



225 West Wacker Drive  
Suite 400  
Chicago, Illinois 60606  
800.331.2020  
[PreventBlindness.org](http://PreventBlindness.org)

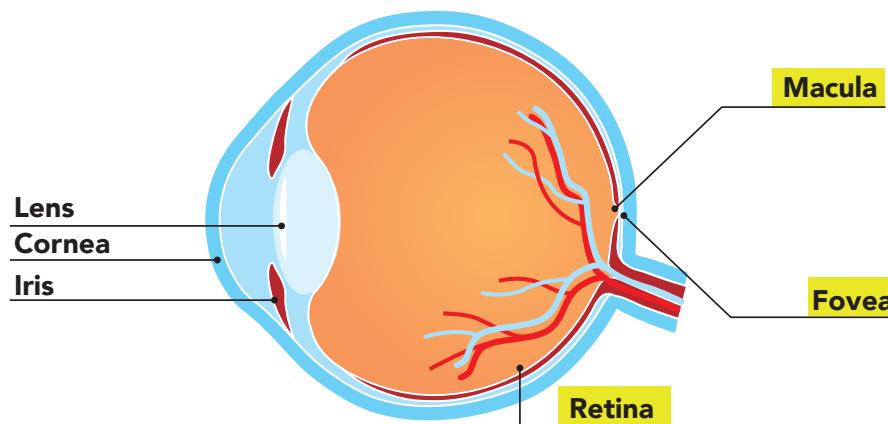
## Geographic Atrophy (GA)

### What is geographic atrophy?

Geographic atrophy (GA) is an advanced form of dry age-related macular degeneration (commonly referred to as AMD). AMD is a disease that affects part of the back of the eye called the **macula**, which helps you to see fine details, such as print in a book and recognizing faces. The macula is located in the central part of the **retina**. The retina is the “film” lining inside the back of the eye which relays the images we see to the brain. Some patients with AMD will develop GA, an advanced form of the dry type of AMD.

In GA, areas of the central macula experience cell death (atrophy). These areas can expand and may result in a dim or dark spots in your central or near central vision. GA often first develops near the **fovea**, the center of the macula, which is the central and clearest part of your vision. Since the most center part of vision may not be affected at first, this may allow some people with GA to keep a small area of central vision leading to possible delays in diagnosis of GA. GA can worsen over time, and permanent loss of central vision can occur.

If you have GA in one eye, you are more likely to develop it in the other eye. It is common for those living with GA to become easily frustrated when performing everyday activities due to the loss of central vision. AMD has been associated with an increased risk of anxiety or depression. It is estimated that 1.49 million people in the United States have a severe form of AMD, including GA.<sup>1</sup>



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# Geographic atrophy (GA)

(continued)



Normal vision



Geographic atrophy

## Types of AMD

**Dry AMD:** The most common form of AMD is dry AMD. This is caused by small yellow deposits called drusen, which form under the retina. They can grow in size and stop the flow of nutrients to the retina. This causes the retinal cells in the macula to die, causing the central vision to become affected. Dry AMD typically progresses more slowly than wet AMD.

**Wet AMD:** Wet AMD generally causes more rapid and, in some cases, more serious vision loss without treatment. The vision loss is linked to leaky blood vessels (hence the term “wet”). In wet AMD, tiny new blood vessels grow under and into the retina. These blood vessels often break and leak, causing fluid or blood to build-up under the retina which distorts vision and may lead to a loss of vision.

## What increases your risk for geographic atrophy?

The following may increase your risk for GA:

- Family history of AMD
- Age – over 60 years old
- Race – Caucasians have a higher rate of AMD
- Light colored eyes
- Smoking
- Genetics
- Heart disease
- Diabetes
- Being female and not using menopausal hormone replacement therapy
- High blood pressure (hypertension)
- High cholesterol
- Obesity
- High sun exposure throughout the life span
- Poor diet with a low intake of fruits and vegetables (specifically dark green leafy vegetables)

## What symptoms could you have with geographic atrophy?

There may be no symptoms in the early stages until the disease progresses to affect the central vision in one or both eyes. Vision changes due to GA may include:

- Difficulty with seeing the detail in your central vision, which is needed for reading up close or overhead signage, crafts, recognizing faces, and driving
- Numbers or letters disappearing or missing when reading
- A dim or dark spot in your central or near central vision
- Trouble seeing in low light
- Needing a lot of extra light to read
- Dull or washed out images or colors

If you experience any of these symptoms, see an eye doctor as soon as possible.

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## How is geographic atrophy diagnosed?

If you are 50 years old or older, you should get a complete eye exam every one or two years or as indicated by your eye doctor. It is important to attend all scheduled eye exams even if you have no noticeable vision problems.

At your eye doctor appointment, consider:

- Preparing a list of questions
- Bringing someone with you to the appointment
- Recording your appointments with the doctor's permission to remember all of what was discussed

It's important to make sure you have all of the answers to your questions to make informed decisions. During the eye exam, the eye doctor will conduct the following tests, among others:

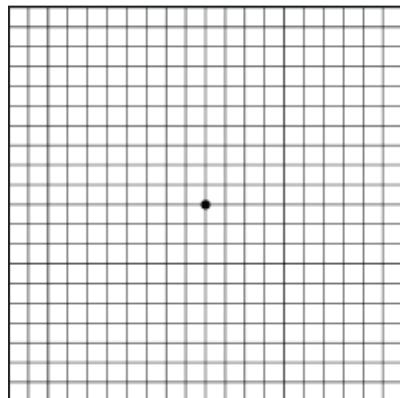
- **Visual acuity:** This test will find out how well you can see through your central vision in each eye. This is the part of the exam when you read an eye chart to see how clearly you see.
- **Dilated eye examination:** The eye doctor will dilate (widen) the pupils of the eyes with eye drops to allow a better view of the back of your eyes (retina and macula). The doctor will look for changes in the macula.

## If your eye doctor suspects or is monitoring you for GA, then the following tests may be conducted:

- **Fundus photograph:** A fundus photograph provides a picture of the retina and may document the amount of drusen or GA to compare at future visits. Sometimes the photograph will be taken with special imaging called autofluorescence, which may help with the identification of GA.
- **Optical coherence tomography (OCT):** The OCT examination provides a cross sectional image of the eye, which can show if the macula is thickened, a loss of tissue, and/or if there is fluid under the retina that may be affecting vision.
- **Fundus autofluorescence (FAF):** FAF takes a photograph of the back of the eye by using lights to illuminate patterns in your retina that cannot be seen in a fundus photograph. This test can be used to detect GA progression.
- **Contrast sensitivity:** Contrast sensitivity is measured in one or both eyes to assess the level of "dimness" in vision. This can be especially useful to explain symptoms when the visual acuity is not really affected.
- **Refraction:** A refractive evaluation may also be performed to assess whether vision can be improved with a change in eyeglass prescription at both distance and near. Depending on the loss of vision, sometimes a stronger or weaker eyeglass prescription may helpful.

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Amsler grid

## How is geographic atrophy treated?

The FDA recently approved two treatments for GA. Both are medicines that are injected directly into the eyeball every 1-2 months. These new treatments can't restore vision that has already been lost, but they may slow the progression of the disease.

In some cases, the use of these medicines has been associated with serious side-effects, including development of the wet type of AMD and severe inflammation that can cause loss of vision. You should discuss with your eye doctor whether these medicines are right for you.

## What can you do if you have or are at risk for geographic atrophy?

If you have or are at risk for GA, here are some things you can do:

- **Home monitoring with Amsler grid:** This test helps detect problems in your central vision. It is important to perform this test on each eye separately every day with your eyeglasses you use for near vision if you need them. An Amsler grid is made of straight horizontal and vertical lines. If you notice the straight lines become appear wavy or broken or there are holes in the grid, tell your eye doctor right away. Download and print an Amsler grid here: [PreventBlindness.org/wp-content/uploads/2011/06/Amsler\\_Grid\\_one-up.pdf](http://PreventBlindness.org/wp-content/uploads/2011/06/Amsler_Grid_one-up.pdf).
- **Home monitoring with other systems:** Other home monitoring devices or programs may be provided by your eye doctor to monitor progression of your GA.
- **Eye exams:** It is important that you get an eye exam as often as it has been recommended by your eye doctor. The exam will determine if you have GA, monitor the progression of your GA, and keep you informed of new treatments.
- **Healthy habits:** Healthy habits can lead to healthy eyes – quit smoking, eat healthy with lots of fruits and vegetables, especially dark green leafy vegetables, wear sunglasses, and stay active. Remember to talk to a doctor before starting any exercise program.
- **Vitamins:** Your eye doctor may ask you to take AREDS (Age-Related Eye Disease Study) vitamins to lower the risk of dry AMD becoming wet AMD. Talk with your health care provider and eye care professional before taking any vitamins. Keep in mind, these vitamins do not bring back vision you have lost or cure AMD.

## Is there anything you can do if you lost vision to geographic atrophy?

If you or someone you know has lost some sight due to GA or other forms of AMD, low vision rehabilitation with a low vision specialist is recommended. A low vision specialist may help you determine tools and skills that can assist you in performing everyday activities with greater ease by maximizing the use of the vision you still have. This may be done with the use of lenses, lighting, and assistive technology or devices, and the use of visual and non-visual skills.

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Your low vision evaluation will also include education and counseling around your mental wellness. A low vision specialist will help determine the right plan based on your needs. Ask your eye doctor to recommend a low vision specialist.

## Visit these support resources if you have lost some sight due to GA:

### Living Well with Low Vision

Living Well with Low Vision is an online resource to educate those with loss of vision on how to maintain their independence and quality of life.

[LowVision.PreventBlindness.org](http://LowVision.PreventBlindness.org)

### ASPECT Patient Empowerment Program

Prevent Blindness developed the ASPECT Program—Advocacy, Support, Perspective, Empowerment, Communication, and Training—to engage individuals in their eye health through storytelling and advocacy in a virtual group setting. The program aims to equip participants with knowledge, skills, and confidence to become advocates for vision and eye health – at the individual, peer-to-peer, community, state, or national level.

[PreventBlindness.org/aspect](http://PreventBlindness.org/aspect)

## How does geographic atrophy affect mental health?

GA can cause loss of vision. For some, loss of vision can lead to feelings of depression, anxiety, and loss of independence. Some individuals may notice a change in their desire to socialize with others, or increased frustration with the additional time it may take to accomplish tasks of daily living. Not everyone who has vision loss will experience mental health symptoms, but if you do, there is help available.

## To help support your mental health as you deal with GA:

### Talk to your primary care doctor, mental health professional, or eye doctor:

**doctor:** Talk to your doctor about any changes to your emotional well-being. Ask your eye doctor questions on how GA will affect your daily life and work. Seek assistance on how to deal with the changes in your life and consider using low vision rehabilitation to maximize the use of the vision you do have.

**Seek support:** Look for support groups of others who are living with GA. MD Support provides a list of support groups near you on their website, [MDSupport.org](http://MDSupport.org). These groups can help you learn about your condition, share your experience, and find support.

**Connect with others and the things that bring you joy:** Stay connected with friends and family to keep you from feeling isolated. Over time, you can find new ways to do the things you love or to discover new hobbies that bring you happiness.

**Exercise:** Physical activity can improve symptoms of depression or anxiety and help you feel better. Talk to your health care professional to determine what exercise routine may work best for you, especially if you have changes to your vision due to GA.

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**Seek vision rehabilitation:** Ask your eye doctor to recommend a low vision specialist. The specialist can help to maximize the use of the vision you have and teach skills to perform tasks differently with your vision loss.

**To learn more about your mental health as you cope with GA, check out the following resources:**

**Vision Loss and Mental Health**

[CDC.gov/vision-health/about-eye-disorders/vision-loss-mental-health.html](https://www.cdc.gov/vision-health/about-eye-disorders/vision-loss-mental-health.html)

**Centers for Disease Control and Prevention (CDC): The Mental Health of People with Disabilities**

[CDC.gov/ncbddd/disabilityandhealth/features/mental-health-for-all.html](https://www.cdc.gov/ncbddd/disabilityandhealth/features/mental-health-for-all.html)

**American Psychological Association: Depression**

[APA.org/topics/depression](https://www.apa.org/topics/depression)

**National Alliance on Mental Illness (NAMI): Signs and symptoms**

[NAMI.org/About-Mental-Illness/Warning-Signs-and-Symptoms](https://www.nami.org/About-Mental-Illness/Warning-Signs-and-Symptoms)

**Additional resources:**

**GuideMe Resource for Age-related Macular Degeneration**

GuideMe is a resource for those who have been recently diagnosed with AMD, their family members and caregivers. Learn more at [GuideMe](https://www.preventblindness.org/guideme). [PreventBlindness.org](https://www.preventblindness.org).

If you are at risk for or living with GA, know there is support and are resources to help you. The information and resources shared above can guide you through your journey.

**Reference:**

1. Rein D, Wittenborn J, Burke-Conte Z, et al. Prevalence of Age-Related Macular Degeneration in the US in 2019. *JAMA Ophthalmology*. doi:10.1001/jamaophthalmol.2022.4401. Published online November 03, 2022.