration develops differently in each person so symptoms may vary, but as the condition progresses a number of symptoms become more obvious. Some people will notice a gradual loss of ability to see objects clearly, especially blurring of areas of type on a page of print with dark or empty spaces that may block

the center of the field of vision. Other people may notice that straight lines in the landscape such as telephone poles, the sides of buildings or streetlight posts appear wavy, crooked or distorted. Some people notice a need for brighter light when reading, a gradual loss of color intensity, or poor night vision. In some cases, vision loss can be very rapid. Early detection is imperative to limit visual impairment.

How Do You Detect AMD?

It is difficult for a person to realize there is a problem until they are well into the disease process. Eye doctors can readily detect the disease as well as early changes that indicate a risk of developing AMD through a comprehensive eye examination. Yearly comprehensive eye examinations are the most effective way to guard against loss of vision from AMD. You can easily test yourself for possible complications of AMD with the Amsler Grid and the Photostress Test. These simple tests are easily administered at home and can be used to evaluate central vision on a daily basis. They are generally given to patients by their eye doctor when AMD is suspect or the patient has already been diagnosed. They are very important tools for detecting and following changes in the macular area, which can lead to serious vision loss. The Amsler Grid is a crosshatched pattern of vertical and horizontal lines with a central fixation target. The grid is used to detect early changes in the macular area or follow already existing areas of deficit. It must be performed one eye at a time with reading correction in place. If any of the lines appear wavy, distorted, or parts missing it could be an indication of AMD or some other macular problem and should be discussed with an eye doctor **as soon as possible**. The Photostress Recovery Test involves looking at a bright light for a few seconds and noting how long it takes the vision to recover. This is similar to the momentary

blindness after a flash picture. The Photostress Recovery Test is a little more involved than the Amsler Grid, but it generally predicts a problem fairly accurate. This test must be performed one eye at a time with reading correction in place. A long recovery time is possibly indicative of a macular problem and should be discussed with an eye doctor **as soon as possible**.

How Do You Treat AMD?

Prevention is essential! There is no cure for macular degeneration. At the present time, there are no prescription medications to cure or treat either form of the disease. However, recent studies suggest dietary supplements with lutein may be helpful. There are no surgical procedures to restore central vision loss after it is damaged by "dry" macular degeneration. However, patients with the "wet" type can generally be helped with laser treatment. Sometimes as the "wet" type progresses, the growth of the abnormal sub-retinal blood vessels will invade the central macular area. This is why advanced cases of "wet" AMD used to be untreatable. However, a new procedure called Photodynamic Therapy (PDT) can treat these central abnormal blood vessels. In laser therapy a beam of intense laser light passes harmlessly through the eye to the retina sealing off the leaking newly formed blood vessels. This procedure attempts to arrest the spread of the abnormal blood vessels and help resolve the excess fluid. Sometimes the "wet" type of AMD progresses very rapidly, therefore, self-testing central vision every day is essential to help reveal any possible progression of the condition.

Researchers are currently trying to find ways to prevent or minimize the effects of macular degeneration. A landmark study, The Age-Related Eye Disease Study (AREDS) was released by The National Institutes of Health