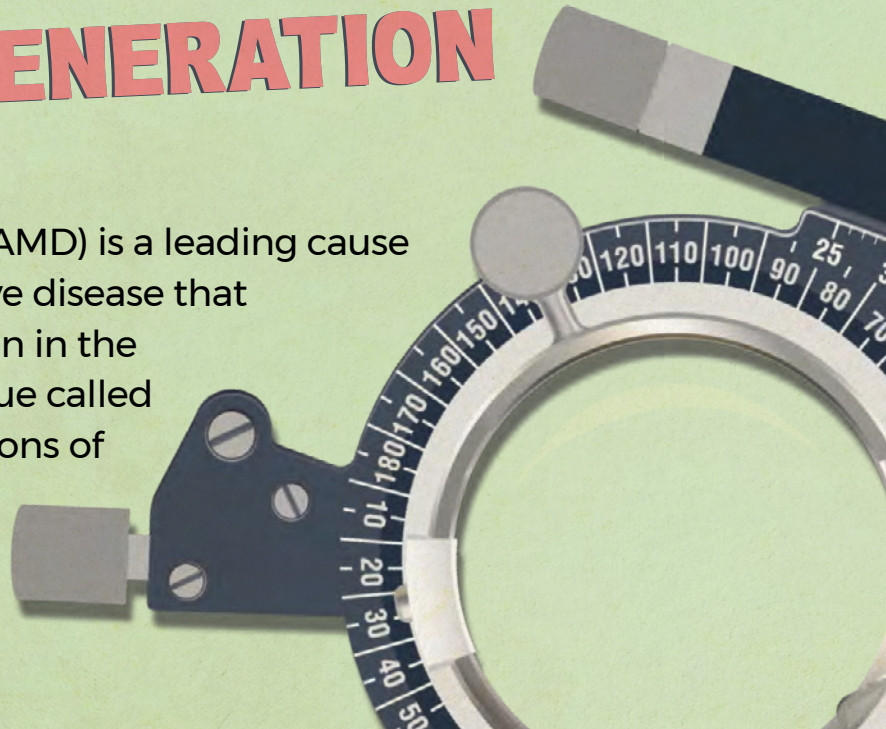


# Taking a Closer Look at AGE-RELATED MACULAR DEGENERATION

Age-related macular degeneration (AMD) is a leading cause of vision loss in older adults. It's an eye disease that damages the macula — a small region in the center of the eye's light-sensitive tissue called the retina. The macula contains millions of cells that give us sharp, central, and color vision — the vision that we use to write, read, watch TV, drive, and do other everyday tasks.

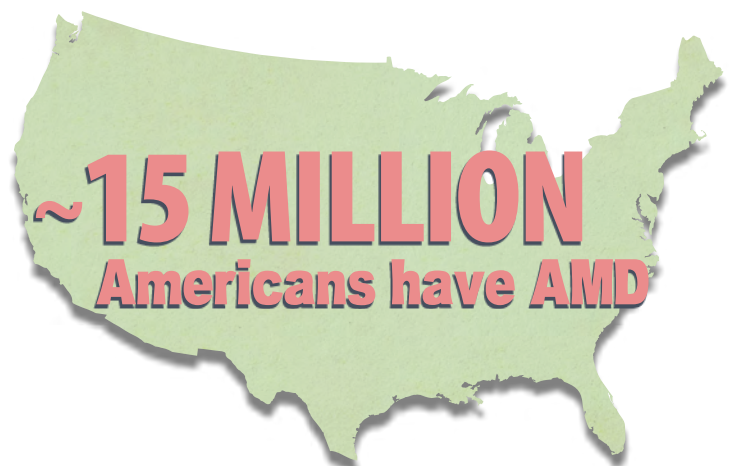


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Because AMD is a progressive disease, it can worsen with time. However, it advances differently from person-to-person and from eye-to-eye. Some people may go years without noticeable symptoms, while others experience rapid vision loss.

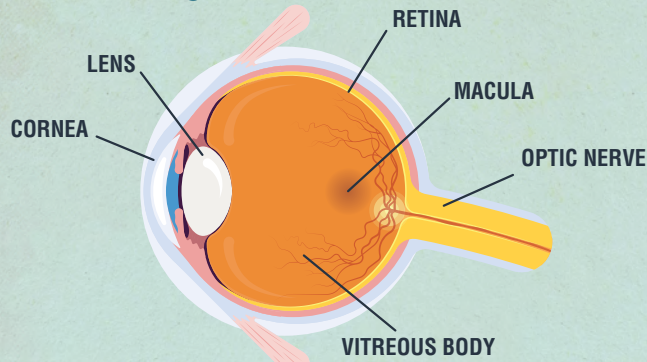
AMD rarely causes complete blindness, but it can lead to legal blindness without proper treatment. How quickly the disease progresses and how much vision loss it causes usually depends on the type of AMD.





# What Are the Types of AMD?

## Normal Eye

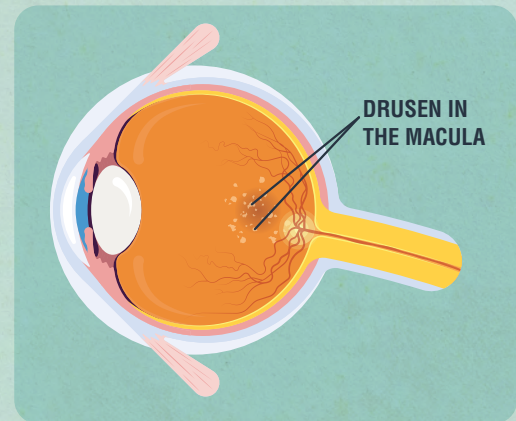


**1 in 10**  
people with dry  
AMD will progress  
to wet AMD

## “Dry” AMD

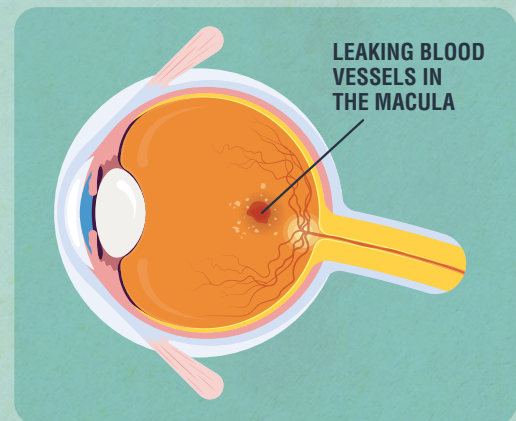
Dry AMD is the most common type of AMD. As we age, small yellow deposits, called drusen, can form and collect under the macula. If too many drusen form, the macula thins and dries out, causing damage to its light-sensing cells.

Dry AMD gradually progresses and may advance from early to intermediate, and eventually to the advanced dry or atrophic stage, or to “wet” AMD. Vision loss from early or intermediate dry AMD is not typically severe and may only cause mild loss of central vision. However, advanced dry AMD can cause vision loss that impacts quality of life.



## “Wet” AMD

The advanced wet AMD stage is caused by the abnormal growth of blood vessels under the macula that can leak and cause bulging, swelling, and scarring of the macula and damage to the light-sensing cells. Vision loss can occur rapidly if the center of the macula — called the fovea — is affected. Without treatment, wet AMD can result in legal blindness.







## How Does AMD Affect Vision?

AMD reduces one's ability to see centrally, both near and far. The loss of this central vision can make everyday tasks such as driving, reading, and watching television difficult. It may be hard to recognize faces and adjust from dark to light conditions. However, most people with AMD keep a reasonable amount of their peripheral – or side vision – and can learn to adapt and make the most of that remaining vision.

### EARLY STAGE



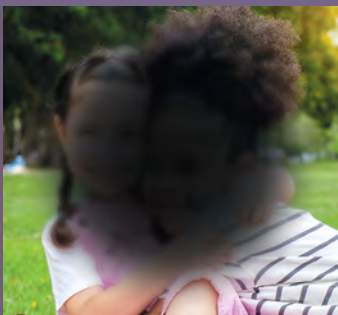
**EARLY STAGE:** There is usually no noticeable vision loss, although it may be hard to read in low light or see small electronic screens. Drusen begin to collect and can be detected during an eye exam.

### INTERMEDIATE STAGE



**INTERMEDIATE STAGE:** As more drusen develop or enlarge, it can be harder to adapt to the dark or see colors. Additional light or magnification may be needed for reading or seeing fine details, and it may get harder to recognize faces.

### ADVANCED STAGE



**ADVANCED STAGE DRY AMD:** Drusen deposits and thinning of the retina can cause blurred or blank spots in central or paracentral (close to central) vision, making it hard to read or drive safely.

**ADVANCED STAGE WET AMD:** When fluid develops in the macula it can cause blurred central vision, straight lines appearing wavy, dark spots in the center of vision, and even objects appearing to move or change shape or color. As wet AMD progresses, the blurred spot will get larger and darker. Because the eye cells that detect color are highly concentrated in the macula, color vision can deteriorate. Wet AMD can also lead to legal blindness without treatment.

# What Causes AMD?

AMD appears to be affected by a combination of genetics, environmental factors, and lifestyle factors:



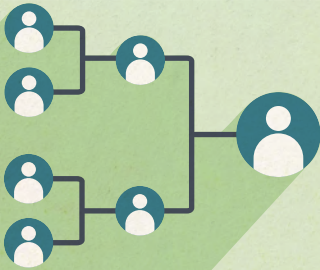
## Age

After age 55 the risk of AMD goes up significantly



## Biological sex

People born female tend to live longer and therefore have a greater risk



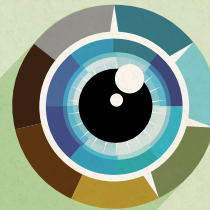
## Genetics

A family history of AMD raises risk



## Race

AMD is more common in Caucasians



## Eye color

AMD is more common in people with light colored eyes, but family history may also explain the association



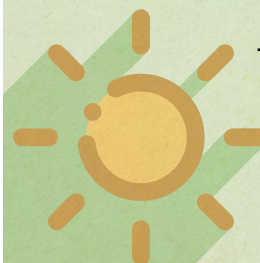
## Diabetes and cardiovascular disease

Uncontrolled high blood sugar, blood pressure, and cholesterol – and previous heart disease – can damage the blood vessels in the macula



## Smoking

Chemicals from smoking can damage blood vessels in the macula. Other than age, smoking is the number one risk factor for AMD



## Sun exposure

The cells of the macula are highly sun sensitive



## Can AMD be Prevented?

While you can't change your age or your family tree, there are many things you can do to help protect your eyes and reduce your risk of developing AMD:



### **Wear sunglasses or wide-brimmed hats**

to shield your eyes from sunlight (note that contact lenses

also offer some protection).



### **Eat fish and nuts containing high levels of omega-3 fatty acids.**

Avoid items with high levels of saturated and trans-unsaturated fats.



### **Eat a diet full of foods that contain vision protecting vitamins and minerals.**

Antioxidants important for eye health — including vitamins C and E — can be found in egg yolks, corn, oranges, squash, and many other fruits and vegetables. Green leafy vegetables contain antioxidants, as well as important carotenoids, like lutein and zeaxanthin.

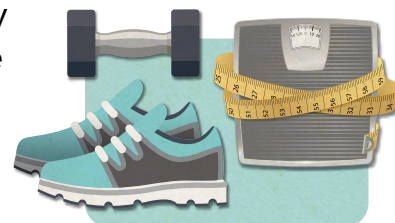
### **Consider supplements that can help provide critical nutrients**

for those who are unable to get them from their diet alone. There are also supplements recommended for people already diagnosed with AMD.



### **Exercise regularly and maintain a healthy weight.**

Research has found a link between obesity and the progression of AMD to late-stage AMD. Obesity can also contribute to heart disease which increases risk.



Work with your health care provider to **control high blood pressure and other cardiovascular risk factors** that are thought to impact the blood vessels supplying nutrients to the retina.

### **Drink in moderation**

since alcohol lowers levels of protective antioxidants.



### **Don't smoke,**

or stop if you do, since smoking also reduces protective antioxidants.



### **Get regular dilated eye exams**

that can detect early signs and symptoms of AMD and allow for earlier treatment.



# How is AMD Diagnosed?

## Dilated Eye Exam

A regular dilated eye exam can detect AMD and monitor its progression. Special eye drops widen or dilate the pupils, and magnifying equipment gives a better view of the retina. This can reveal the buildup of drusen or irregular blood vessels.

The National Eye Institute at the National Institutes of Health (NIH) recommends dilated eye exams every one to two years for:

- Everyone over age 60
- African Americans over age 40 (although at lower risk for AMD, African Americans are at higher risk for retinal degeneration due to hypertension and glaucoma)
- People with a history of glaucoma



*Individuals who have been diagnosed with AMD will need to see their eye care providers more frequently.*

## Optical Coherence Tomography (OCT)

OCT is a sophisticated picture of the inside of the eye. It can detect changes in the thickness of the retina that may be caused by AMD. A newer test called OCT angiography can give additional data on the blood vessels in the macula.

## Visual Field Test

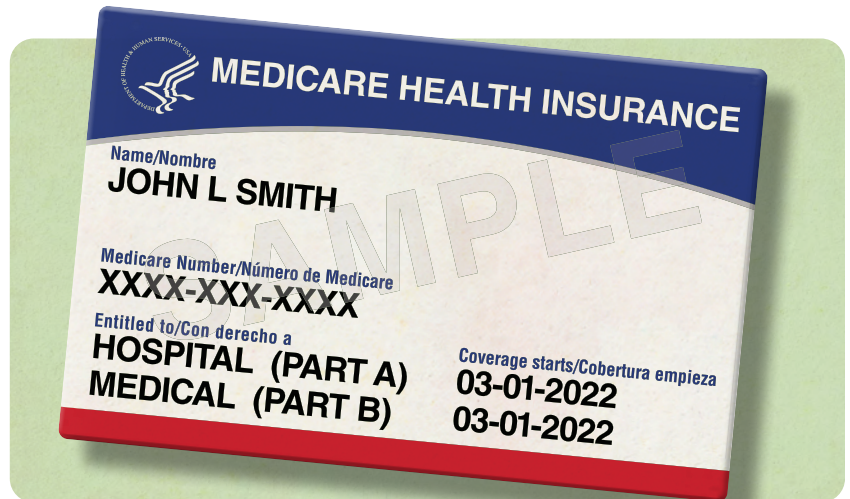
There are a number of different visual field tests, all designed to measure central and peripheral vision.

## Angiography

These tests involve injecting dye into a vein in the arm and taking pictures of the eye as the dye passes through the blood vessels of the retina.

# What is Covered by Medicare?

**Medicare Part B (Medical Insurance)** through **Original Medicare** covers certain screenings, diagnostic tests, and treatments. Cost-sharing varies for each service so it's important to discuss with eye care providers in advance to know what is covered.



## ORIGINAL MEDICARE DOES Cover

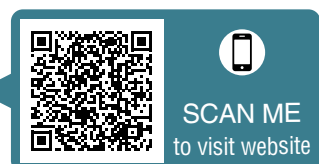
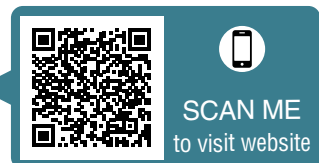
- ☒ A visual acuity screening at the “Welcome to Medicare” preventive visit that uses an eye chart to test your distance vision
- ☒ **Some of the cost of care** for eye injuries, surgeries, treatments, and exams for people at high risk of eye disease including certain diagnostic tests and treatments for people diagnosed with AMD

## ORIGINAL MEDICARE DOES NOT Cover

- ☐ **Routine eye exams** like dilated checkups and exams for new lenses or eyeglasses
- ☐ Contact lenses or eyeglasses

Many **Medicare Advantage Plans** offer additional vision benefits. If you are at risk for or have been diagnosed with AMD, you may want to shop around to see if there's a plan that's right for you.

Additionally, **Medigap Plans** cover out-of-pocket costs from Original Medicare, such as those associated with Medicare-covered vision services.





# Are There Treatments for AMD?

While there is no cure for AMD, and while there are no treatments for dry AMD, there are a number of treatments for wet AMD that can help slow progression and even help restore lost vision in some patients.

## Anti-VEGF Medications

There are a number of anti-VEGF (vascular endothelial growth factor) medications that work by blocking a protein that promotes new blood vessel growth. These medications can slow or stop vision loss – and in some cases even restore lost vision.

**Anti-VEGF medications can stabilize vision in most and restore vision loss in ~30% of patients**

The medications are regularly injected into the eye – every four weeks to four months depending on the medication. These treatments can be intimidating at first, but it's important not to skip any. Without regular treatments, any improvements could be reversed, and future vision loss can be harder to treat.



## Implantable Miniature Telescope

While this device won't reverse or slow the damage to the macula, they can help people with advanced AMD see better with the help of a miniature telescope implanted in the eye.

## Supplements

Several large studies have proven the vision benefits of a diet full of fruits and vegetables, lean meats, low-fat dairy, and whole grains. These foods provide antioxidants – including lutein and zeaxanthin, vitamin C, vitamin E, zinc, copper, omega-3 fatty acids, and other micro-nutrients that can help prevent and slow vision loss from AMD. For those unable to get enough nutrients in their diets, there are supplements, including the AREDS2 (Age-Related Eye Disease Studies 2) formula of high-dose nutrients recommended by the National Eye Institute.



## Port Delivery System

This tiny, refillable device holds an anti-VEGF medication and is implanted under the surface of the eye. It can hold up to six months of medication that is slowly released over time. While these patients still need to see their eye care provider regularly for monitoring, they will likely only need treatments a couple of times a year to refill the implant.

## Photodynamic Therapy and Laser Surgery

These therapies can destroy abnormal blood vessels in wet AMD, which can help stabilize, but not restore, vision. This therapy is rarely used now that the anti-VEGF medications are available.



## What's on the Horizon for AMD?

It is an exciting time in AMD research with many potential treatments for both dry and wet AMD on the horizon.

### WET AMD

Gene therapy treatments are being studied that could tell the eye how to make its own anti-VEGF medicines.

Combination drugs could deliver anti-VEGF and other AMD medications at the same time, hopefully delivering longer lasting effects.

### DRY AMD

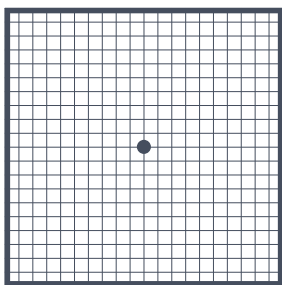
Drugs that target other proteins that attack the retina are currently in clinical trials.

Stem cell therapy may be used in the future to replace retinal cells that die in late-stage dry AMD.

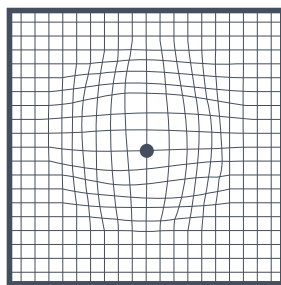
## Why is It Important to Monitor AMD Progression?

If a patient is closely monitored, developing problems may be prevented and the next dose of treatment can be given sooner if needed. In between appointments, patients can monitor their symptoms with:

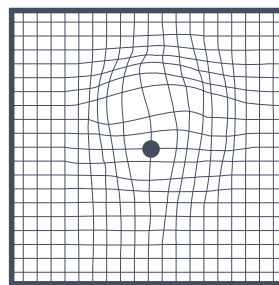
- **At home Optical Coherence Tomography (OCT) devices** that allow patients to take retinal images and upload them for monitoring. If changes are detected, the patient's eye care provider is contacted.
- **Computer tasks and apps** that can detect changes and alert eye care providers.
- **The Amsler Grid:** a checkerboard-like grid (see end of this brochure) that may start to look faded, broken, or distorted in places as AMD progresses. AMD patients can periodically check their vision and report any changes to their eye care provider.



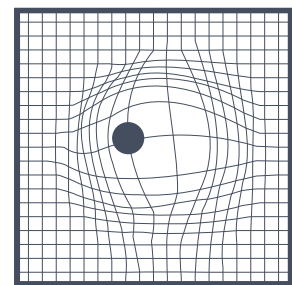
Normal



Early



Intermediate

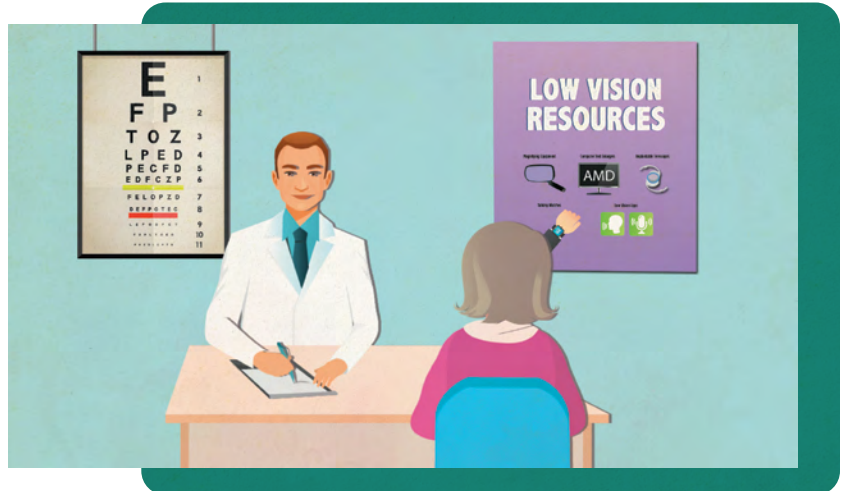


Advanced

# What Support is Out There for People with AMD?

Coping with vision loss can be scary, but there's a lot of help available, and most people can learn to adapt with their remaining peripheral – or side – vision.

- **A low vision specialist** can make recommendations for changes to work and living environments.
- **Low vision devices and tools** such as magnifying devices, handheld computers and apps, and large-print reading materials can improve the ability to see and function.
- **Support groups** can connect AMD patients with others who are going through similar experiences.
- **Organizations can help with transportation** to and from eye care appointments, and with the many expenses associated with care.
- **Mental health professionals** can help for anyone dealing with depression or anxiety.
- **A strong team of healthcare professionals, family, and friends**, can help make the most of living with AMD.
- Many organizations can provide more information about living with AMD and low vision including:



[Bright Focus Foundation](#)



[Foundation Fighting Blindness](#)



[Lighthouse Guild](#)



[Lions Club International](#)



[American Macular Degeneration Foundation](#)



[National Eye Institute](#)



[The Patient Access Network](#)



[Prevent Blindness America](#)



[Research to Prevent Blindness](#)

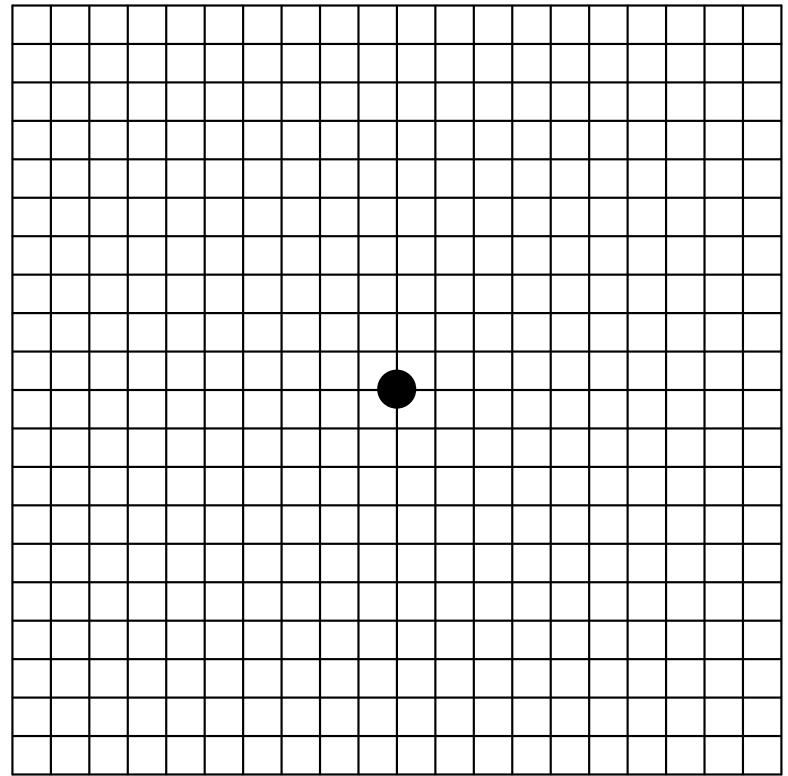


[VisionAware](#)



## Amsler GRID




Hold the grid at a comfortable reading distance (use glasses if needed). Cover one eye and look at the dot in the center of the grid. Note how the lines and squares appear. Do they look straight and even, or do they seem wavy or distorted? Are any of the pieces of the grid missing? Now cover your other eye and follow the same directions. Contact your eye care provider right away if the grid appears abnormal in any way.



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