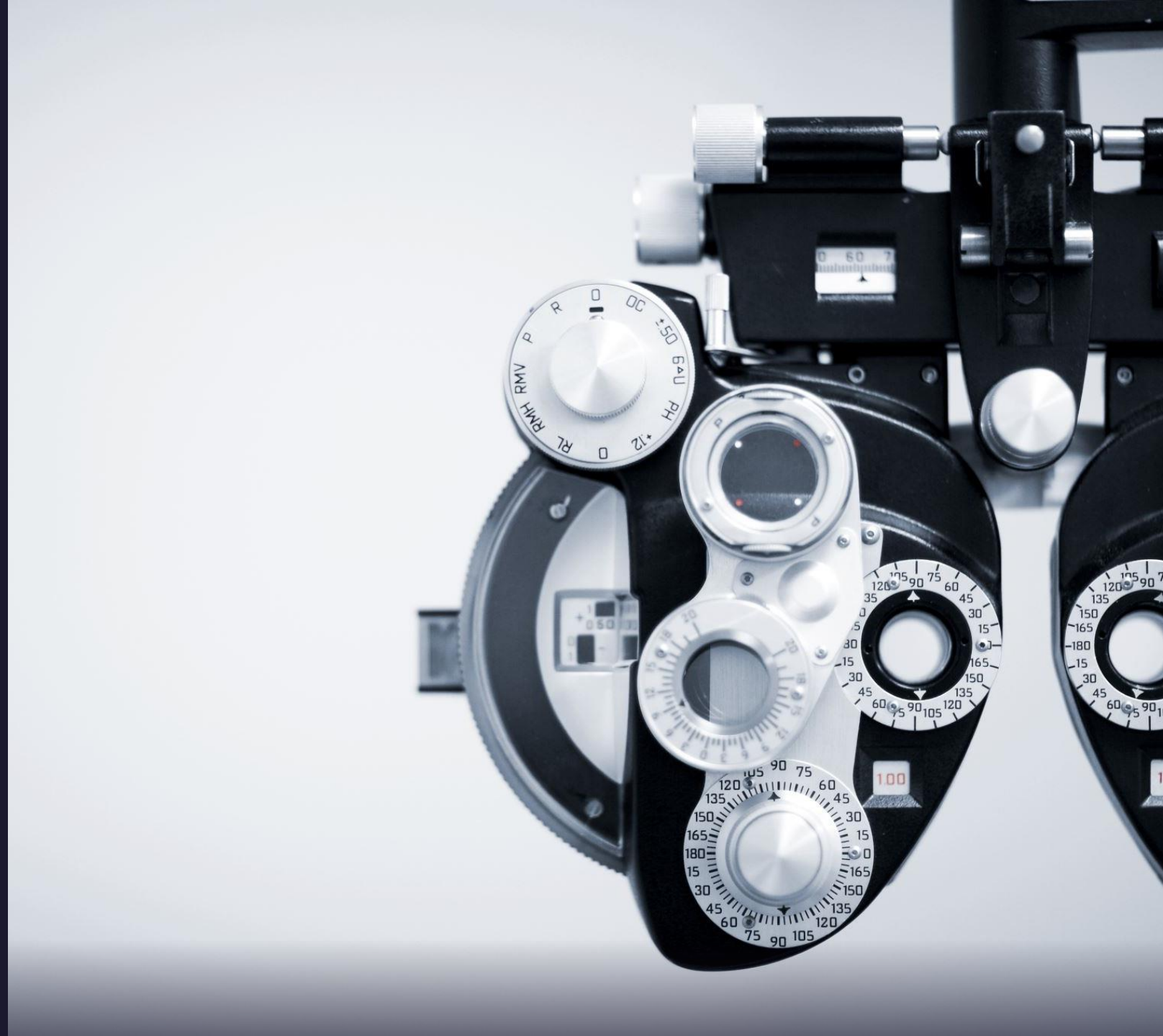
SEE CLEARLY, LIVE FULLY

Managing Age-Related Eye Conditions

Agenda

- Cataracts
- Glaucoma
- Diabetic Retinopathy
- Age-Related Macular Degeneration
- Retinal Detachment



CATARACTS

A clouding of the lens that affects vision

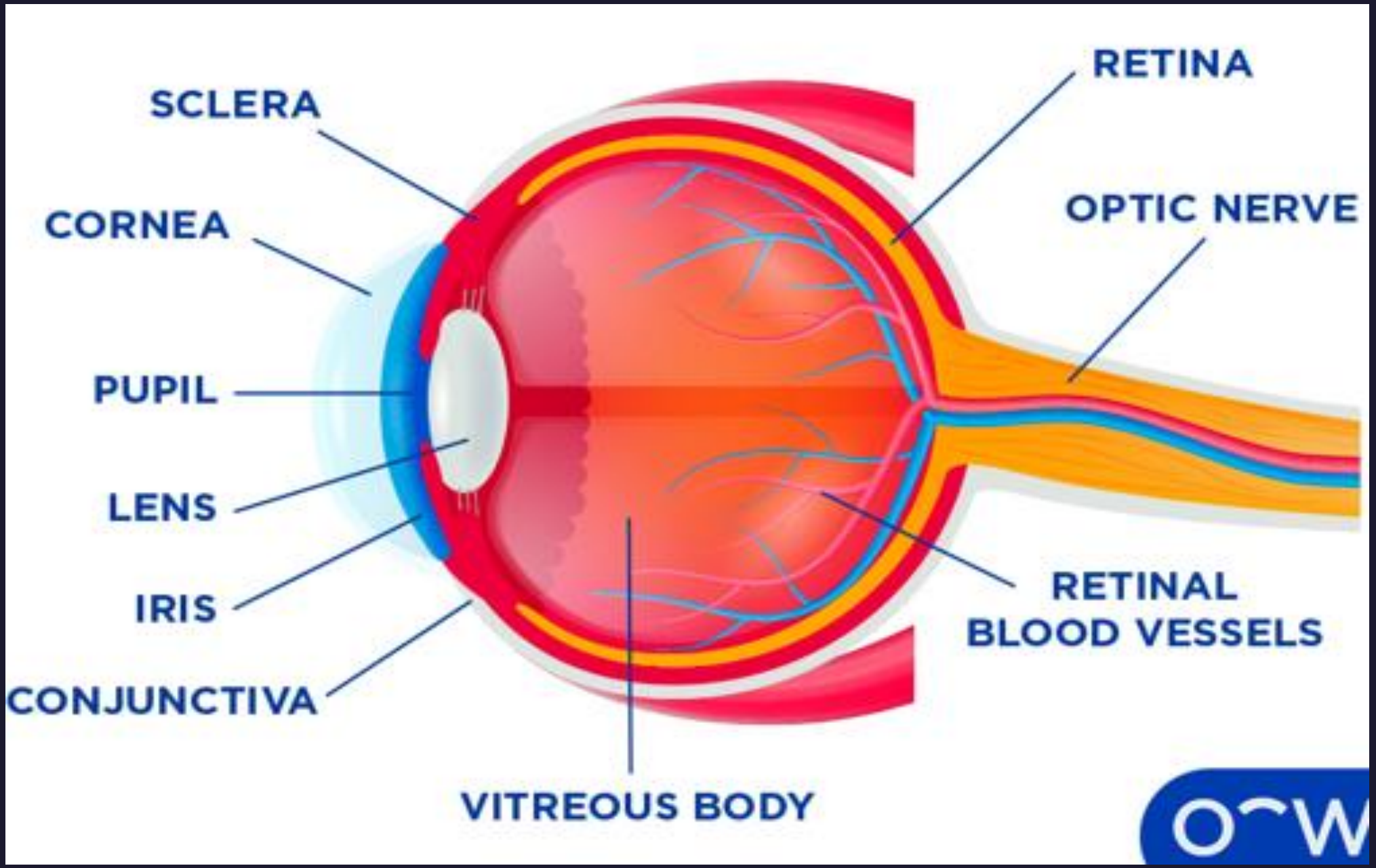
Related to Aging

Occurs in either one or both eyes

CATARACTS

The ***Lens*** is the clear part of the eye that helps focus light, or an image, on the retina.

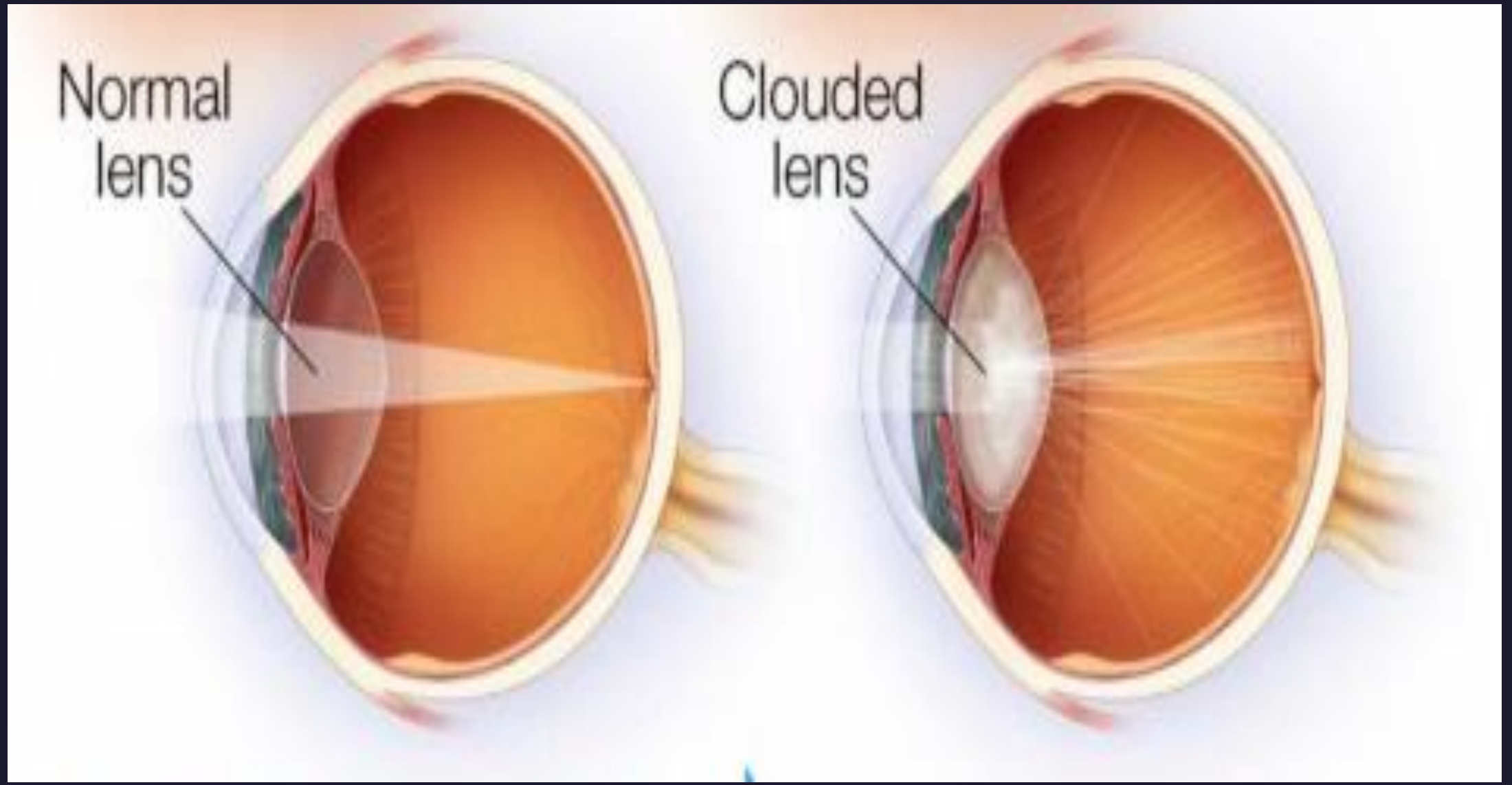
The ***Retina*** is at the back of the eye. It is sensitive to light and sends images to the optic nerve.


SCLERA
CORNEA
PUPIL
LENS
IRIS
CONJUNCTIVA
VITREOUS BODY
RETINA
OPTIC NERVE
RETINAL
BLOOD VESSELS

CATARACTS

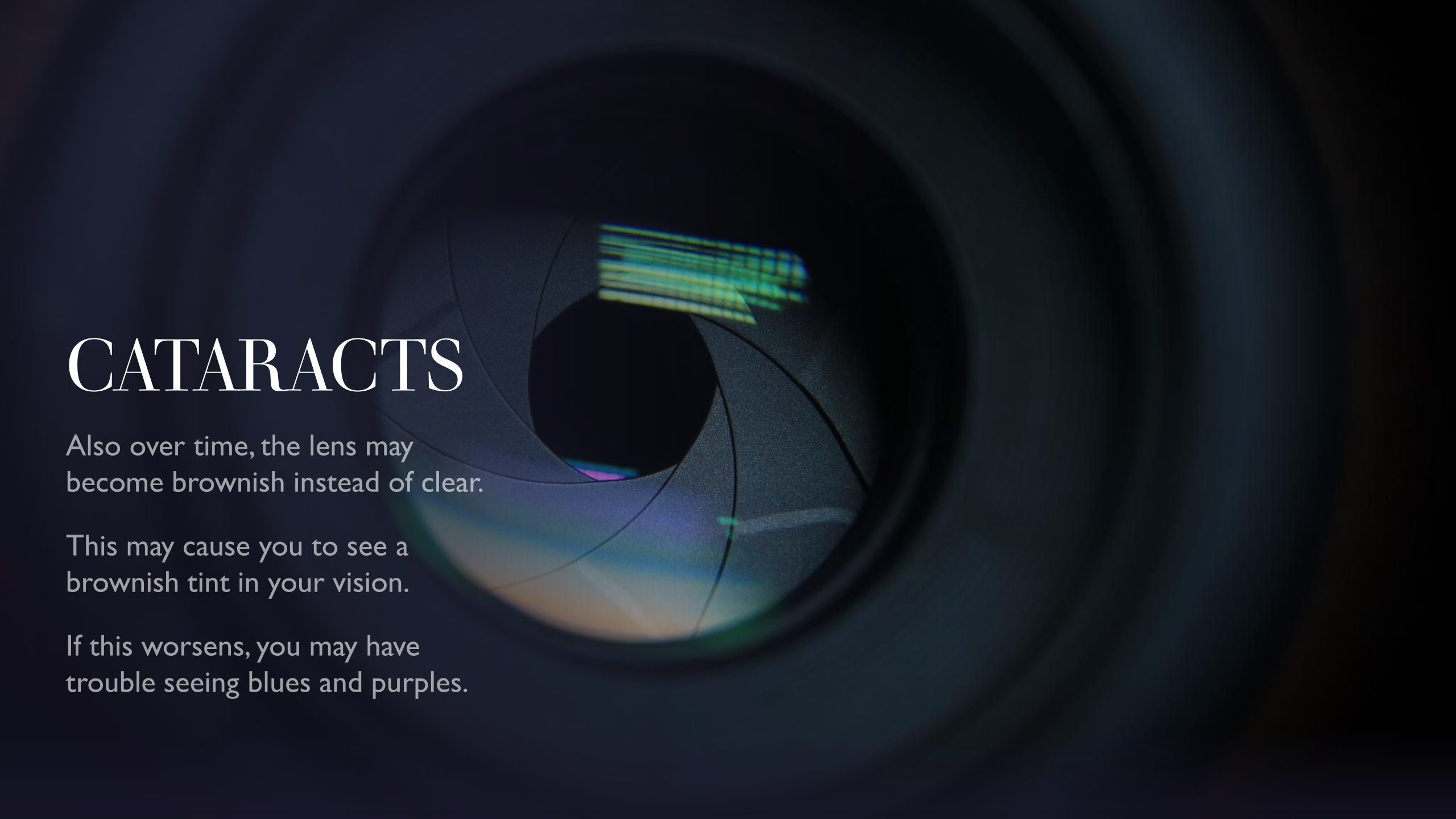
The lens must be clear for the retina to receive a sharp image.

If the lens is cloudy from a cataract, the image you see will be blurry.


Normal lens
Clouded lens

CATARACTS

- The lens is made of water and protein.
- As we age, some of the protein may clump together and start to cloud a small area of the lens. This is a cataract.
- Over time, the area may grow larger and cloud more of the lens, making harder to see.
- When a cataract is small, you probably won't notice any vision changes.
- Cataracts grow slowly.



CATARACTS

Also over time, the lens may become brownish instead of clear.

This may cause you to see a brownish tint in your vision.

If this worsens, you may have trouble seeing blues and purples.

CATARACTS

- Symptoms:
  - Cloudy or blurry vision
  - Colors seem faded
  - Glare – headlights, lamps or sunlight may appear too bright. Also, a halo may appear around lights.
  - Poor night vision
  - Double vision or multiple images in one eye

CATARACTS

- Can occur in the 40's and 50's, but usually don't start to affect vision until the 60's.
- Risk Factors, other than age:
  - Certain diseases, such as diabetes
  - Smoking and/or alcohol use
  - Prolonged exposure to UV sunlight

CATARACTS

- Cataracts can also form after surgery for other eye problems, like glaucoma.
- Cataracts can develop after a trauma or injury to the eye.
- Sometime cataracts can be congenital or inherited.
- Exposure to radiation can also cause cataracts to form.

CATARACTS

- Surgery is the only effective treatment.
- The cloudy lens is removed and replaced with an artificial one.
- Surgery is only done if vision loss is bad enough that it interferes with your everyday activities, like driving, reading, or watching TV.
- If you choose to delay surgery, it will not result in long-term damage to your eye or make the surgery more difficult. There is no rush.
- Sometimes a cataract will have to be removed even if it isn't causing vision problems, if it is interfering with treatment of another eye problem, such as age-related macular degeneration or diabetic retinopathy.

01

Wear sunglasses and a hat

02

Stop Smoking

03

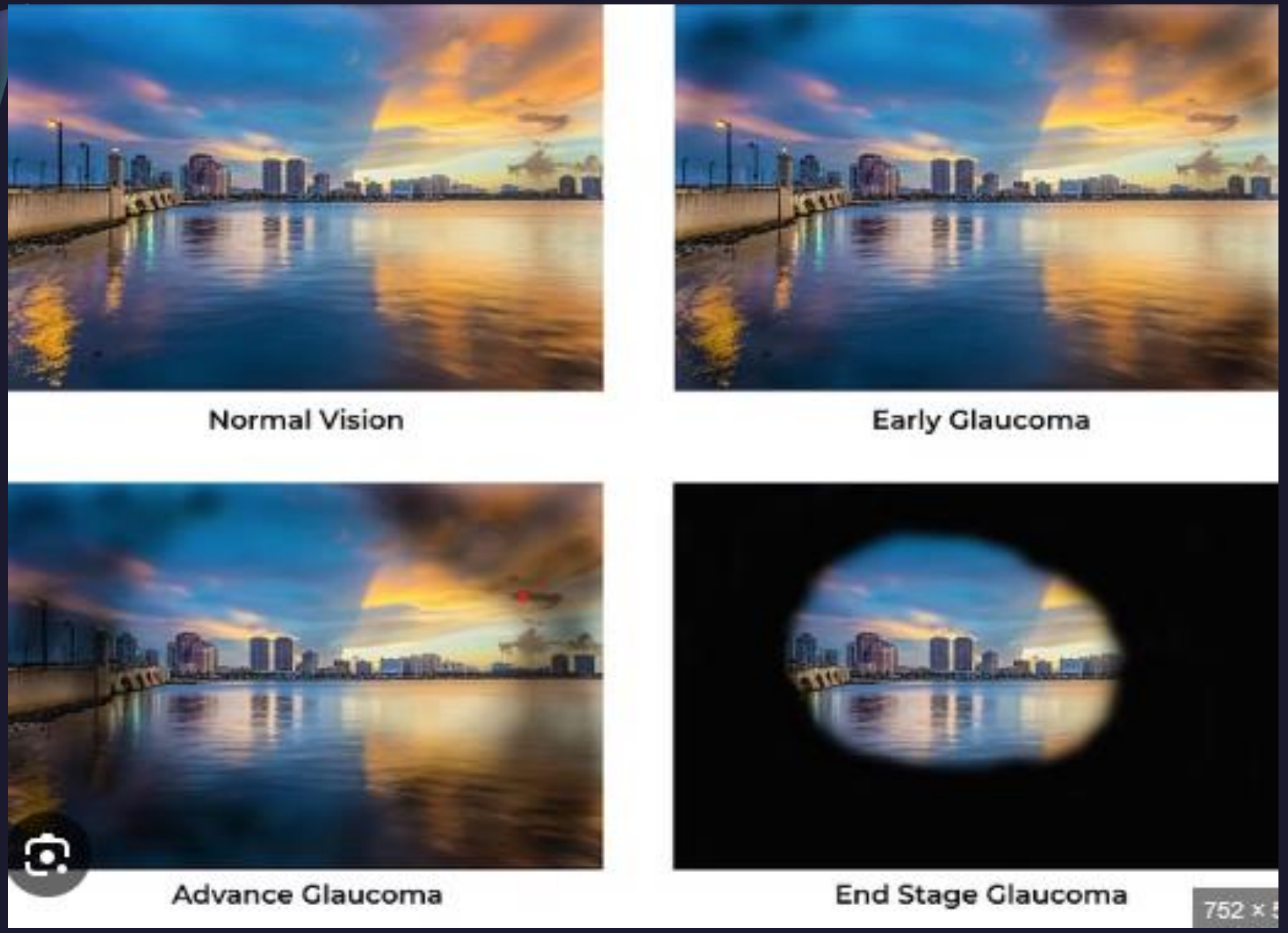
Eat foods high in antioxidants – green leafy vegetables, fruit

04

Have a dilated eye exam at least once a year after the age of 60.

Protecting yourself from CATARACTS

Glaucoma

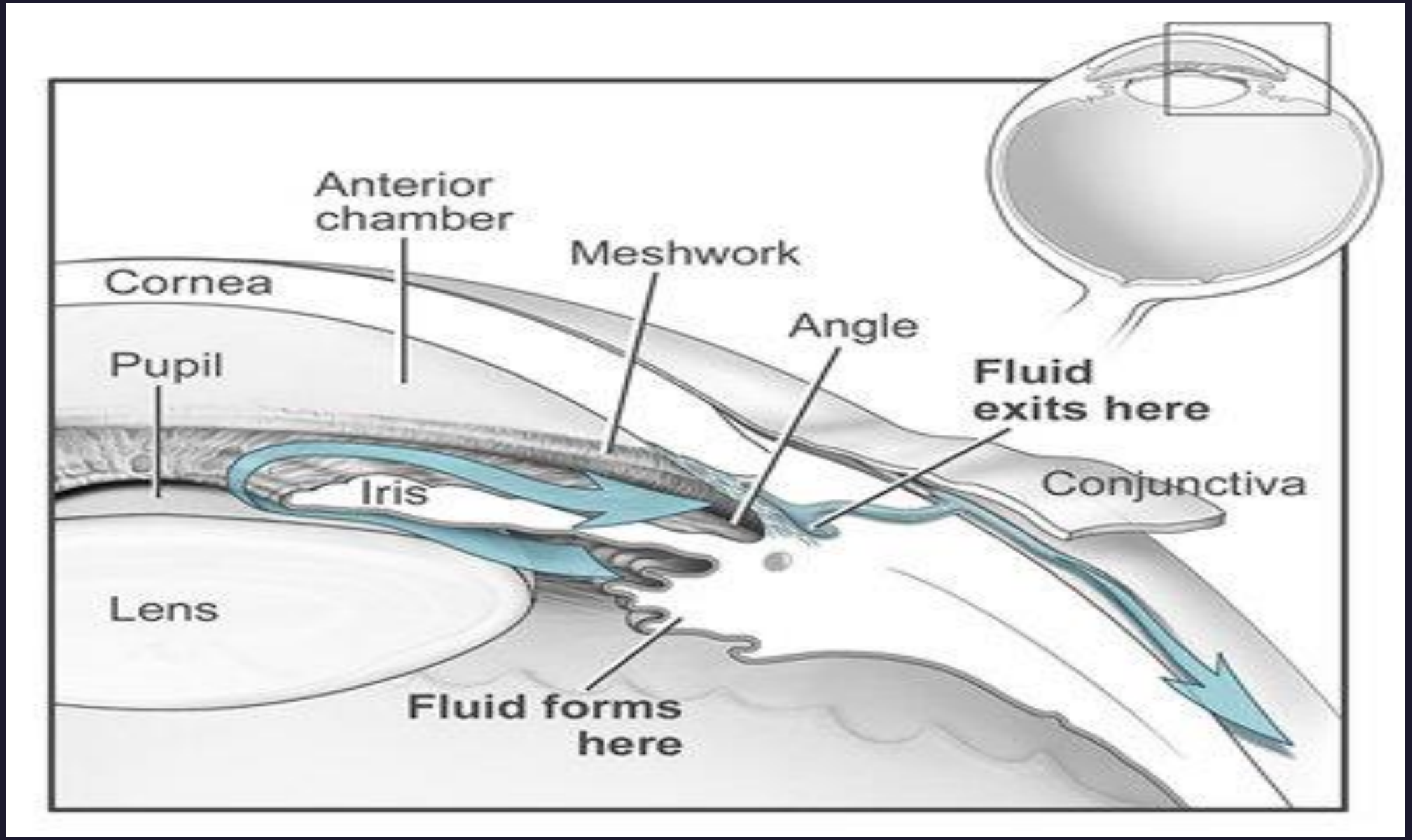

Normal Vision
Early Glaucoma
Advance Glaucoma
End Stage Glaucoma

GLAUCOMA

- Glaucoma is actually a group of disease that cause damage to the optic nerve.
- The optic nerve is a bundle of nerves that carry messages from the eye to the brain.
- At the front of the eye there is a small space where clear fluid flows in and out. This clear fluid feeds nearby eye tissue.
- When the fluid flows too slowly, it creates pressure on the optic nerve.
- This pressure can harm the optic nerve and cause glaucoma.
- This can result in vision loss or blindness.

GLAUCOMA

- Open-Angle Glaucoma is most common
  - In open-angle glaucoma, the clear fluid in the front of the eye passes too slowly through it's draining point. This causes the fluid to build up which increases the pressure inside the eye. If that pressure gets high enough, it can damage the optic nerve.


Anterior chamber
Meshwork
Cornea
Angle
Pupil
Fluid exits here
Conjunctiva
Iris
Lens
Fluid forms here

OTHER TYPES OF GLAUCOMA

Normal-tension Glaucoma

- Eye pressure is normal but there is still damage to the optic nerve.

Angle-closure Glaucoma

- The fluid cannot drain at all, it becomes blocked by part of the iris.

If my eye pressure is high will I definitely get glaucoma?

- Not Necessarily
- Eye pressures are different for everyone.
- Whether you develop glaucoma depends on the level of pressure that your optic nerve can tolerate without being damaged. This level is different for each person.
- You are only diagnosed with glaucoma if the optic nerve is damaged.
- If you have increased eye pressure but no damage to the optic nerve, it means that you are “at risk” for glaucoma.

OTHER TYPES OF GLAUCOMA

- Secondary Glaucomas:
  - Develop as complications of other medical conditions
  - Neovascular Glaucoma – result of poorly controlled diabetes or blood pressure
  - Due to a cataract
  - Due to eye tumors
  - Due to uveitis, a condition that causes inflammation and irritation of the eye
  - After other eye surgeries or serious eye injuries
  - Pigmentary Glaucoma – pigment from the iris sheds off and blocks the meshwork
  - Pseudoexfoliation Glaucoma – extra material is produced and shed off internal eye structures and blocks the meshwork

Symptoms

- Often there are no early signs or symptoms.
- Glaucoma causes no pain.
- Vision stays normal initially.
- If not treated, you may slowly lose your peripheral vision.
- You may also lose contrast sensitivity and things look washed out or like you are looking through a fog.
- Over a longer period of time, if still untreated, central (straight-ahead) vision can also decrease, until no vision at all remains.

RISK FACTORS FOR GLAUCOMA

- African Americans over age 40
- Everyone over age 60, especially Hispanics/Latinos
- Family History of Glaucoma
- Diabetes
- High Blood Pressure
- Previous Eye Injury

GLAUCOMA DIAGNOSIS

- A comprehensive DILATED eye exam is needed to diagnose glaucoma.
- They will look at your distance vision, your peripheral vision, and they will look at your retina and optic nerve for signs of damage.
- Glaucoma cannot be cured. Vision lost due to glaucoma cannot be restored.
- However, early detection and treatment can delay progression.

GLAUCOMA TREATMENT

- Medications (eye drops or pills)
- Laser Surgery
- Traditional Surgery

GLAUCOMA TREATMENT

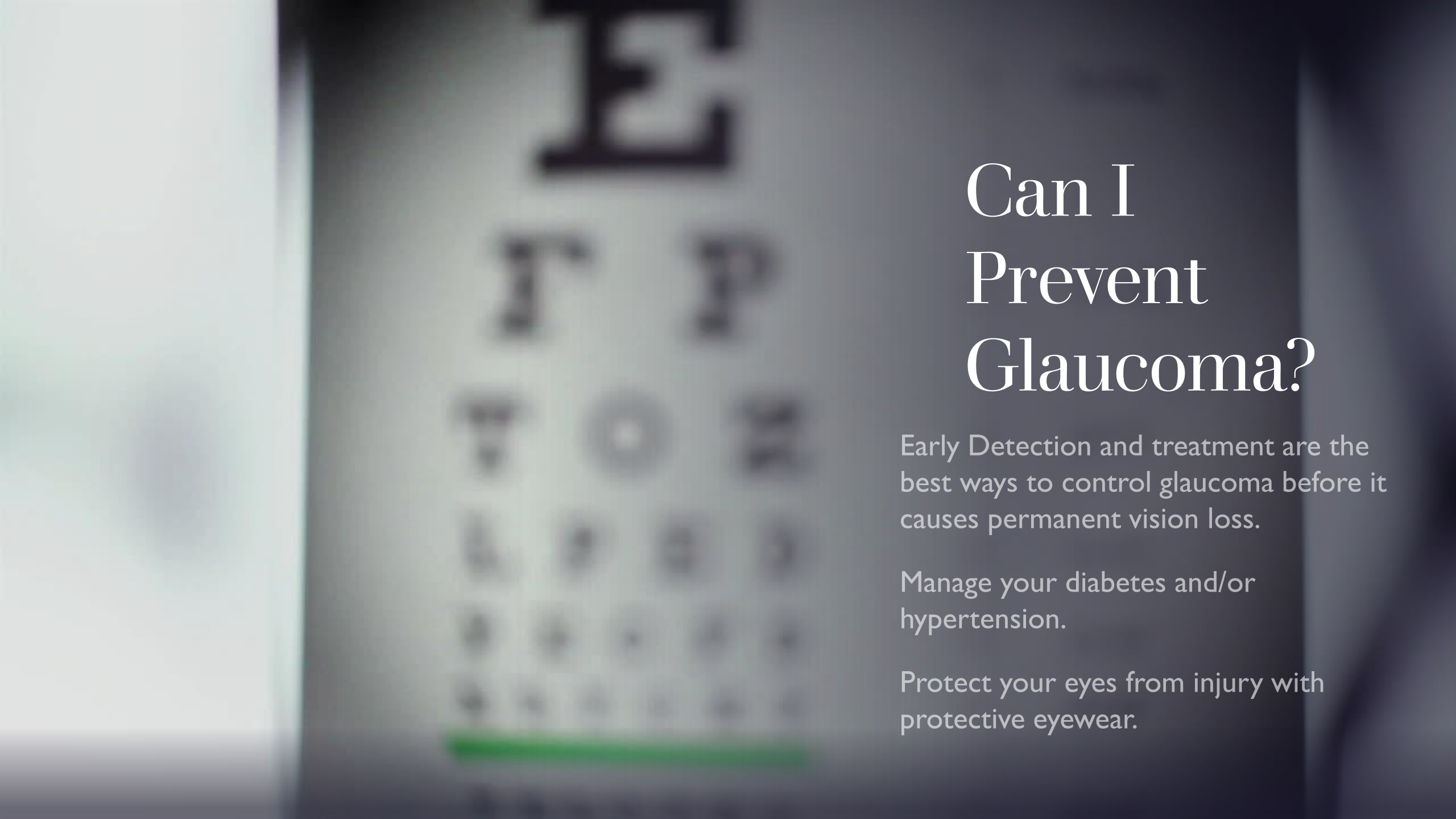
- Medication Options:
  - Eye Drops that decrease pressure either by decreasing fluid production or increasing its drainage.
    - Examples: latanoprost, bimatoprost, timolol
  - Oral medications called carbonic anhydrase inhibitors (acetazolamide, methazolamide)
- Laser Trabeculoplasty uses a laser to improve the drainage of fluid from the eye.
- Laser Peripheral Iridotomy creates a small opening in the iris to improve fluid flow.
- Glaucoma Drainage Implants

GLAUCOMA TREATMENT

- Conventional Surgery is often done after medicines and laser surgery have failed to control eye pressure.
- Conventional Surgery involves making a new opening for the fluid to leave the eye.
- Conventional Surgery is referred to as Trabeculectomy.
- A small piece of tissue is removed to create a new channel for the fluid to drain from the eye.
- If doing both eyes, operations are done 4 to 6 weeks apart.

GLAUCOMA TREATMENT

- Glaucoma treatment is lifelong.
- The goal is to reduce vision loss, not to restore vision that is already lost.
- Once diagnosed it is important to continue with regular eye exams so that treatment may be adjusted as needed.
- If using medications, either by mouth or eye drops, it is important to take it regularly. Because glaucoma often has no symptoms, it can be easy to forget medications or be tempted to stop taking them. But regular use is needed to control the pressure.
- The effects of laser surgery can wear off over time, so you may still need further treatment later.



Can I Prevent Glaucoma?

Early Detection and treatment are the best ways to control glaucoma before it causes permanent vision loss.

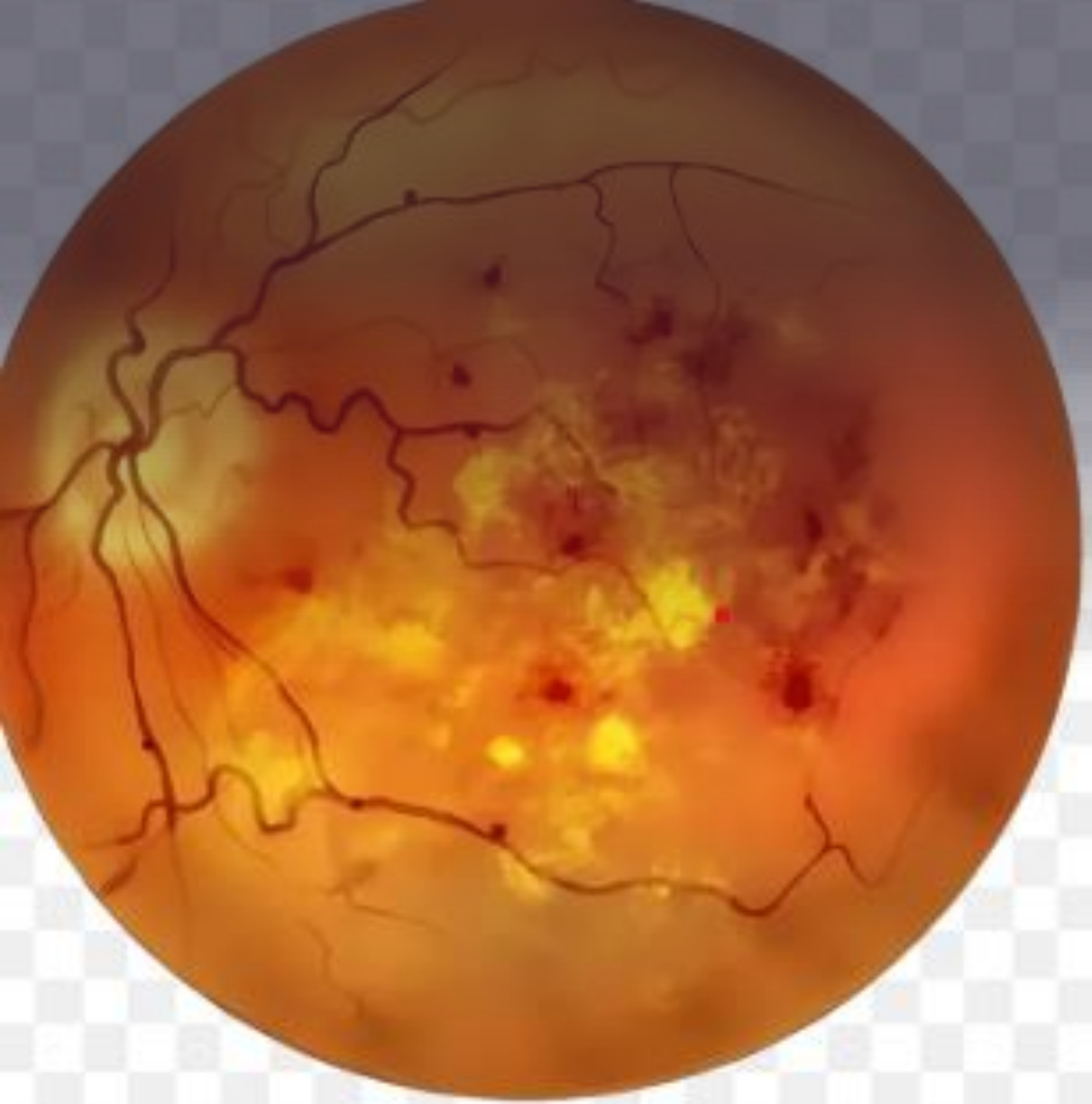
Manage your diabetes and/or hypertension.

Protect your eyes from injury with protective eyewear.

DIABETIC RETINOPATHY

DIABETIC RETINOPATHY

- A complication of diabetes
- The leading cause of vision impairment and blindness among adults age 20-74.
- Chronically high blood glucose can damage the tiny blood vessels in the retina.
- Those tiny blood vessels can then leak fluid or hemorrhage, which distorts vision.
- If it advances, new abnormal blood vessels begin to be made on the surface of the retina.
- These abnormal blood vessels are weak and so they are more likely to leak and bleed which can lead to scarring and cell loss in the retina.



Diabetic retina

Normal retina

DIABETIC MACULAR EDEMA (DME)

- Fluid can build up in a region of the retina called the macula.
- The macula is important for sharp, straight-ahead vision used for reading, recognizing faces, driving.
- DME is the most common cause of vision loss in people with diabetic retinopathy.
- About ½ of all people with diabetic retinopathy will develop DME.

WHO IS AT RISK FOR IT?

- All Diabetics, both Type 1 and Type 2
- Risk increases the longer you have diabetes.
- 40-45% of Americans with diabetes have some stage of diabetic retinopathy. Only half are aware of it.

SYMPTOMS OF DIABETIC RETINOPATHY

- There are 4 stages of disease, and the early stages usually have no symptoms.
- It often goes unnoticed until it begins to affect vision.
- Bleeding from the abnormal vessels can cause you to see “floating” spots.
- Sometimes this will clear up on its own.
- But without treatment, bleeding often recurs, increasing the risk of permanent vision loss.

DIABETIC RETINOPATHY - DIAGNOSIS

- This also requires a comprehensive dilated eye exam, where your eye doctor will look for:
  - Changes to blood vessels
  - Leaking blood vessels or signs of leaking vessels, such as fatty deposits
  - Swelling of the macula (DME)
  - Changes in the lens
  - Damage to nerve tissue

TREATMENT

- Treatment is often delayed until it reaches the proliferative stage, which is the worst stage.
- Anti-VEGF Injection Therapy – medications are injected into the vitreous gel to block a protein called Vascular Endothelial Growth Factor (VEGF). This protein stimulates the new abnormal blood vessels to grow and leak fluid.
- Examples: Avastin, Lucentis, Eylea.
- These injections are usually given monthly for 6 months and after that less frequently.
- Increasingly being used as first-line option

TREATMENT

- Corticosteroids – can be injected or implanted into the eye.
- Ozurdex (dexamethasone) implant – for short-term use
- Iluvien (fluocinolone acetonide) – longer lasting
- These implants release a steady amount of steroids into the eye to suppress edema.
- However, using these steroids in the eye increases the risk of cataract and glaucoma. Eye pressure should be monitored in patients using these.

TREATMENT

- Focal/grid macular laser surgery – up to hundreds of small laser burns are made to leaking blood vessels in areas of edema. The burns slow the leakage of fluid, reducing swelling in the retina.
- Completed in one session, but may need to be repeated in later years.

TREATMENT

- Scatter Laser Therapy (also called panretinal photocoagulation)
  - Thousands of tiny burns are made in the retina away from the macula
  - The burns cause abnormal blood vessels to shrink
  - Can preserve central vision but may cause some loss of peripheral, color, and night vision
  - Works best if used before those new abnormal blood vessels start to bleed

TREATMENT

- Vitrectomy – the surgical removal of vitreous gel in the center of the eye.
- Used to treat severe bleeding into the vitreous
- Done under local or general anesthesia, as outpatient or inpatient
- Ports are placed in the eye to allow the surgeon to insert and remove instruments, like a small vacuum called a vitrector.
- This procedure can also be used to remove scar tissue or repair a detached retina.

WHAT CAN I DO?

WHAT CAN I DO?

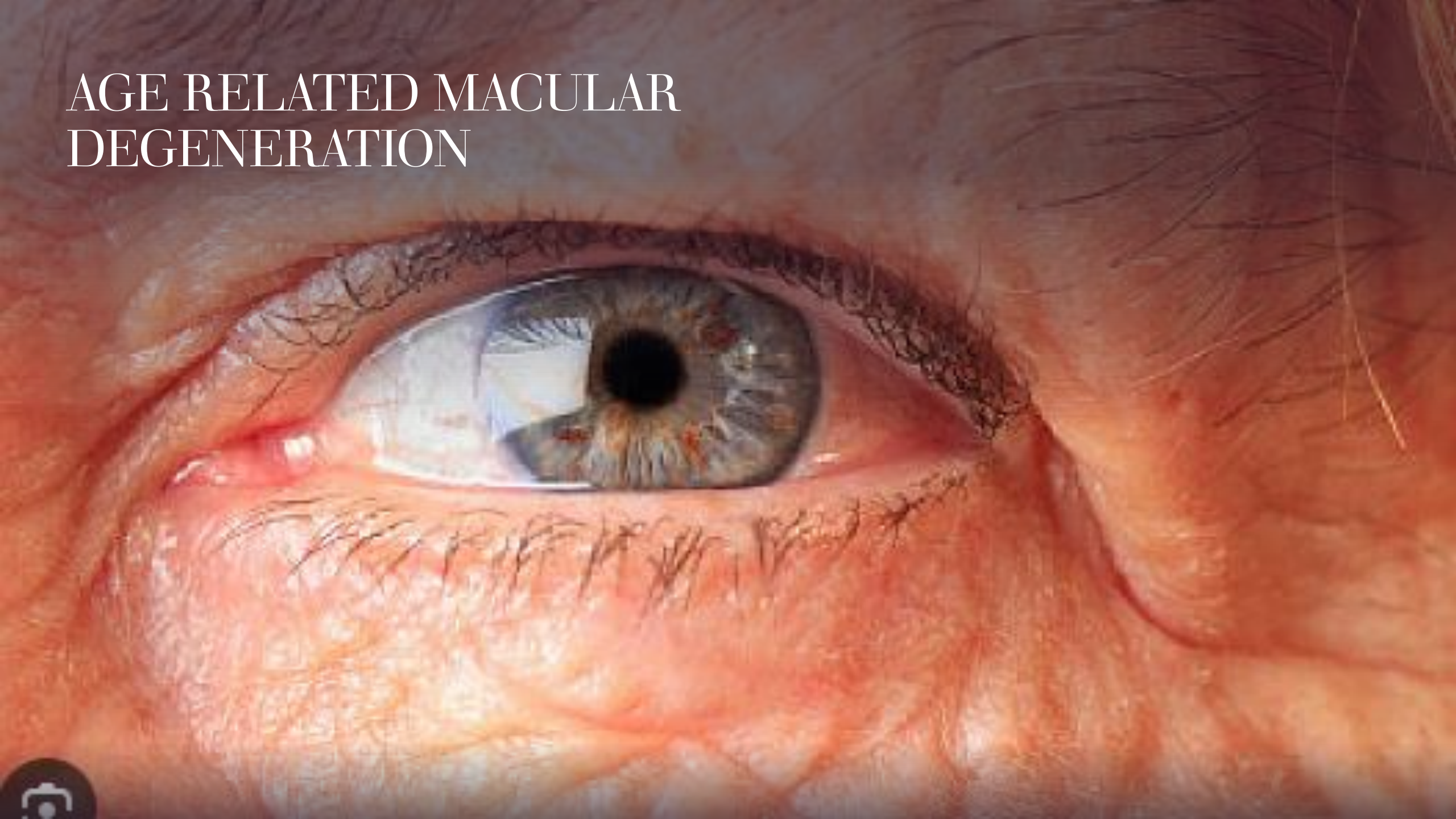
Manage your blood glucose

Get a dilated eye exam every year

PREVENTION

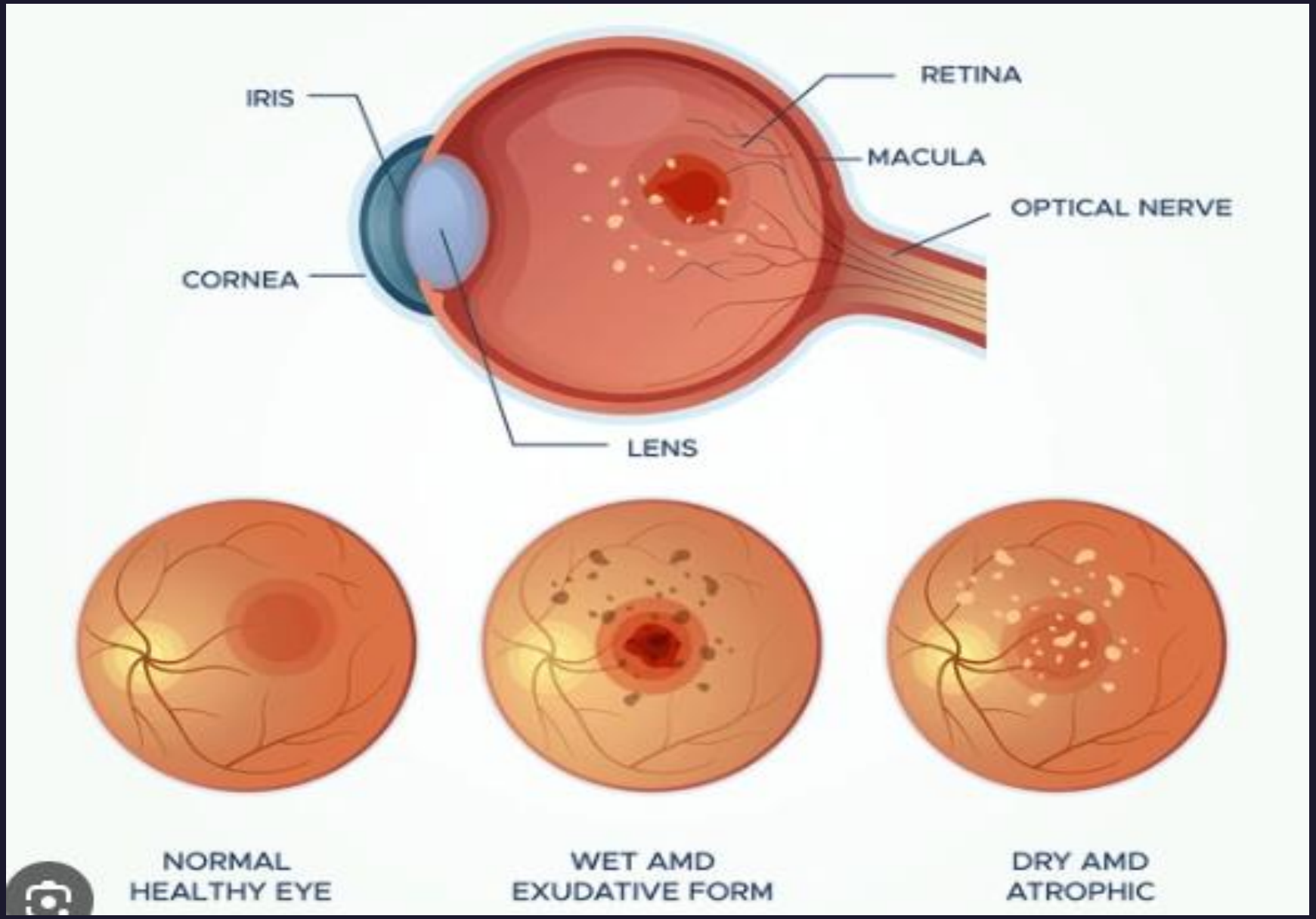
- Early detection and treatment can reduce the risk of blindness by 95%.
- Since the early stages often have no symptoms, diabetic patients should get a dilated eye exam once a year.
- Controlling diabetes slows the onset and worsening of diabetic retinopathy.
- There are also studies that have shown that controlling your blood pressure and cholesterol can reduce the risk of vision loss in people with diabetes.

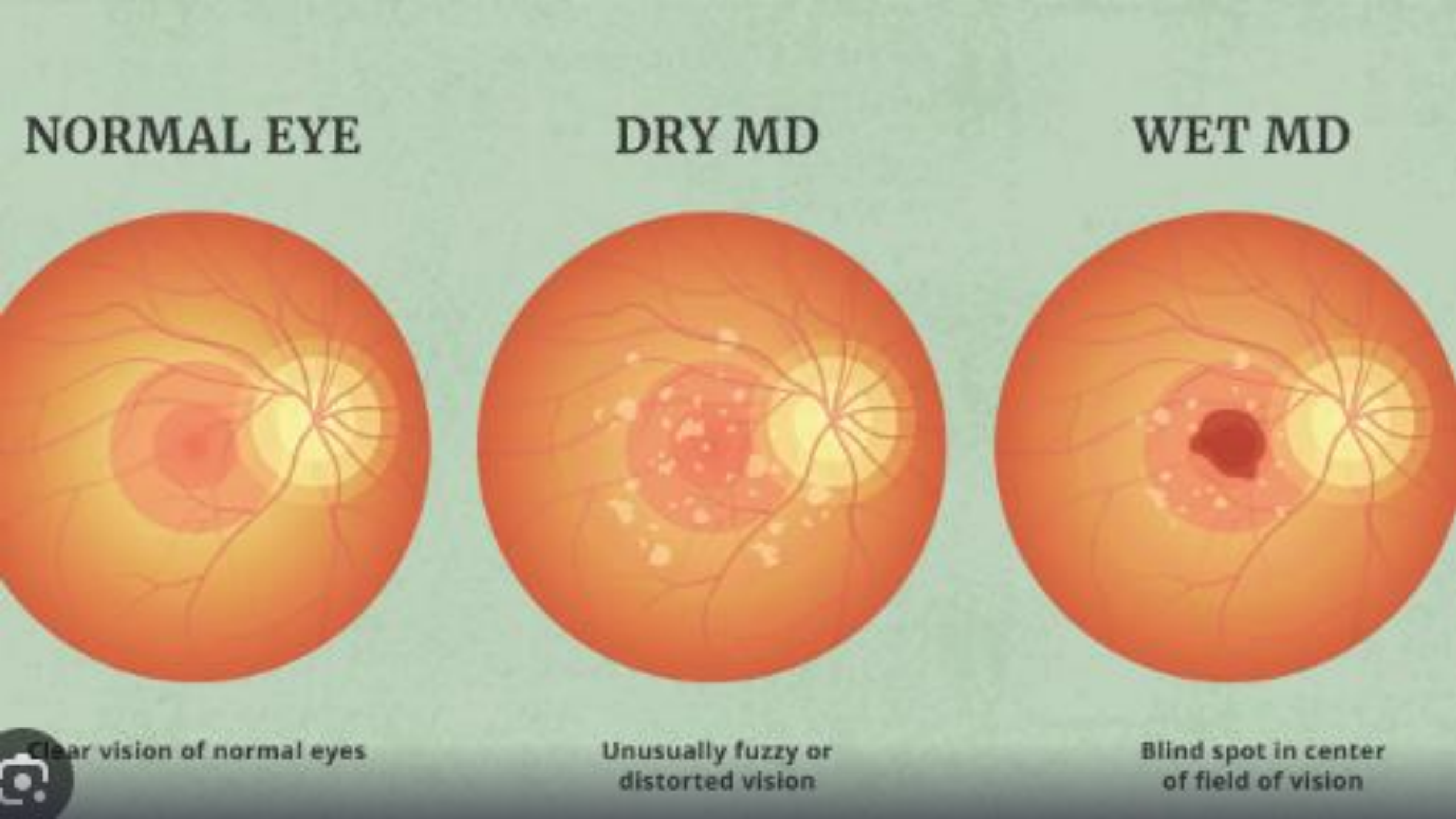
AGE RELATED MACULAR DEGENERATION



AGE-RELATED MACULAR DEGENERATION - AMD

- Leading cause of vision loss in people age 60 and older.
- AMD causes damage to the macula, which lets us see objects straight ahead.
- Sometimes AMD advances very slowly, sometimes faster. It can be in one or both eyes.
- As AMD progresses, you may see a blurred area near the center of vision.
- Over time the blurred area grows larger, or you may develop blank spots in your vision.
- Objects may not appear as bright as they used to be.
- AMD does not cause complete blindness, but central vision loss can interfere with the ability to see faces, drive, read, write, cook, etc.


IRIS
RETINA
MACULA
OPTICAL NERVE
CORNEA
LENS
NORMAL
HEALTHY EYE
WET AMD
EXUDATIVE FORM
DRY AMD
ATROPHIC


NORMAL EYE
DRY MD
WET MD
Clear vision of normal eyes
Unusually fuzzy or distorted vision
Blind spot in center of field of vision

WHO IS AT RISK FOR AMD?

- Age over 60
- Smoking – Doubles the Risk
- Race – More common in Caucasians
- Family History and Genetics

DIAGNOSING AMD

- Early and Intermediate stages usually have no symptoms.
- Can only be detected with a comprehensive dilated eye exam.
- Fluorescein Angiogram – a dye is injected into your arm and pictures are taken as the dye passes through the blood vessels in your eye. This lets them see leaking blood vessels.
- Optical Coherence Tomography – uses light waves to get pictures of tissues in the eye. This shows ***drusen***, or yellow deposits beneath the retina. Some drusen is a normal sign of aging, but medium to large drusen may indicate AMD.

3 STAGES OF AMD

- EARLY AMD:
  - Medium-sized drusen (width of a human hair)
  - Typically no vision loss
- INTERMEDIATE AMD:
  - Large drusen and/or pigment changes in the retina
  - Some vision loss is possible but most will not have any symptoms.
- LATE AMD:
  - Drusen PLUS vision loss

LATE AMD – 2 TYPES

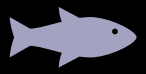
- DRY AMD:
  - Breakdown of light-sensitive cells in the macula and the tissue beneath the macula
  - Damage is more gradual
- WET AMD:
  - Abnormal blood vessels grow underneath the retina
  - These vessels leak fluid and blood which may lead to swelling and damage of the macula.
  - Damage is usually rapid and severe.
- It is possible to have both wet and dry AMD – either can appear first but usually dry progresses to wet.

LIFESTYLE CHOICES THAT CAN HELP

Exercise Regularly

Maintain normal Blood Pressure

Maintain normal Cholesterol levels



Eat a diet rich in green, leafy vegetables and fish

TREATMENT

- Early AMD – No treatment, monitor – Lifestyle Choices
- Intermediate and Late AMD –
  - DAILY VITAMINS: Reduce the risk of late AMD by 25% - AREDS OR AREDS2
    - Vitamin C 500mg
    - Vitamin E 400 IU
    - Beta-carotene 15mg
    - Zinc 80mg
    - Copper 2mg
    - Replace Beta-carotene with lutein 10 mg and zeaxanthin 2 mg

TREATMENT OF DRY AMD

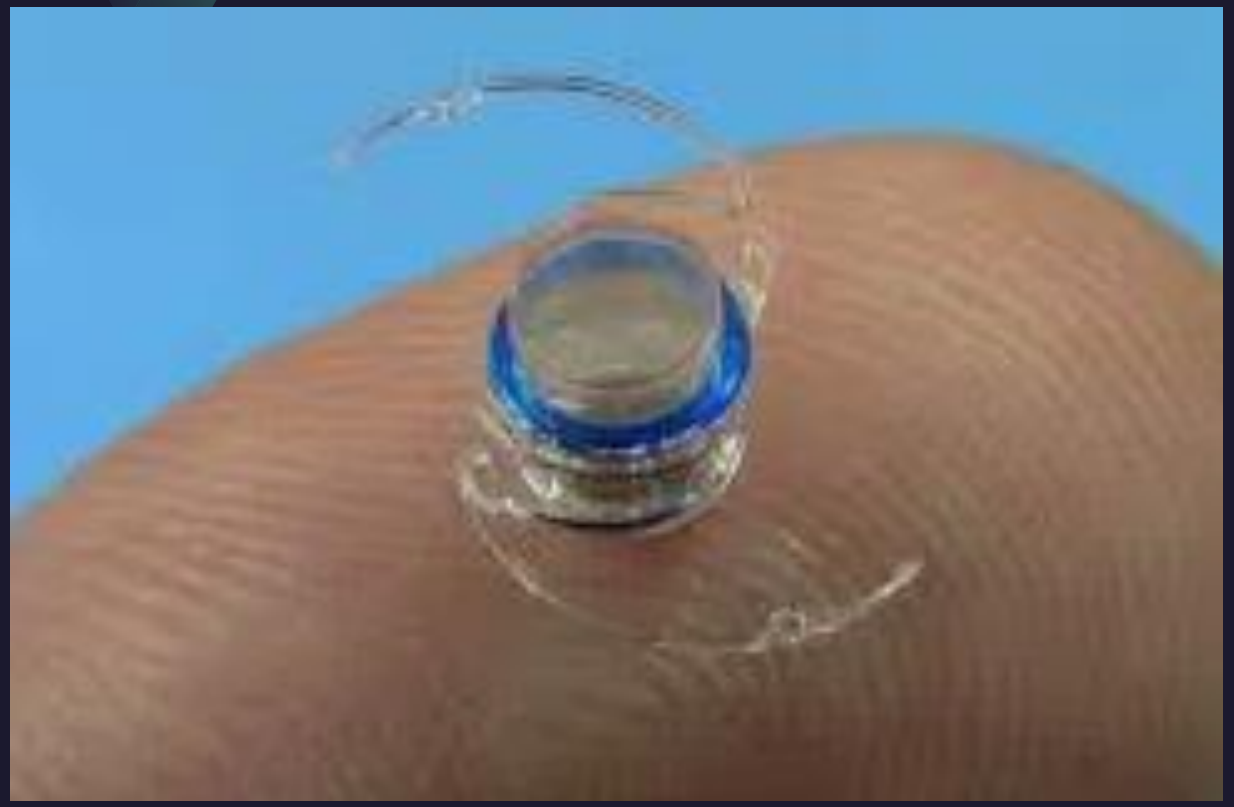
Dry AMD is more common.

Treatment consists of nutritional supplements, lifestyle changes and monitoring.

TREATMENT OF WET AMD

- With Wet AMD, you can also use the anti-VEGF injections, like in diabetic retinopathy. These drugs block the growth of new abnormal blood vessels.
- Sometimes laser surgery can be used for Wet AMD to destroy the abnormal blood vessels. It can cause a small blind spot where the laser has scarred the retina but it still may help prevent more severe vision loss from occurring years later.

TREATMENT



- Implantable Miniature Telescope (IMT)
  - For some patients with end-stage AMD
  - It refocuses the images on a healthier part of the retina
  - Can be used in both Wet and Dry AMD

VISION REHABILITATION SERVICES

- Even if your eye doctor says that nothing more can be done for your vision, Vision Rehabilitation services can still help.
- These services include training for magnifying and adaptive devices, ways to complete daily living skills safely and independently, guidance on modifying your home, and information on where to locate resources to help cope with your vision loss.
- If you have Medicare you might qualify for Occupational Therapy. Call 1-800-MEDICARE to verify.

RETINAL DETACHMENT

RETINAL DETACHEMENT

- RHEGMATOGENOUS detachments are the most common. They are caused by a hole or tear in the retina that allows fluid to pass through and collect underneath the retina, detaching it from its underlying blood supply.
- Retinal tears can happen when the vitreous gel separates from the retina as part of aging, thinning of the retina, or sometimes from trauma.

RETINAL DETACHMENT

- TRACTIONAL retinal detachments are caused by scar tissue that grows on the surface of the retina and pulls the retina off the back wall of the eye. This can occur from diabetes or other conditions.
- EXUDATIVE detachments form when fluid leaks out of blood vessels and accumulates under the retina. This is less common and can happen in eyes with abnormal inflammation or excessive leakage from abnormal blood vessels.

SYMPTOMS

Floaters

Flashing Lights

A Shadow or Curtain in the peripheral vision which can stay stationary or move toward the center of vision

Sometimes patients are not aware of any changes in their vision

DIAGNOSING RETINAL DETACHMENTS

- May include pushing on the outside of the eye to view the far most peripheral retina.
- Photographs may be taken of the retina.
- Optical Coherence Tomography – uses light waves to create an image of the retina.
- Ultrasound of the eye may be needed if a clear view of the retina cannot be seen.

RISK FACTORS

- Large or multiple retinal tears
- Vitreous hemorrhage – blood leaks into the gel inside the eye
- Choroidal detachment – the choroid (layer between the retina and sclera) separates from the sclera (white part of the eye)
- Eye Trauma
- Multiple previous surgical procedures

RISK FACTORS, continued

- Diabetic Retinopathy
- Extreme Nearsightedness
- Vitreous Detachment (gel pulls away from the retina)
- Thinning of the retina called Lattice Degeneration.

TREATMENT

- SCLERAL BUCKLE – Surgery where a silicone band is placed outside the eye wall to push the wall of the eye closer to the retinal tear in order to close the tear.
- VITRECTOMY – 3 incisions are made in the white part of the eye and the vitreous gel is removed and fluid under the retina is drained. A laser is then used to seal any tears or holes. A gas bubble is placed to hold the retina in place while it heals.
- PNEUMATIC RETINOPEXY – In-office procedure where a gas bubble is injected into the eye and the patient maintains a specific head posture to position the gas bubble over the retinal tear.

TREATMENT

- LASER SURGERY – Sometimes the detachment can be walled off with a laser to prevent it from spreading. This is generally used for small detachments.
- In general, any procedure is successful 9 out of 10 times, but sometimes more than one procedure is required to put the retina back in place.
- Generally, if the center of the retina has NOT detached, vision after surgery will be the same as it was before surgery.
- If the center of the retina HAS detached, vision is often improved after surgery.

PREVENTION

- Often caused by aging, so no prevention.
- Protect your eyes with safety goggles/glasses.
- Get a dilated eye exam once a year.

WAYS TO PROTECT YOUR EYES

LIFESTYLE CHOICES THAT CAN HELP

- Exercise Regularly
- Maintain normal Blood Pressure
- Maintain normal Cholesterol levels
- Eat a diet rich in green, leafy vegetables and fish

HEALTHY THINGS TO EAT FOR YOUR EYES

- Foods high in Vitamin A, C, E, lutein, zeaxanthin and Omega-3 fatty acids.
- Lutein and Zeaxanthin: spinach, kale, collard greens, Swiss chard, broccoli
- Vitamin C – citrus, berries and peppers
- Vitamin A – carrots, sweet potatoes and bell peppers
- Omega-3 – fatty fish – salmon, tuna, mackerel
- Vitamin E – almonds, walnuts, sunflower seeds

Thank you

Keri E. Sword, PharmD, CDCES

276-223-0558, ext 7

ksword@brockhughes.org