

Care of the Patient with Age-Related Macular Degeneration



American Optometric Association

A. DESCRIPTION AND CLASSIFICATION

Age-related macular degeneration (AMD) is an acquired retinal disorder which is characterized by pigmentary atrophy and degeneration, drusen and lipofuscin deposits, and exudative elevation of the outer retinal complex in the macular area.

1. Nonexudative AMD

- ❑ A dry or atrophic form that results from a gradual breakdown of the retinal pigment epithelium (RPE), the accumulation of drusen deposits, and loss of function of the overlying photoreceptors.

2. Exudative AMD

- ❑ A wet form that is characterized by the development of neovascularization in the choroid, leading to serous or hemorrhagic leakage and subsequent elevation of the RPE or neurosensory retina.

3. Geography Atrophy

- ❑ A clinical manifestation of progressive atrophy of the RPE in conjunction with drusen formation.

B. RISK FACTORS

- ❑ **Age:** Risk increases in patients > 60 years of age
- ❑ **Gender:** Higher incidence and earlier age of onset in females

- ❑ **Race:** Higher incidence in Caucasians than African Americans
- ❑ **Ocular Factors:** Aphakia or pre-1984 pseudophakia; hyperopia (risk of exudative AMD increases up to 2.5 times when hyperopia > 0.75 diopters is present)
- ❑ **Hereditary Factors:** Genetic predisposition (first-degree family history of AMD)
- ❑ **Systemic Factors:** Cardiovascular disease; cigarette smoking
- ❑ **Environmental Factors:** Cumulative light exposure (especially to ultraviolet wavelengths) may damage the outer retina

C. COMMON SIGNS, SYMPTOMS, AND COMPLICATIONS

Signs and symptoms of AMD may not become apparent until late in the disease process at which time treatment may not be effective. They include gradual onset of blurred vision, dysmorphopsia, scotoma, hemorrhagic RPE, and neurosensory retinal detachment. Table 1 provides a summary of the stages of AMD development, describing clinical signs for timely identification and treatment of AMD. Related complications may include RPE detachment and vitreous hemorrhage.

NOTE: This Quick Reference Guide should be used in conjunction with the Optometric Clinical Practice Guideline on Care of the Patient with Age-Related Macular Degeneration (2004). It provides summary information and is not intended to stand alone in assisting the clinician in making patient care decisions.

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D. EARLY DETECTION AND PREVENTION

Recent research suggests that effects of aging on the retina may result from cumulative exposure to ultraviolet radiation (UVR) and depletion of antioxidant enzymes. Preventive strategies may include:

- Recommending UVR protection to all patients (especially children, persons over age 50, and those engaging in vocational or avocational activities requiring increased exposure to UVR or visible blue light).
- Recommending nutritional supplements (e.g., antioxidants, beta-carotene [10,000 IU] and vitamins C and E [100 IU]) for adults if there are no contraindications (e.g., anemia or concomitant use of coumadin)

E. EVALUATION

The evaluation of patients with retinal changes suggestive of AMD or patients with diagnosed AMD may include, but is not limited to, the following areas:

1. Patient History

- Presenting problem/chief complain

- Visual/ocular/general health history
- Medications
- Family history

2. Ocular Examination

- Best corrected visual acuity (including near monocular visual acuity)
- Confrontation visual fields
- Sensorimotor examination
- Refraction
- Biomicroscopy
- Tonometry
- Stereoscopic fundus examination (with papillary dilation)

3. Supplemental Testing

- Amsler grid testing
- Other macular function assessment (e.g., contract sensitivity, photostress test)
- Color vision
- Central 10-degree computerized automated perimetry
- Fundus photography (with a red-free filter)

TABLE 1*

Stages of AMD**

1. Pigmentary abnormalities

- RPE degeneration
- Increased retinal pigment in the macular area

2. Retinal pigment epithelial degeneration and increased retinal pigmentation

- Granules or clumps of gray or black pigment in or beneath the retina
- Grayish-yellow or pinkish-yellow areas of varying density and configuration in the plane of the RPE

3. Early AMD

- Soft, indistinct, or reticular drusen
- Any type of drusen (except hard, indistinct) with RPE degeneration in the absence of signs of late AMD

4. Late AMD

- Exudative AMD
 - RPE or serous detachment of the sensory retina
 - Subretinal or pigment epithelium hemorrhage
- Pure geographic atrophy

5. Pure geographic atrophy

- Geographic atrophy in the absence of exudative macular degeneration
- Loss of RPE and increased visualization of the underlying choroid

**The classification of the stages of AMD is not clearly defined; rather, the various categories have been delineated based on ophthalmoscopically visible lesions. The transition from one stage or class to another is not always obvious or clearly identifiable.

Retinal drusen are categorized according to:

- Size
- Confluence (touching and merging)
- Uniformity of appearance
- Sharpness (soft, indistinct or distinct; hard, indistinct or distinct; or reticular)

* Adapted from Table 1 in the Optometric Clinical Practice Guideline on Care of the Patient with Age-Related Macular Degeneration

F. MANAGEMENT

1. Basis for Treatment

Management of the patient with nonexudative AMD varies considerably from that of the patient diagnosed with exudative AMD for whom immediate treatment is critical. Table 2 provides an overview of the evaluation and management of patients suspected of or diagnosed with AMD.

2. Available Treatment Options

- Low risk patients with nonexudative AMD:
 - UVR protective spectacle lenses and antioxidant supplementation
 - Patient counseling and education
 - Amsler grid self-assessment
- High risk patients with nonexudative AMD may also require:
 - Consultation with retina specialist to rule out choroidal neovascularization (CNV)
 - Low vision evaluation and prescription of appropriate low vision optical devices
- Patients with exudative AMD and clinical signs and/or symptoms of CNV may require laser treatment

3. Patient Education

- Provide information about the diagnosis and prognosis of the condition
- Review symptoms of AMD
- Encourage compliance with treatment
- Discuss need for immediate evaluation when new symptoms appear (e.g., blurred vision, dysmorphopsia, or scotoma)

4. Prognosis and Followup

The progression of vision loss in nonexudative AMD is variable and must be evaluated on an individual basis.

Foveal involvement appears to occur early in the atrophic process, but the average interval from first observation to legal blindness is 9 or 10 years. Most patients with AMD will never develop the exudative form of the disease.

Timely intervention by laser photocoagulation in cases of extrafoveal membranes in exudative AMD and in treatment of subfoveal membranes can be beneficial. Only 10-15 percent of persons with drusen will develop signs of CNV.

Table 2 provides the frequency and composition of follow-up evaluations for the various types of AMD patients.

TABLE 2*

Frequency and Composition of Evaluation and Management Visits for Age-Related Macular Degeneration

Type of Patient	Frequency of Evaluation	Composition of Followup Evaluations				Management Plan
		Amsler Grid	Stereo Fundus Biomicroscopy	Central 10 degree Automated Visual Field (AVF)	Fundus Photography	
Patient with two or more risk factors for AMD, over age 55	Annual examination	Yes	Yes	Yes; baseline, repeat every two years	Yes; baseline, repeat every two years or as necessary	Patient education; recommend UVR protection, antioxidant supplementation, home Amsler weekly
Patient with hard drusen and/or pigmentary degeneration	6-12 months depending on risk	Yes	Yes	Yes; repeat every two years	Yes; repeat every two years	Patient education; recommend UVR protection, antioxidant supplementation, home Amsler twice each week
Patient with geographic atrophy, VA 20/30-20/70	6-12 months depending on extent of atrophy	Every interim visit	Every interim visit	Every one to two years	Yes; repeat every year	Patient education; recommend UVR protection, antioxidant supplementation, home Amsler every other day; monitor for CNV
Patient at high risk with soft confluent drusen and granular pigmentary degeneration	4-6 months	Every interim visit	Every interim visit	Annually	Annually	Patient education; recommend UVR protection, antioxidant supplementation, home Amsler daily; low vision consultation and evaluation
Patient with CNV within 2500 microns of center of foveal avascular zone	2 weeks after fluorescein angiography (FA) laser photocoagulation; at 6 weeks, then every 2-3 months after repeat FA	Every interim visit	Every interim visit	Semiannually	Semiannually	Patient education; recommend UVR protection, antioxidant supplementation, home Amsler daily; immediate consultation for signs of recurrent CNV; low vision consultation and evaluation
Patient with disciform scar in both eyes	6-12 months	Not necessary	Every interim visit	Annually; consider central 30° AVF, depending on central fixation	Annually	Review; low vision consultation and evaluation

*Adapted from Figure 2 in the Optometric Clinical Practice Guideline on Care of the Patient with Age-Related Macular Degeneration.