



Spotlight on Red Light Therapy

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Financial Disclosures

I have the following financial relationships to disclose



Name of Commercial Interest(s)	Nature of Relationship	What was Received
Apellis	Speaker	Speaker Fee

The content and format of this course is presented without commercial bias and does not claim superiority of any commercial product or service.

Outline

- ▶ Review of PBM mechanism
- ▶ Lightsite III 24-month data
- ▶ Logistics of treatment
- ▶ Cases
- ▶ Patient candidacy for treatment
- ▶ Off-label treatment considerations

How Does it Work?

1. <https://retinatoday.com/articles/2024-may-june/photobiomodulation-innovation-on-the-horizon-for-dry-amd>

- ▶ PBM induces mitochondrial energy production and decreases oxidative stress (among other cellular changes).
- ▶ The retina has the highest oxygen demand (by weight) in the body, with high concentrations of mitochondria in the RPE, ganglion cells and photoreceptors.
- ▶ Mitochondrial dysfunction, oxidative stress, and inflammation are part of the pathophysiology of numerous retinal diseases:
 - ▶ ROP, AMD, RP, DR, DME
- ▶ Therefore the ability of PBM to effect energy generation is hypothesized to underlie improved clinical and anatomical outcomes in degenerative disease states, such as AMD¹.

How Does it Work?

**ENERGY
PRODUCTION**



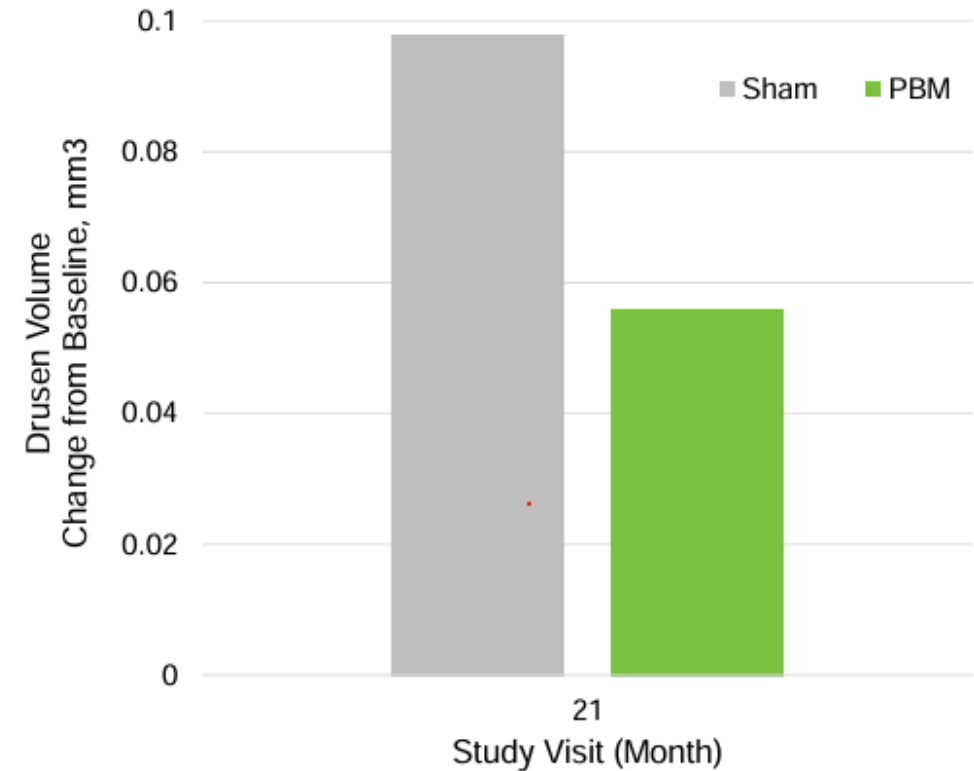
**OXIDATIVE
STRESS AND
INFLAMMATION**



Lightsite III – Drusen Volume

- Double-masked, randomized, sham-controlled, parallel-group, prospective study.

- ▶ ~2x change from baseline macular drusen volume observed in Sham vs. PBM-treated eyes at Month 21

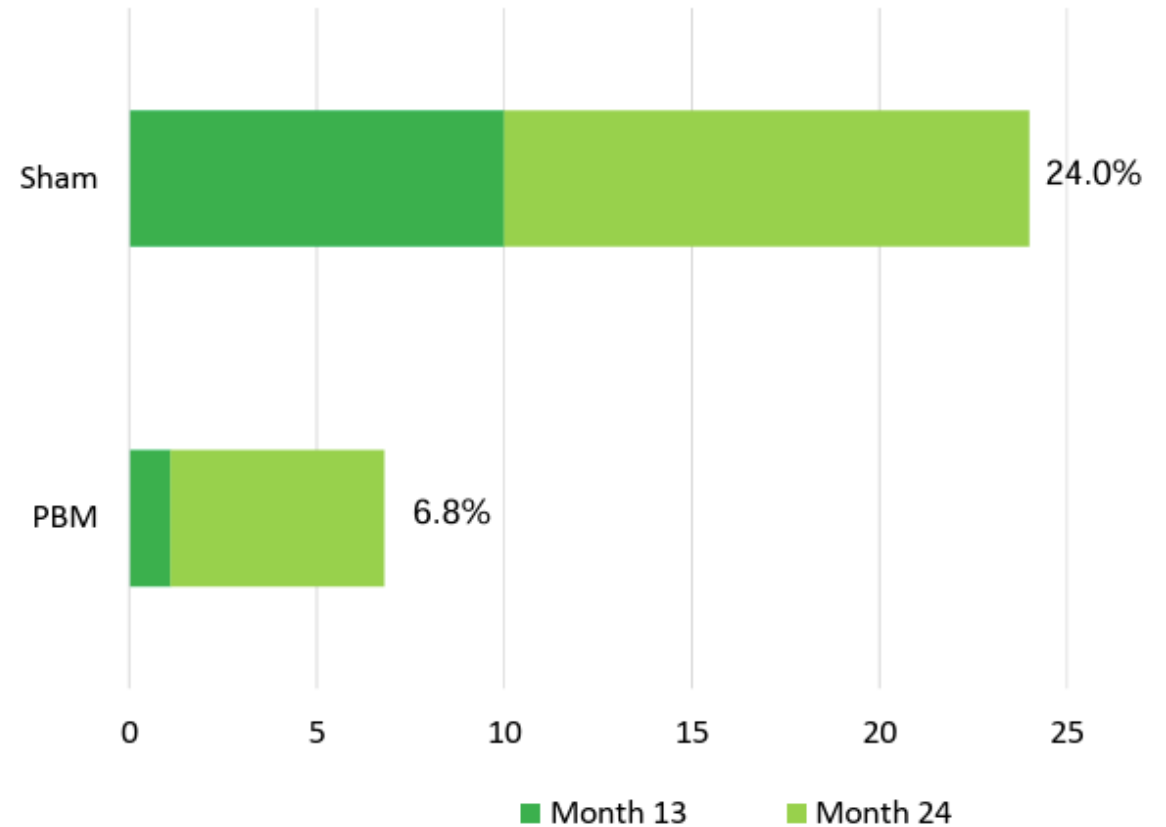


Do, D. et al., Photobiomodulation for Dry AMD. Presented at the American Academy of Ophthalmology, Chicago, IL, USA. October 20, 2024.

Lightsite III – Incident GA

- Double-masked, randomized, sham-controlled, parallel-group, prospective study.

- ▶ Significant reduction of new GA in treatment group at both 13 and 24 months.

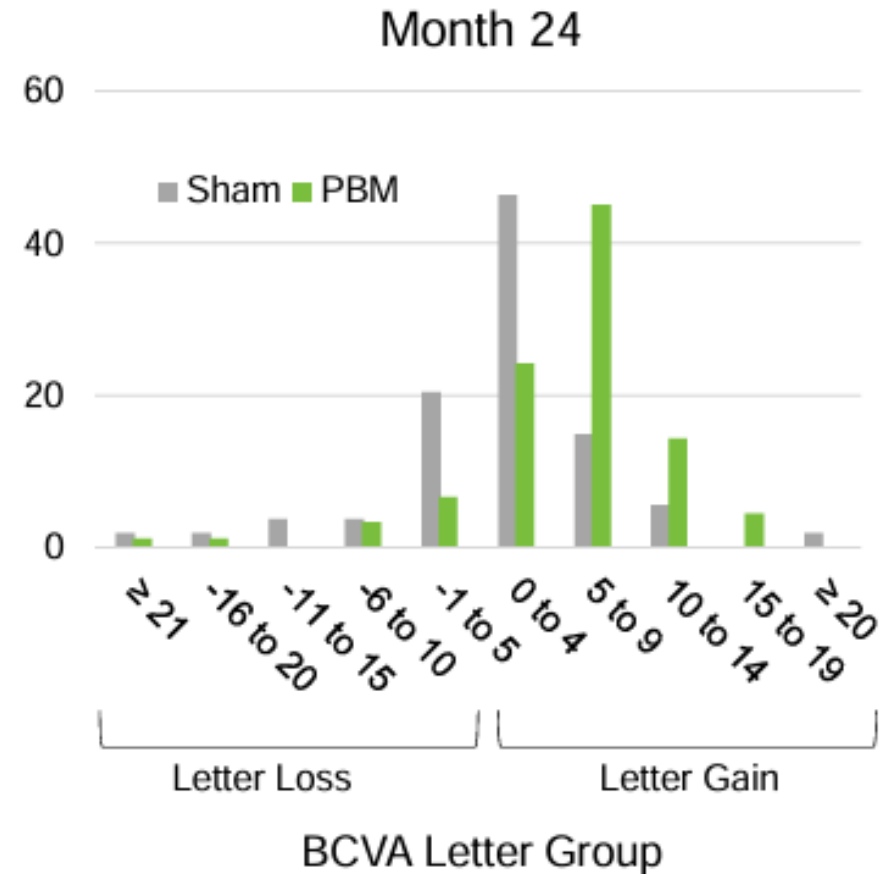


Do, D. et al., Photobiomodulation for Dry AMD. Presented at the American Academy of Ophthalmology, Chicago, IL, USA. October 20, 2024.

Lightsite III – Visual Acuity

- Double-masked, randomized, sham-controlled, parallel-group, prospective study.

- ▶ At Month 24, PBM treatment group showed ~60% of patients with > 5 letter benefits
- ▶ Sham showed significantly higher number of patients with vision loss.



- ▶ Study Limitations

Do, D. et al., Photobiomodulation for Dry AMD. Presented at the American Academy of Ophthalmology, Chicago, IL, USA. October 20, 2024.

Treatment Cost

- ▶ Self-pay cost (off-label) per year
 - ▶ \$4000 unilateral/year
 - ▶ \$6000 bilateral/year
- ▶ Insurance Coverage
 - ▶ Only on-label
 - ▶ Inconsistent

FDA Indications for Use:

- ▶ Best-corrected visual acuity of 20/32 through 20/70 **and**
- ▶ Dry age-related macular degeneration (AMD) characterized by:
 - ▶ at least 3 medium drusen ($> 63 \mu\text{m}$ and $\leq 125 \mu\text{m}$ in diameter), **or** large drusen ($> 125 \mu\text{m}$ in diameter), **or** non-central geographic atrophy, **AND**
 - ▶ The absence of neovascular maculopathy or center-involving geographic atrophy.

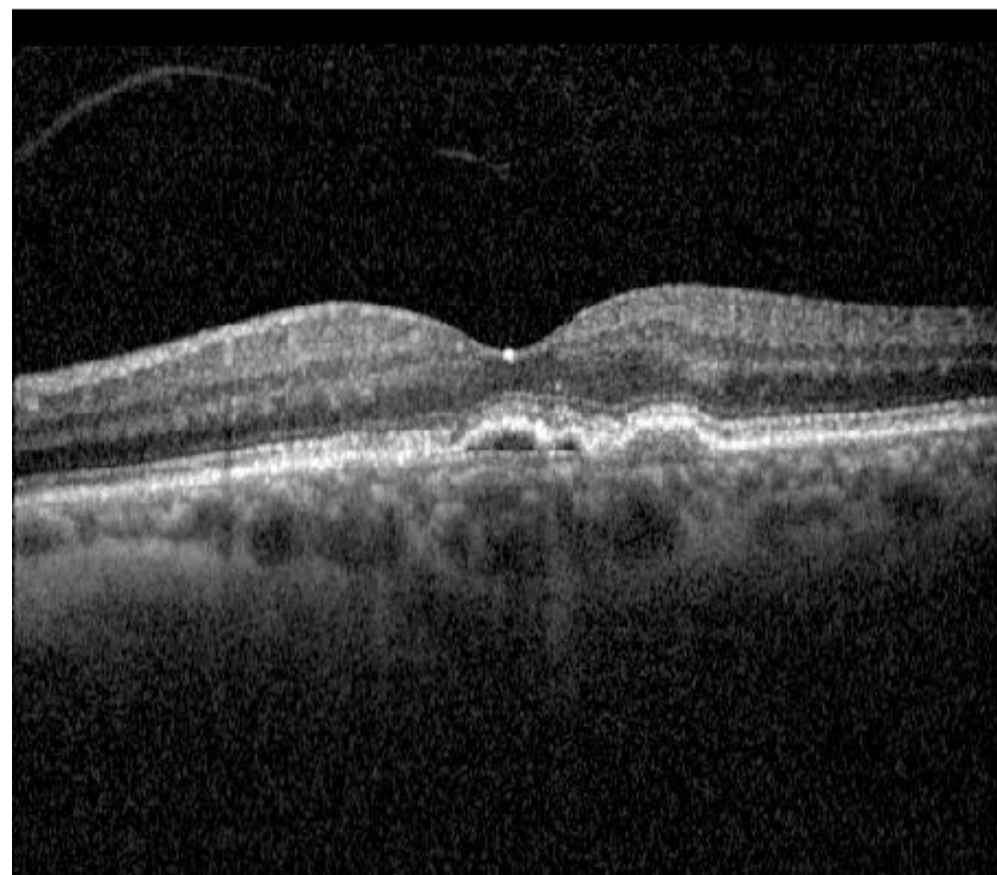
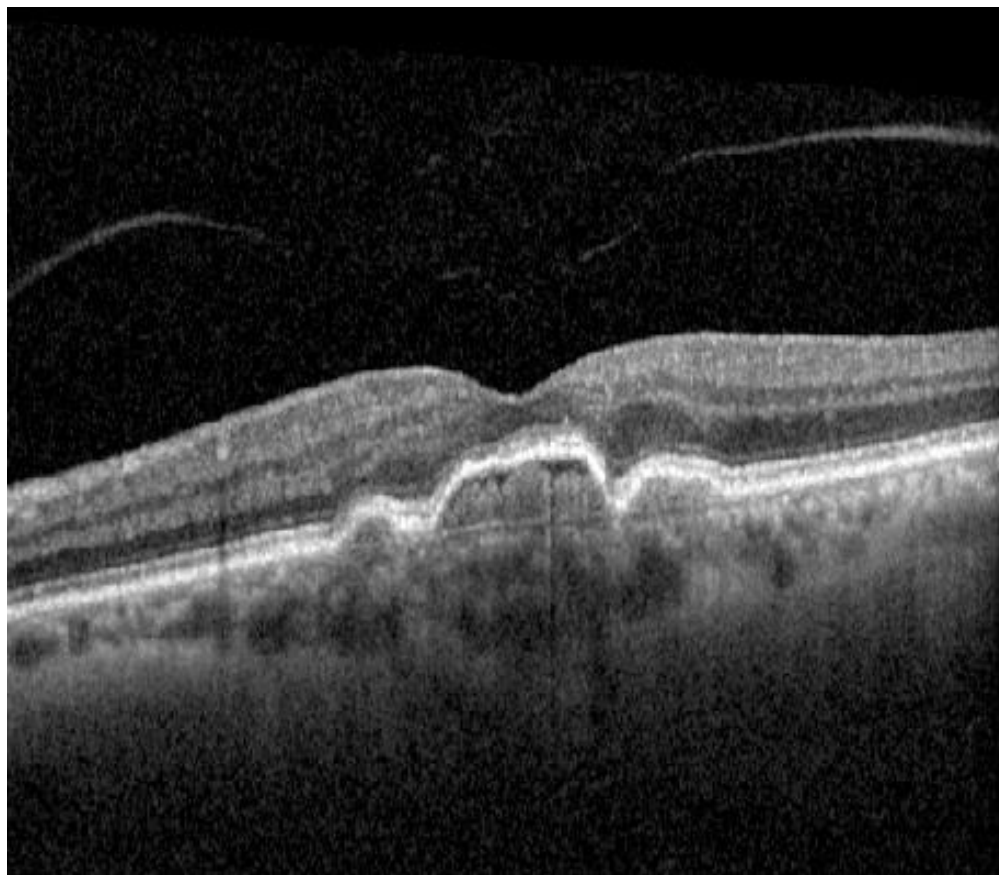
Treatment Logistics

- ▶ Treatment performed at Colorado Retina Associates **Cherry Creek** location
- ▶ 27 treatments per year
 - ▶ 3 series of 9 treatments over 3-5 weeks, q 4 months.
 - ▶ Treatment duration < 5 minutes per eye
- ▶ Long term benefits require continued treatment



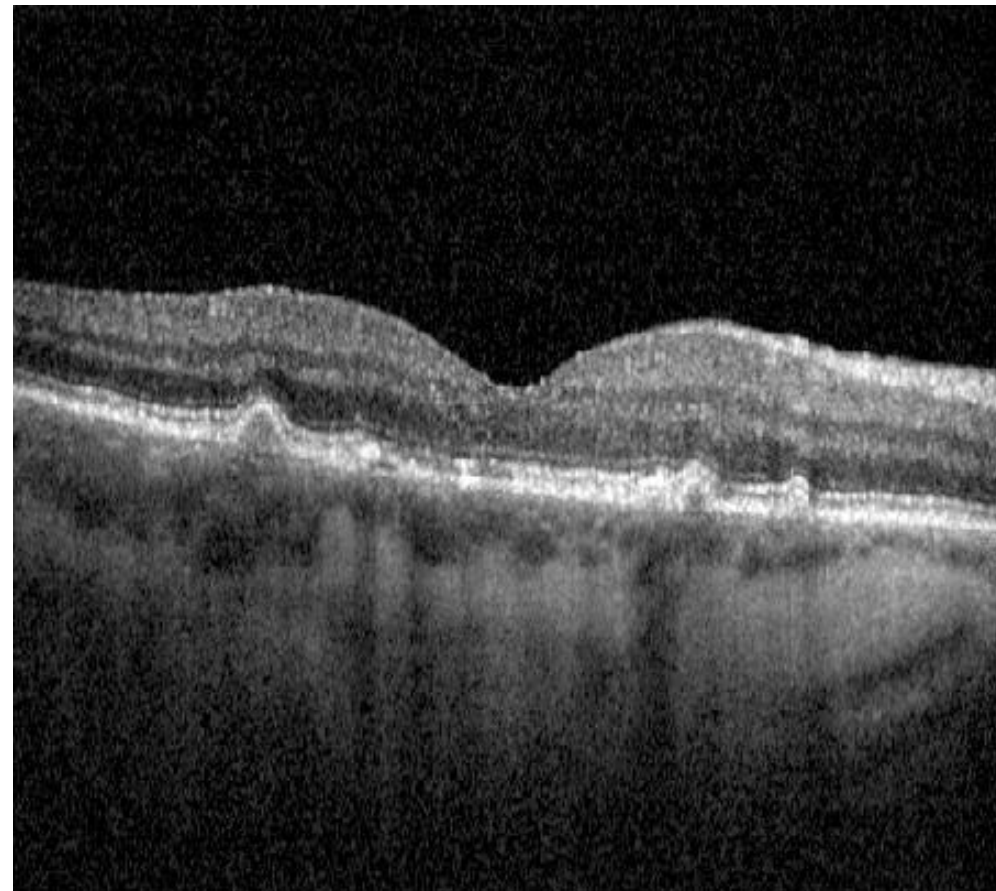
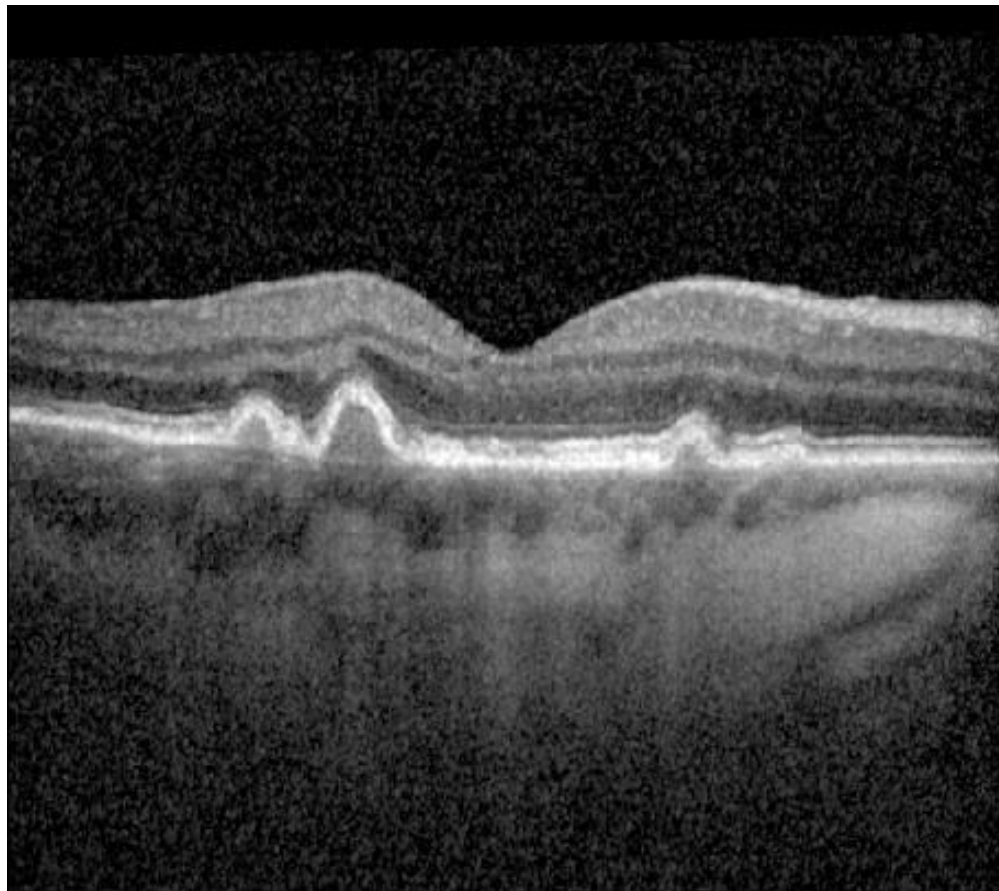
Case Examples

69yo male before and after 1 series of 9 PBM treatments:



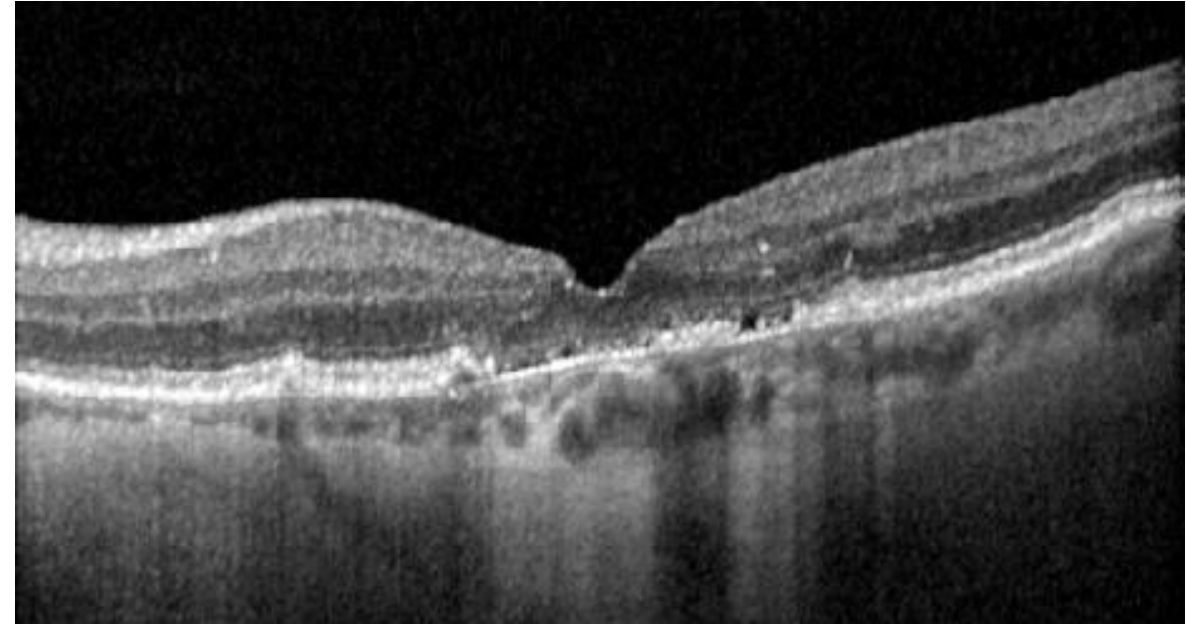
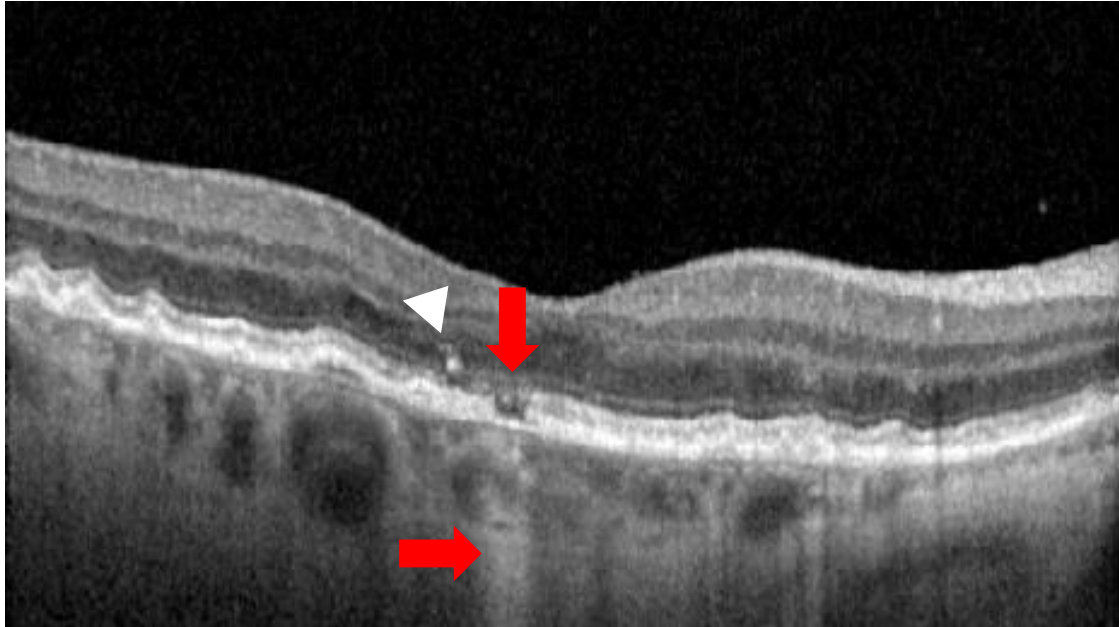
Case Examples

72yo female before and after 1 series of 9 PBM treatments



Off-Label Treatment

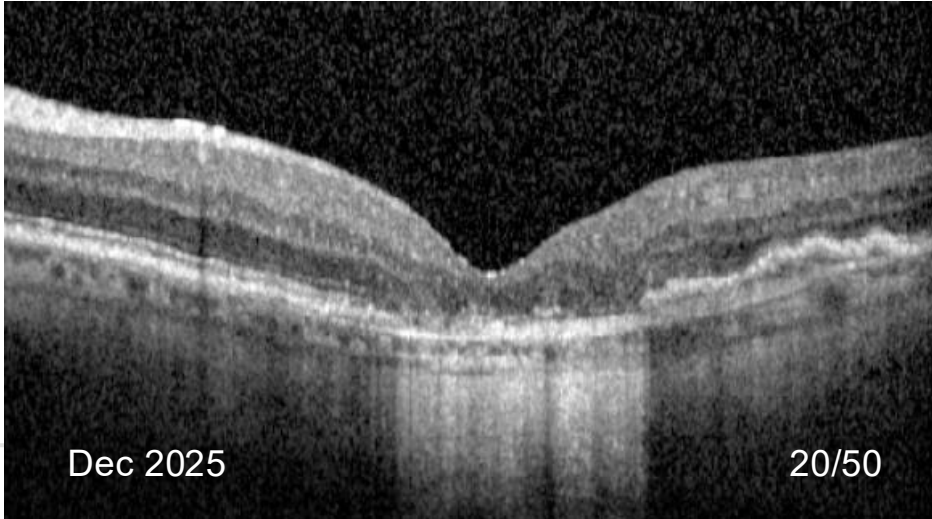
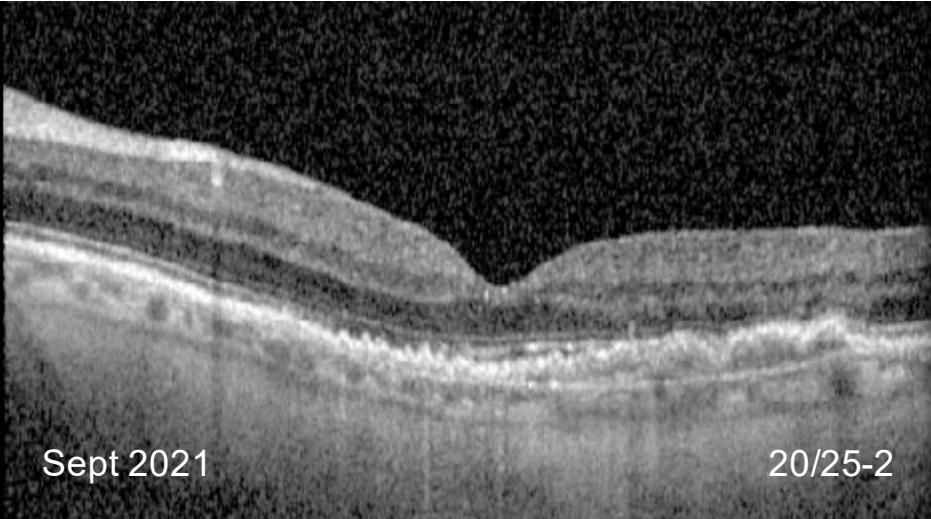
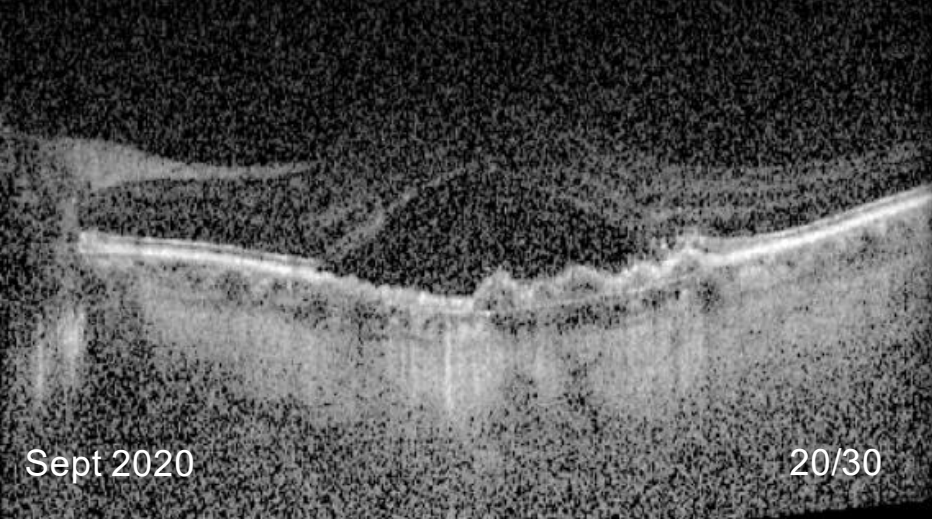
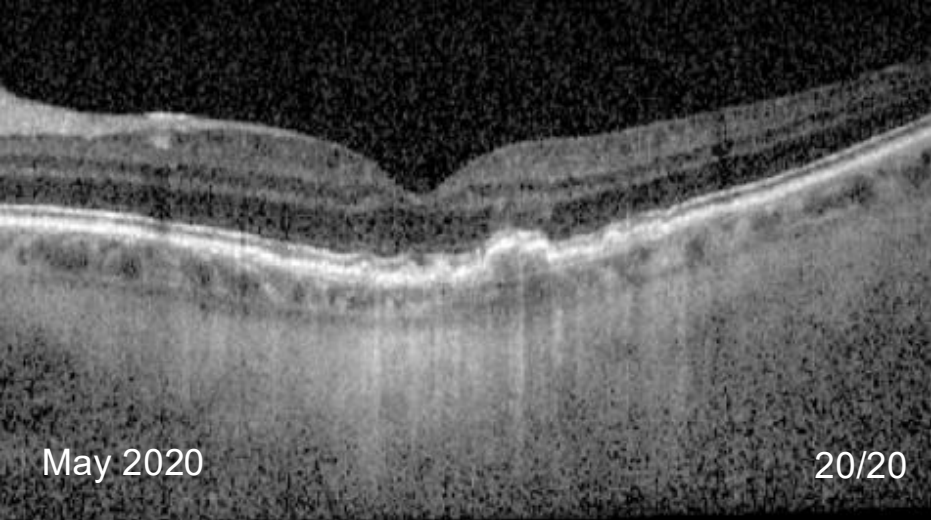
But what about this patient: 78yo female with 20/20 OD and 20/200 OS.



- ▶ High-risk characteristics: hypertransmission defect, RPE attenuation, RPE migration, central GA in the fellow eye.
- ▶ High-risk but off-label. Would you recommend PBM for this patient?

Off-Label Treatment

But what about this patient?



Clinical Pearls



PBM can slow the progression of dry AMD.



PBM may improve best corrected visual acuity for some patients.



Cost and treatment burden are currently the biggest barriers for patients.



Dry disease progression can cause vision loss in an eye with well-controlled wet disease.