Macular Degeneration

Understanding the Disease and New Treatments

Dr. Ashley Craven, O.D.

What is Macular Degeneration?

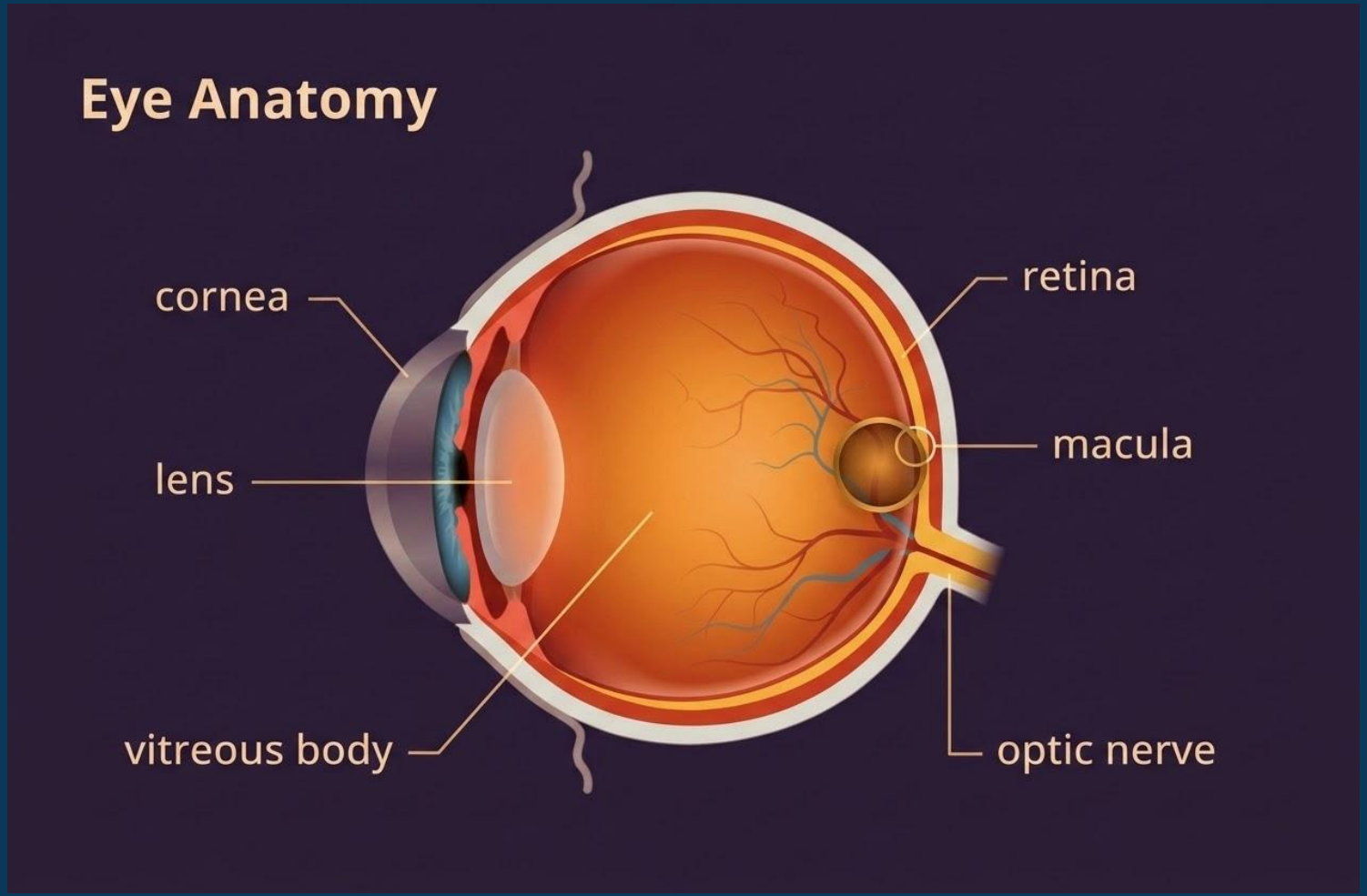
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AMD Definition

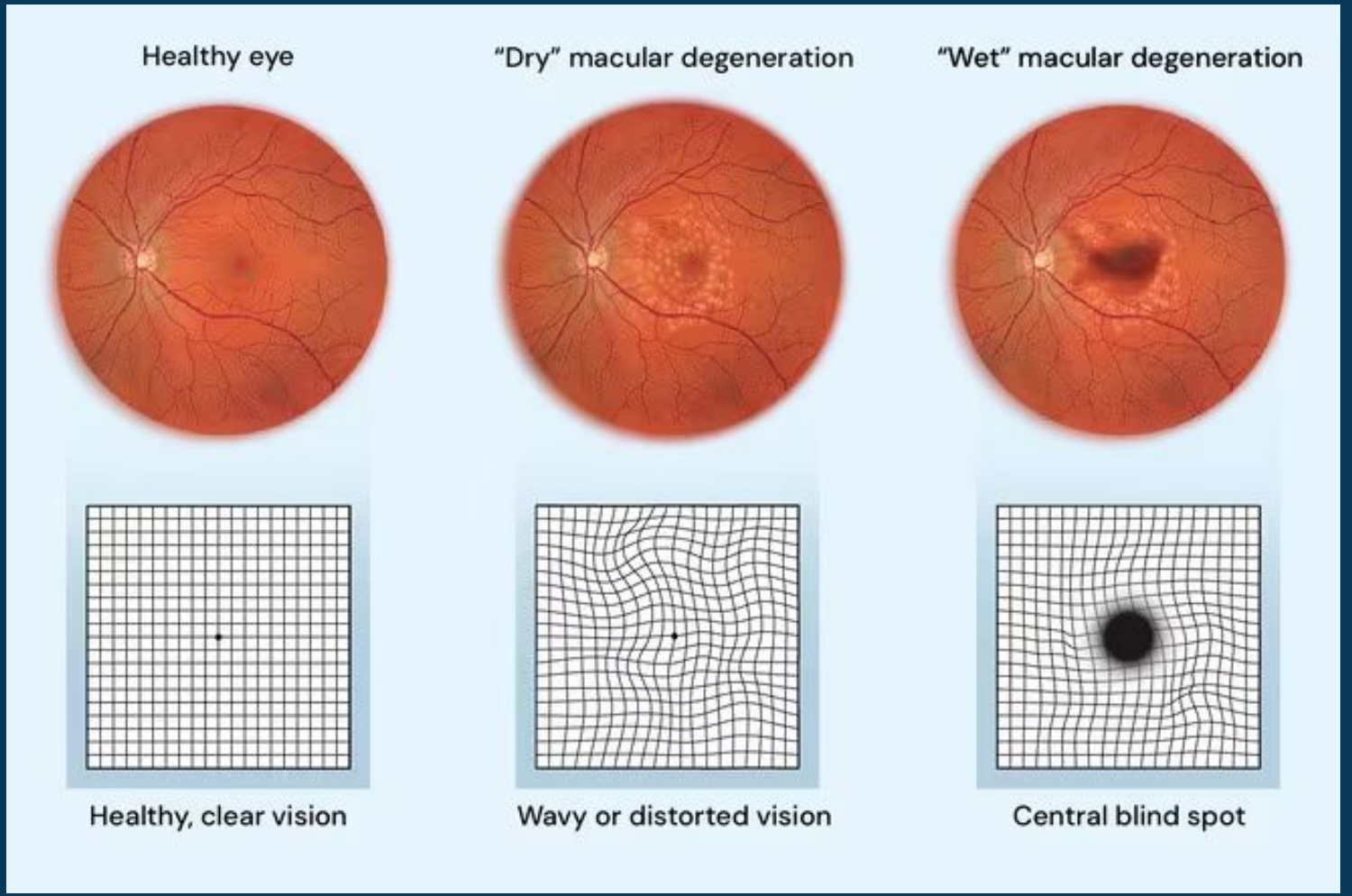
Macular degeneration—frequently called age-related macular degeneration (AMD)—is a chronic eye disease that damages the macula, the small central part of the retina responsible for sharp, clear, straight-ahead vision.

Key Characteristics

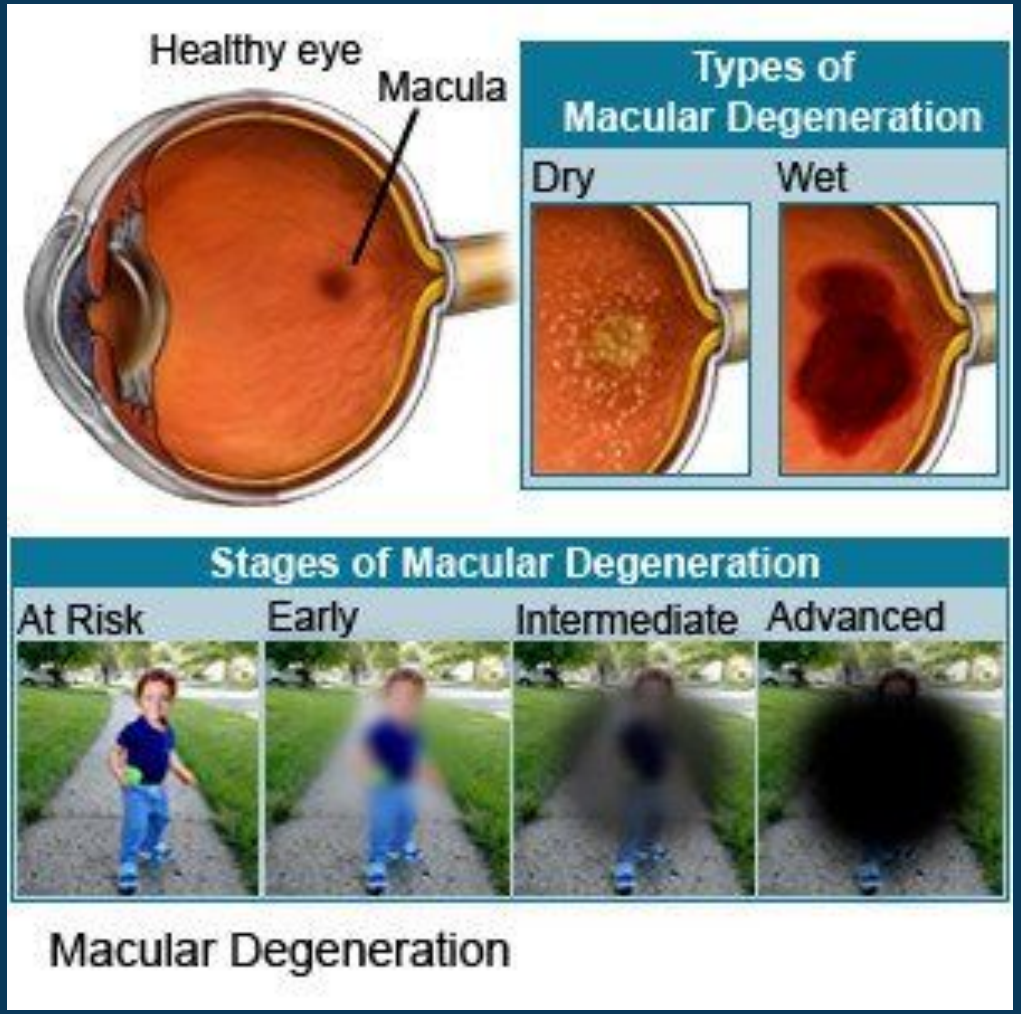
- Central Vision Loss: It blurs or destroys central vision, making it difficult to read, drive, or recognize faces.
- Peripheral Vision Remains: It does not cause total blindness; side (peripheral) vision is typically preserved.



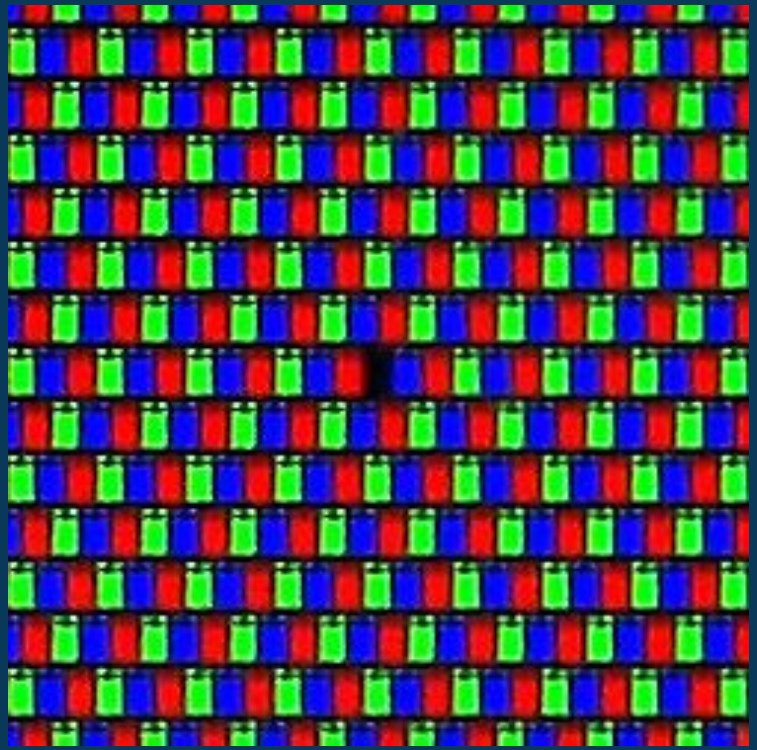
https://www.allaboutvision.com/eye-care/eye-anatomy/eye-structure/macula/



https://www.allaboutvision.com/conditions/macular-degeneration/age-related/


Healthy eye
Macula
Types of Macular Degeneration
Dry
Wet
Stages of Macular Degeneration
At Risk
Early
Intermediate
Advanced
Macular Degeneration

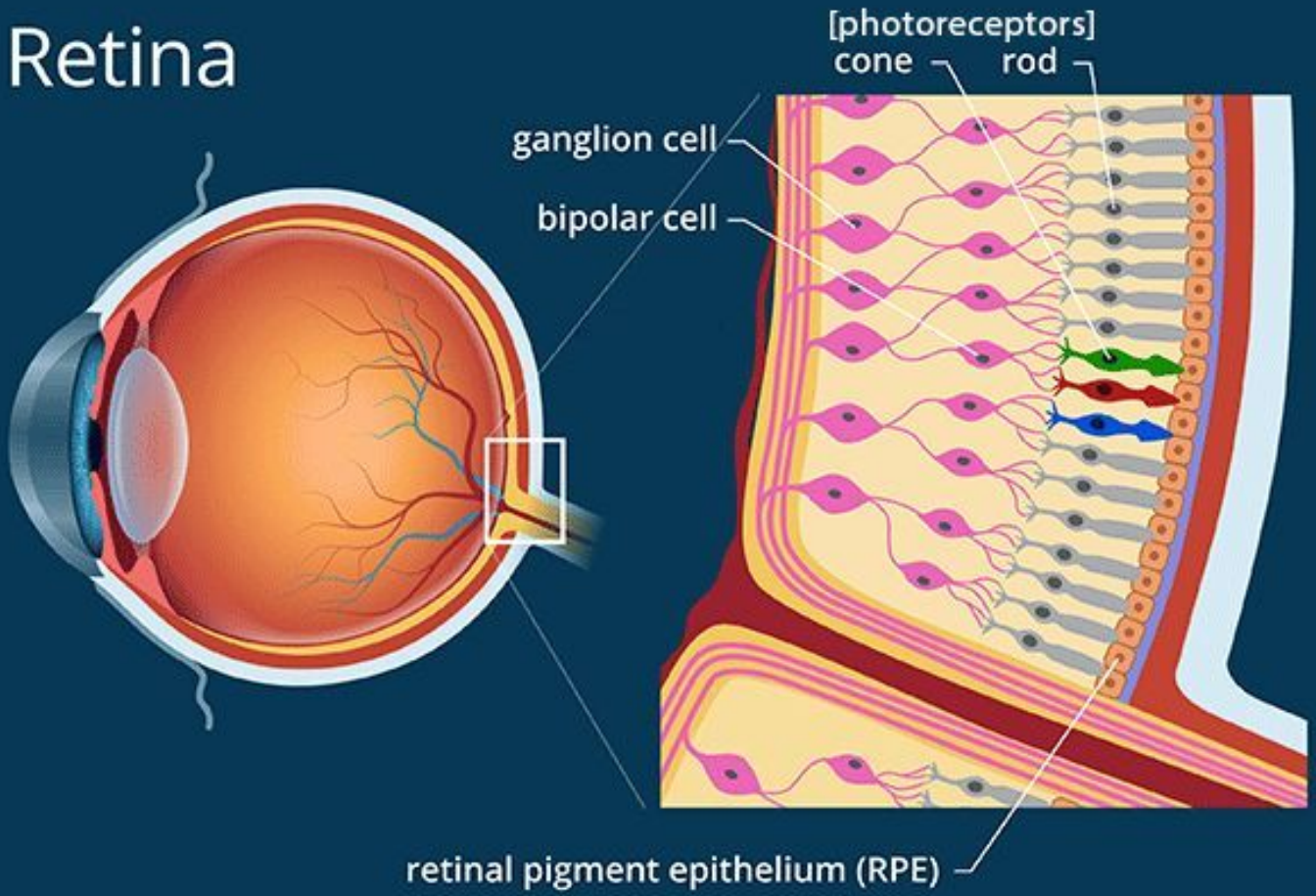
Why is the Macula So Important?



Think of your macula like a high resolution TV screen with pixels of cells called cones.

When enough pixels are damaged, the image will be blurred, distorted or incomplete.

Retina



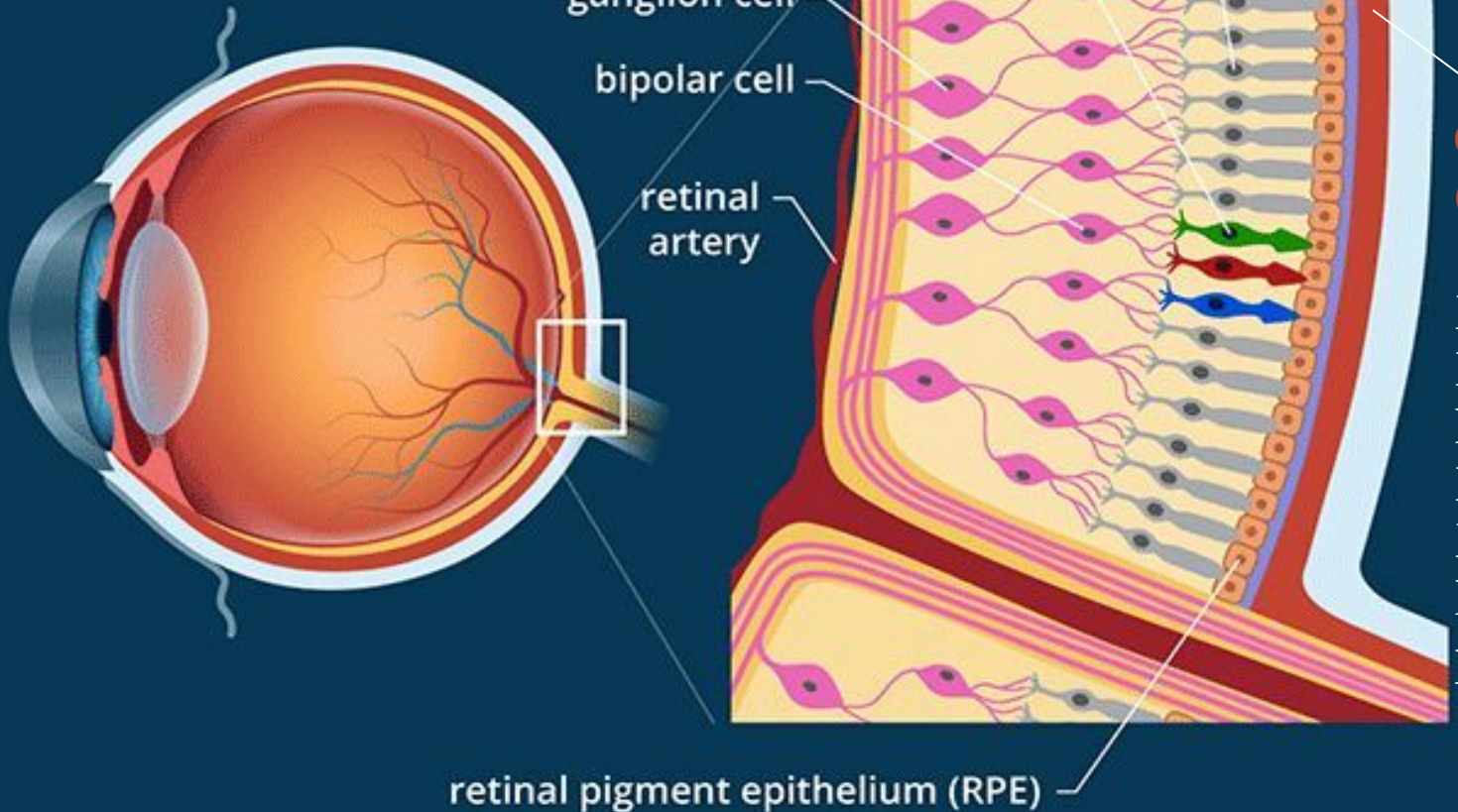
https://www.allaboutvision.com/eye-care/eye-anatomy/eye-structure/photoreceptors/

Why is the Macula So Susceptible to Damage?

The cone cells in the retina (pixels) are some of the most metabolically active cells in the body.

They require a huge amount of nutrients and put out a significant amount of waste products.

Retina

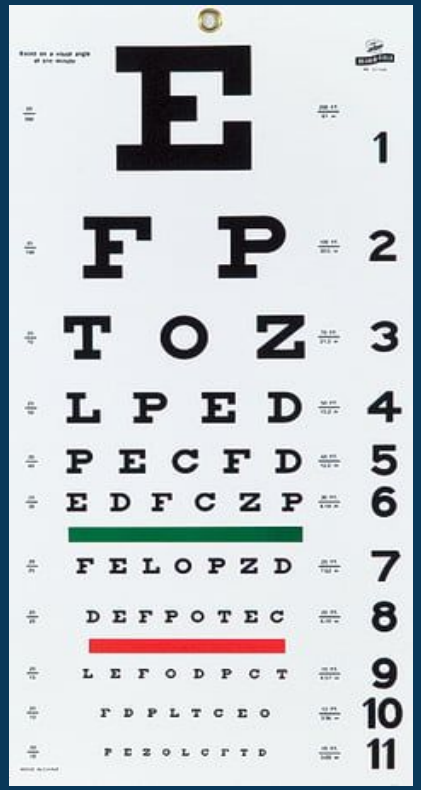


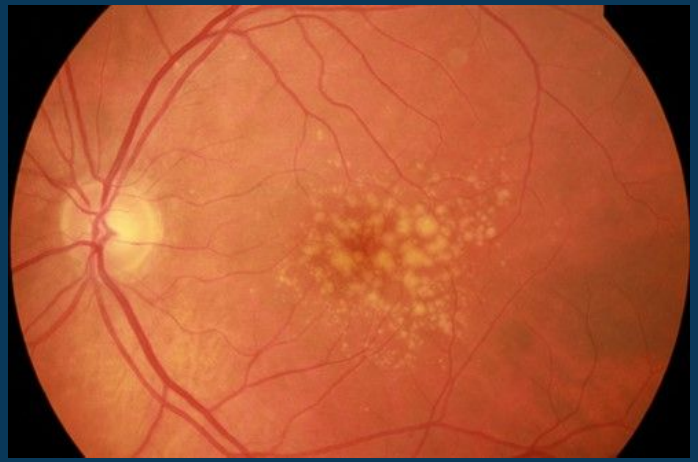
Bruch's Membrane

Choroid (Blood Supply)

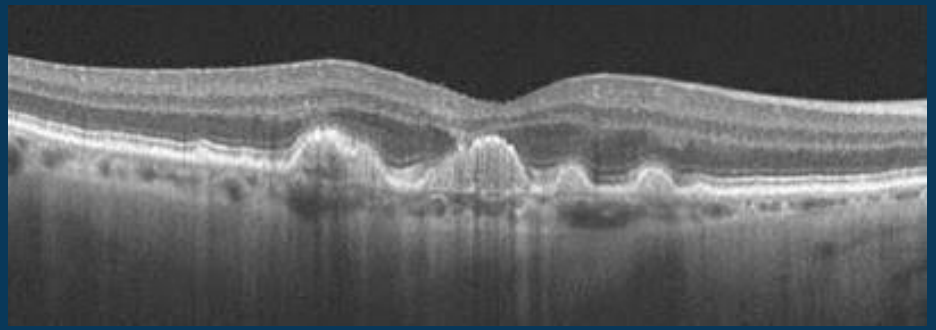
Macular Degeneration happens when Bruch's Membrane no longer functions properly

How Do We Diagnose AMD?

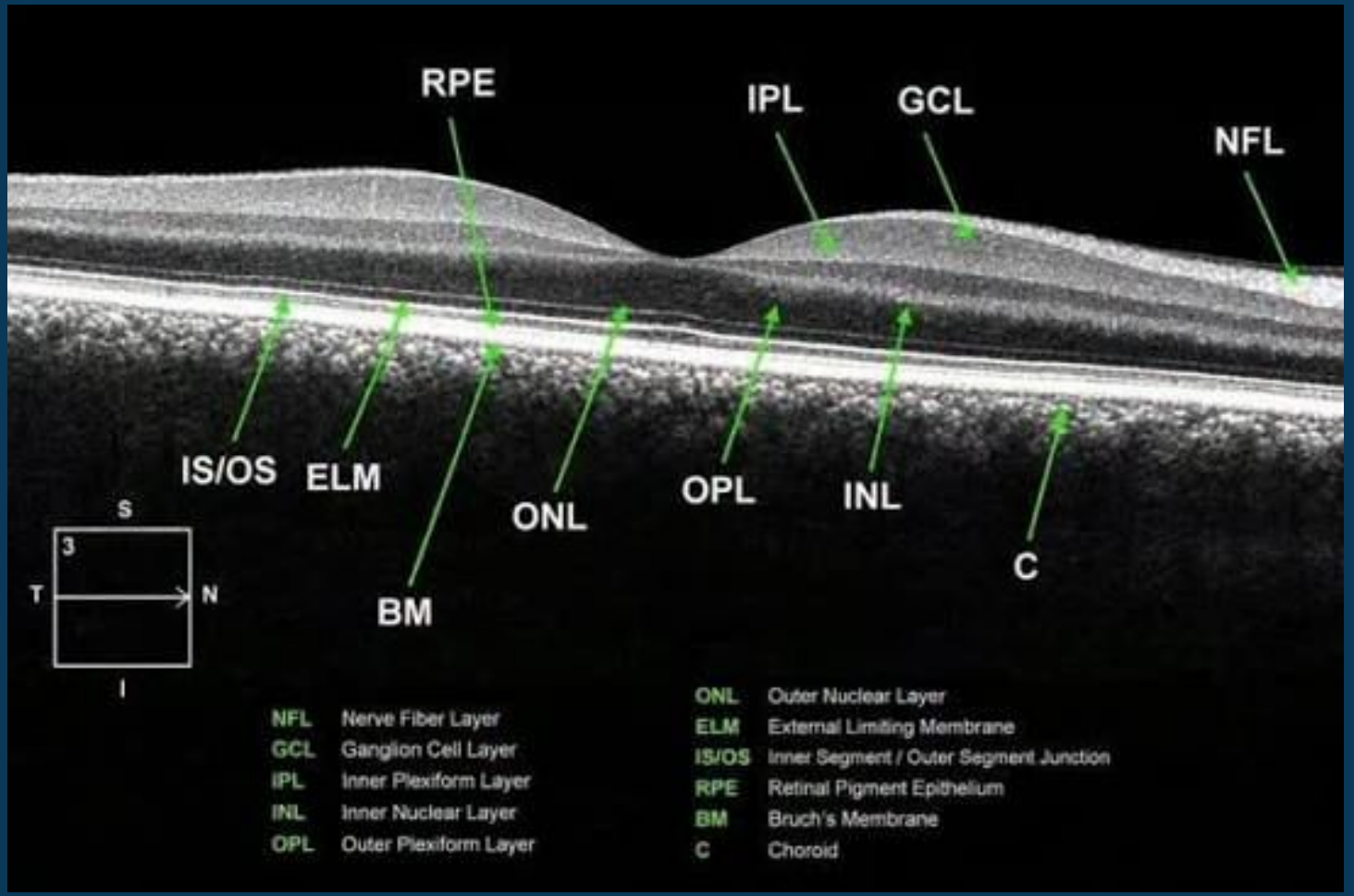




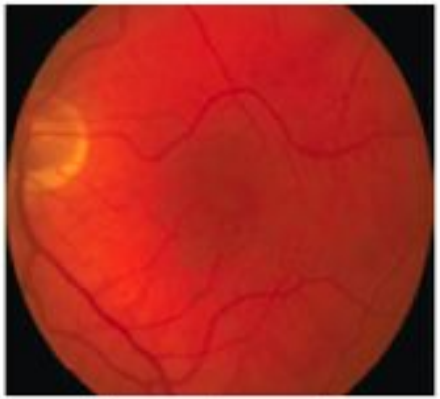




OCT


RPE
IPL
GCL
NFL
IS/OS
ELM
ONL
OPL
INL
C
BM
S
3
T
N
I
NFL Nerve Fiber Layer
GCL Ganglion Cell Layer
IPL Inner Plexiform Layer
INL Inner Nuclear Layer
OPL Outer Plexiform Layer
ONL Outer Nuclear Layer
ELM External Limiting Membrane
IS/OS Inner Segment / Outer Segment Junction
RPE Retinal Pigment Epithelium
BM Bruch's Membrane
C Choroid

What is the difference between Dry AMD and Wet AMD?



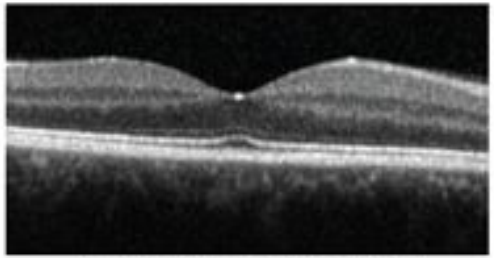
Normal macula



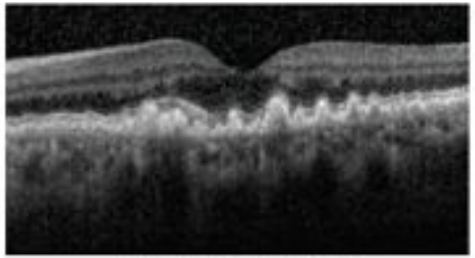
Dry AMD with drusen and central geographic atrophy



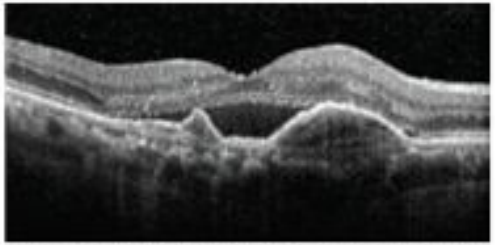
Wet AMD with bleeding and scar tissue



Normal macula OCT



Dry AMD OCT showing drusen



Wet AMD OCT showing fluid under the retina and RPE

What are the risk factors for developing AMD?

- Age
- Smoking
- Family History (specific genes)
- Cardiovascular Disease
- Female Gender
- Caucasian Race
- High Cholesterol
- Obesity

What Can We Do to Prevent or Slow AMD Progression?

- Diet rich in whole foods and antioxidants (Mediterranean Diet)
- Smoking cessation
- Exercise
- AREDS vitamin supplements
- Sun protection*
- Monitoring at home and with OD
- Blood pressure control
- Photobiomodulation (PBM) - Dry AMD only
- Eye injections - Wet AMD and some advanced dry AMD



What is in AREDS 2?

- **Vitamin C:** 500 mg (as ascorbic acid)
- **Vitamin E:** 400 IU (268 mg)
- **Zinc:** 80 mg (as zinc oxide)
- **Copper:** 2 mg (as cupric oxide)
- **Lutein:** 10 mg
- **Zeaxanthin:** 2 mg



MacuHealth

COMPARE THE TWO PRODUCTS

To assist you in choosing the right supplement, we've prepared this chart to help familiarize you with the features of MacuHealth and MacuHealth Plus+.

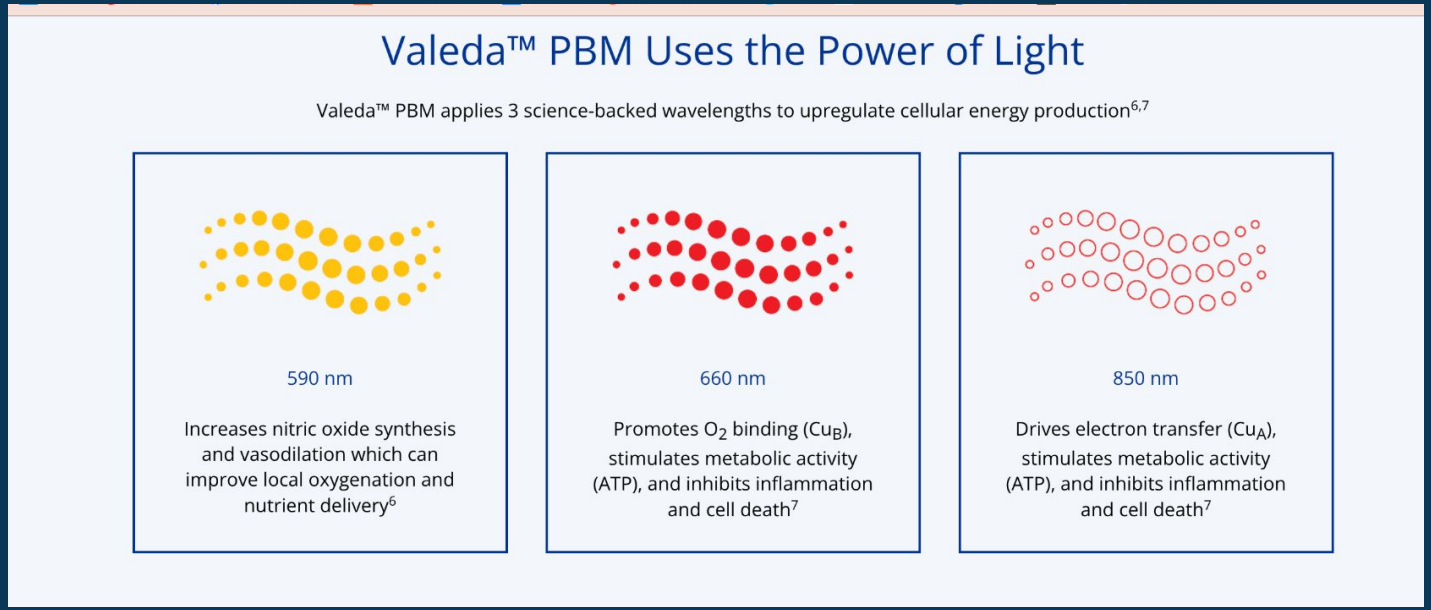




	MacuHealth Our patented formula, supported by over 40 peer-reviewed publications	MacuHealth PLUS+ Created for AMD patients wanting an AREDS2 formula
FORMULATION AND PRICING		
Micro-Micelle™ Technology*	✓	✓
Triple Carotenoid Formula Contains the third critical carotenoid, Meso-Zeaxanthin	✓	✓
Target Patients	For healthy and AMD patients	For AMD patients only
AREDS2 Formula Includes zinc and copper		✓
Zinc-Free For patients concerned about zinc intake	✓	25 mg of zinc
Daily Serving Size	1 Softgel; 90-Day Supply	4 Softgels; 90-Day Supply
BENEFITS		
Improves contrast sensitivity	✓	✓
Boosts night vision	✓	✓
Protects from blue light	✓	✓
Improves glare tolerance	✓	✓
Rebuilds macular pigment	✓	✓

New PBM Treatments

PHOTO: Light BIO: Cell MODULATION: Regulation

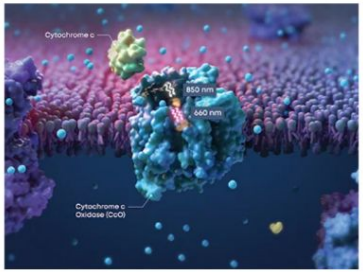


PBM: How it Works

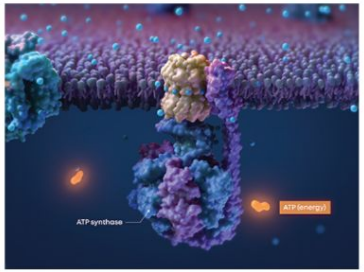
Valeda™ PBM's unique mechanism of action works to restore cellular energy production and improve retinal cellular health[5]



The retina is rich in mitochondria, and mitochondrial dysfunction is a known cause of vision loss in dry AMD.



Cytochrome c oxidase (CcO) is a key photoacceptor in the mitochondrial electron transport chain.

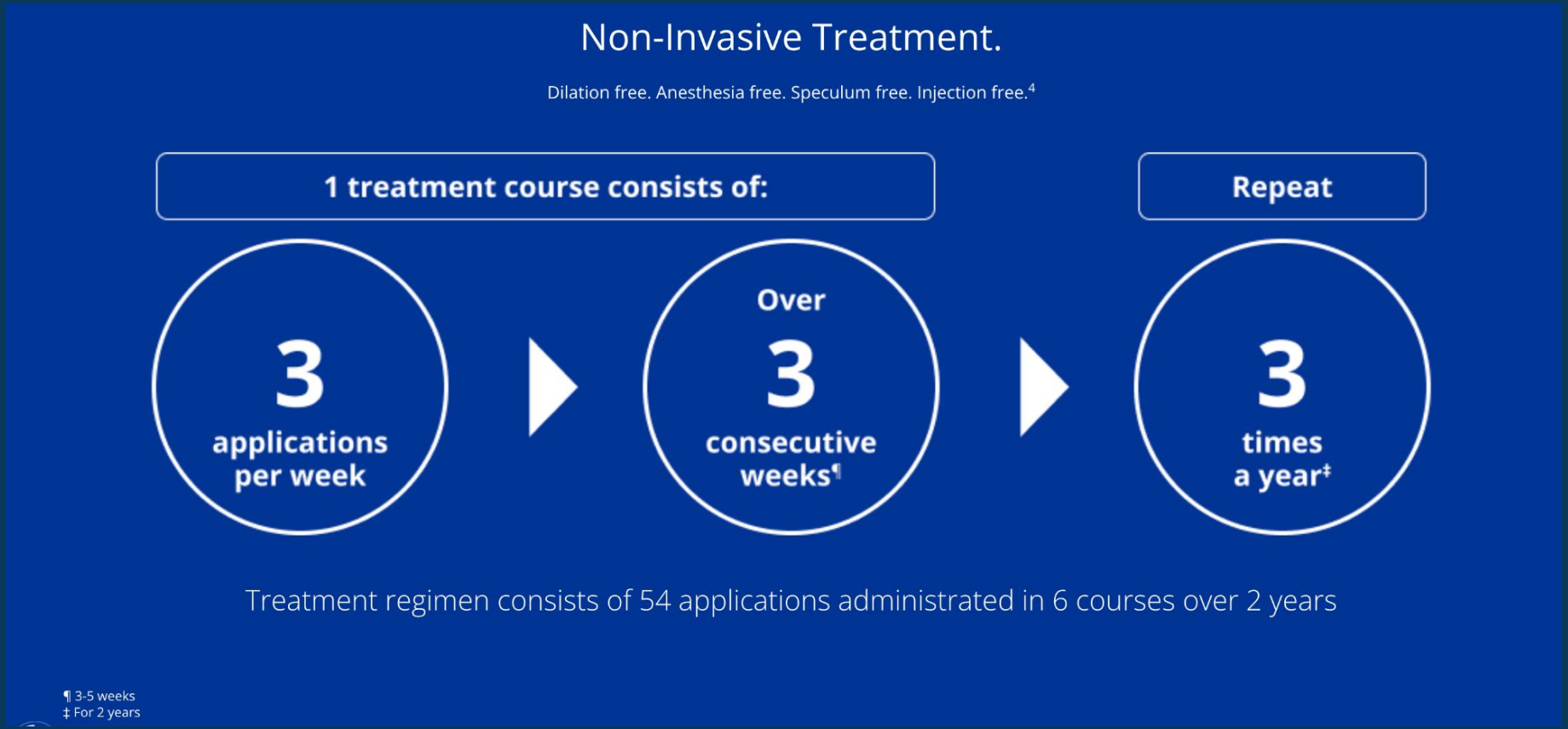


Valeda™ PBM wavelengths activate CcO, enhancing electron transport and mitochondrial adenosine triphosphate (ATP) production, the cell's major source of energy.

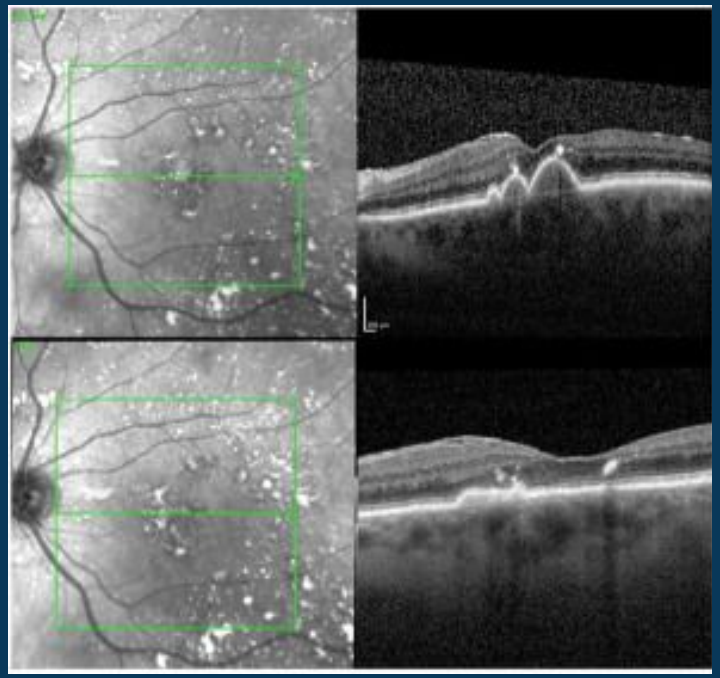
How does the treatment feel?



PBM Treatments

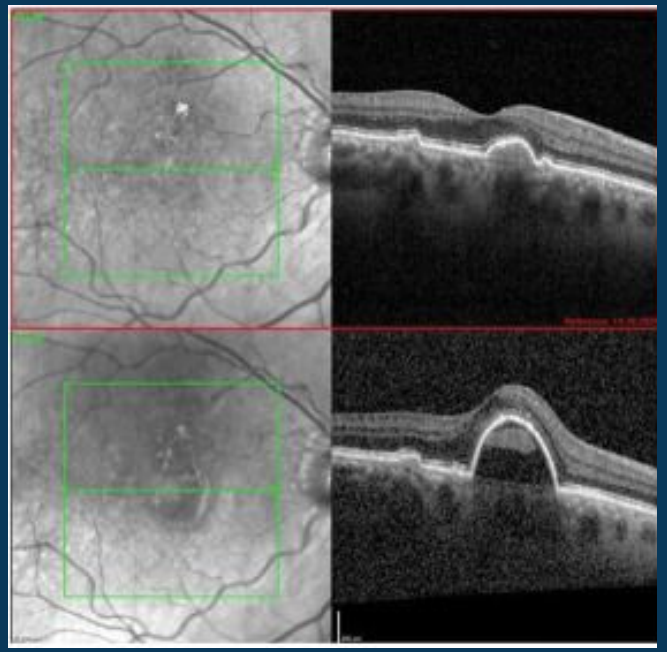


Results from Lightsite Study III



4 Courses of PBM

Gained 4 Letters of Acuity



Sham Treatment

Loss of 3 Letters of Acuity

New Optimism



After 3 courses of 9 treatments at 1 year

How to Support a Loved One with AMD

- Support them in attending eye exams and treatments
- Work together to provide mostly whole food nutrient dense meals
- Support smoking cessation
- Understand that some tasks may be more difficult and some easier than you would expect. The impact can fluctuate significantly based on lighting and a number of factors.
- Charles Bonnet syndrome: can present like hallucinations or dementia but is a real physical phenomenon.
- Support consistent AREDS supplement use
- Consider Low Vision resources

Resources

Understanding Macular Degeneration from American Academy of Ophthalmology

https://www.aao.org/eye-health/diseases/amd-macular-degeneration

Age-Related Macular Degeneration from All About Eyes

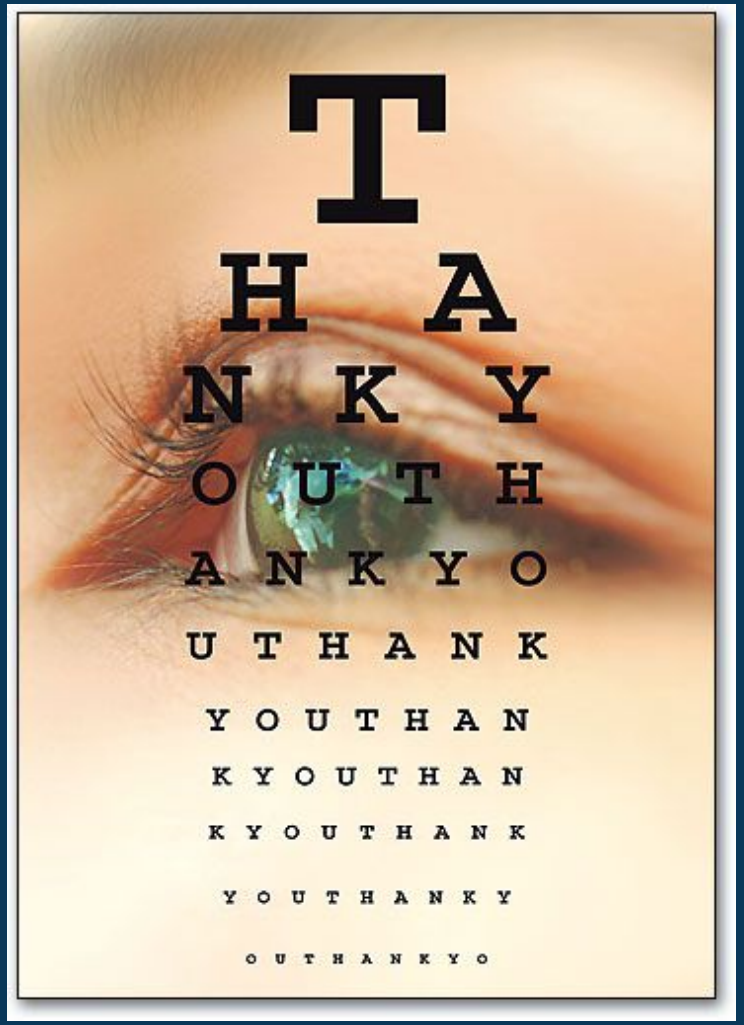
https://www.allaboutvision.com/conditions/macular-degeneration/age-related/

LightSite III Study

https://pubmed.ncbi.nlm.nih.gov/37972955/

Valeda Photobiomodulation

https://www.myalcon.com/professional/vitreoretinal/valeda-pbm/


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INVISION