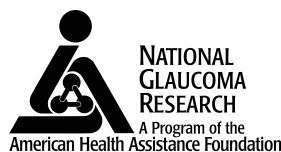


Set Your Sights on Vision Health

N A T I O N A L G L A U C O M A R E S E A R C H

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American Health Assistance Foundation



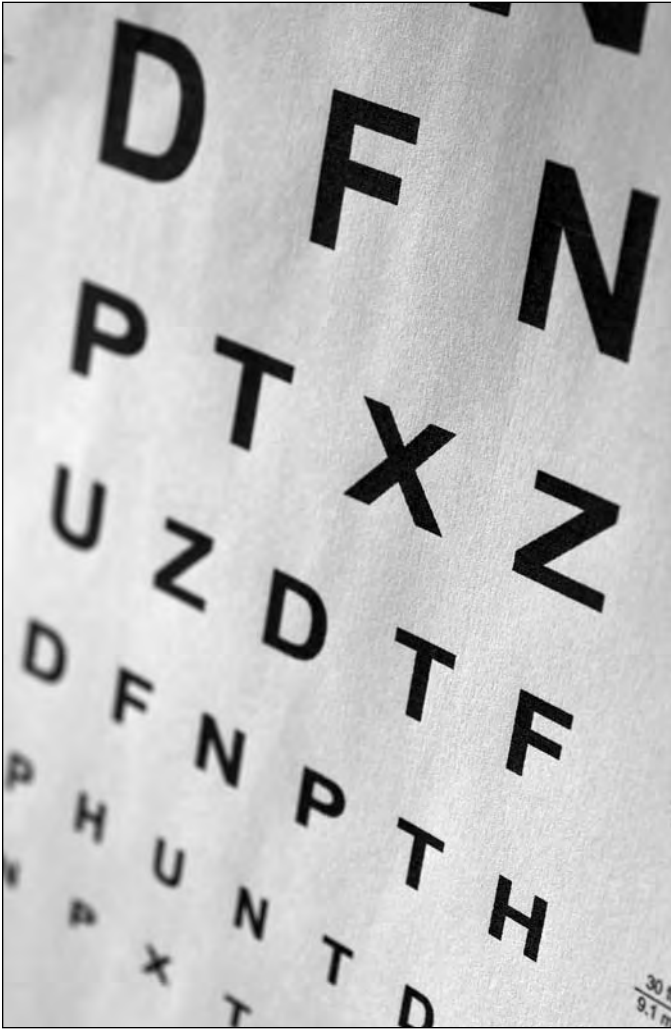
Macular Degeneration Research (MDR) and National Glaucoma Research (NGR) are programs of the American Health Assistance Foundation (AHAF), a nonprofit organization dedicated to finding cures for glaucoma and age-related macular degeneration (AMD) by funding scientists worldwide through generous donor contributions. In addition, through its outreach efforts, AHAF informs those directly affected and the general public about these diseases. This update contains material that may be reprinted without AHAF's prior approval, and we encourage you to include these articles in your publication. It is also available in PDF on the AHAF website in the press center at www.ahaf.org/Press/vision.pdf. Please credit the MDR and NGR programs of the American Health Assistance Foundation as a source. Thank you for helping us to raise awareness of these degenerative eye diseases and eye health. Please contact Kelly Herberger at 301-948-3244 (1-800-437-2423) or via email at kherberger@ahaf.org if you have any questions.

AHAF Vision Resources and Information

The MDR and NGR programs of AHAF offer a number of booklets and brochures that provide vital information about glaucoma and age-related macular degeneration (AMD). People may order one free copy of each of the following brochures in English or Spanish: "Macular Degeneration: The Essential Facts" and "The Essential Facts on Glaucoma;" and booklets, also in English or Spanish, "Living with Macular Degeneration" (40 pp) and "Living with Glaucoma" (34 pp). Another free brochure, "Safety and Older Driver" contains important information related to eyesight and driving ability. All publications are in large print. Print copies may be ordered by calling 1-800-437-2423 or visiting us online at www.ahaf.org; free electronic versions may be downloaded online at www.ahaf.org. These electronic copies are PDF files that can be read or printed from the computer. Call 1-800-437-2423 or visit the AHAF website (www.ahaf.org) for more information and other resources. ■



What Type of Eye Doctor Should I See?



Many people confuse optometrists, ophthalmologists and opticians. An **optometrist** has both a four-year Bachelor of Science degree and a four-year post-graduate degree from an accredited college of optometry. An optometrist is called a Doctor of Optometry (OD). Optometrists examine patients for near and farsightedness and can diagnose some diseases like glaucoma and cataracts. They can also prescribe treatment, normally non-surgical, such as eyeglasses, contacts, visual aids and vision rehabilitation. Optometrists can manage some eye diseases and conditions. However, they do not perform surgery, and they are not trained to diagnose and treat all eye diseases. An **ophthalmologist** has an undergraduate degree, a four-year medical degree and four years of post-graduate training in ophthalmology. Ophthalmologists are medical doctors who can diagnose, treat and manage all eye disorders, and perform eye surgery. Both optometrists and ophthalmologists are licensed by the states in which they practice. **Opticians** have two-year technical degrees. They fill prescriptions for eyeglasses and contacts, including adjustment, repair and replacement.

For regular comprehensive eye exams, an optometrist is a good choice. For people with higher risk of developing eye disease or those who have already been diagnosed, an ophthalmologist may be better able to treat and manage symptoms. Always consult your eye doctor for professional advice.

Why Are Regular Eye Exams Important?

Many eye diseases, such as glaucoma and age-related macular degeneration (AMD), have no symptoms until vision is irreversibly lost. Therefore, early detection and intervention are essential to controlling the progress of the disease and preventing or stabilizing vision loss. It is very important to have regular eye examinations, particularly as you age, or if you have any of the risk factors associated with AMD or glaucoma.

People under age 60 should have an eye exam at least every two years. For those at risk or over age 60, an eye doctor may recommend more frequent exams. A comprehensive eye exam will include a dilation of the pupil which allows the doctor to see to the back of the eye. ■

Lifelong Good Eye Habits

As we age, our risk of developing eye diseases such as age-related macular degeneration (AMD), cataracts and glaucoma increases. Lifelong healthy vision habits that begin in childhood may lower the chances of developing these disorders and protect eyesight. Although we realize how vital vision is to our lives, many of us take our sight for granted and forget to include these practices in our daily routine.

- Children and adults should **wear sunglasses** and brimmed hats for protection against ultraviolet (UV) radiation that may harm the eyes and increase the risk of developing eye disease. Sunglasses don't have to be expensive, but make sure they are block at least 99% of UVB and 95% of UVA rays. The most protective sunglasses fit snugly to the face and wrap around the temples.

- Use **sufficient light** in the home when performing close up work, and when reading or writing. Proper lighting can also prevent accidental eye injury caused by bumping into open doors or tripping, for example.
- Long hours in front of a **computer screen** may not increase the risk of eye disease, but can make eyes tired and dry. When using the computer for extended periods, make sure to “rest” the eyes regularly by looking away from the screen at objects that are farther away. It can also help to close the eyes for short breaks.
- Wear approved **protective eyewear** in the workplace (if required), at home (for example, when mowing, hammering or drilling), and when playing racquet sports. Wear a helmet that protects the eyes when playing baseball and hockey.
- Eat a **healthy “vision” diet**, including brightly colored fruits and vegetables, whole grains and foods containing omega-3 fatty acids (for example, tuna, salmon, certain nuts and oils).
- **Exercise** regularly – it’s great for every part of the body – the eyes, the brain and the heart.
- **Avoid or quit smoking.**
- Control other **medical conditions** such as diabetes and high blood pressure which may increase the risk of developing eye disease.
- Get **regular eye exams** – at least once every two years. Your doctor may recommend more frequent exams, particularly if you are at risk.
- Contact an eye care professional immediately if you notice any **changes or problems with your vision** such as eye pain, blurriness or the appearance of halos around lights.
- If you have an **eye disease**, make sure you understand its symptoms, progress and treatment options. Follow your doctor’s instructions, take medications exactly as prescribed, see your doctor regularly, and report any problems immediately.

What Should I Ask the Doctor?

During a comprehensive eye examination it may be difficult to remember all the information the doctor needs and how to get as much information as possible from your eye care professional. A little planning can make the exam better for both the doctor and the patient.

Before the exam, make sure you have information about your general health and health history readily available so that you can fill out any necessary forms. Write down any medications you are currently taking

and any questions you have. It can help to bring a friend or relative to the doctor’s office.

If you are diagnosed with an eye disease:

- Request that the doctor explain the disease, its symptoms, progress, treatment options and ongoing care.
- Ask for explanations of anything that is not understood, and for further written information to read after the visit.
- If medication is prescribed, ensure that you know exactly how to take it and are aware of any side effects. Ask about possible drug interactions.
- If surgery is recommended, make sure you understand what will happen, and what must be done before, during and after the procedure.
- Know when you should come for a return visit.
- If you have already lost some vision, inquire about vision rehabilitation and resources. ■

Healthy “Vision” Foods

In addition to exercising routinely, protecting the eyes and getting regular eye exams, eating certain foods can help maintain vision health.

Include these in your diet:

- Dark green, yellow and orange fruits and vegetables. These contain carotenoids which may defend against a number of medical conditions, including age-related macular degeneration (AMD). **Lutein and zeaxanthin** are two especially important carotenoids related to vision health. Lutein is found in dark, leafy greens such as spinach, collard greens and kale, as well as in okra, broccoli, papaya, oranges, kiwis, mangoes, green beans, peaches, sweet potatoes, lima beans, squash, red grapes and green bell peppers. Egg yolks also contain lutein. Yellow corn, honeydew melons, squash, oranges, mangoes, kale, apricots, peaches and orange bell peppers are good sources of zeaxanthin.
- Fruits and vegetables abundant in **vitamin C** including green peppers, citrus fruits, tomatoes, broccoli, strawberries, sweet and white potatoes, leafy greens and cantaloupe.
- Eggs, fortified cereals, fruit, wheat germ, green leafy vegetables, nuts, nut oils, vegetable oils and whole grains. These all contain **vitamin E**.
- Wild salmon, tuna, sardines, walnuts and flaxseed oil. These are good sources of **omega-3 fatty acids**.

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- **Whole grain** versions of rice, bread and pasta that contain complex carbohydrates which are metabolized more slowly and are healthier than their “white” counterparts. (White rice, bread and pasta have a high glycemic index meaning that the carbohydrates are broken down rapidly into glucose or blood sugar. They provide quick energy but contain few nutrients and little fiber, and in large amounts they may damage cells. Some studies have shown that eating foods with a high glycemic index may increase the risk of developing AMD.) ■

Eye Disease Statistics

- Age-related macular degeneration (AMD) is the leading cause of vision loss in the U.S. for people over 60 years old.
- Approximately 1.8 million Americans age 40 and older have advanced AMD, and another 7.3 million people with intermediate AMD are at substantial risk for vision loss.
- The government estimates that by 2020 there will be 2.9 million Americans with advanced AMD.
- AMD is more common in Caucasians than in other races.
- In the U.S., an estimated 2.2 million people age 40 and older have glaucoma, and of these, as many as 120,000 are blind. Another two million people may have the disease and not know it, and three to six million Americans have above normal eye pressure that could lead to glaucoma. (Johns Hopkins White Papers, Johns Hopkins Medicine, 2008).
- Glaucoma is the leading cause of blindness among African Americans and Hispanics in the U.S.
- African Americans are several times more likely to develop glaucoma than Caucasians and are at a greater risk of blindness from the disease.
- Worldwide, an estimated 66.8 million people are visually impaired due to glaucoma, and an estimated 6.7 million are blind.

What is Age-Related Macular Degeneration (AMD)?



AMD is a common eye disease associated with aging that gradually destroys sharp, central vision. The retina is the very thin tissue that lines the back of the eye and contains the light-sensing cells that send visual signals to the brain. Sharp, clear, “straight ahead” vision is processed by the macula, which is the central part of the retina. When the macula is damaged, many daily activities such as driving, reading and recognizing faces become increasingly difficult.

There are two forms of AMD: dry and wet. People can have both forms, and AMD can affect one or both eyes. The disease may progress slowly or rapidly. Dry AMD may or may not change to the wet form, but all wet AMD is considered advanced and is always preceded by dry AMD.

Dry AMD is the most common form of the disease, diagnosed in 85-90 percent of cases. Yellow deposits called drusen form and accumulate under the retina. Over time, drusen may increase in size and number, and are associated with deterioration of the macula and the death of light-sensing cells. This results in a blurring or spotty loss of clear, straight-ahead vision. In **wet AMD** abnormal blood vessels grow behind the macula. These can leak fluid and blood and result in scarring and potentially, rapid, severe damage to the macula. Wet AMD accounts for approximately 10 percent of the cases, but results in 90 percent of legal blindness. A classic early symptom of wet AMD is that straight lines appear wavy.

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Common treatments for wet AMD include:

Macugen[®] blocks vascular endothelial growth factor (VEGF), a protein that promotes the blood vessel growth associated with wet AMD. Macugen is administered through regular injections, approximately every six weeks, for up to two years, and has been shown to reduce the risk of moderate vision loss.

Lucentis[®] is an antibody fragment that binds to and inhibits the activity of VEGF. When injected monthly, Lucentis has been shown to maintain vision in more than 90 percent of patients.

Avastin[®], a drug manufactured by the same company that makes Lucentis (Genentech, Inc.), has been used by some physicians as an “off-label” treatment for AMD, but is actually a cancer therapy. Avastin costs much less than Lucentis, and many physicians believe these drugs are equally effective. In 2008, the National Eye Institute (NEI) of the National Institutes of Health began clinical trials (Comparison of Treatments Trials or CATT) to study the relative efficacy and safety of Avastin and Lucentis.

Photodynamic therapy (PDT) using **Visudyne**[®] (verteporfin) treats the blood vessels characteristic of wet AMD. PDT is most effective with a type of wet AMD called predominantly classic subfoveal, with well-defined areas of abnormal blood vessel growth and bleeding.

A potential treatment for wet AMD is Bevasiranib which was developed by Acuity Pharmaceuticals and is now in clinical trials. Bevasiranib also targets VEGF.

Currently, there is no treatment or cure for **dry AMD**. However, in 2001, the NEI’s Age-Related Eye Disease Study (**AREDS**) found that taking a specific high dose formula of vitamins C and E, beta-carotene, zinc and copper supplements (**AREDS** formula) significantly reduced the risk of progressing from intermediate AMD to advanced or wet AMD. The study showed no benefit for those with early stage AMD. The antioxidant vitamins and minerals in the **AREDS** formula help maintain healthy cells and tissues and may prevent damage in the macula. NEI has begun **AREDS-2 trials** focused on the addition of lutein, zeaxanthin and omega-3 fatty acids to the original **AREDS** formula. Researchers are interested in the effect of these supplements on the progression to advanced AMD and/or moderate vision loss in those at risk of progression. Participants will also be offered variations on levels of beta-carotene and zinc that were included in the original **AREDS** formula. Scientists will follow up for at least five years.

Retaane[®] (anecortave acetate) was designed to inhibit the blood vessel growth in wet AMD, but after the conclusion of **clinical trials**, its manufacturer, Alcon, decided instead to conduct a three-year study to test the ability of Retaane to prevent dry AMD from progressing to the wet form. Retaane is administered behind the eye through a tube, and it requires fewer treatments (usually once every six months) than currently available injections. ■

What is Glaucoma?

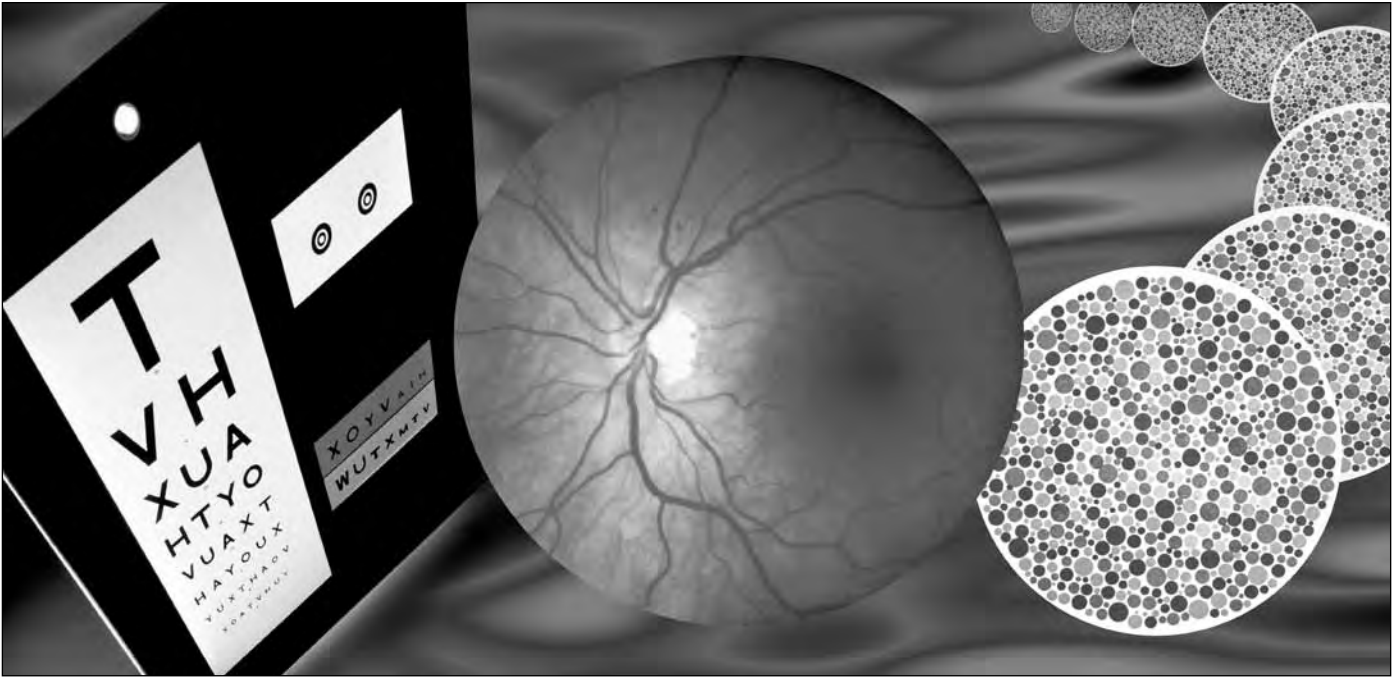
Glaucoma is actually a group of eye diseases in which the optic nerve is damaged. This optic nerve damage usually occurs in the presence of high eye pressure. However, it can take place with normal or even less than normal eye pressure. Glaucoma can lead to vision loss and possibly blindness.

Open-angle glaucoma is by far the most prevalent form of the disease. In this type of glaucoma, fluid in the eye does not drain properly and eye pressure builds. Usually there are no symptoms, and peripheral vision is lost first, so even that may not be noticed. Although this chronic condition is incurable, vision loss can be prevented through early detection and treatment. Less frequently, open-angle glaucoma is diagnosed with nor-

mal or below normal eye pressure. Some experts believe the damage in these cases may be a result of increased blood flow to the optic nerve. **Closed-angle glaucoma** is a relatively rare, acute form of the disease in which eye pressure builds suddenly and can cause eye pain, nausea, vomiting, headache, blurred vision and the appearance of halos around lights. People experiencing any of these symptoms need to seek immediate medical attention.

Common treatments for glaucoma include mainly eye drops and sometimes pills. There are a number of different categories of eye drops, but all are used to either decrease the amount of fluid in the eye or improve

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its outward flow. Laser surgery, in which a laser is directed toward various parts of the eye to reduce pressure, may also be used to treat the disease. Normally, conventional filtration surgery is used as a therapy for glaucoma after other treatment strategies, such as medications and laser surgery, have failed. It is most often performed with the open-angle form of the disease.

Researchers continue to investigate **potential treatments** for glaucoma including improved medications and better surgical methods aimed at decreasing eye

pressure. However, vision loss in glaucoma is actually caused by damage to the optic nerve and can sometimes occur in the presence of normal or below normal eye pressure. Therefore, other investigations are focused on protecting the remaining retinal ganglion cells (RGCs) in the optic nerve, called neuroprotection, and on possible growth of new cells or neuroregeneration. Some scientists believe a vaccine may be able to counteract damage to the optic nerve and potentially lead to cell repair and renewal. Other research is aimed at using adult retinal stem cells to “grow” new RGCs to replace those that have died. ■



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