



Complete Summary

GUIDELINE TITLE

Age-related macular degeneration.

BIBLIOGRAPHIC SOURCE(S)

American Academy of Ophthalmology Retina Panel, Preferred Practice Patterns Committee. Age-related macular degeneration. San Francisco (CA): American Academy of Ophthalmology (AAO); 2003. 29 p. [96 references]

COMPLETE SUMMARY CONTENT

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SCOPE

DISEASE/CONDITION(S)

Age-related macular degeneration

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Treatment

CLINICAL SPECIALTY

Ophthalmology

INTENDED USERS

Health Plans
Physicians

GUIDELINE OBJECTIVE(S)

To minimize loss of vision and to maximize the vision-related quality of life related to age-related macular degeneration (AMD), by addressing the following goals:

- Identify patients at risk of visual loss related to age-related macular degeneration
- Educate patients and their families about the disease, risk factors, and preventive measures
- Minimize visual loss and functional impairment in these patients through appropriate detection, treatment, and follow-up examinations
- Help patients identify sources for visual rehabilitation

TARGET POPULATION

Persons typically age 50 years or older, with or without visual symptoms

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis/Evaluation

1. History, including history of symptoms and medications, medical and ocular history, family history, social history (especially smoking)
2. Stereo biomicroscopic examination of the macula
3. Diagnostic tests, including fluorescein angiography and/or fundus photography when indicated. Indocyanine green video-angiography (ICG) is an ancillary test.

Treatment/Management

1. Observation with no medical or surgical therapies
2. Antioxidant vitamin and mineral supplements
3. Thermal laser photocoagulation surgery
4. Photodynamic therapy (PT) with verteporfin
5. Follow-up of postoperative patients
6. Fundus photography and fluorescein angiography should be employed where indicated.
7. Patient and family education
8. Referral to vision rehabilitation and social services

MAJOR OUTCOMES CONSIDERED

Incidence of severe vision loss and functional impairment due to age-related macular degeneration

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

In the process of revising this document, a detailed literature search of articles in the English language was conducted on the subject of age-related macular degeneration for the years 1997 to 2002.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Ratings of Strength of Evidence

- I. Level I includes evidence obtained from at least one properly conducted, well-designed randomized, controlled trial. It could include meta-analyses of randomized controlled trials.
- II. Level II includes evidence obtained from the following:
 - Well-designed controlled trials without randomization
 - Well-designed cohort or case-control analytic studies, preferably from more than one center
 - Multiple-time series with or without the intervention
- III. Level III includes evidence obtained from one of the following:
 - Descriptive studies
 - Case reports
 - Reports of expert committees/organization
 - Expert opinion (e.g., Preferred Practice Pattern panel consensus)

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not applicable

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The results of a literature search on the subject of age-related macular degeneration were reviewed by the Retinal Panel and used to prepare the

recommendations, which they rated in two ways. The panel first rated each recommendation according to its importance to the care process. This "importance to the care process" rating represents care that the panel thought would improve the quality of the patient's care in a meaningful way. The panel also rated each recommendation on the strength of the evidence in the available literature to support the recommendation made.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Ratings of Importance to Care Process

Level A, most important
Level B, moderately important
Level C, relevant but not critical

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

These guidelines were reviewed by Council and approved by the Board of Trustees of the American Academy of Ophthalmology (September 2003). All Preferred Practice Patterns are reviewed by their parent panel annually or earlier if developments warrant and updated accordingly.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The ratings of importance to the care process (A, B, C) and the ratings for strength of evidence (I, II, III) are defined at the end of the "Major Recommendations" field.

Diagnosis

The initial evaluation of a patient with signs and symptoms suggestive of age-related macular degeneration (AMD) includes all features of the comprehensive adult medical eye evaluation, with particular attention to those aspects relevant to AMD.

History

- Symptoms [A:II]
 - Metamorphopsia

- Decreased vision
- Medications and nutritional supplements [B:III]
- Medical and ocular history [B:III]
- Family history, especially family history of AMD [B:II]
- Social history, especially smoking [B:II]

Examination

- Stereo biomicroscopic examination of the macula [A:III]

Diagnostic Tests

Fluorescein Angiography

Intravenous fundus fluorescein angiography in the clinical setting of AMD is indicated [A:I] when the patient complains of new metamorphopsia or has unexplained blurred vision, and/or when clinical examination reveals elevation of the retinal pigment epithelium (RPE) or retina, subretinal blood, hard exudates, or subretinal fibrosis and in the following situations:

- To detect the presence of and determine the extent, type, size, and location of choroidal neovascularization (CNV) and to calculate the percentage of the lesion composed of or consisting of classic CNV. If laser photocoagulation surgery or verteporfin photodynamic therapy (PDT) is being considered, the angiogram is also used as a guide to direct treatment.
- To detect persistent or recurrent CNV following treatment
- To assist in determining the cause of visual loss that is not explained by the clinical examination. If CNV is suspected on the basis of new symptoms or ocular findings, fluorescein angiography should be performed and interpreted expeditiously by an individual experienced in managing patients with neovascular AMD. [A:I]

Each angiographic facility should have in place a care plan or an emergency plan and a clear protocol to minimize the risks and to manage any complications. [A:III]

Treatment

Assessment and treatment plans for different categories of AMD are listed in the table below.

Recommended Treatment	Diagnoses Eligible for Treatment	Follow-up Recommendations
Observation with no medical or surgical therapies [A:I]	No clinical signs of AMD (Age-Related Eye Disease Study [AREDS] category 1)	As recommended in the Comprehensive Adult Medical Eye Evaluation Preferred Practice Pattern (PPP)

Recommended Treatment	Diagnoses Eligible for Treatment	Follow-up Recommendations
	<p>Early AMD (AREDS category 2)</p> <p>Advanced AMD with bilateral subfoveal geographic atrophy or disciform scars</p>	<p>[A: III]</p> <p>No fundus photos or fluorescein angiography unless symptomatic [A: I]</p>
<p>Antioxidant vitamin and mineral supplements as recommended in the AREDS reports [A: I]</p>	<p>Intermediate AMD (AREDS category 3)</p> <p>Advanced AMD in one eye (AREDS category 4)</p>	<p>Monitoring of monocular near vision (reading/Amsler grid) [A: III]</p> <p>Return exam at 6 to 24 months if asymptomatic or prompt exam for new symptoms suggestive of CNV [A: III]</p> <p>Fundus photography as appropriate</p> <p>Fluorescein angiography if there is evidence of edema or other signs and symptoms of CNV</p>
<p>Thermal laser photocoagulation surgery as recommended in the Macular Photocoagulation Study (MPS) reports [A: I]</p>	<p>Extrafoveal classic CNV, new or recurrent</p> <p>Juxtafoveal classic CNV</p> <p>May be considered for new or recurrent subfoveal CNV if the lesion is less than 2 MPS disc areas and the vision is 20/125 or worse, especially if PDT is contraindicated or not available</p> <p>May be considered for juxtapapillary CNV</p>	<p>Return exam with fluorescein angiography approximately 2 to 4 weeks after treatment, and then at 4 to 6 weeks and thereafter depending on the clinical and angiographic findings [A: III]</p> <p>Retreatments as indicated</p> <p>Monitoring of monocular near vision (reading/Amsler grid)</p>

Recommended Treatment	Diagnoses Eligible for Treatment	Follow-up Recommendations
		[A: III]
PDT with verteporfin as recommended in the Treatment of Age-Related Macular Degeneration with Photodynamic Therapy (TAP) and Verteporfin in Photodynamic Therapy (VIP) reports [A: I]	Subfoveal CNV, new or recurrent, where the classic component is >50% of the lesion and the entire lesion is ≤5400 microns in greatest linear diameter Occult CNV may be considered for PDT with vision <20/50 or if the CNV is <4 MPS disc areas in size when the vision is >20/50	Return exam with fluorescein angiography every 3 months until stable, with retreatments as indicated [A: III] Monitoring of monocular near vision (reading/Amsler grid) [A: III]

Note: If patients treated with thermal laser photocoagulation surgery or verteporfin PDT notice visual loss or change prior to the next scheduled visit, return evaluation that may include angiography is recommended. [A: III]

The following is recommended for treatment of CNV that meets the MPS criteria and for subfoveal CNV that meets TAP or VIP criteria for a predominantly classic lesion or an occult lesion with no classic CNV:

- Discuss risks, benefits, and complications with the patient and obtain informed consent (see Counseling/Referral). [A: III]
- Treat within 1 week after fluorescein angiography. [A: I]

Follow-up

A history and examination are the recommended elements of the follow-up visits. Recommended follow-up intervals are listed in the above table.

History

- Symptoms, including decreased vision and metamorphopsia [A: II]
- Changes in medications and nutritional supplements [B: III]
- Changes in medical and ocular history [B: III]
- Changes in social history (smoking) [B: II]

Examination

- Visual acuity [A: III]
- Stereo biomicroscopic examination of the fundus [A: III]

Follow-up of Postoperative Patients

In addition to the above recommendations, patients who have been treated with either thermal laser photocoagulation surgery or verteporfin PDT should be examined at regular intervals by means of biomicroscopy of the fundus. [A: III] Fundus photography [A: III] and fluorescein angiography [A: I] should be employed when indicated.

A follow-up examination should be performed approximately 2 to 4 weeks after initial thermal laser photocoagulation surgery to confirm that the CNV has been obliterated. [A: I] Subsequent examinations and fluorescein angiography should be performed at approximately 4 to 6 weeks and thereafter depending on the clinical findings and the judgment of the treating physician. [A: III]

Following verteporfin PDT, return examination with fluorescein angiography should be performed approximately every 3 months until stable, with retreatments as indicated. [A: III]

Provider

Treatment of CNV is difficult, and referral to an ophthalmologist with special training or experience in managing this condition is appropriate.

Counseling/Referral

All patients with AMD should be educated about the prognosis of the disease and the potential value of treatment as appropriate for their ocular and functional status. [A: III]

Patients with early AMD who may develop the intermediate or more severe stages of AMD should be encouraged to have regular dilated eye exams for the early detection of the intermediate stage of AMD. [A: III]

Patients with intermediate AMD who are at increased risk of visual loss or of progression to advanced AMD should be educated about methods of detecting new symptoms of CNV and about the need for prompt notification to an ophthalmologist who can confirm if the new symptoms are from CNV and who can begin treatment if indicated. [A: III]

Patients with CNV for whom treatment may be indicated, based on the MPS, TAP, and VIP guidelines, should be counseled about the effects of laser surgery, [A: III] some of which are as follows:

- Treatment will reduce but not eliminate the risk of severe visual loss.
- Thermal laser surgery will produce permanent scotomas. The location, size, and anticipated effect of the scotoma on central visual function (e.g., reading vision) should be explained.
- Verteporfin PDT will reduce the risk of moderate and severe visual loss, but most patients will still lose some vision over 2 years, and improvement in visual acuity is unusual. Successful verteporfin PDT may require an average of 4 to 5 treatments over 2 years.

- There is a high risk of CNV persistence or recurrence after thermal laser surgery that could require additional laser surgery. This risk is greatest during the first year after initial treatment.
- Multiple fluorescein angiograms are necessary for appropriate follow-up after thermal laser surgery or verteporfin PDT.

Patients with reduced visual function should be referred for vision rehabilitation and social services. [A:III]

Definitions:

Ratings of Importance to Care Process

- Level A, most important
- Level B, moderately important
- Level C, relevant but not critical

Ratings of Strength of Evidence

- I. Level I includes evidence obtained from at least one properly conducted, well-designed randomized, controlled trial. It could include meta-analyses of randomized controlled trials.
- II. Level II includes evidence obtained from the following:
 - Well-designed controlled trials without randomization
 - Well-designed cohort or case-control analytic studies, preferably from more than one center
 - Multiple-time series with or without the intervention
- III. Level III includes evidence obtained from one of the following:
 - Descriptive studies
 - Case reports
 - Reports of expert committees/organization
 - Expert opinion (e.g., Preferred Practice Pattern panel consensus)

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations.")

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Improved vision or minimized visual loss and functional impairment related to age-related macular degeneration (AMD)

POTENTIAL HARMS

A brief list of complications is given below. Refer to the original guideline document for a more detailed discussion.

Supplements of High-dose Antioxidants and Zinc

- Beta-carotene
 - Increased yellowing of the skin
 - Increased risk of developing lung cancer in current smokers or former smokers who stopped within the last year
- Zinc
 - Increased risk of hospitalizations for genitourinary causes (prostate hypertrophy in men)

Thermal Laser Photocoagulation Surgery

- Severe vision loss following treatment, which may be permanent
- Rupture of Bruch's membrane with subretinal or vitreous hemorrhage
- Retinal pigment epithelium (RPE) tears
- Treatment of the fovea in juxtafoveal neovascularization

Photodynamic Therapy (PDT)

- Severe vision loss within 1 week following treatment in 1 to 4%, which may be permanent
- Infusion site extravasation requiring coverage of the infiltrated area for 5 days or until it is normal
- Back pain during infusion of drug
- Photosensitivity reaction (can be avoided by avoiding direct sunlight)

CONTRAINDICATIONS

CONTRAINDICATIONS

The use of verteporfin is contraindicated in patients with porphyria or a known allergy or sensitivity to the drug, and careful consideration should be given to patients with liver dysfunction, and patients who are pregnant, breast-feeding, or of pediatric age because these patients were not studied in published reports.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- Preferred Practice Patterns provide guidance for the pattern of practice, not for the care of a particular individual. While they should generally meet the needs of most patients, they cannot possibly best meet the needs of all patients. Adherence to these Preferred Practice Patterns will not ensure a successful outcome in every situation. These practice patterns should not be deemed inclusive of all proper methods of care or exclusive of other methods

- of care reasonably directed at obtaining the best results. It may be necessary to approach different patients' needs in different ways. The physician must make the ultimate judgment about the propriety of the care of a particular patient in light of all of the circumstances presented by that patient. The American Academy of Ophthalmology is available to assist members in resolving ethical dilemmas that arise in the course of ophthalmic practice.
- Preferred Practice Patterns are not medical standards to be adhered to in all individual situations. The Academy specifically disclaims any and all liability for injury or other damages of any kind, from negligence or otherwise, for any and all claims that may arise out of the use of any recommendations or other information contained herein.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

American Academy of Ophthalmology Retina Panel, Preferred Practice Patterns Committee. Age-related macular degeneration. San Francisco (CA): American Academy of Ophthalmology (AAO); 2003. 29 p. [96 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1998 Sep (revised 2003)

GUIDELINE DEVELOPER(S)

American Academy of Ophthalmology - Medical Specialty Society

SOURCE(S) OF FUNDING

American Academy of Ophthalmology

GUIDELINE COMMITTEE

Preferred Practice Patterns Committee; Retina Panel

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The following author has received compensation within the past 3 years up to and including June 2003 for consulting services regarding the equipment, process, or product presented or competing equipment, process, or product presented:

Joan W. Miller, MD: Eyetech Pharmaceuticals - Consultant. Additional Disclosure: The Massachusetts Eye and Ear Infirmary has an ownership in three U.S. patents directed to the use of verteporfin. In addition, the Massachusetts Eye and Ear Infirmary has an ownership interest in certain patent applications directed to the selective destruction of subretinal choroidal neovasculature for the treatment of macular degeneration and other disorders. Should the Massachusetts Eye and Ear Infirmary receive royalties or other financial remuneration as a result of these patents and patent applications, Dr. Miller would receive a share of the same in accordance with the Massachusetts Eye and Ear Infirmary's institutional Patent Policy and Procedures, which includes royalty-sharing provisions.

Other authors have no financial interest in the equipment, process, or product presented or competing equipment, process, or product presented.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previously released version: Age-related macular degeneration. San Francisco (CA): American Academy of Ophthalmology (AAO); 1998).

All Preferred Practice Patterns are reviewed by their parent panel annually or earlier if developments warrant.

GUIDELINE AVAILABILITY

Electronic copies: Available from the [American Academy of Ophthalmology \(AAO\) Web site](#).

Print copies: Available from American Academy of Ophthalmology, P.O. Box 7424, San Francisco, CA 94120-7424; telephone, (415) 561-8540.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

The following patient education brochures are available:

- Macular degeneration (2000)
- Macular Degeneration (Spanish: Degeneracion Macular)(2000)

The following patient education booklet is available:

- Age-Related Macular Degeneration (2002)

The following patient education videotape is available:

- Understanding macular degeneration (2001)
- Understanding Age-Related Macular Degeneration (Spanish language version) (2001)

Copies: Available from the American Academy of Ophthalmology (AAO), P.O. Box 7424, San Francisco, CA 94120-7424; Phone: (415) 561-8540.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

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