

In the Trenches: Managing Geographic Atrophy

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1 hour

Course Description

Geographic atrophy (GA), an advanced form of age-related macular degeneration (AMD), presents diagnostic and management challenges in optometric practice. This course reviews GA pathophysiology, risk factors, multimodal imaging, and current FDA-approved therapies. Case examples will illustrate real-world strategies for early detection, co-management, and patient counseling in primary eye care.

Course Learning Objectives

Explain the pathophysiology and natural history of GA in the context of AMD progression.

Identify clinical and imaging features predictive of GA onset and progression.

Apply evidence-based management strategies, including new complement inhibition therapies, and establish realistic patient expectations in clinical practice.

Outline

I. Background and Epidemiology

- Definition and context
 - GA as a late-stage manifestation of non-neovascular AMD.
 - Distinction between early, intermediate, and advanced AMD.
- Epidemiology
 - GA prevalence among aging populations.
 - Projected increase with global aging demographics.
- Burden of disease
 - Functional vision loss: reading, driving, independence.
 - Psychosocial and quality-of-life impacts

II. Pathophysiology of GA

- Multifactorial etiology
 - Age and oxidative stress.
 - Genetic predisposition: *CFH*, *C3*, *ARMS2/HTRA1*.
 - Environmental influences: smoking, diet, BMI, alcohol intake.
- Cellular mechanisms
 - Drusen accumulation and complement dysregulation.
 - Retinal pigment epithelium (RPE) degeneration.
 - Photoreceptor loss and choriocapillaris compromise.
- Progression dynamics

- Median 2.5 years from extrafoveal onset to foveal involvement.
- Functional deficits often precede Snellen acuity loss

III. Clinical and Imaging Diagnosis

- Traditional approaches
 - Color fundus photography: hypopigmented, sharply demarcated lesions.
- Fundus autofluorescence (FAF)
 - Hypoautofluorescent areas = RPE atrophy.
 - Hyperautofluorescent rims = high-risk progression patterns.
 - Predictive phenotypes: banded, diffuse FAF.
- Optical coherence tomography (OCT)
 - Key biomarkers:
 - Loss of outer retinal layers.
 - Choroidal hypertransmission.
 - Hyper-reflective foci (↑ risk of GA within 2 years).
 - Nascent GA signs (layer sinking, hyporeflective wedge).
 - OCT en face and B-scan applications.
- Other imaging
 - Near-infrared reflectance (NIR) to delineate foveal involvement

IV. Risk Factors for Progression

- Anatomic risk
 - Larger baseline lesion size.
 - Multifocal vs. unifocal lesions.
 - Bilateral involvement accelerates decline.
- Imaging predictors
 - Hyperautofluorescent borders.
 - Reticular pseudodrusen.
 - Drusen substructures and regression.
- Clinical course
 - Progressive, irreversible vision loss even with preserved acuity early

V. Management Strategies

- General measures
 - Patient education on natural history.
 - Nutritional supplements (AREDS2) role in slowing AMD progression.
 - Lifestyle modification: smoking cessation, healthy diet.
- New pharmacologic options
 - Pegcetacoplan
 - C3 inhibitor; intravitreal injection every 25–60 days.
 - Based on OAKS/DERBY/GALE data.
 - Avacincaptad pegol
 - C5 inhibitor; monthly intravitreal dosing.

- GATHER1/GATHER2 trial evidence.
 - Clinical benefit: *slows lesion growth*, does not restore vision.
- Monitoring
 - Regular multimodal imaging as best practice.
 - Referral criteria for retina specialists.
 - Co-management with patient counseling on treatment expectations

VI. Case Examples

- Case 1: Early GA
 - Comprehensive exam finding.
 - Imaging workup confirms lesions.
 - Discussion: referral timing.
- Case 2: Advanced GA with trial consideration
 - Declining VA; imaging progression.
 - Counseling for complement therapy eligibility.
- Case 3: Longitudinal follow-up
 - 6-year documented progression.
 - Lessons in monitoring and setting expectations.

VII. Practical Considerations for Optometrists

- In-office role
 - Early detection and referral patterns.
 - Imaging interpretation for disease staging.
- Patient counseling
 - Realistic expectations: therapies *slow but do not halt* progression.
 - Emphasis on quality of life, support services, low vision care.
- Collaborative care
 - Communication with retinal specialists.
 - Defining optometry's role in GA management continuum.

VIII. Conclusion

- GA is a progressive, vision-threatening disease with increasing prevalence.
- Multimodal imaging is critical for diagnosis and monitoring.
- Complement inhibitors represent the first approved therapies, marking a new era.
- Optometrists play a central role in detection, patient education, and co-management.