

HAND-IN-HAND

Guiding Your Patients With Dry AMD



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DISCLOSURES

Speaking & Publication Honoraria: Astellas, Carl Zeiss Meditec,
Mivision

Patients lose more than just vision



require assistance
with daily activities¹



report difficulty
reading²



lose confidence
driving at night¹



In **1.6 years** after diagnosis, **67% of people** with GA lose their ability to drive³

QUESTION #1

What percentage of patients with Geographic Atrophy (GA) and no CNVM do you personally monitor with no regular ophthalmology review?

(i) 0-25%

(ii) 26-50%

(iii) 51-75%

(iv) 76-100%

WHAT IS AMD ?

Acquired later in life, progressive degenerative condition affecting photoreceptors and RPE⁴

Build up of proteinaceous and lipid deposits under the macula (**DRUSEN**)⁴

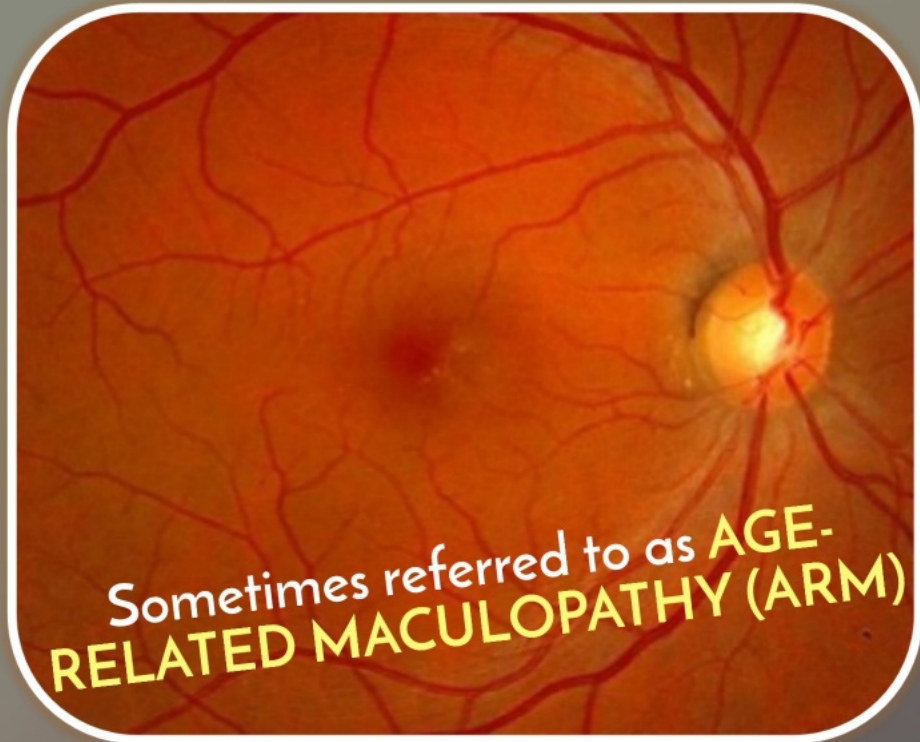
Dysregulation of immune responses via complement system causes further damage to photoreceptors and RPE⁴

Can ultimately cause loss of photoreceptors and RPE (**geographic atrophy**) or development of abnormal blood vessels (**CNVM**)⁴

AMD CLASSIFICATION

AREDS Category 1 (No or Normal Ageing Changes)

No drusen / a few hard drusen
No RPE abnormalities



AREDS Category 2 ("Early" AMD)

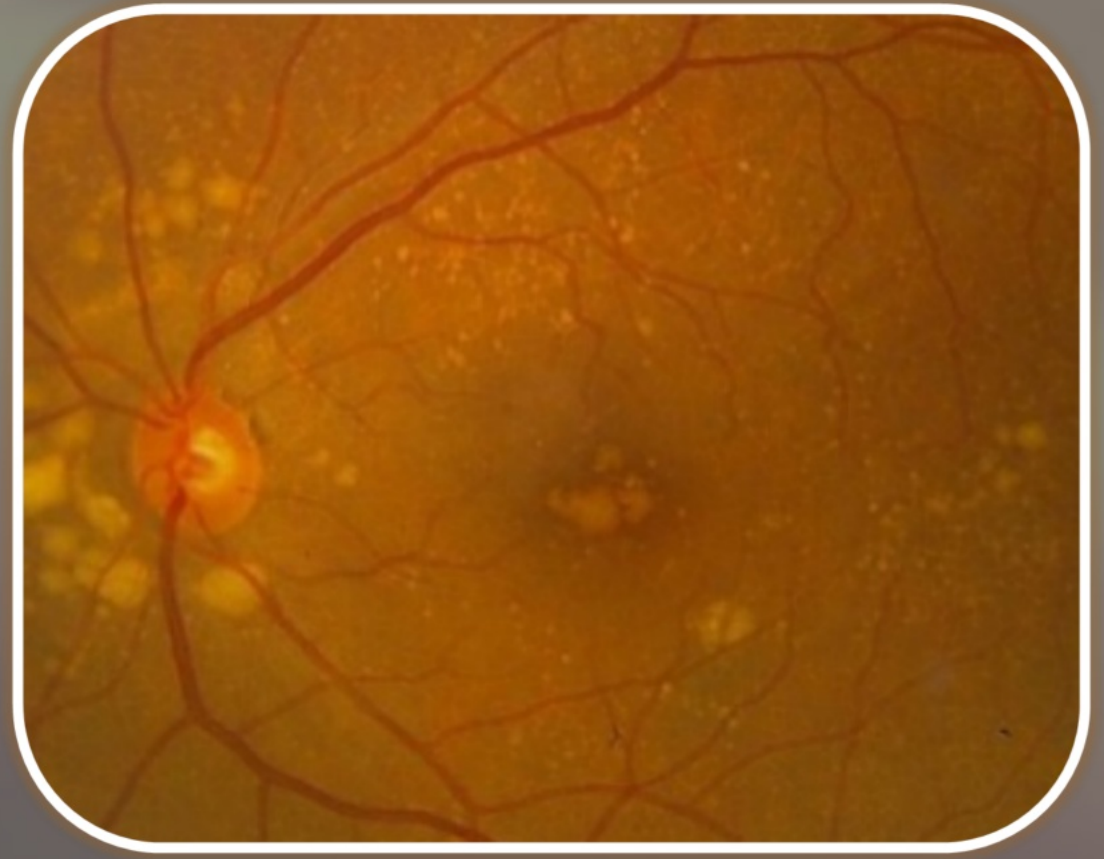
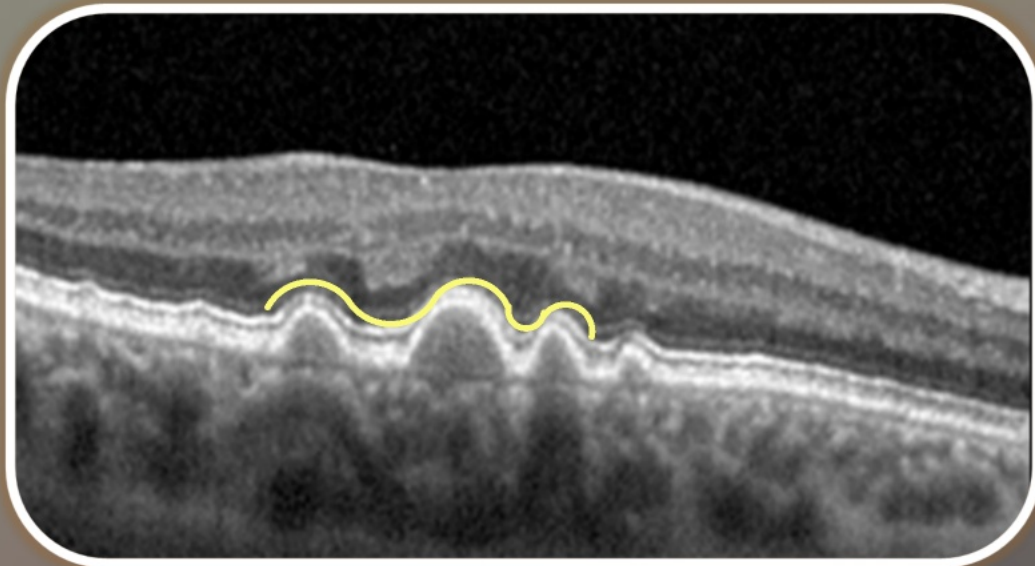
Several hard drusen
OR a few intermediate drusen (63-124um)
No RPE abnormalities



AMD CLASSIFICATION

AREDS Category 3 ("Intermediate" AMD)

Many intermediate-sized drusen
OR > 1 large drusen (>125 μ m diameter),
OR non-centre involving GA
RPE abnormalities



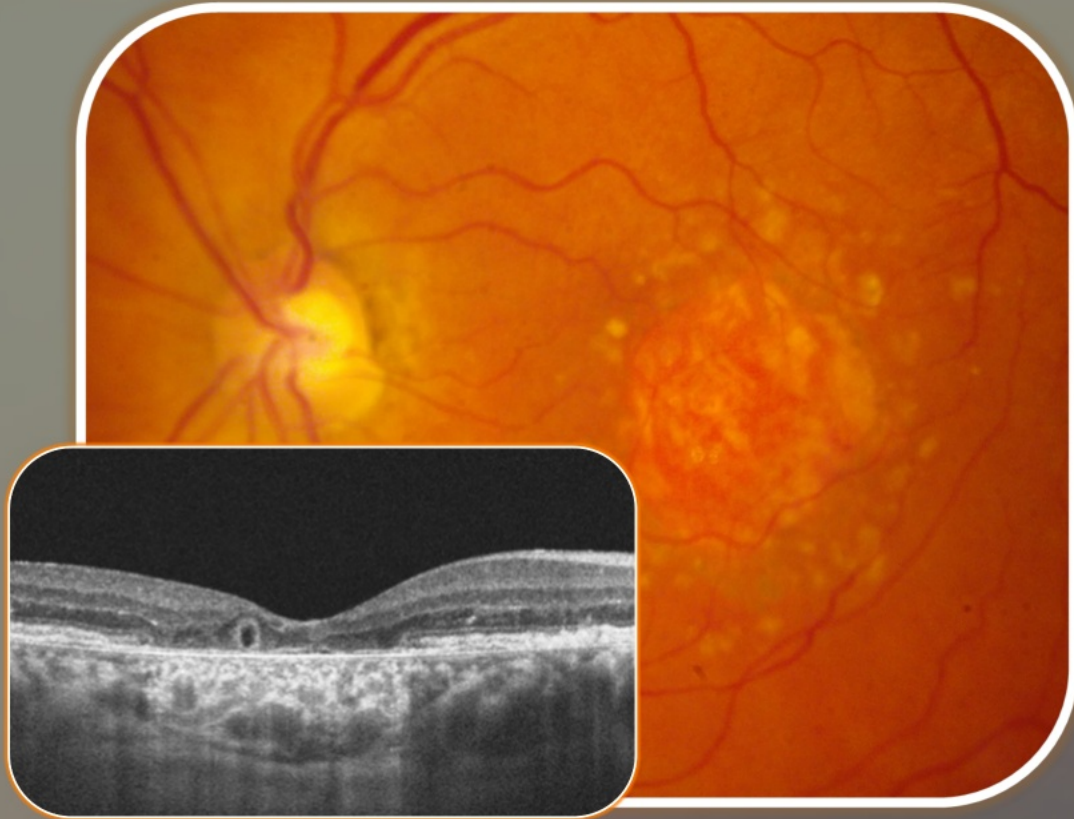


drusen = *sub*-RPE elevations

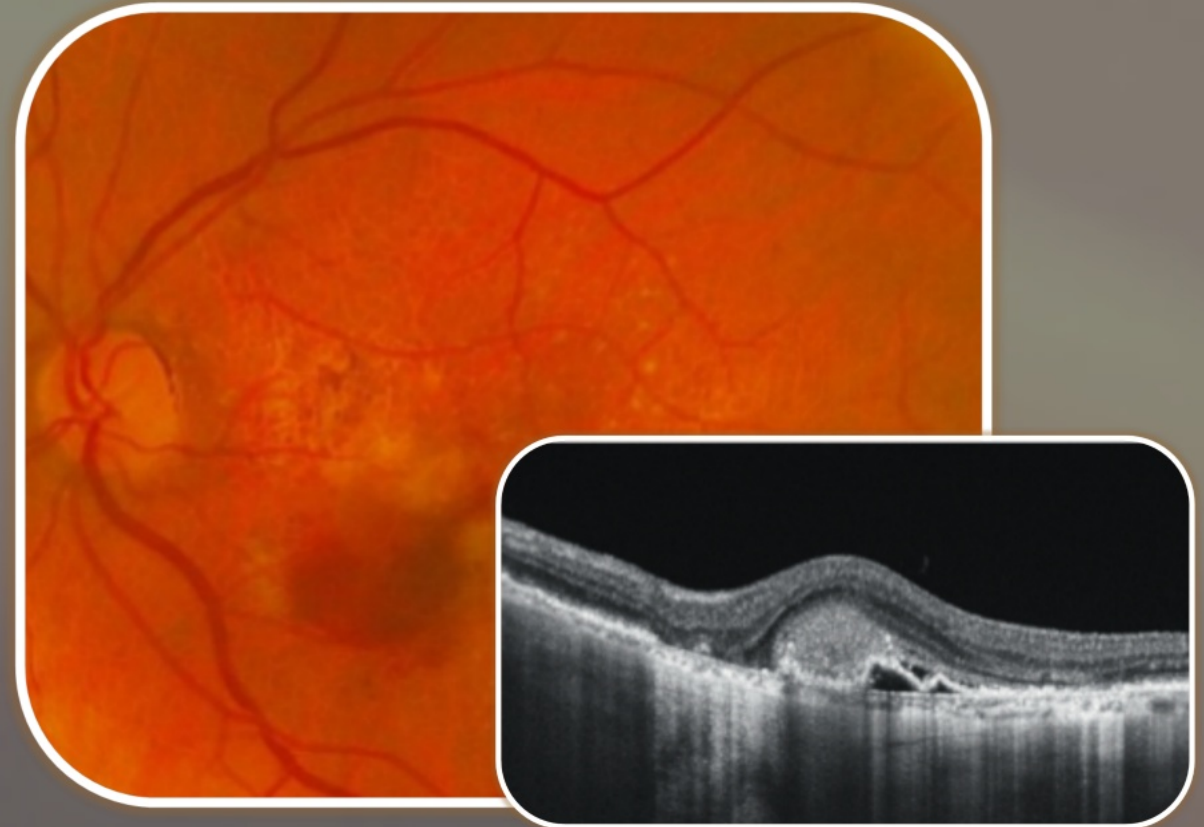
This is a cross-sectional OCT scan of the retina. The image shows various retinal layers. A yellow wavy line is drawn over the retinal pigment epithelium (RPE) layer, highlighting several small, dome-shaped elevations. These elevations are drusen, which are deposits of extracellular material between the RPE and the underlying choroid. The text 'drusen = sub-RPE elevations' is overlaid on the image, with 'drusen' and 'sub' in yellow and 'RPE' in white.

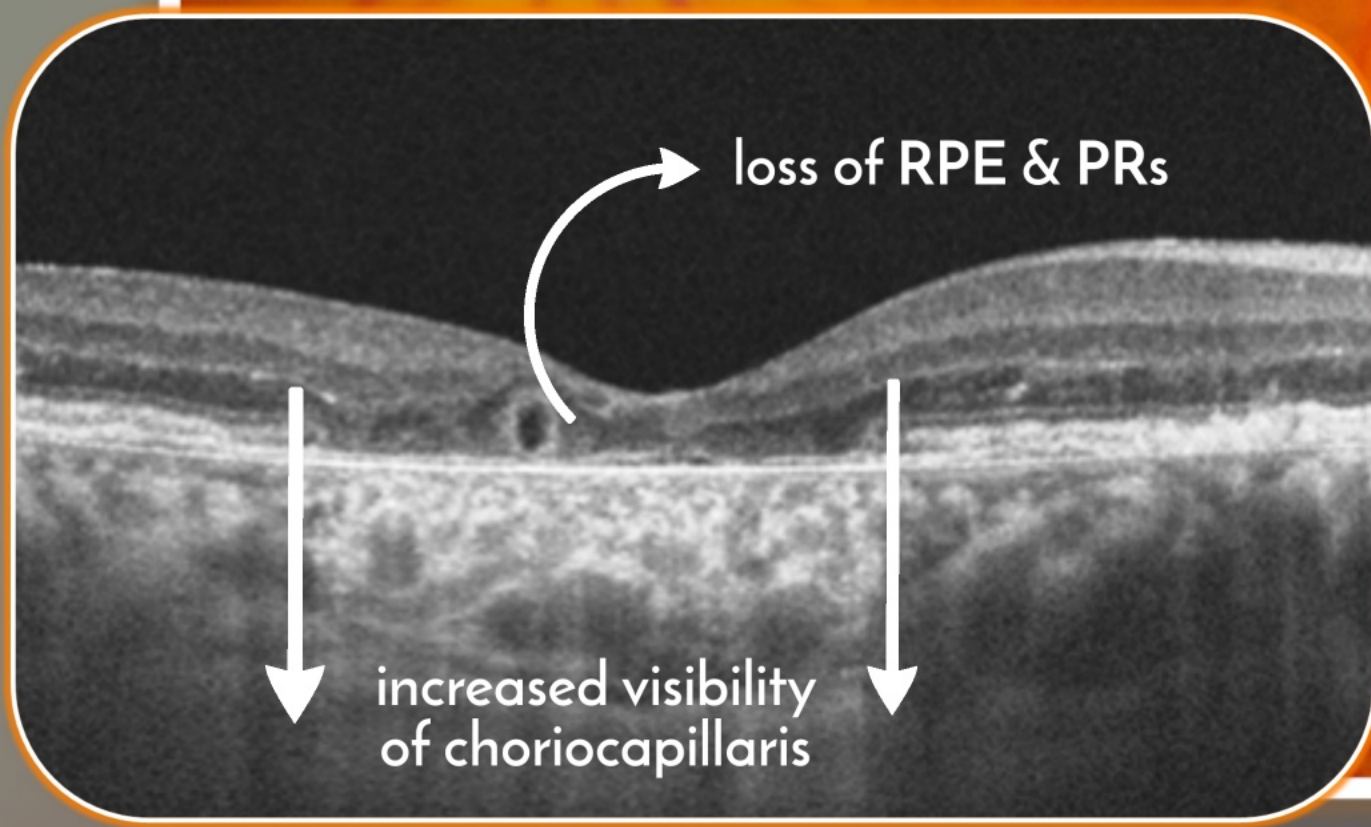
AMD CLASSIFICATION

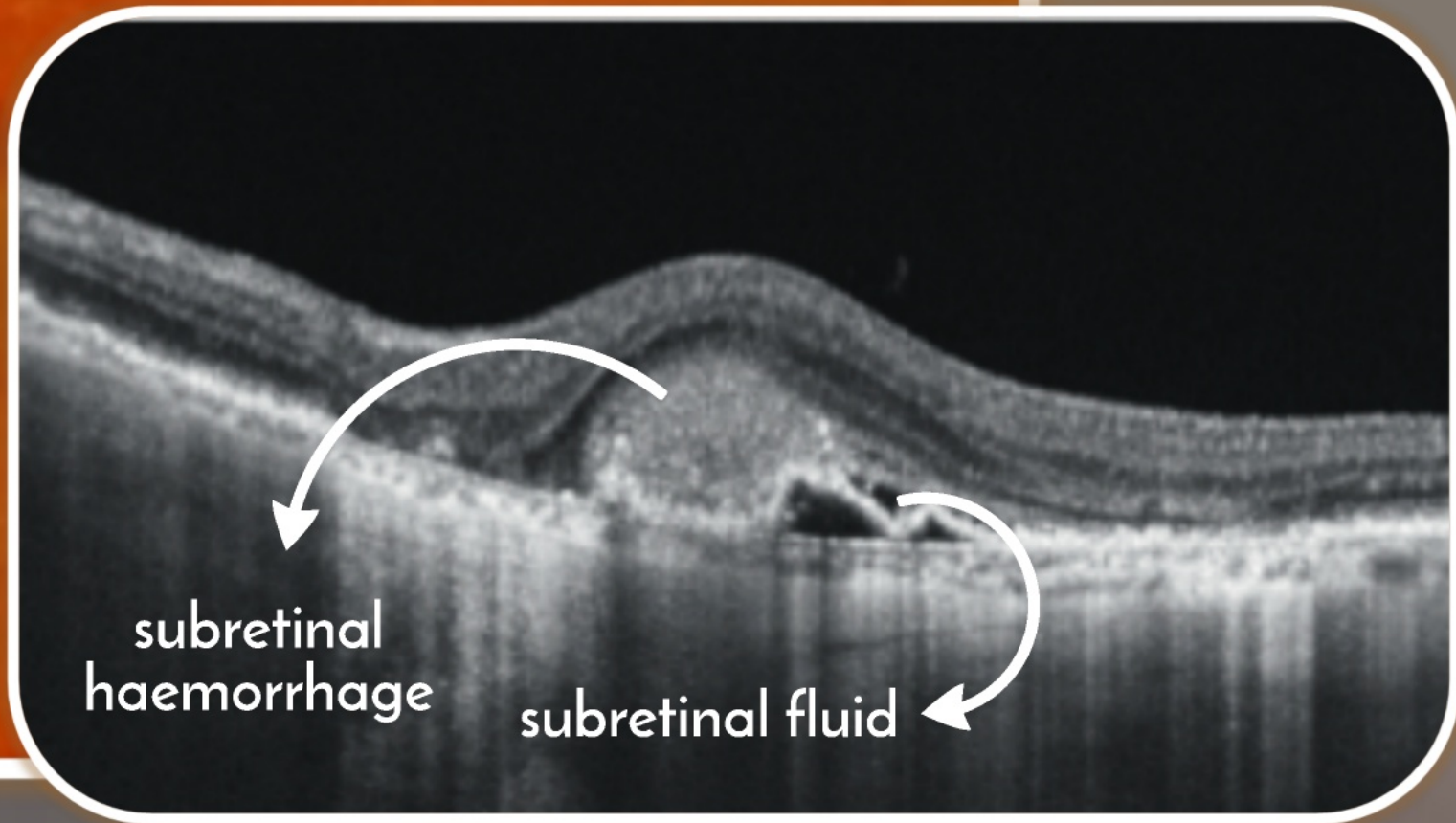
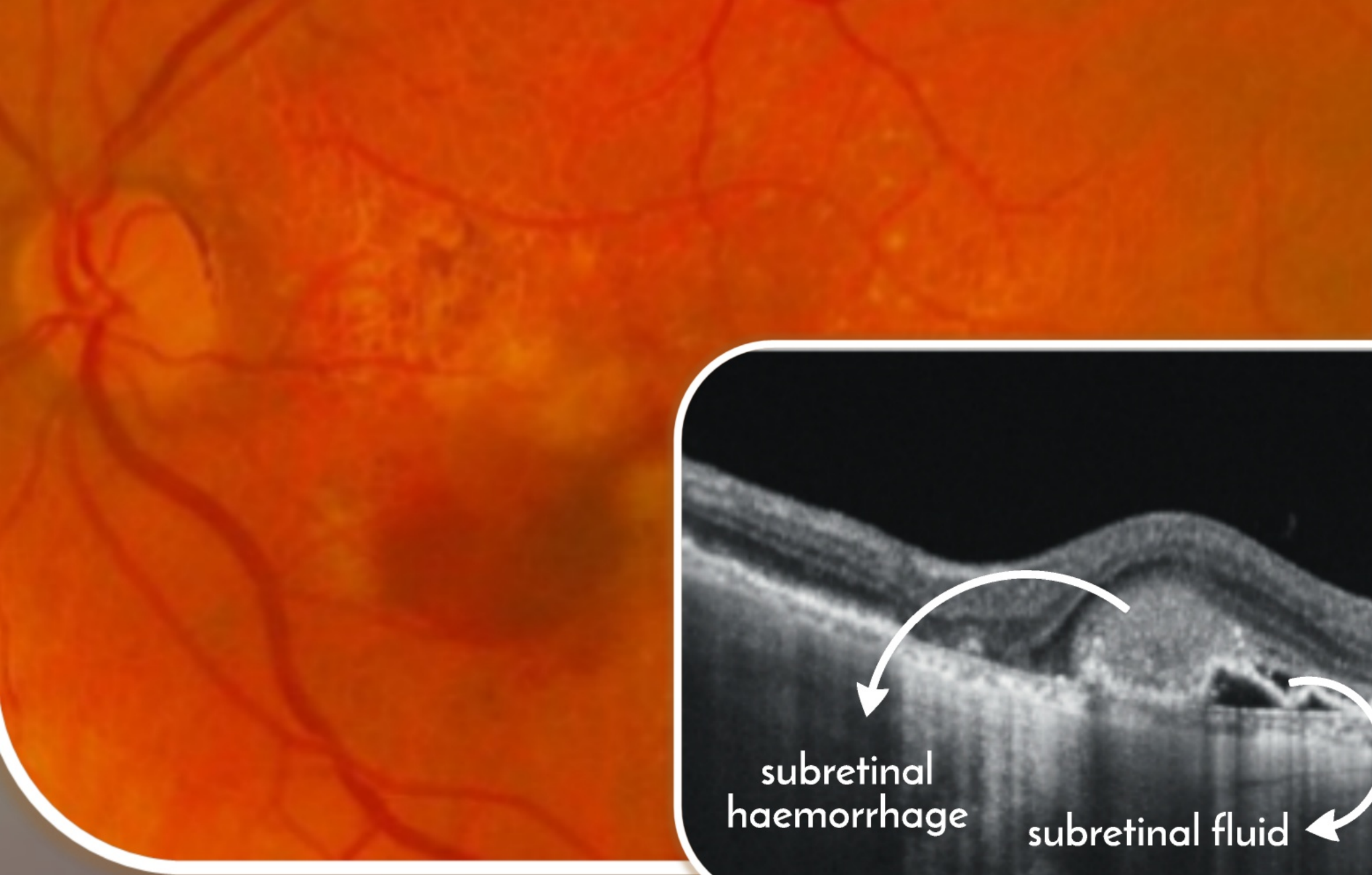
AREDS Category 4 ("Late" AMD)
Centre-involving GA (usually $>175\mu\text{m}$)



AREDS Category 4 ("Late" AMD)
Choroidal neovascularisation



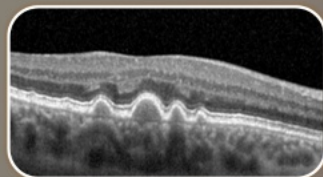




WHY GRADE AMD?

Know risk of progression to late-stage disease over 5 years⁵

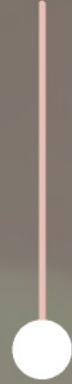
- **Normal:** <1%
 - **Early AMD:** 1.3%
 - **Intermediate AMD:** up to 27%
- every 1-2 years*
- every 6-12 months*



Many intermediate-sized drusen
OR > 1 large drusen (>125µm diameter),
OR non-centre involving GA

Set appropriate **review** periods and management options

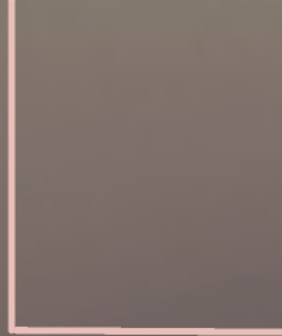
OXIDATIVE STRESS



GENETICS



PATHOGENESIS



IMMUNE (COMPLEMENT)
SYSTEM

GENETICS

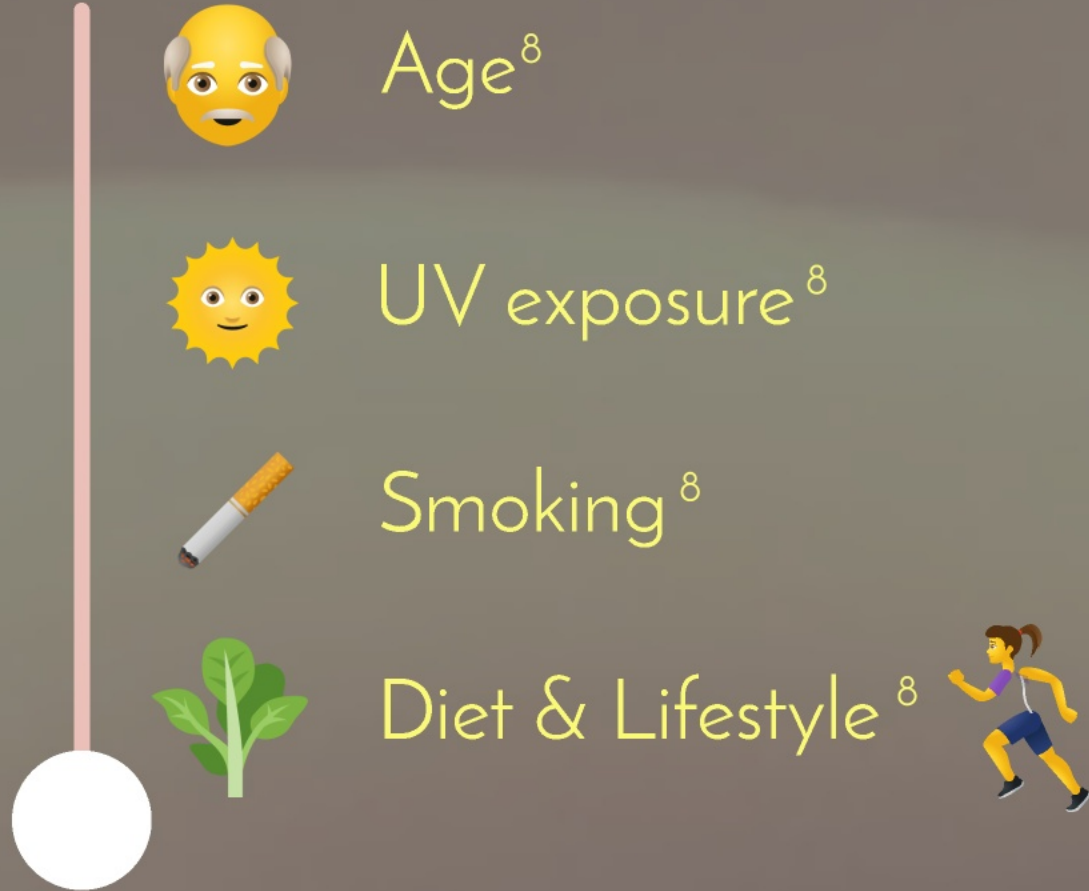
P

52 common known gene variants associated with AMD risk (eg. *CFH*, *ARMS2/HTRA1*)⁶

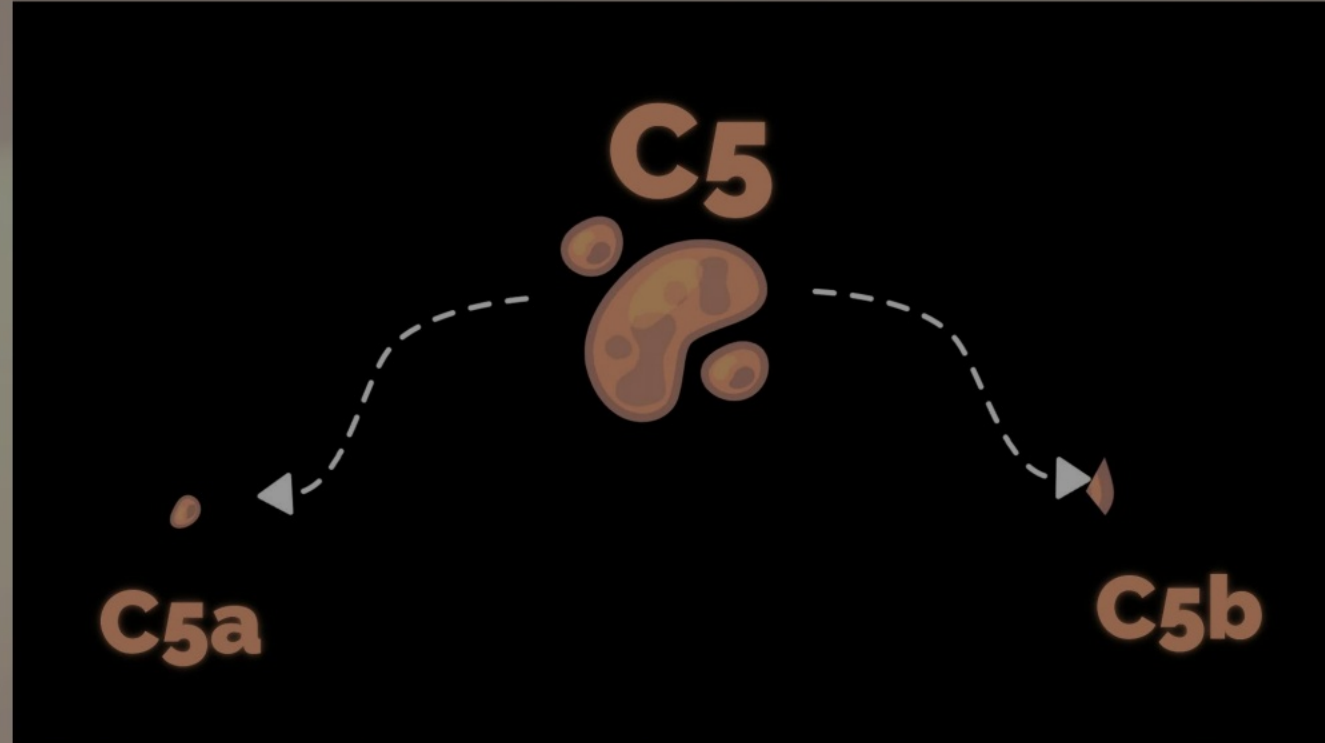
Phenotypic presentation more prevalent with age

- 288 million people worldwide will have AMD by 2040⁷
- greater proportion of late-stage disease due to aging population⁷
- approximately 5 million people worldwide with GA⁷

OXIDATIVE STRESS



FOUNDATIONS



IMMUNE (COMPLEMENT) SYSTEM

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BREAKING BAD NEWS

(1) Educate and empower your patients

- Amsler grid
- AREDS2 anti-oxidant supplements (The 5Ws)
- Diet & lifestyle

(2) Try a "Positive-Negative-Positive" approach

BREAKING BAD NEWS

(3) . . . But ultimately, bad news is bad news no matter what . . .

- Be honest
- Allow time and preparation
- Support person
- Titrate your information (second appt, reliable external resources)

QUESTION #2

Which of the following techniques do you routinely perform for your AMD patients, new and returning? Please select all that apply.

- (i) SD-OCT
- (ii) Colour fundus photography
- (iii) Fundus autofluorescence (FAF)
- (iv) OCT-angiography (OCT-A)
- (v) VFT 10-2
- (vi) I don't perform any of these techniques

HOW TO MONITOR AMD

- (1) Colour fundus photography
- (2) SD-OCT
- (3) Fundus autofluorescence (FAF)
- (4) Red-free imaging
- (5) OCT-Angiography (OCT-A)
- (6) Visual Acuity (to some degree . . .)

HOW TO MONITOR AMD

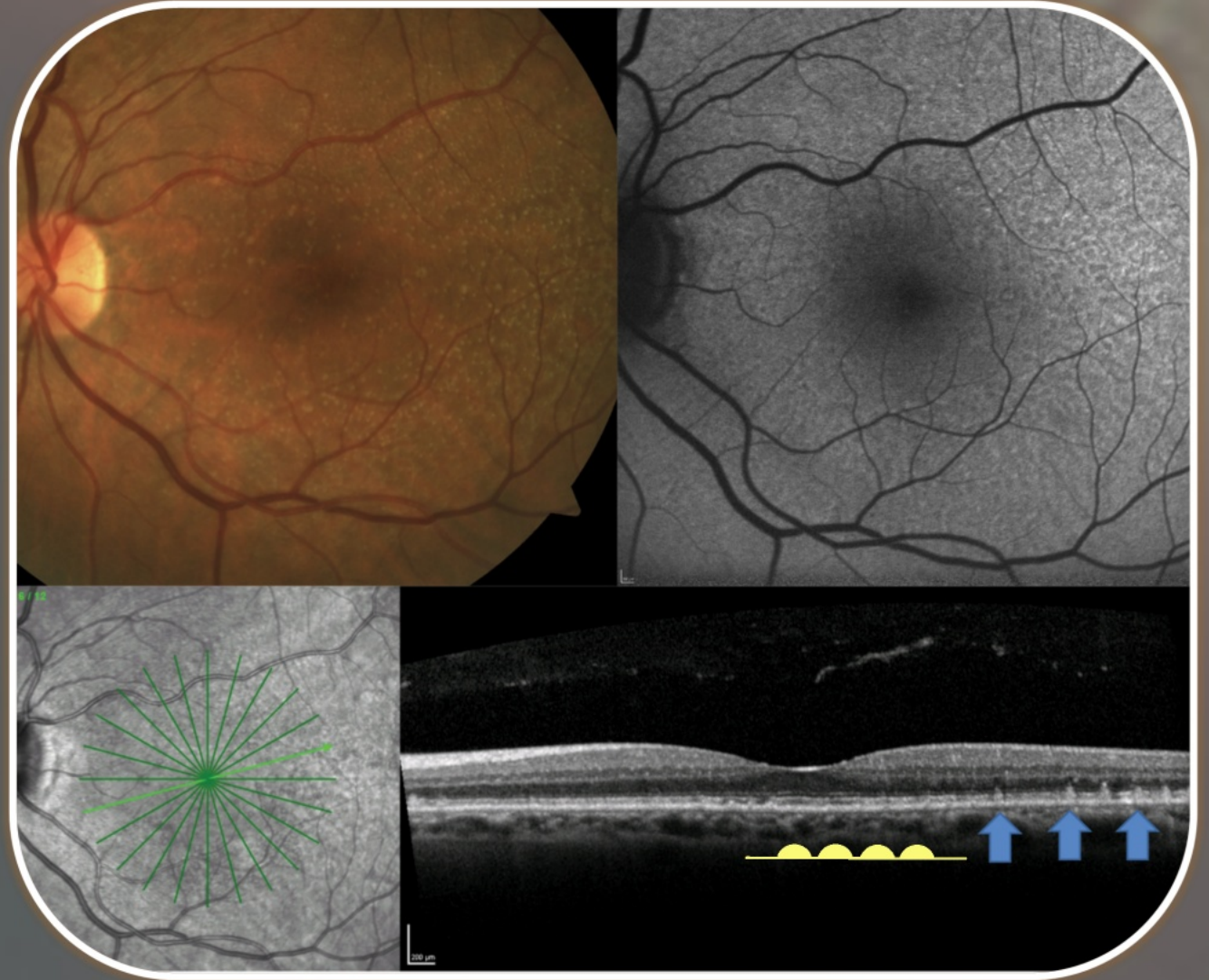
(2) SD-OCT

- useful for detecting subtle RPE changes and drusen (early AMD)
- can demonstrate advanced AMD very clearly (GA/exudation from CNVM)
- recognised high-risk OCT-based biomarkers for progression of dry AMD, especially to GA

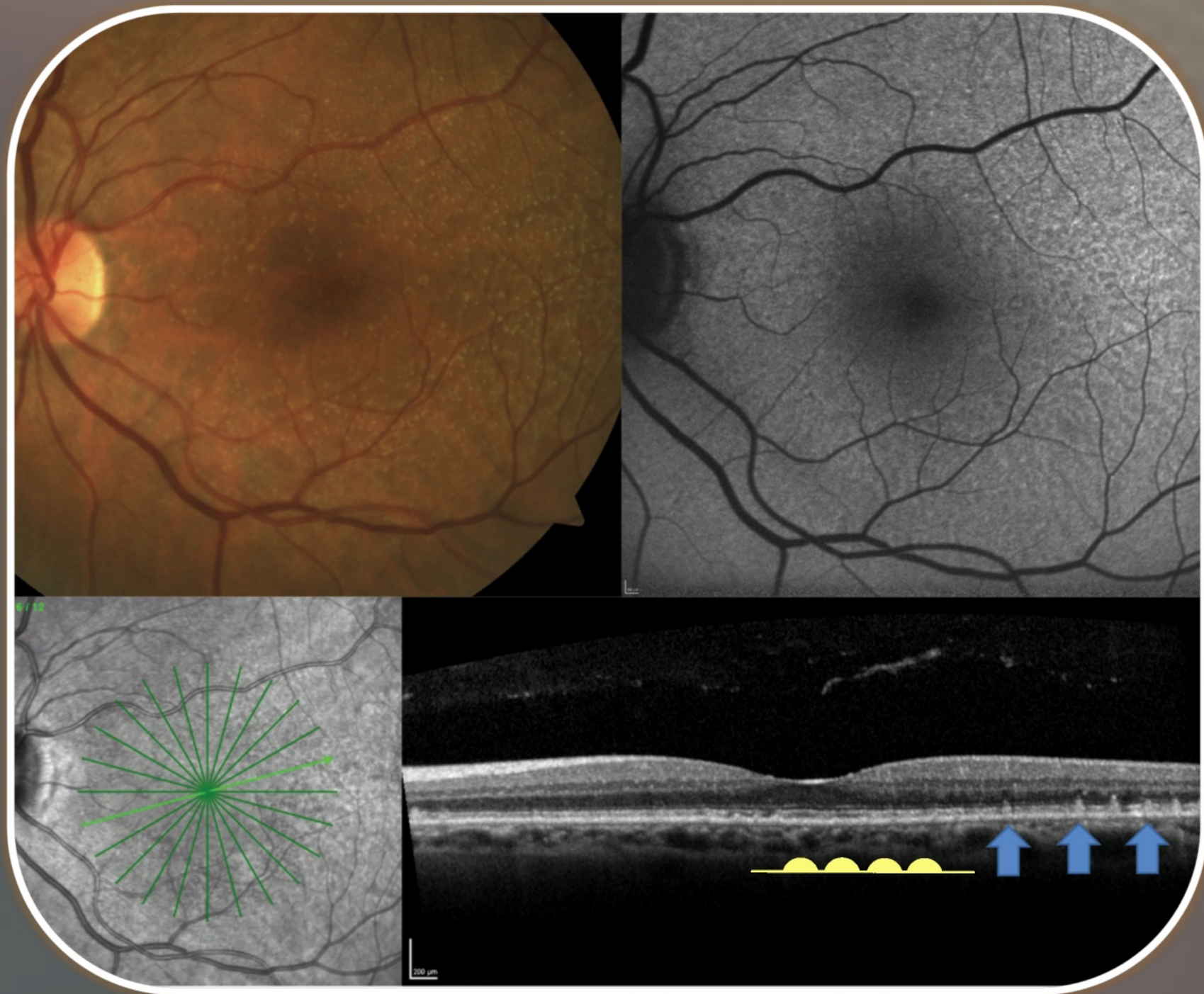
HOW TO MONITOR AMD

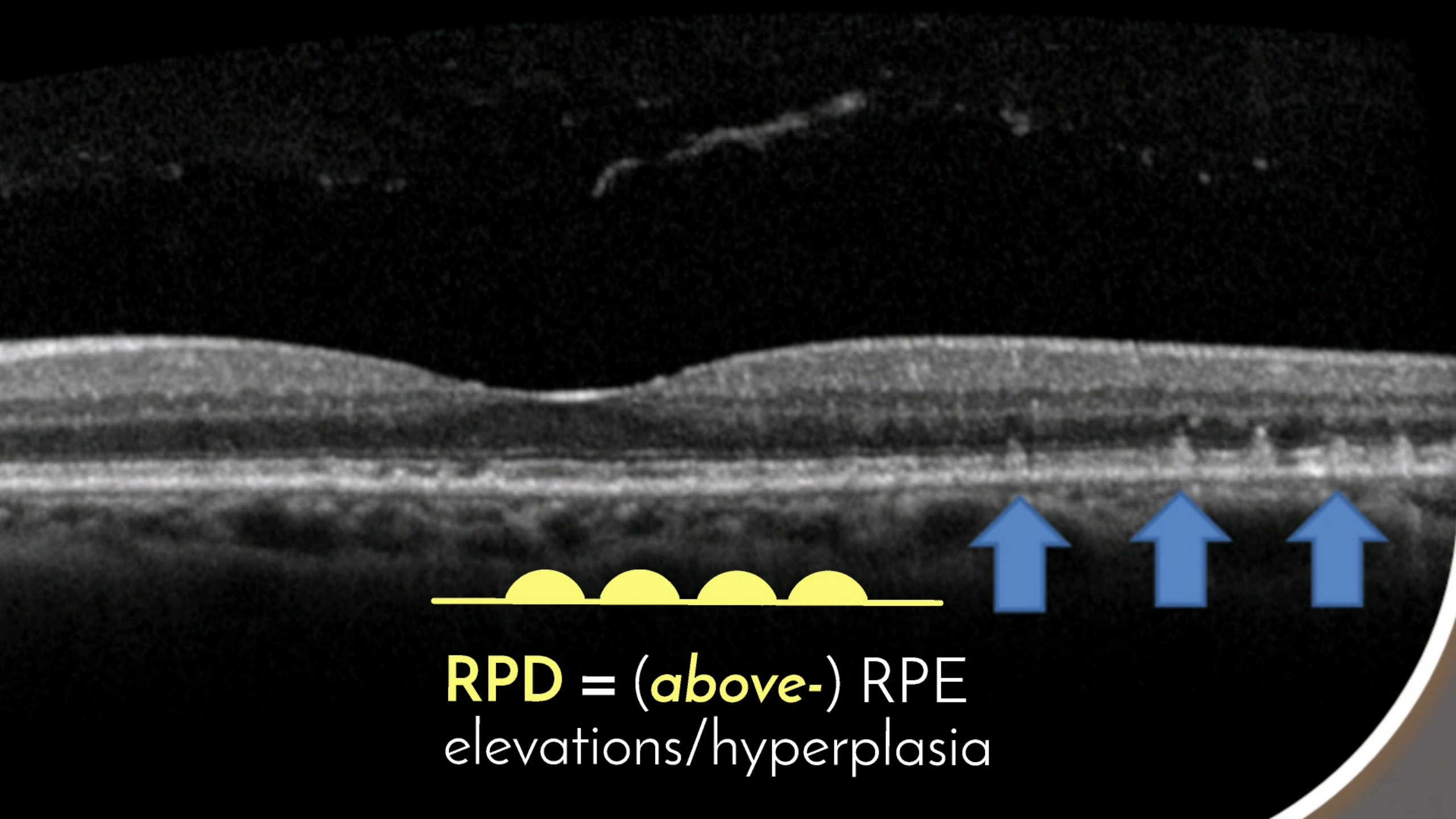
(2) SD-OCT (potential high-risk features)

- reticular pseudodrusen



al
rusen



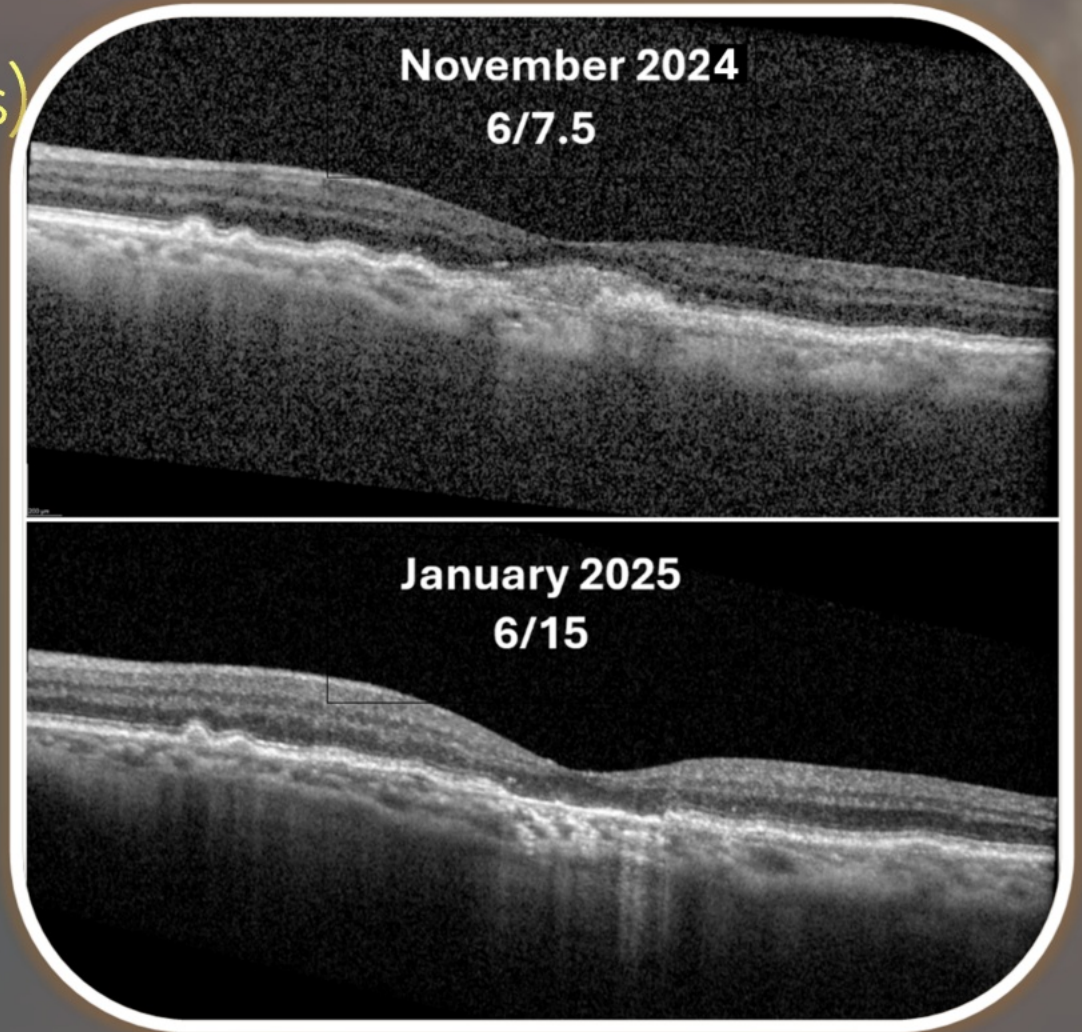


RPD = (*above-*) RPE
elevations/hyperplasia

HOW TO MONITOR AMD

SD-OCT (potential high-risk features)

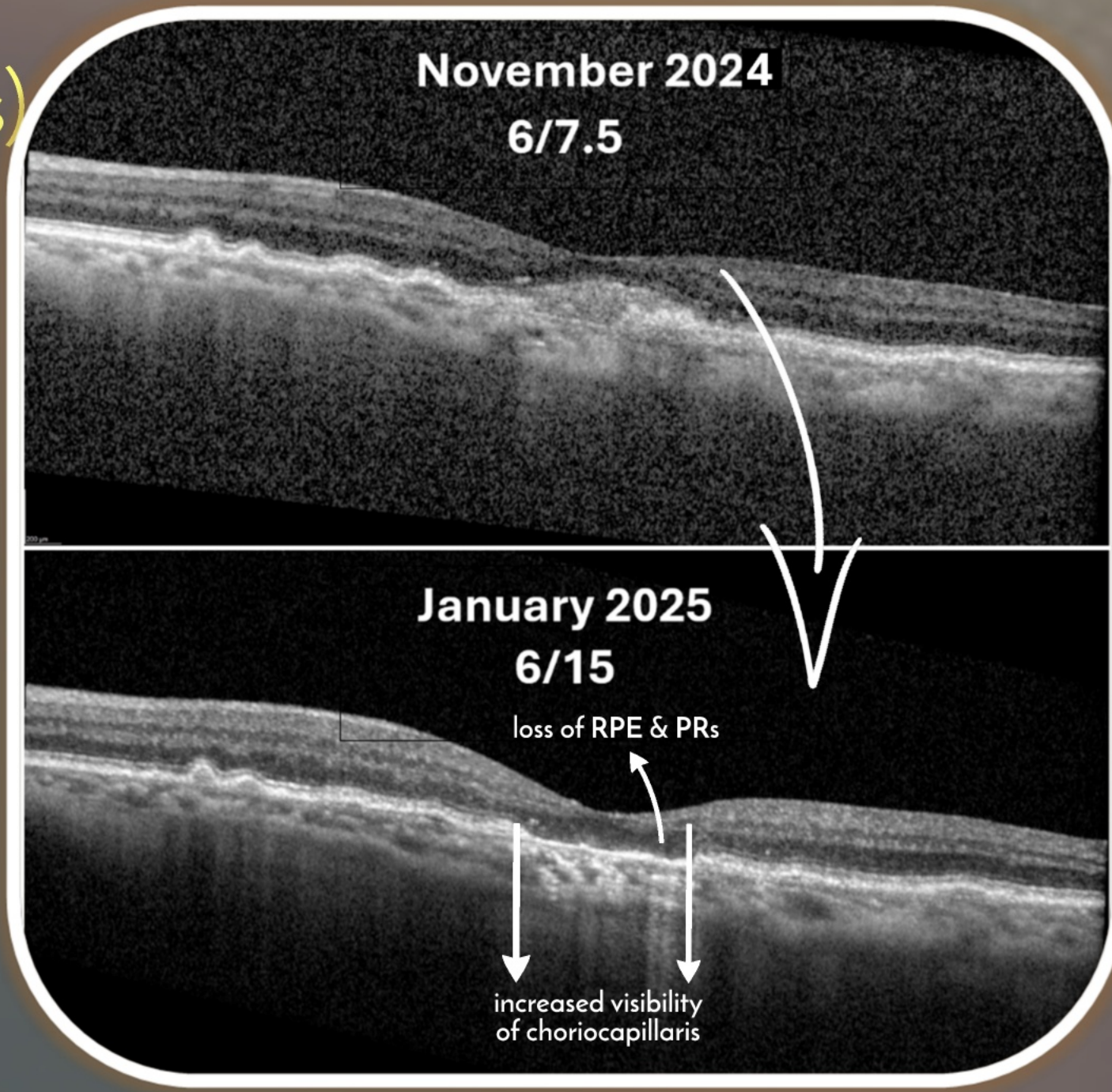
- high-volume drusen
- collapse of drusenoid or fibrovascular PEDs



n-risk features)

n

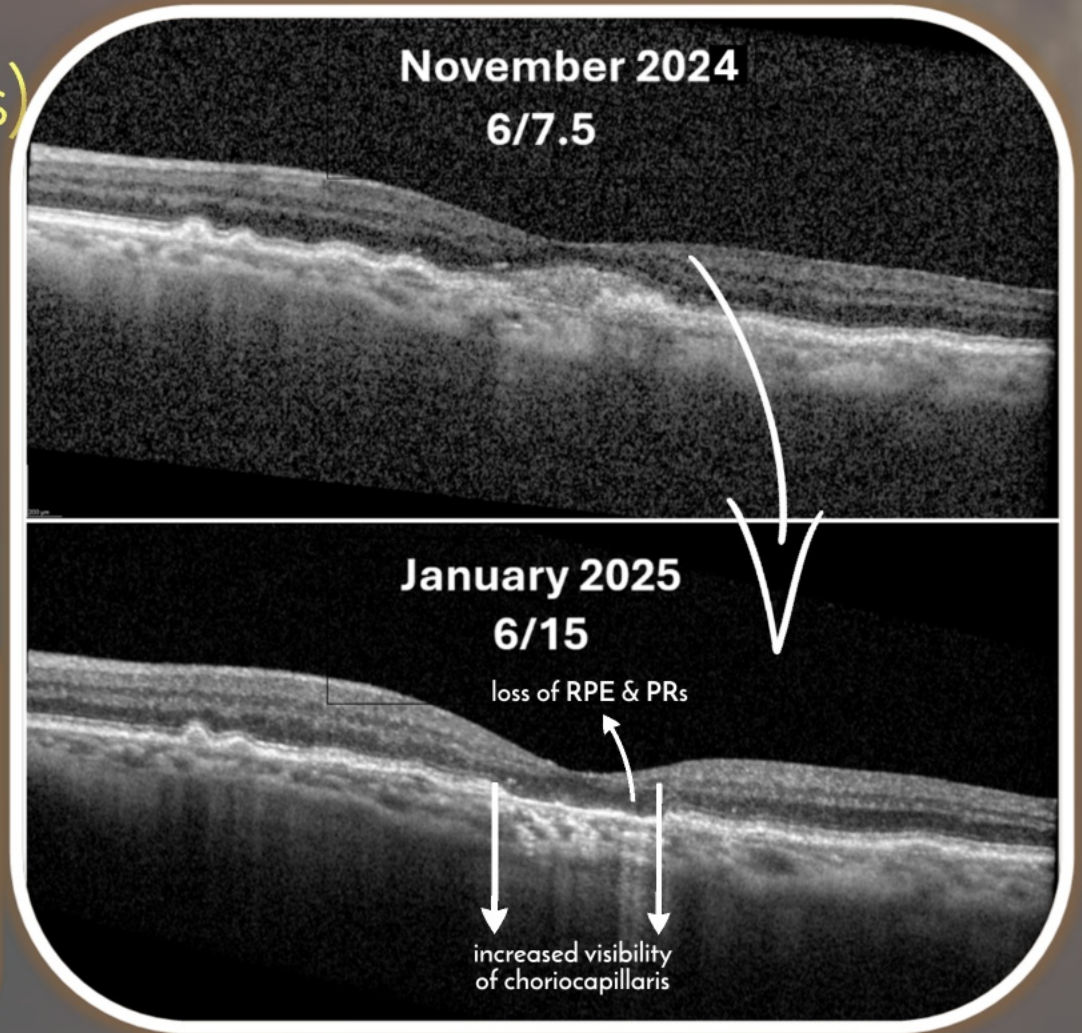
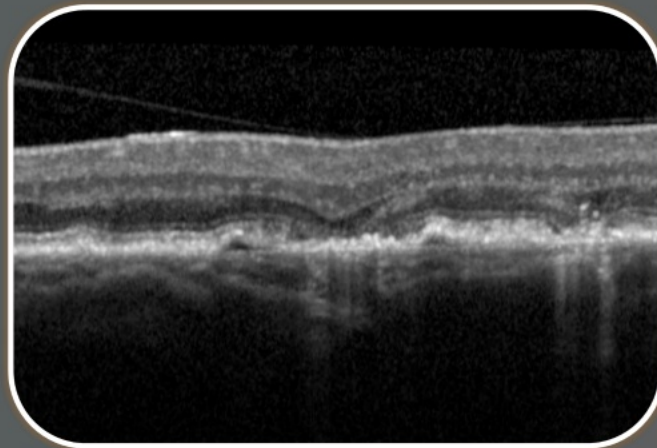
id
Ds



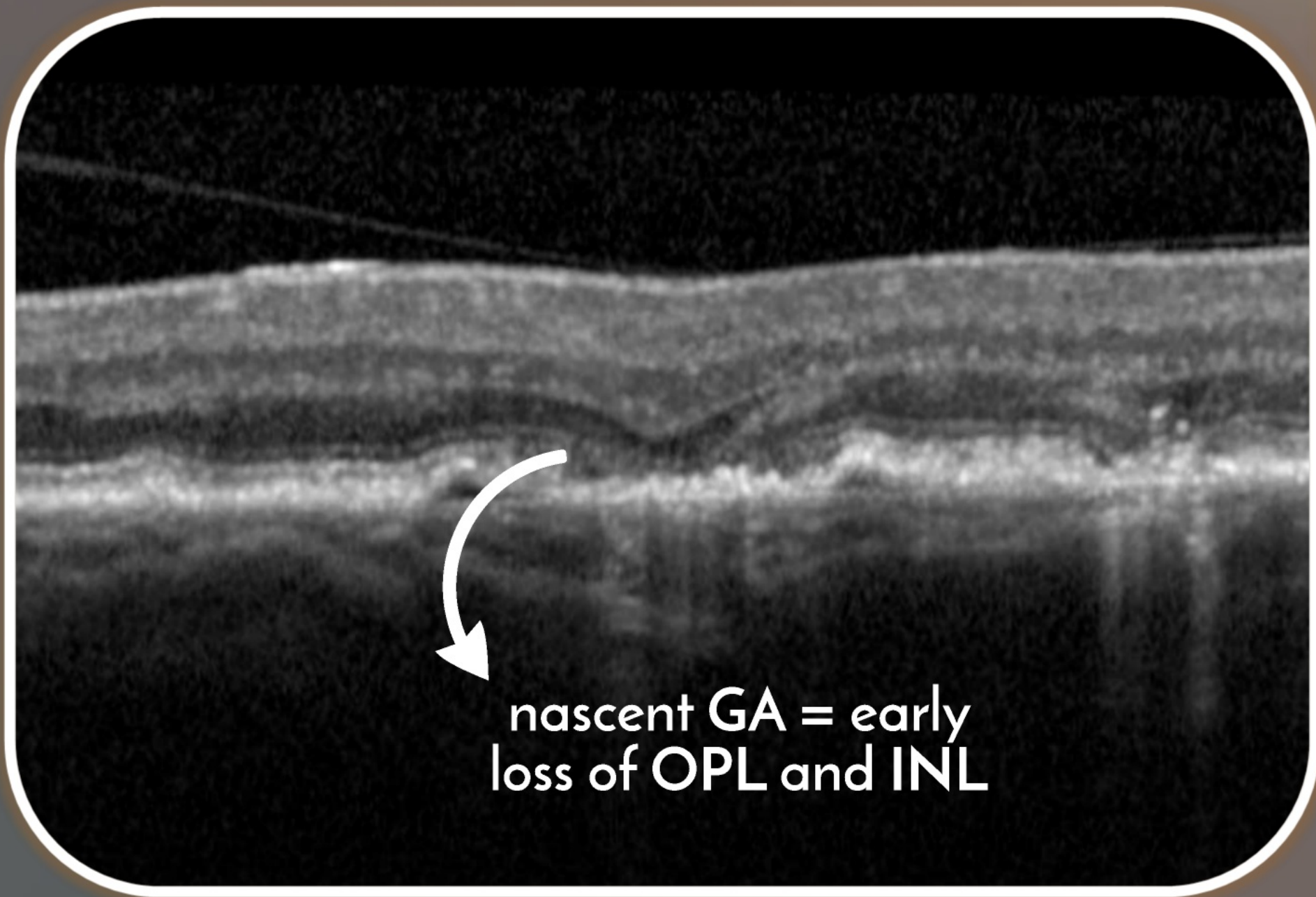
HOW TO MONITOR AMD

SD-OCT (potential high-risk features)

- high-volume drusen
- collapse of drusenoid or fibrovascular PEDs
- nascent GA



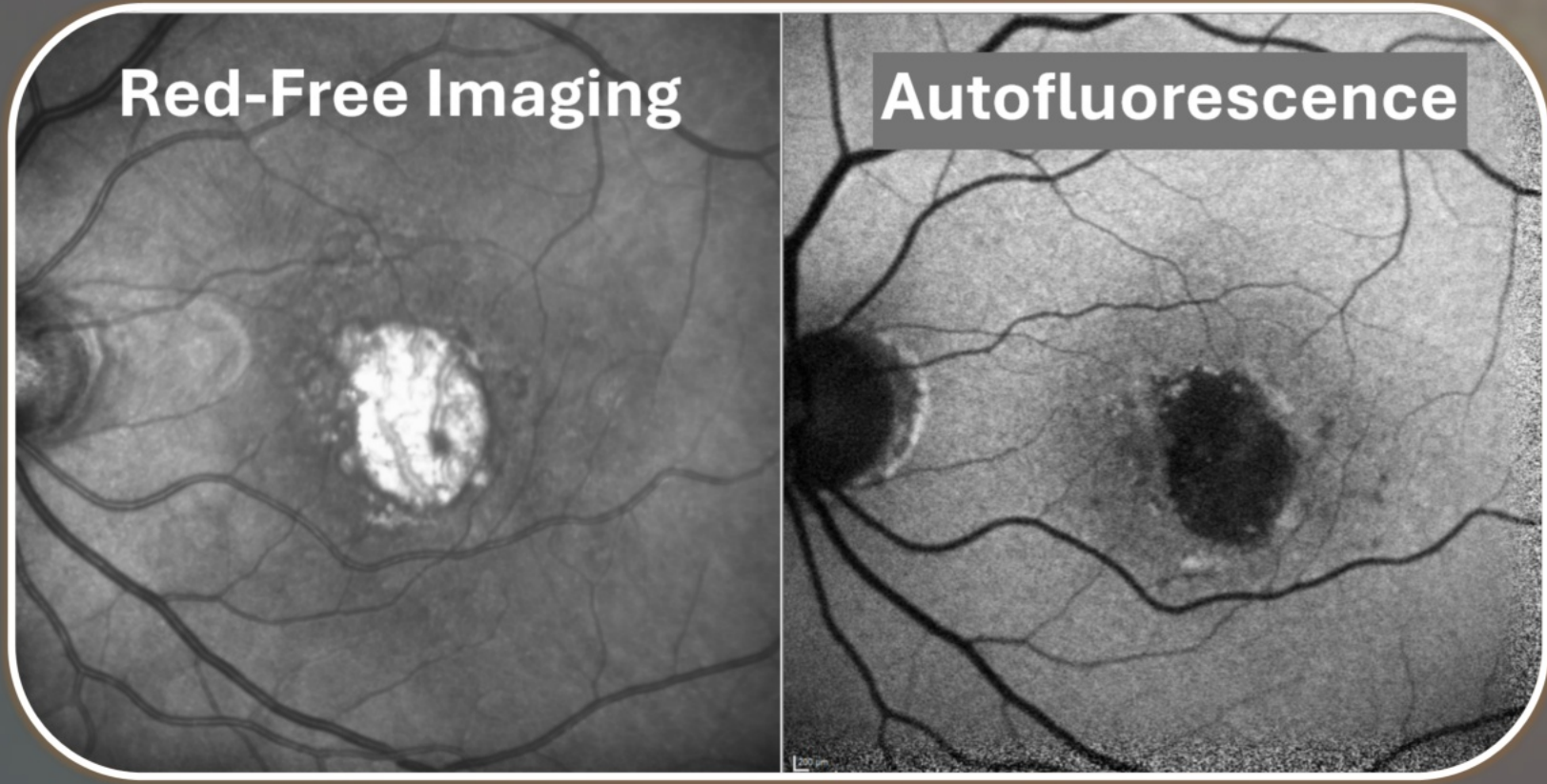
GA



HOW TO MONITOR AMD

(3) Fundus
autofluorescence (FAF)

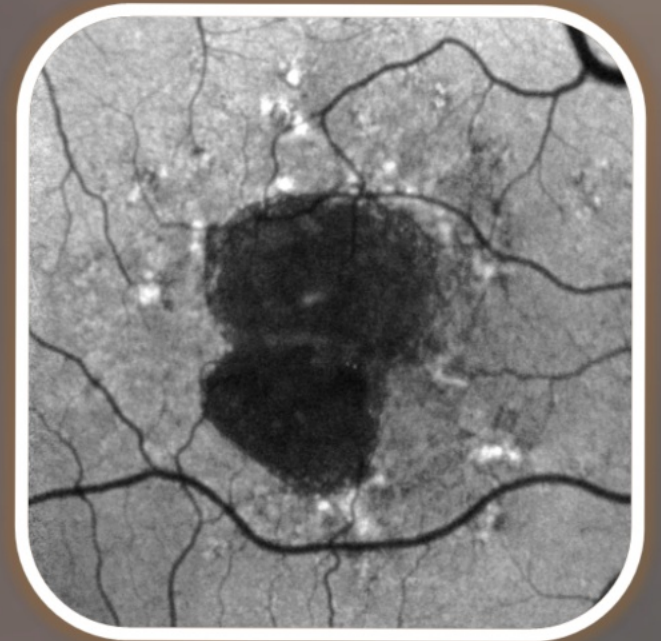
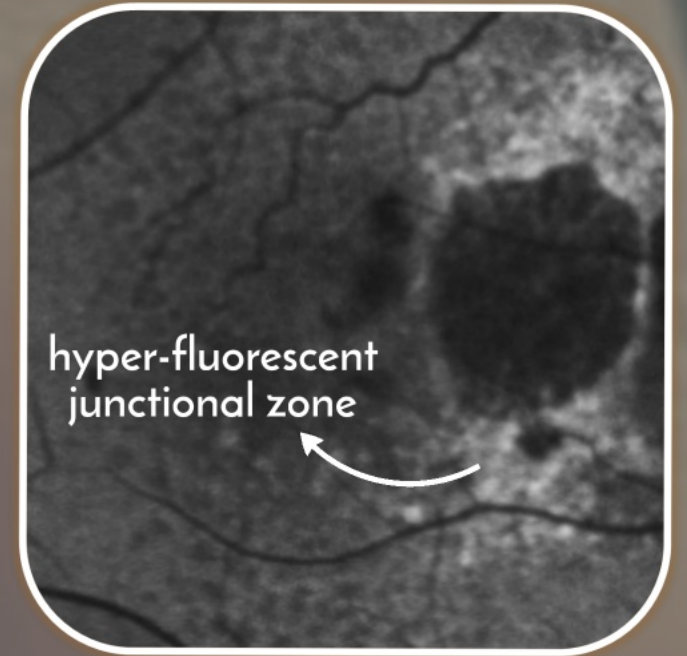
(4) Red-free imaging



HOW TO MONITOR AMD

(3) Fundus autofluorescence (FAF)

- can better delineate edges of GA
- useful for measuring area of GA and progression to fovea
- hyperfluorescent junctional zone associated with higher risk of GA progression⁹



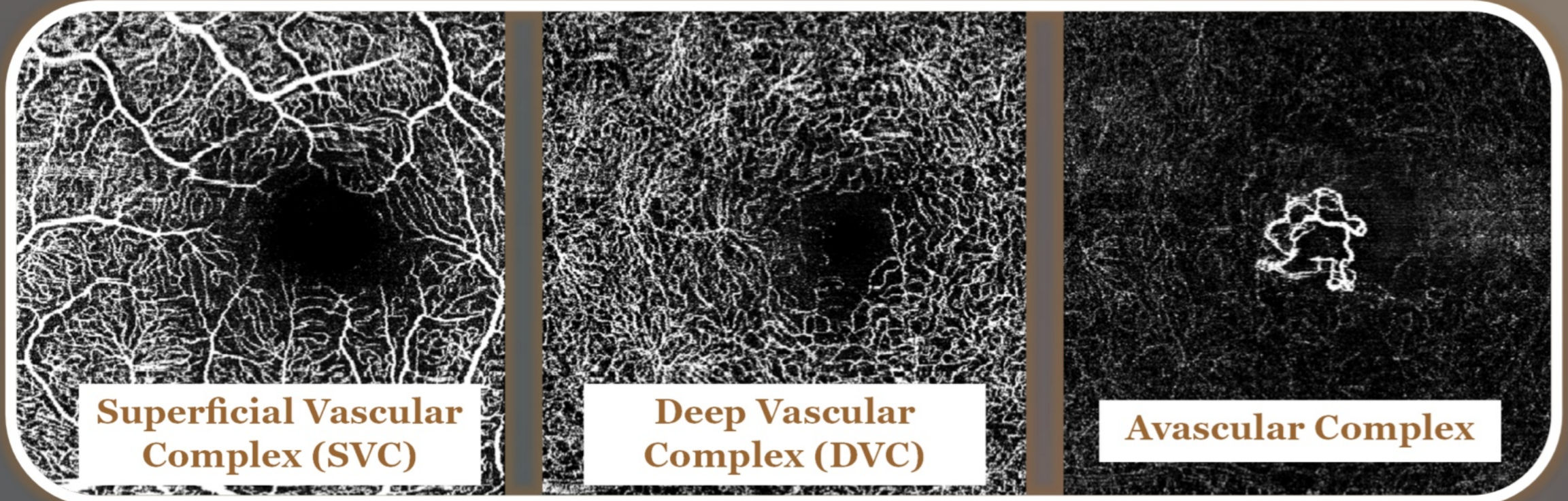
- **Optometry Australia Clinical Practice Guide:** recommended clinical imaging for AMD patients (or referral to optometry colleague or ophthalmologist for these tests)¹⁰

Table 6: Recommended ocular imaging of a patient with AMD

Colour Fundus Photography (CFP)	Key indications: CFP is often used for monitoring drusen number, size, presence of pigmentary abnormalities and signs of late disease (MNV and GA); however, may be limited by low contrast, especially in the presence of imaging artifacts with small pupils, and/or ocular media opacities.
Optical Coherence Tomography (OCT)	Key indications: same as with CFP, but invaluable for identifying signs of late neovascular AMD (such as retinal fluid) or early signs of atrophic AMD (such as nascent geographic atrophy [nGA]) not seen on CFP. Can also be used for improved three-dimensional visualisation of drusen extent.
Fundus Autofluorescence (FAF)	Key indications: FAF provides better demarcation of areas of GA than CFPs ^{63,64} , so it is especially useful for measuring the size and extent of atrophic lesions.

HOW TO MONITOR AMD

(5) OCT-Angiography (OCT-A)





**Vascular
Complex (DVC)**



Avascular Complex

HOW TO MONITOR AMD

Some imaging is better than no imaging! (eg. colour fundus photography only)

Call a friend - consider sending to a colleague with SD-OCT and/or autofluorescence if more detailed monitoring is required

If sending to an ophthalmologist for diagnostic imaging / baseline assessment (eg. lack of equipment, consideration for GA treatments), consider mentioning a collaborative care plan

HOW TO MONITOR AMD

(6) Visual Acuity

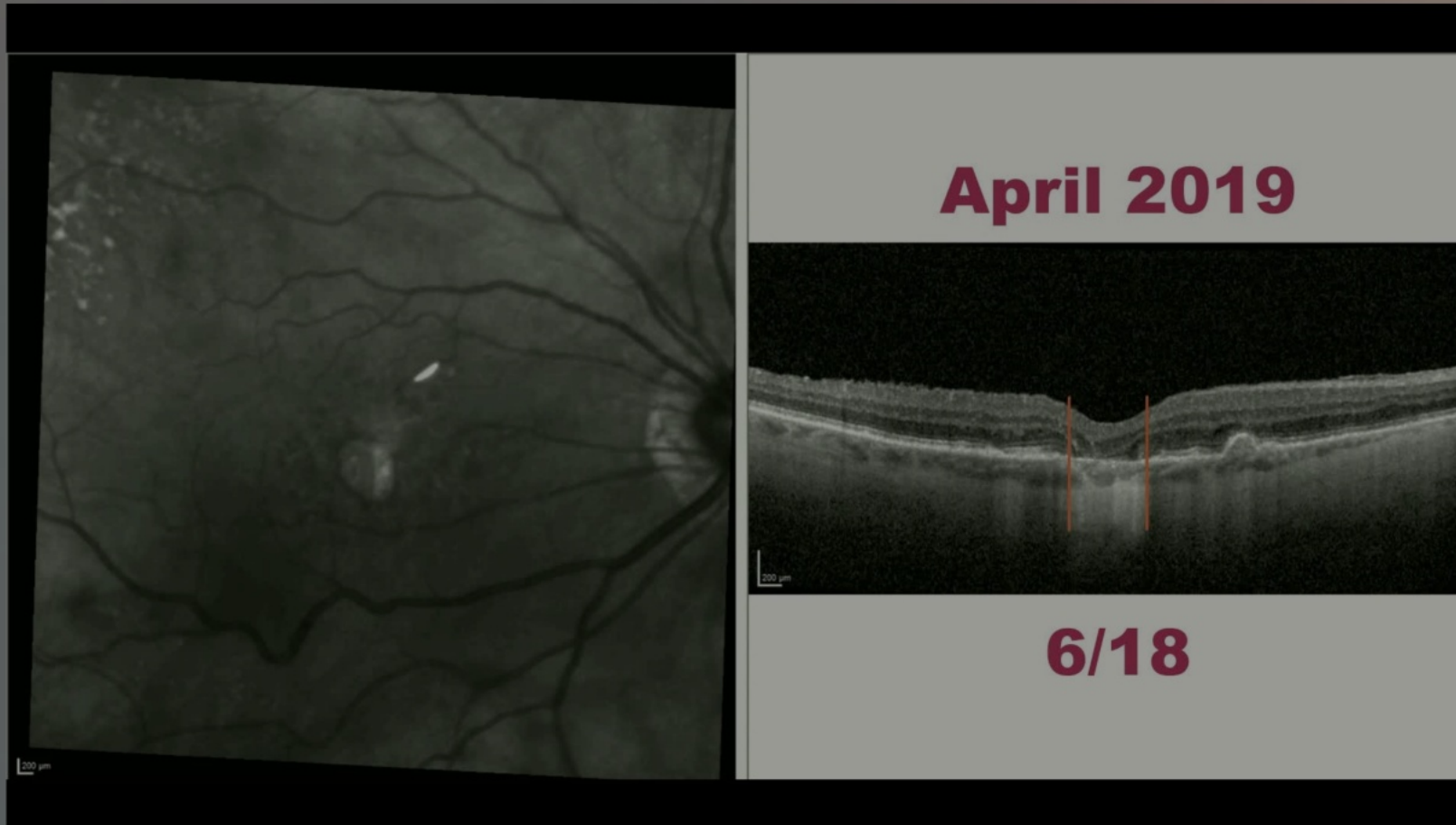
- beware over-estimation of visual function
- eccentric viewing

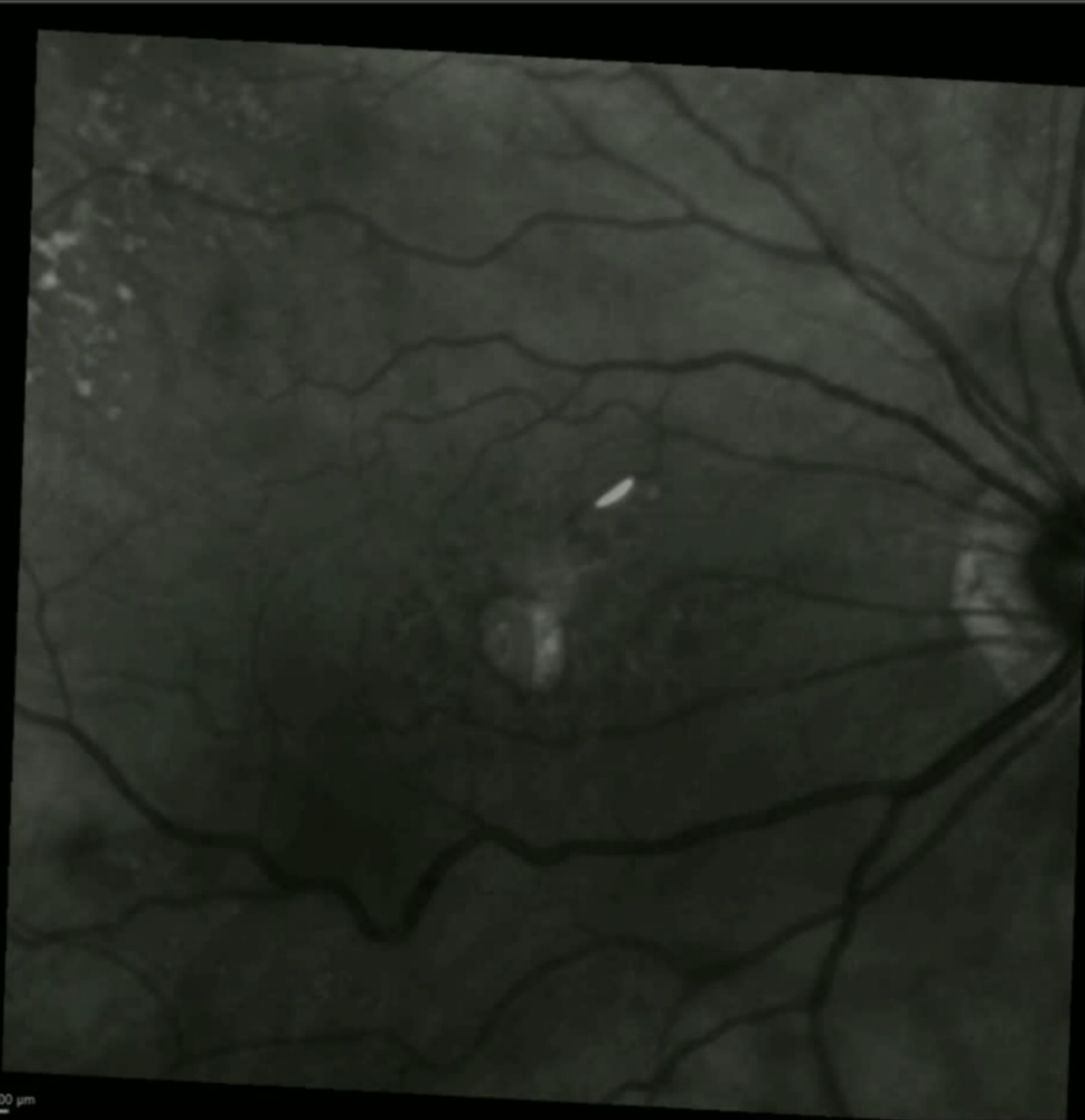


CASE

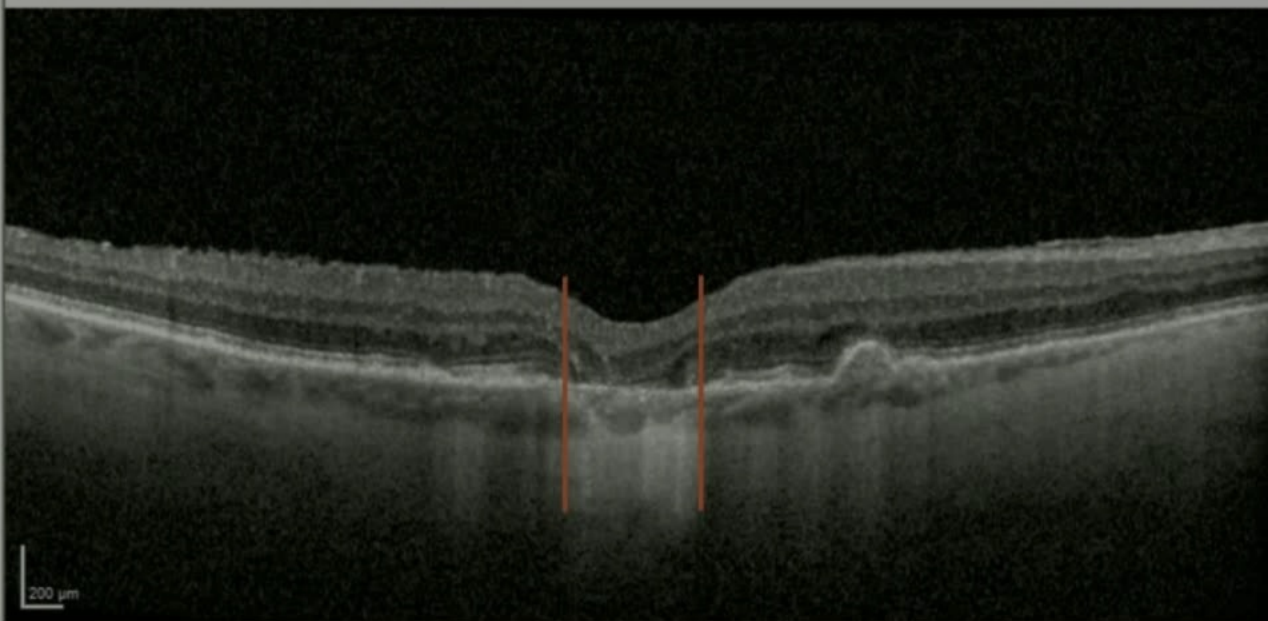
83yo Mr BF - patient since 2015

RE:





April 2019



6/18

QUESTION #3

**When do you refer your dry AMD patients to private ophthalmology?
Please select all that apply.**

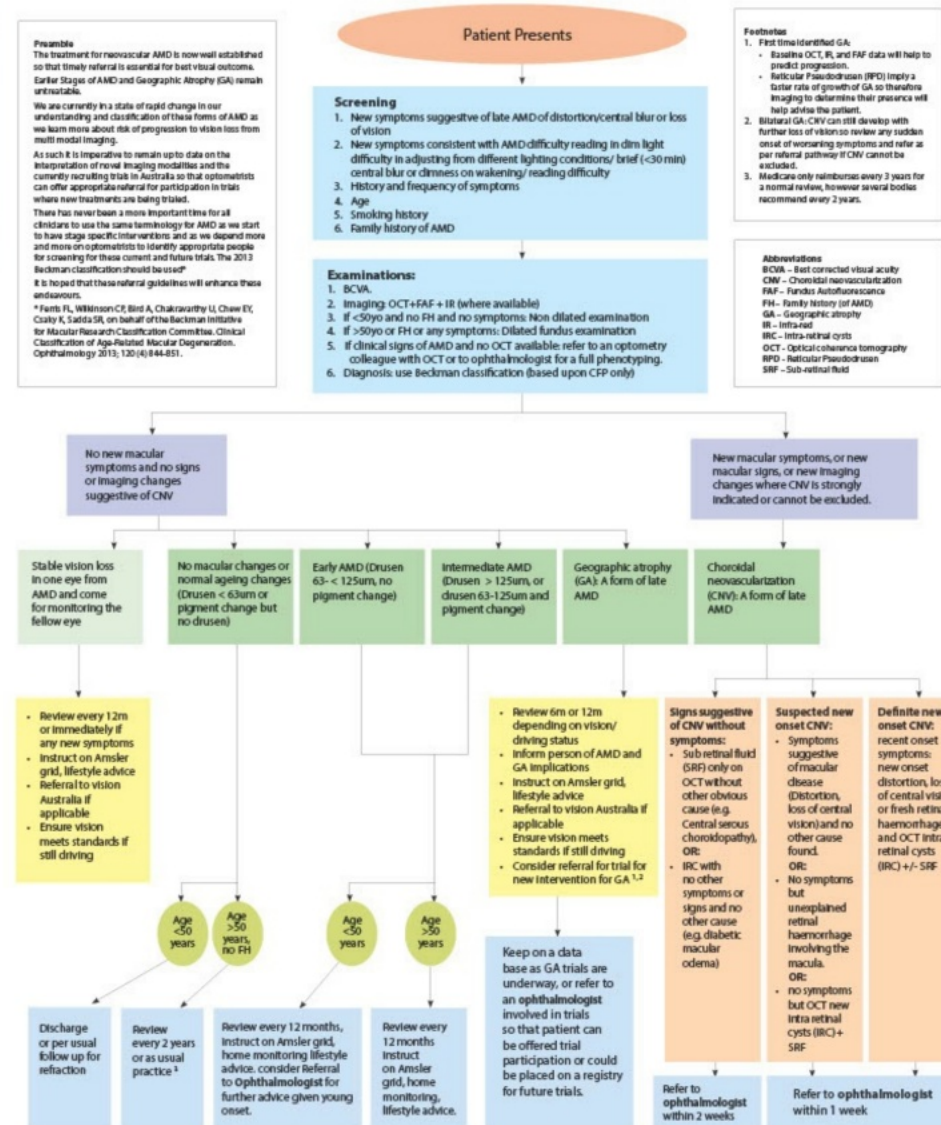
- (i) When VA deteriorates
- (ii) When patient requests referral
- (iii) When patient is borderline for driving standards
- (iv) At first diagnosis for baseline scans and discussion with ophthalmologist
- (v) When patient is classified as intermediate dry AMD (non-centre involving GA/>1 large drusen (>125um diameter)
- (vi) Evidence of GA development or progression
- (vii) When patient is classified as late AMD (centre-involving GA/CNVM concern)
- (viii) Never

WHEN TO REINJECT

- (1) Newly-diagnosed dry AMD if uncertain about diagnosis and/or limited imaging modalities in practice
- (2) Query new CNVM (or recurrent disease prior to next injection)
- (3) Possible progression of dry AMD on diagnostic imaging
- (4) Potential candidates for intravitreal GA treatments (when available)
- (5) Sudden changes in VA or new-onset distortion on Amsler grid

WHEN TO REFER

RANZCO Referral Pathway for AMD Screening and Management by Optometrists



Keep on a data base as GA trials are underway, or refer to an ophthalmologist involved in trials so that patient can be offered trial participation or could be placed on a registry for future trials.



GA progression data is **NOT** transferrable between machines.

Consider early baseline referrals to ophthalmology for patients who may be interested or suitable for GA treatments in the future (progression data established)

RANZCO



The Royal Australian
and New Zealand
College of Ophthalmologists

THE LEADERS IN COLLABORATIVE EYE CARE

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QUESTION #4

Which of the following are part of your regular management plan for a **NEW** dry AMD patient? Please select all that apply.

- (i) Grading of AMD
- (ii) Amsler grid use
- (iii) AREDS2 anti-oxidant supplement recommendation
- (iv) Diet and lifestyle

QUESTION #5

Which of the following referrals are part of your regular management plan for a **NEW** dry AMD patient? Please select all that apply.

- (i) Referral to an ophthalmologist
- (ii) Referral to patient support services (eg. Macular Disease Foundation)
- (iii) Referral to a low vision service on indication (eg. Vision Australia)
- (iv) Referral to GP for psycholog referral/other

HOW CAN WE HELP NOW?

1 Refer to low vision support services (and check back in!)



HOW CAN WE HELP NOW?

2 Ensure your patient is receiving adequate social support

- Disability (Blind) Pension (not income-tested) - up to \$1000-\$1100 per person per fortnight
- Taxi subsidy scheme (TSS) - half-price taxi trips (up to \$30)
- Vision Impairment Travel Pass (VITP) - free public transport

HOW CAN WE HELP NOW?

3 Check in with your patient's mental and psychological welfare

- document their hobbies and social interests, follow-up on these
- support from family and friends
- Charles Bonnett Syndrome

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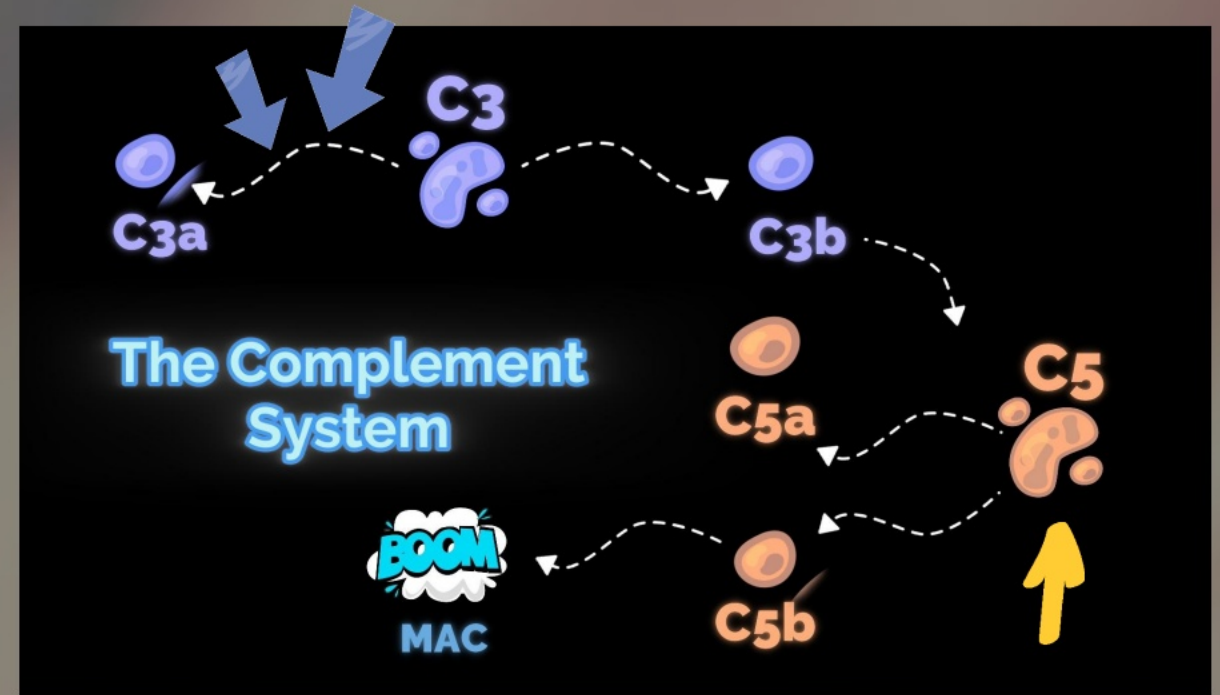


GA TREATMENTS

FDA approved intravitreal complement inhibitors ¹¹

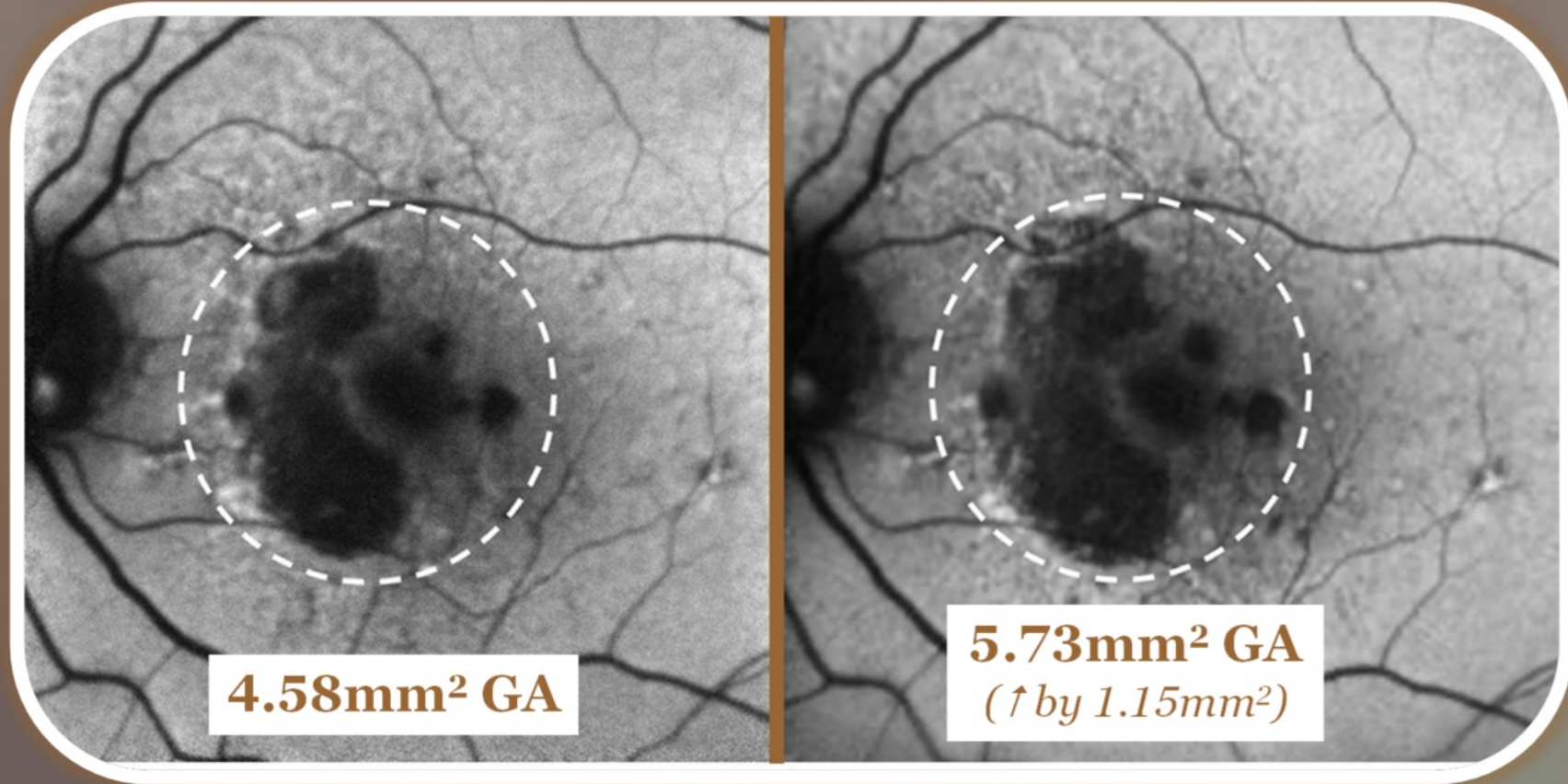
Avacincaptad pegol is a
C5 inhibitor

Pegcetacoplan is a
C3 & C3b inhibitor



RISK FOR GA PROGRESSION

GA grows at approximately 0.53 to 2.6 mm²/year (0.2-1 disc areas)¹²



RISK FOR GA PROGRESSION

larger baseline size of GA

extrafoveal GA (>250-300um from fovea)

NB. GA tends to progress to periphery faster than to fovea ("foveal sparing")

multifocal GA

presence of reticular pseudodrusen (RPD)

hyper-fluorescence in junctional zone on FAF

impaired choroidal blood flow on OCT-A

disruption to photoreceptor layer on SD-OCT

fast historical rate of GA enlargement

GA in fellow eye

Adapted from Guymer, 2023¹³

GA TREATMENTS

Do not stop or reverse GA but can **SLOW** progression (by up to 14 to 25% in Phase 3 clinical trials)¹⁴⁻¹⁵

Selection criteria not fully defined but likely need to see some historical evidence of progression (consider early ophthalmology referral)

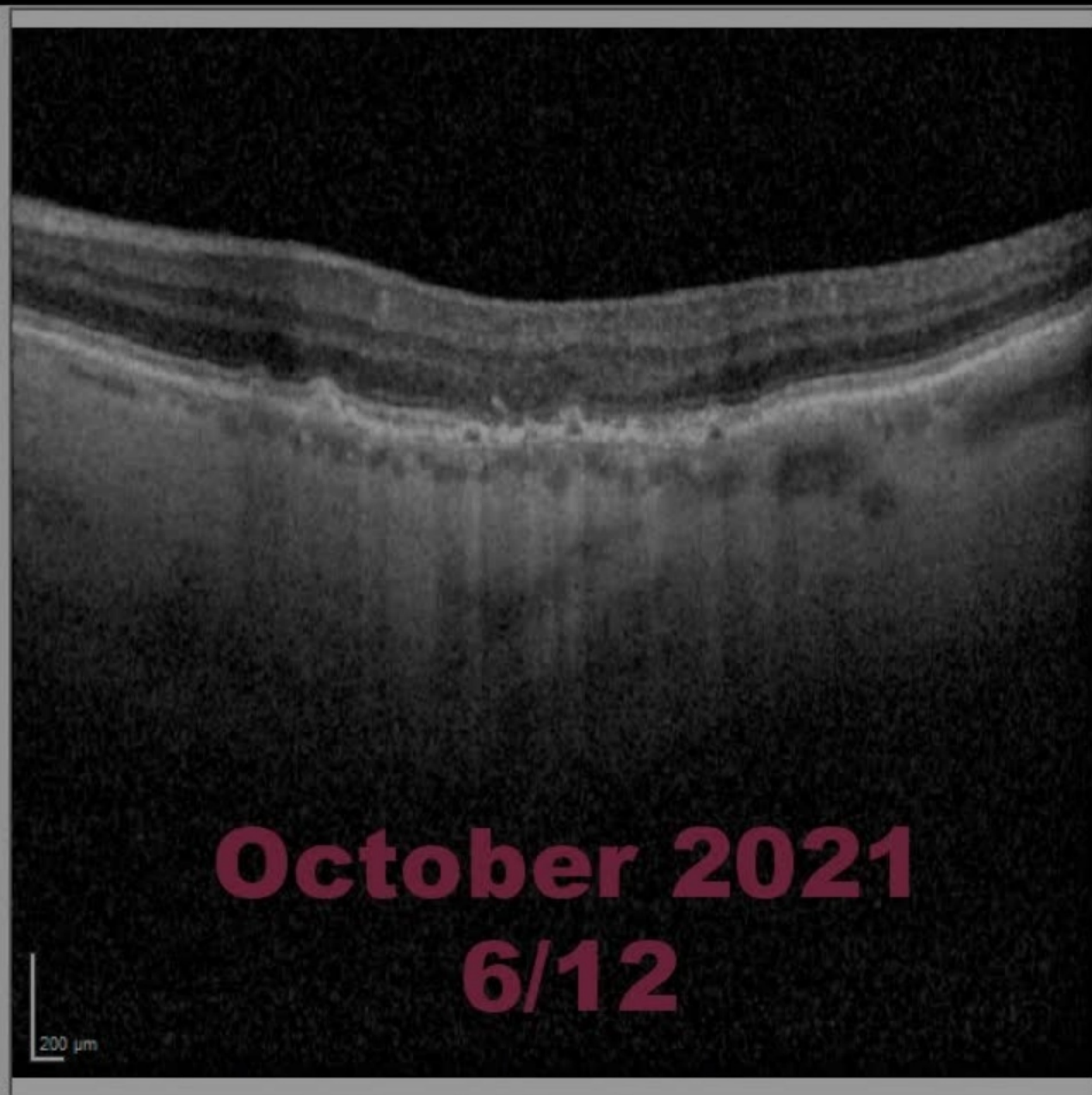
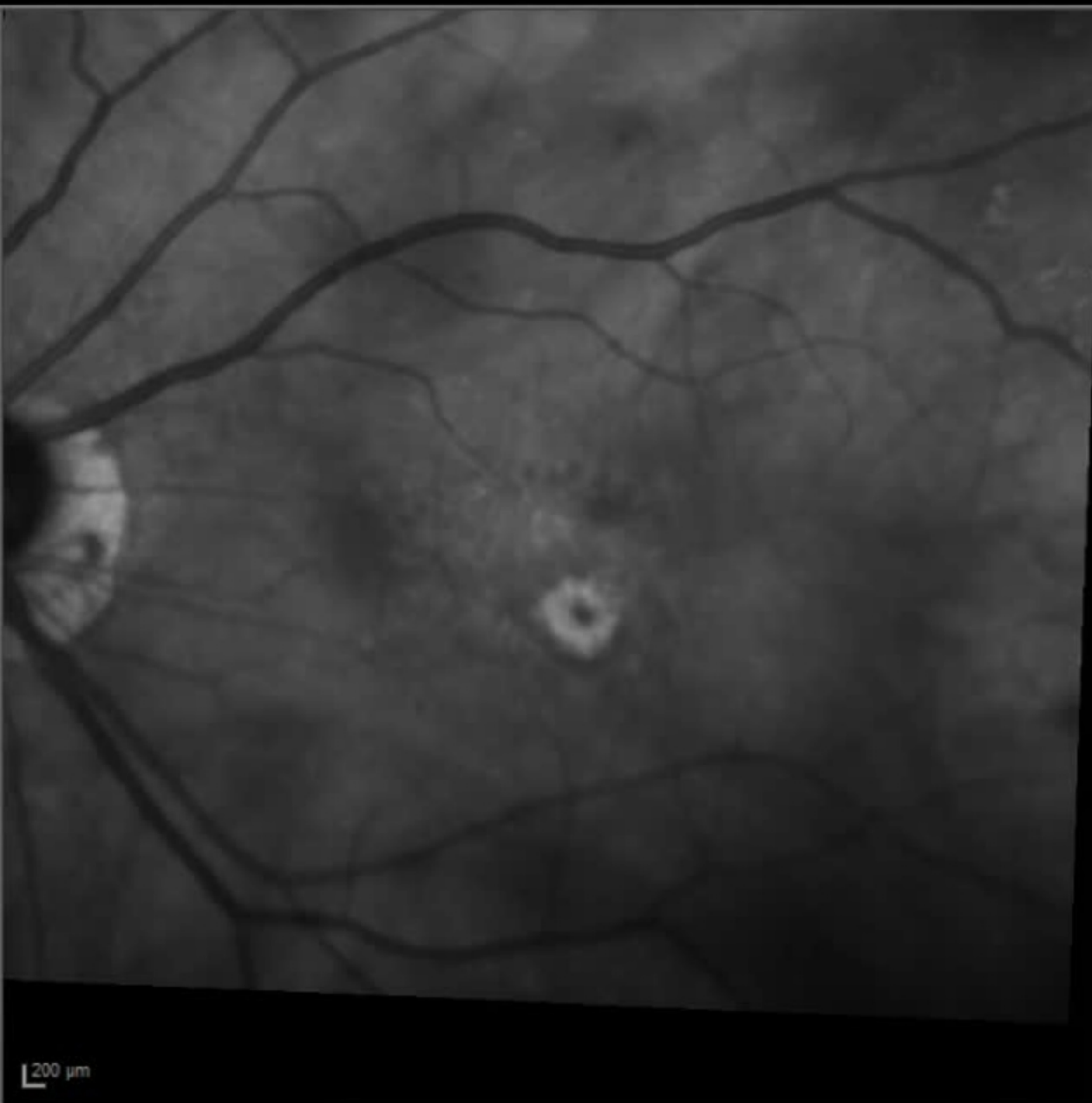
Most likely to be beneficial for

- extrafoveal GA (slower decline in VA)
- history of aggressive-growing GA
- patients who have already lost vision in one eye from GA

83yo Mr BF - patient since 2015

- RE 6/45 from centre-involving GA
- LE

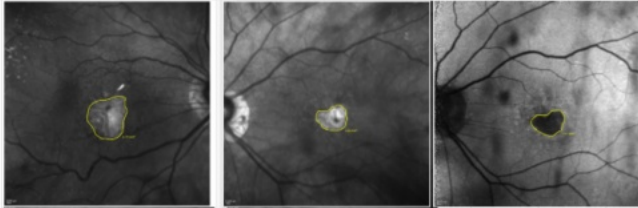
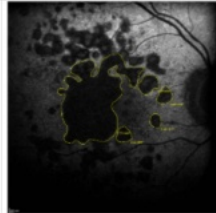
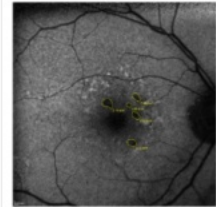
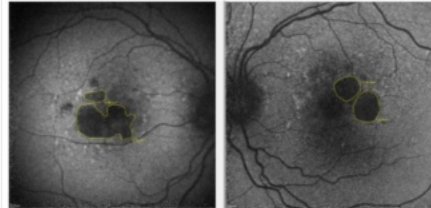


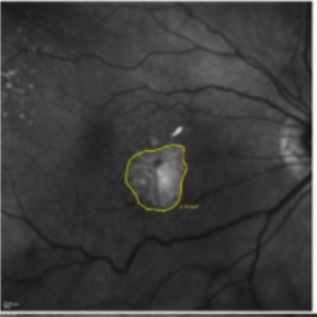
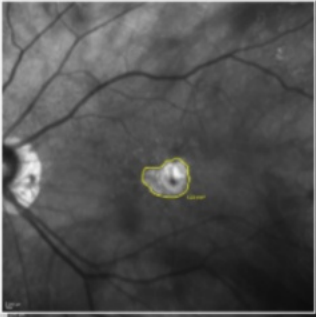
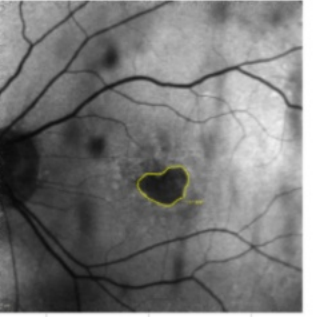
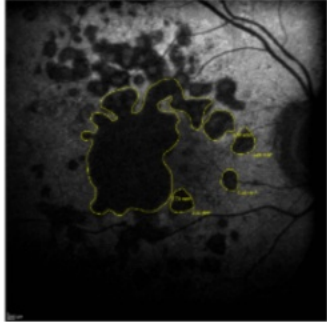
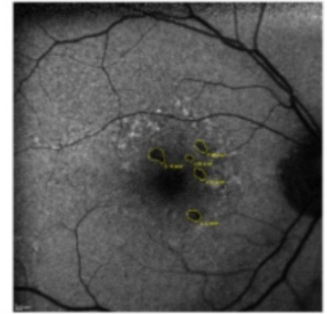
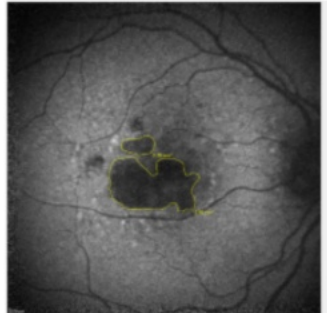
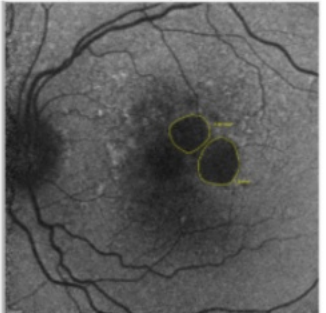


GA TREATMENTS

Currently monitoring potential candidates for GA treatments in practice

GA TREATMENTS

CLINICAL NOTES	GA AREA	FAF
<p>Concurrent glaucoma R 6/24 L 6/15 DROPPED TO 6/30 IN NOVEMBER 2024</p>	<p>R 2.73mm² L 1.23mm²</p>	
<p>HM in contralateral eye from CNV Enlarging centre-threatening GA in good eye (6/12)</p>	<p>R 9.17mm²</p>	
<p>Lost vision in LE (CF) RE 6/7.5</p>	<p>R 0.45mm²</p>	
<p>R > L GA VA R 6/18 L 6/7.5</p>	<p>R 3.33mm² L 2.09mm²</p>	

1	CLINICAL NOTES	GA AREA	FAF						
3	Concurrent glaucoma R 6/24 L 6/15 DROPPED TO 6/30 IN NOVEMBER 2024	R 2.73mm ² L 1.23mm ²	  						
4	HM in contralateral eye from CNV Enlarging centre-threatening GA in good eye (6/12)	R 9.17mm ²							
5	Lost vision in LE (CF) RE 6/7.5	R 0.45mm ²							
6	R>L GA VA R 6/18 L 6/7.5	R 3.33mm ² L 2.09mm ²	 						

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HAND-IN-HAND

Guiding Your Patients With Dry AMD



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QUESTION #6

In accordance with Optometry Australia's Clinical Practice Guide for the Diagnosis and Management of Age-related Macular Degeneration, what are the recommended imaging techniques for geographic atrophy (GA) diagnosis and monitoring?

- (i) SD-OCT, colour fundus photography and fundus autofluorescence
- (ii) SD-OCT and colour fundus photography
- (iii) Fundus red-free photography only
- (iv) Fundus photography through iPhone at slit lamp

QUESTION #7

67% of people with geographic atrophy (GA) lose their ability to drive within how many years?

(i) 1.6 years

(ii) 5 years

(iii) 10 years

(iv) 20 years

TAKE HOME MESSAGES

- 1 Recognise the important role optometrists play in educating and supporting patients (both clinical and psychological)
- 2 Use all available multi-modal imaging (colour fundus photography, autofluorescence, SD-OCT) to monitor AMD
- 3 Ensure your patients are accessing all support services available to them (eg. low vision aides, support programs)
- 4 GA treatments may become available in Australia in the future - refer patients who may be suitable or interested

QUESTION #8

A 60-year-old patient presents with minor vision changes. You note the following changes: the right macula has 2 large soft drusen ($>125\text{ }\mu\text{m}$), and the left macula has non-centre involving RPE changes. You diagnose intermediate (Category 3) dry AMD.

What is the risk of progression to late-stage AMD in the next 5 years?

- (i) Up to 27% in both eyes
- (ii) Up to 10% in both eyes
- (iii) 10% in the right eye, 50% in the left eye
- (iv) Up to 50% in both eyes

QUESTION #9

After reviewing retinal and OCT images, you recommend diet, lifestyle changes, and support options. This patient expresses their desire to do everything possible to protect their vision.

Which of the following would be an appropriate next step?

- (i) Refer to private ophthalmology for baseline scans for future GA treatments
- (ii) Advise nothing can be done and review when vision changes
- (iii) Review annually

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THANK YOU!

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