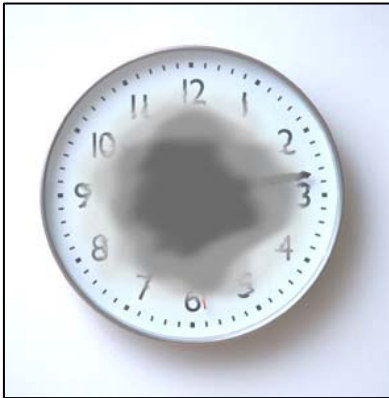


# AGE-RELATED MACULAR DEGENERATION

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## Overview



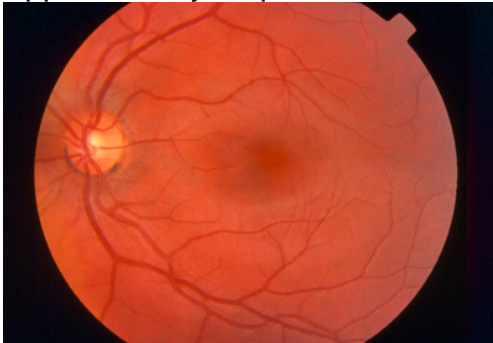
Age-related macular degeneration (AMD) is a progressive degenerative disease of the retina, which is the leading cause of blindness in people aged 55 and older in the United States. It affects more than 10 million Americans, more than cataracts and glaucoma combined. Significant improvement in treatments over the past several years have made living with AMD and keeping functional vision more possible. It is important to be aware of symptoms of this disease as you pass age 55 so you can seek medical attention if it

develops. Early detection and treatment can help you keep your central vision.

## Types of Age-Related Macular Degeneration

There are two basic types of macular degeneration: “dry” and “wet”.

Approximately 90 percent of the cases we see are the “dry” (atrophic) type.

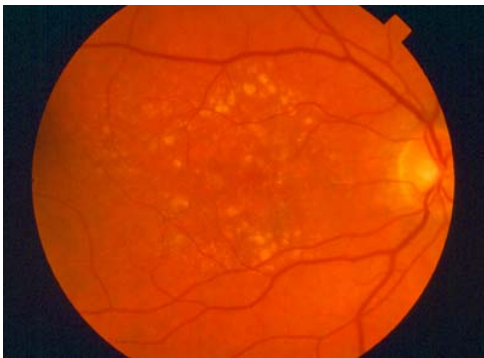


**Normal retina**

## Dry AMD

The dry form of AMD occurs when the central retina deteriorates with age. As it deteriorates, small yellow waste deposits, called **drusen**, accumulate underneath the retina at the same time as the pigmented layer under the retina begins to break down. The loss of pigment and the build up of drusen damage your central vision.

- How much central vision you lose depends on how much drusen builds up and how much pigment has been lost.
- Dry AMD tends to progress slowly over a number of years and in many cases, people retain functional vision.
- However, sometimes the dry changes are severe or the disease will change into the “wet” variety without warning.



Retina with Macular Degeneration

## Wet AMD

The wet type of AMD is always preceded by the “dry” type. It causes damage to the eye much more quickly and can cause serious vision loss within months or weeks. Approximately 10 percent of cases of dry macular degeneration progress to the wet type. In wet macular degeneration, the eye grows abnormal blood vessels that bleed and leak fluid into the macula. The fluid builds up, causing the macula to become distorted, which prevents the retina from functioning properly.

- Straight edges or objects may look wavy, because the macula is no longer smooth.
- Everything may be blurred and you may develop blind spots due to blood or fluid under the macula.
- Eventually, without treatment, scar tissue can develop and permanently damage your central vision.
- Treatments for wet AMD have improved over the past several years and many people who were previously untreatable are now candidates for treatment.

## Symptoms

The symptoms are similar for both types of AMD. However, symptoms are more serious and develop much more quickly with wet macular degeneration. Dry macular degeneration progresses more slowly. If you think you have wet macular degeneration, contact us right away. **Early detection and treatment can help you keep your central vision.** Symptoms may include:

- Your central vision becomes dim or blurry.
- Flat or level objects may look wavy or crooked or smaller than they really are.
- Blurred or blind spots develop in the center of your visual field combined with a drop in the sharpness of your central vision. In the dry form this happens very gradually. In the wet form vision loss happens quickly.
- As disease progresses, you may not see well enough to read or drive.

## Screening and Diagnosis

We can schedule a general eye exam for you in either our Optometry or Ophthalmology departments. However, if you have sudden vision changes, especially if you have a family history of macular degeneration, contact us to schedule an urgent appointment in Ophthalmology.

A screening exam for AMD will include some or all of the following:

- **Ophthalmoscopy.** We use a strong light and magnifying lens to examine your retina for signs of macular degeneration. This allows us to see drusen and any blood or scarring. We may also photograph the eye during this exam.
- **Visual Acuity Test.** Just like a regular eye exam, this tests the strength of your central vision by requiring you to read letters on a wall chart some distance away.
- **Amsler Grid.** An Amsler Grid can detect wet macular generation. The grid consists of straight lines with a dot at the center. The lines near the center dot will appear wavy or curved instead of straight if you have wet macular degeneration. We may give you a grid to take with you so that you can watch for any vision changes at home.
- Some additional diagnostic tests, including a **fluorescein angiogram** or computerized eye scan called **Optical coherence tomography (OCT)**, may be performed if wet macular degeneration is suspected.

## Additional Resource

[Fluorescein angiogram](#)

## Causes and Prevention

AMD is connected to family history of the disease and the natural aging process. AMD is caused by deterioration of the central portion of the retina, called the macula. The retina is the nerve layer that lines the back of the eye and converts light into electrical signals that are sent to the brain. These signals are

interpreted by the brain as images. The macula ensures that we can focus clearly, particularly when looking straight ahead. A healthy macula is important for activities like driving and reading.

Smoking, chronic sun exposure and poor nutrition can increase your risk of developing macular degeneration. To reduce your risk of developing AMD:

- **Wear sunglasses** to block harmful ultraviolet sunlight rays (UVA and UVB).
- **Eat fresh fruits and dark green leafy vegetables**, such as collard greens and spinach.
- **Take a vitamin supplement** specifically for your eyes. For example, studies have shown that multivitamins with the “AREDS” formula, which contain beta-carotene and zinc, may be able to slow the progression of symptoms in people with advanced macular generation. Check with us to make sure that they are appropriate for you. Some formulas, for example, are not appropriate for smokers or for ex-smokers.
- **Quit smoking.** Studies suggest that smoking more than doubles your risk of developing AMD.

## **Treatment for Dry Macular Degeneration**

**There is no cure or treatment for dry macular degeneration** at the moment. We recommend that you follow lifestyle and nutrition advice including wearing sunglasses, eating dark leafy vegetables and fruit and quitting smoking. You should also:

### **Monitor your vision with and Amsler Grid**

The Amsler Grid is a screening test that is used to assess your macula (the center of your retina). You should print a copy of the [Amsler Grid](#) and administer the test at home.

The grid has horizontal and vertical lines, with a dot in the center, printed on black or white paper. While staring at the dot, you should look for wavy lines and missing areas of the grid. We are interested in tracking the following:

- Are you able to see the corners and sides of the square?
- Do you see any wavy lines?
- Are there any holes or missing areas?

If the lines of grid do not appear straight and parallel or there are missing areas, we will examine the back of your eye (macula) very closely. If you notice any sudden vision change, such as flashing lights or floaters, you should come in for a dilated eye exam, even if the Amsler Grid looks normal.

## Consider taking multivitamin supplements

Scientists are still debating whether taking vitamin and/or mineral supplements could help prevent, treat or cure certain eye conditions. Some early scientific studies seemed to show that supplements had the potential to prevent or slow the progression of cataract and AMD. One such study is The Age-Related Eye Disease Study (AREDS), sponsored by the National Eye Institute (NEI), one of the Federal government's National Institutes of Health. If you are interested in considering multivitamin supplements:

- Review a [summary about AREDS'](#) findings
- Talk to one of us in the Ophthalmology department or to your Primary Care Physician before taking large-dose supplements and follow our dosage recommendations carefully. Some supplements may interfere with each other or other medications.
- Smokers and ex-smokers probably should not take beta-carotene, as studies have shown a link between beta-carotene use and lung cancer among smokers.

## Additional Resources

[Monitor your vision with an Amsler Grid](#)

Consider taking the multivitamin supplements by reviewing the [AREDS study](#)

## Treatment for Wet Macular Degeneration

There are a number of **effective treatments for wet macular degeneration**, although there is no cure yet.

We will usually refer you to one of our retina vitreous specialists who can recommend the best approach to treating your wet AMD. This may include a combination of treatments or one specific treatment. Sometimes treatment can't restore good central vision, but can slow the vision loss. Response to treatment varies from patient to patient and can even vary between each of your eyes. We will consider treatments such as:

- **Traditional Argon Laser.** During this procedure we use a precise laser to seal the abnormal blood vessels that are leaking into the macula. The procedure can be performed in our Ophthalmology clinic, with local anesthetic; it only takes a few minutes.
- **Photodynamic Therapy (PDT laser).** Photodynamic therapy combines laser treatment with a medicine called verteporfin (Visudyne®) which is activated by light. At the beginning of the procedure we inject verteporfin into the bloodstream. When the medicine reaches the abnormal blood vessels under the macula, we use the light from the laser to activate the drug, which then forms blood clots that seal the abnormal blood vessels. This slows down the buildup of fluid under the retina, the growth of scar

tissue and subsequent vision loss. Photodynamic therapy takes about 20 minutes and can be done in our Ophthalmology clinic.

- **Anti-VEGF injections.** We may recommend injecting anti-vascular endothelial growth factor (VEGF) medicines directly in to your eye. VEGF is a protein that supports the growth of abnormal blood vessels into the macula. These abnormal blood vessels leak into the macula and cause wet macular degeneration. By blocking the effects of VEGF, anti-VEGF drugs, such as bevacizumab (Avastin®) and ranibizumab (Lucentis®), can stop the growth of new abnormal blood vessels, reduce fluid leakage and slow further vision loss.

## Living with Vision Loss

If you have already lost vision, it's important to adjust your lifestyle to maximize the eyesight that you have:

- Choose large print books and magazines.
- Use magnifiers or low vision aides.
- Position lighting so that it is aimed at what you want to see and away from your eyes. Add extra table lamps and floor lamps where more lighting is needed.
- Make sure entry areas and stairs are well lit to avoid falls. Mark these areas with contrasting paint or tape so you can easily see them.
- Use bold lettering and high color contrast materials to make labels and mark switches.
- Talk to us about a referral to a low vision specialist. They can give you further advice on how to adapt your home and lifestyle according to the vision you have.
- Realize that you are not alone. This is a common disease. There is hope that advancements in research will continue to improve our ability to treat this condition.

## Getting Your Care at Kaiser Permanente

If you are diagnosed with AMD, we will focus at first on performing a comprehensive exam that will give us a baseline that we can use to monitor your symptoms. We will also spend time educating you and your family member(s) about the disease and what to expect. We may send you home with an Amsler Grid that you can use to detect any changes in your eyesight that may indicate that your eyesight is getting worse or that you are developing wet macular degeneration. We may evaluate you using advanced scanning and fluorescein photography if any changes occur.

We have Ophthalmology departments at all of our medical centers in Northern California. If you notice a sudden change in your vision you may have developed wet macular degeneration which can cause severe, permanent vision loss very quickly. Call the 24/7 call center (415) 833-2200 and ask to speak to one of our

advice nurses. They will listen to your symptoms and schedule an appointment for you.

If you have other symptoms, or need to schedule an eye exam, you can make a routine eye appointment by calling our call center (415) 833-2200. The call center can also put you through to an advice nurse if you need immediate advice about your eye. Our advice nurses are available 24/7. You can also email your doctor through our [Web site](#). Once you have registered for a user id, you can access your prescription information, look at your lab results, view summaries from previous doctor's visits as well as send a message to your physician.