



April 2007

International Council of Ophthalmology/
International Federation of Ophthalmological Societies

ICO International Clinical Guidelines

This document contains 19 International Clinical Guidelines defined by the International Council of Ophthalmology (ICO).

The Guidelines are designed to be translated and adapted by ophthalmologic societies to help ophthalmologists assess how they are treating patients. They are intended to serve a supportive and educational role and ultimately to improve the quality of eye care for patients.

Below is a list of the Guidelines available with links to each Guideline in this document, followed by the Preface to the Guidelines. Also see the Introduction to the ICO International Clinical Guidelines at www.icoph.org/guide/guideintro.html.

For the latest information on the ICO Clinical Guidelines and to download individual Guidelines as separate PDF files, see www.icoph.org/guide.

List of Guidelines Available

- Age-related Macular Degeneration (Initial and Follow-up Evaluation)
- Age-related Macular Degeneration (Management Recommendations)
- Amblyopia (Initial and Follow-up Evaluation)
- Bacterial Keratitis (Initial Evaluation)
- Bacterial Keratitis (Management Recommendations)
- Blepharitis (Initial and Follow-up Evaluation)
- Cataract (Initial Evaluation)
- Conjunctivitis (Initial Evaluation)
- Diabetic Retinopathy (Initial and Follow-up Evaluation)
- Diabetic Retinopathy (Management Recommendations)
- Dry Eye (Initial Evaluation)
- Esotropia (Initial and Follow-up Evaluation)
- Eye Disease in Leprosy (Initial Evaluation and Management)

International Council of Ophthalmology
Jean-Jacques DeLaey, MD, Secretary General
Department of Ophthalmology, Ghent University Hospital, de Pintelaan 185, B-9000
Ghent, Belgium
Fax: (+32-9) 332-49-63 E-mail: info@icoph.org Web: www.icoph.org

- Posterior Vitreous Detachment, Retinal Breaks and Lattice Degeneration (Initial and Follow-up Evaluation)
- Primary Open-Angle Glaucoma (Initial Evaluation)
- Primary Open-Angle Glaucoma (Follow-up Evaluation)
- Primary Open-Angle Glaucoma Suspect (Initial and Follow-up Evaluation)
- Primary Angle Closure (Initial Evaluation and Therapy)
- Trachoma

Preface to the Guidelines

International Clinical Guidelines are prepared and distributed by the International Council of Ophthalmology on behalf of the International Federation of Ophthalmological Societies.

These Guidelines are to serve a supportive and educational role for ophthalmologists worldwide. These guidelines are intended to improve the quality of eye care for patients. They have been adapted in many cases from similar documents (Benchmarks of Care) created by the American Academy of Ophthalmology based on their Preferred Practice Patterns.

While it is tempting to equate these to Standards, it is impossible and inappropriate to do so. The multiple circumstances of geography, equipment availability, patient variation and practice settings preclude a single standard.

Guidelines on the other hand are a clear statement of expectations. These include comments of the preferred level of performance assuming conditions that allow the use of optimum equipment, pharmaceuticals and/or surgical circumstances.

Thus, a basic expectation is created and if the situation is optimum, the optimum facets of diagnosis, treatment and follow up may be employed. Excellent, appropriate and successful care can also be provided where optimum conditions do not exist.

Simply following the Guidelines does not guarantee a successful outcome. It is understood that, given the uniqueness of a patient and his or her particular circumstance, physician judgment must be employed. This can result in a modification in application of a guideline in individual situations.

Medical experience has been relied upon in the preparation of these guidelines, and they are whenever possible, evidence-based. This means these Guidelines are based on the latest available scientific information. The ICO is committed to provide updates of these guidelines on a regular basis (approximately every two to three years).

(Also see the Introduction to the ICO International Clinical Guidelines at www.icoph.org/guide/guideintro.html and the list of other Guidelines at www.icoph.org/guide/guidelist.html.)

Age-Related Macular Degeneration (Initial and Follow-up Evaluation)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History (Key elements)

- Symptoms (metamorphopsia, decreased vision) **(A:II)**
- Medications and nutritional supplements **(B:III)**
- Ocular history **(B:II)**
- Systemic history (any hypersensitivity reactions) **(B:II)**
- Family history, especially family history of AMD **(B:II)**
- Social history, especially smoking **(B:II)**

Initial Physical Exam (Key elements)

- Visual acuity **(A:III)**
- Stereo biomicroscopic examination of the macula **(A:I)**

Ancillary Tests

Intravenous fundus fluorescein angiography in the clinical setting of AMD is indicated: **(A:I)**

- when patient complains of new metamorphopsia
- when patient has unexplained blurred vision
- when clinical exam reveals elevation of the RPE or retina, subretinal blood, hard exudates or subretinal fibrosis
- to detect the presence of and determine the extent, type, size, and location of CVN and to calculate the percentage of the lesion composed of or consisting of classic CNV
- to guide treatment (laser photocoagulation surgery or verteporfin PDT)
- to detect persistent or recurrent CNV following treatment
- to assist in determining the cause of visual loss that is not explained by clinical exam

Each angiographic facility must have a care plan or an emergency plan and a protocol to minimize the risk and manage any complications. **(A:III)**

Follow-up Exam History

- Visual symptoms, including decreased vision and metamorphopsia **(A:II)**
- Changes in medications and nutritional supplements **(B:III)**

- Interval ocular history **(B:III)**
- Interval systemic history **(B:III)**
- Changes in social history, especially smoking **(B:II)**

Follow-up Physical Exam

- Visual acuity **(A:III)**
- Stereo biomicroscopic examination of the fundus **(A:III)**

Surgical and Postoperative Care for Patients Receiving Thermal Laser Surgery, Photodynamic Therapy (PDT), or Intravitreal Injections

- Discuss risks, benefits and complications with the patient and obtain informed consent **(A:III)**
- For thermal laser surgery and PDT, treat within 1 week after fluorescein angiography **(A:I)**
- Examine at 2 to 4 weeks after initial thermal laser surgery to confirm that CVN has been obliterated and perform fluorescein angiography **(A:I)**
- Examine at 4 to 6 weeks after thermal laser surgery and perform fluorescein angiography, and thereafter, depending on clinical findings and judgment **(A:I)**
- Examine and perform fluorescein angiography at least every 3 months for up to 2 years after verteporfin PDT **(A:I)**
- Examine with retreatments as indicated every 4 to 8 weeks after intravitreal injections (see table) **(A:III)**

Patient Education

- Educate patients about the prognosis and potential value of treatment as appropriate for their ocular and functional status. **(A:III)**
- Encourage patients with early AMD to have regular dilated eye exams for early detection of intermediate AMD. **(A:III)**
- Educate patients with intermediate AMD about methods of detecting new symptoms of CVN and about the need for prompt notification to an ophthalmologist. **(A:III)**
- Instruct patients with unilateral disease to monitor their vision in their fellow eye and to return periodically even in absence of symptoms, but promptly after onset of new or significant visual symptoms. **(A:III)**
- For patients with CVN for whom treatment may be indicated, counsel as follows: **(A:III)** treatment will reduce, but not eliminate the risk of severe visual loss; thermal laser surgery will produce permanent scotomas and explain anticipated effect of scotoma on central visual function; verteporfin PDT and pegaptanib sodium treatment will reduce 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; there is a high risk of CNV persistence or recurrence after thermal laser surgery that could require additional laser surgery, and this risk is greatest

in the first year; and multiple fluorescein angiograms are necessary for appropriate follow-up.

- Refer patients with reduced visual function for vision rehabilitation (see www.aao.org/smartsight) and social services. **(A:III)**

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks for Preferred Practice Patterns™ \(PPPs\)](http://www.aao.org) (www.aao.org)

Back to the list of Guidelines

Age-related Macular Degeneration (Management Recommendations)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical
Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Treatment Recommendations and Follow-up Plans for Age-related Macular Degeneration

Recommended Treatment	Diagnoses Eligible for Treatment	Follow-up Recommendations
<p>Observation with no medical or surgical therapies (A:I)</p>	<p>No clinical signs of AMD (AREDS category 1)</p> <p>Early AMD (AREDS category 2)</p> <p>Advanced AMD with bilateral subfoveal geographic atrophy or disciform scars</p>	<p>As recommended in the Comprehensive Adult Medical Eye Evaluation PPP (A:III)</p> <p>Return exam at 6 to 24 months if asymptomatic or prompt exam for new symptoms suggestive of CVN (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 CVN (A:III)</p> <p>Fundus photography as appropriate</p> <p>Fluorescein angiography if there is evidence of edema or other signs and symptoms of CVN</p>
<p>Thermal laser photocoagulation surgery as</p>	<p>Extrafoveal classic CNV, new or recurrent</p>	<p>Return exam with fluorescein angiography approximately 2 to 4 weeks after treatment, and then</p>

<p>recommended in the MPS reports (A:I)</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 CVN</p>	<p>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) (A:III)</p>
<p>PDT with verteporfin as recommended in the TAP and VIP reports (A:I)</p>	<p>Subfoveal CNV, new or recurrent, where the classic component is >50% of the lesion and the entire lesion is \leq5400 microns in greatest linear diameter</p> <p>Occult CNV may be considered for PDT with vision <20/50 or if the CVN is <4 MPS disc areas in size when the vision is >20/50</p>	<p>Return exam approximately every 3 months until stable, with retreatments as indicated (A:III)</p> <p>Fluorescein angiography or other imaging as indicated</p> <p>Monitoring of monocular near vision (reading/ Amsler grid) (A:III)</p>
<p>Pegaptanib sodium intravitreal injection as recommended in pegaptanib sodium literature (A:I)</p>	<p>Subfoveal CNV, new or recurrent, for predominantly classic lesions \leq12 MPS disc area in size</p> <p>Minimally classic, or occult with no classic lesions where the entire lesion is \leq12 disc areas in size, subretinal hemorrhage associated with CVN comprises \leq50% of lesion, and/or there is lipid present, and/or the patient has lost</p>	<p>Patients should be instructed to report any symptoms suggestive of endophthalmitis without delay, including eye pain or increased discomfort, worsening eye redness, blurred or decreased vision, increased sensitivity to light, or increased number of floaters (A:III)</p> <p>Return exam with retreatments every 6 weeks as indicated (A:III)</p> <p>Monitoring of monocular near vision (reading/ Amsler grid)</p>

	15 or more letters of visual acuity during the previous 12 weeks	(A:III)
<p>Ranibizumab intravitreal injection 0.5 mg as recommended in ranibizumab literature (A:I)</p>	Subfoveal CNV	<p>Patients should be instructed to report any symptoms suggestive of endophthalmitis without delay, including eye pain or increased discomfort, worsening eye redness, blurred or decreased vision, increased sensitivity to light, or increased number of floaters (A:III)</p> <p>Return exam with retreatments every 4 weeks as indicated (A:III)</p> <p>Monitoring of monocular near vision (reading/ Amsler grid) (A:III)</p>
<p>Bevacizumab intravitreal injection as described in published reports (A:III)</p> <p>The ophthalmologist should provide appropriate informed consent with respect to the off-label status (A:III)</p>	Subfoveal CNV	<p>Patients should be instructed to report any symptoms suggestive of endophthalmitis without delay, including eye pain or increased discomfort, worsening eye redness, blurred or decreased vision, increased sensitivity to light, or increased number of floaters (A:III)</p> <p>Return exam with retreatments every 4 to 8 weeks as indicated (A:III)</p> <p>Monitoring of monocular near vision (reading/ Amsler grid) (A:III)</p>

NOTE: If patients treated with thermal laser photocoagulation surgery, verteporfin PDT, or intravitreal injections notice visual loss or change prior to the next scheduled visit, return evaluation that may include angiography is recommended. **(A:III)**

AMD = Age-related Macular Degeneration; AREDS = Age-related Eye Disease Study; CNV = choroidal neovascularization; MPS = Macular Photocoagulation Study; PDT = photodynamic therapy; TAP = Treatment of Age-related Macular Degeneration with Photodynamic Therapy; VIP = Verteporfin in Photodynamic Therapy

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks, November 2006 \(www.aao.org\)](http://www.aao.org)

Back to the list of Guidelines

Amblyopia (Initial and Follow-up Evaluation)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History (Key elements)

- Ocular symptoms and signs **(A:III)**
- Ocular history **(A:III)**
- Systemic history, including review of prenatal, perinatal, and postnatal medical factors **(A:III)**
- Family history, including eye conditions and relevant systemic diseases **(A:III)**

Initial Physical Exam (Key elements)

- Visual acuity **(A:III)**
- Assessment of fixation pattern **(A:III)**
- Pupil reactivity and function **(A:III)**
- Ocular alignment and motility **(A:III)**
- External examination: lids, lashes, lacrimal apparatus, orbit, face **(A:III)**
- Evaluation of the fundus (including posterior pole of retina) **(A:III)**
- Cycloplegic refraction **(A:III)**

Care Management

- Provide ongoing management until approximately age 10 years. **(A:III)**
- Choose treatment to meet the patient's visual, physical, social and psychological needs and based on potential risks and benefits for the patient. **(A:III)**
- Treatment goal is to achieve equalization/normalization of fixation patterns or visual acuity. **(A:III)**
- Once maximal visual acuity has been obtained, treatment should be tapered or stopped. **(A:III)**

Follow-up Evaluation

- Follow-up visits should include:
 - Amount of occlusion and /or spectacle wear achieved by report **(A:III)**
 - Side effects (e.g., skin irritation, ocular redness, flushing and psychosocial issues) **(A:III)**
 - Visual acuity or fixation of each eye **(A:III)**
 - Ocular alignment **(A:III)**
 - Repeat cycloplegic refraction, as indicated (at least yearly, and 4-6 month intervals may be necessary) **(A:III)**

Amblyopia Follow-up Evaluation Intervals During Active Treatment Period (A:III)

Age (years)	High Percentage Occlusion ($\geq 70\%$ of waking time)	Low Percentage Occlusion ($\geq 70\%$ of waking time) or Penalization	Maintenance Treatment or Observation
0-1	Days to 4 weeks	2-8 weeks	1-4 months
1-2	2-8 weeks	2-4 months	2-4 months
2-3	3-12 weeks	2-4 months	2-4 months
3-4	4-16 weeks	2-6 months	2-6 months
4-5	4-16 weeks	2-6 months	2-6 months
5-7	6-16 weeks	2-6 months	2-6 months
7-9	8-16 weeks	3-6 months	3-12 months
Over 9	8-16 weeks	3-6 months	6-12 months

Patient Education

- Discuss diagnosis, severity of disease, prognosis and treatment plan with patient, parents and /or caregivers. **(A:III)**
- Develop a team approach with the patient, family/caregiver and others such as teachers or day-care providers, giving attention to visual, psychological, social and economic factors, and assuring that they understand the disease process, rationale and goals of treatments, and the benefits and complications. **(A:III)**
- Discuss potential psychological side effects with the parent/caregiver. **(A:III)**
- Explain the importance of monitoring and long-term follow-up of the problem with the parent/caregiver and patient. **(A:III)**

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks, November 2006 \(www.aao.org\)](http://www.aao.org)

Back to the list of Guidelines

Bacterial Keratitis (Initial Evaluation)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical)

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History

- Ocular symptoms (A:III)
- Circumstances surrounding onset of symptoms (A:III)
- Prior ocular history (A:III)
- Systemic history (A:III)
- Current ocular medications and medications recently used (A:III)
- Medication allergies (A:III)

Initial Physical Exam

- General appearance of patient (B:III)
- Facial examination (B:III)
- Visual acuity (A:III)
- Eyelids and eyelid closure (A:III)
- Conjunctiva (A:III)
- Nasolacrimal apparatus (B:III)
- Corneal sensation (A:III)
- Slit-Lamp biomicroscopy
 - Eyelid margins (A:III)
 - Conjunctiva (A:III)
 - Sclera (A:III)
 - Cornea (A:III)
 - Anterior chamber (A:III)
 - Anterior vitreous (A:III)

Diagnostic Tests

- Manage majority of community-acquired cases with empiric therapy and without smears or cultures. (A:III)
- Indications for smears and cultures:
 - Sight-threatening or severe keratitis of suspected microbial origin prior to initiating therapy (A:III)
 - A large corneal infiltrate that extends to the middle to deep stroma (A:III)
 - Chronic in nature (A:III)
 - Unresponsive to broad spectrum antibiotic therapy (A:III)
 - Clinical features suggestive of fungal, amoebic, or mycobacterial keratitis (A:III)
- The hypopyon that occurs in eyes with bacterial keratitis is usually sterile, and aqueous or vitreous taps should not be performed unless there is a high suspicion of microbial endophthalmitis. (A:III)

- Corneal scrapings for culture and smears should be inoculated directly onto appropriate culture media and slides in order to maximize culture yield. **(A:III)**. If this is not feasible, place specimens in transport media. **(A:III)**. In either case, immediately incubate cultures or take promptly to the laboratory. **(A:III)**

Care Management

- Topical antibiotic eye drops are preferred method in most cases. **(A:III)**
- Use topical broad-spectrum antibiotics initially in the empiric treatment of presumed bacterial keratitis. **(A:III)**
- For severe keratitis (deep stromal involvement or a defect larger than 2 mm with extensive suppuration), use a loading dose every 5 to 15 minutes for the first hour, followed by applications every 15 minutes to 1 hour around the clock. **(A:III)** For less severe keratitis, a regimen with less frequent dosing is appropriate. **(A:III)**
- Use systemic therapy for gonococcal keratitis. **(A:III)**
- In general, modify initial therapy when there is a lack of improvement or stabilization within 48 hours. **(A:III)**
- For patients treated with ocular topical corticosteroids at time of suspected bacterial keratitis, reduce or eliminate corticosteroids until infection has been controlled. **(A:III)**
- When the corneal infiltrate compromises the visual axis, may add topical corticosteroid therapy following at least 2 to 3 days of progressive improvement with topical antibiotics. **(A:III)** Continue topical antibiotics at high levels with gradual tapering. **(A:III)**
- Examine patients within 1 to 2 days after initiation of topical corticosteroid therapy. **(A:III)**

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks](http://www.aao.org), November 2006 (www.aao.org).

Back to the list of Guidelines

Bacterial Keratitis (Management Recommendations)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Follow-up Evaluation

- Frequency depends on extent of disease, but follow severe cases initially at least daily until clinical improvement or stabilization is documented. **(A:III)**

Patient Education

- Educate about the destructive nature of bacterial keratitis and need for strict compliance with therapy. **(A:III)**
- Discuss possibility of permanent visual loss and need for future visual rehabilitation. **(A:III)**
- Educate patients with contact lenses about increased risk of infection associated with contact lens, overnight wear, and importance of adherence to techniques to promote contact lens hygiene. **(A:III)**
- Refer patients with significant visual impairment or blindness for vision rehabilitation if they are not surgical candidates. **(A:III)**

Antibiotic Therapy of Bacterial Keratitis [A:III]

Organism	Antibiotic	Topical Concentration	Subconjunctival Dose
No organism identified or multiple types of organisms	Cefazolin with Tobramycin / Gentamicin or Fluoroquinolones	50 mg/ml 9-14 mg/ml 3 or 5 mg/ml	100 mg in 0.5 ml 20 mg in 0.5 ml
Gram-positive Cocci	Cefazolin Vancomycin* Bacitracin* Moxifloxacin or Gatifloxacin	50 mg/ml 15-50 mg/ml 10,000 IU 3 or 5 mg/ml	100 mg in 0.5 ml 25 mg in 0.5 ml
Gram-negative	Tobramycin /Gentamicin	9-14 mg/ml 50 mg/ml	20 mg in 0.5 ml 100 mg in 0.5 ml

Rods	Ceftazidime Fluoroquinolones	3 or 5 mg/ml	
Gram-negative Cocci**	Ceftriaxone Ceftazidime Fluoroquinolones	50 mg/ml 50 mg/ml 3 or 5 mg/ml	100 mg in 0.5 ml 100 mg in 0.5 ml
Non-tuberculous Mycobacteria	Amikacin Clarithromycin*** Fluoroquinolones	20-40 mg/ml 3 or 5 mg/ml	20 mg in 0.5 ml
Nocardia	Amikacin Trimethoprim/Sulfamethoxazole: Trimethoprim Sulfamethoxazole	20-40 mg/ml 16 mg/ml 80mg/ml	20 mg in 0.5 ml

* For resistant Enterococcus and Staphylococcus species and penicillin allergy. Vancomycin and Bacitracin have no gram-negative activity and should not be used as a single agent empirically in treating bacterial keratitis.

** Systemic therapy is necessary for suspected gonococcal infection.

*** Dosage for oral systemic therapy in adults is 500 mg every 12 hours. Topical therapy has had some success but the medication is irritating and clinical experience is limited.

Adapted from the [American Academy of Ophthalmology Summary Benchmarks, November 2006 \(www.aao.org\)](http://www.aao.org)

Back to the list of Guidelines

Blepharitis (Initial and Follow-up Evaluation)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History

- Ocular symptoms and signs **(A:III)**
- Duration of symptoms **(A:III)**
- Unilateral or bilateral presentation **(A:III)**
- Exacerbating conditions (e.g., smoke, allergens, wind, contact lens, low humidity, retinoids, diet, alcohol) **(A:III)**
- Symptoms related to systemic diseases (e.g., rosacea, allergy) **(A:III)**
- Current and previous systemic and topical medications **(A:III)**
- Recent exposure to an infected individual (e.g., pediculosis) **(C:III)**
- Ocular history (e.g., previous ophthalmic surgery and trauma, including radiation and chemical trauma) **(A:III)**
- Systemic history (e.g., dermatological diseases, such as acne, rosacea and eczema and medications such as isotretinoin) **(A:III)**

Initial Physical Exam

- Visual acuity **(A:III)**
- External examination
 - Skin **(A:III)**
 - Eyelids **(A:I)**
- Slit-lamp biomicroscopy
 - Tear film **(A:III)**
 - Anterior eyelid margin **(A:III)**
 - Eyelashes **(A:III)**
 - Posterior eyelid margin **(A:III)**
 - Tarsal conjunctiva **(A:III)**
 - Bulbar conjunctiva **(A:III)**
 - Cornea **(A:III)**

Diagnostic Tests

- Cultures may be indicated for patients with recurrent anterior blepharitis with severe inflammation as well as for patients who are not responding to therapy. **(A:III)**
- Biopsy of the eyelid to exclude the possibility of carcinoma may be indicated in cases of marked asymmetry, resistance to therapy or unifocal recurrent chalazion that do not respond well to therapy. **(A:II)**

- Consult with the pathologist prior to obtaining the biopsy if sebaceous cell carcinoma is suspected. **(A:II)**

Care Management

- Treat patients with blepharitis initially with a regimen of eyelid hygiene. **(A:III)**
- For patients with staphylococcal blepharitis, a topical antibiotic such as erythromycin can be prescribed to be applied one or more times daily on the eyelids for one or more weeks. **(A:III)**
- For patients with meibomian gland dysfunction, whose chronic symptoms and signs are not adequately controlled with eyelid hygiene, oral tetracyclines can be prescribed. **(A:III)**
- A brief course of topical corticosteroids may be helpful for eyelid or ocular surface inflammation. The minimal effective dose of corticosteroids should be utilized and long-term corticosteroid therapy should be avoided if possible. **(A:III)**

Follow-up Evaluation

- Follow-up visits should include:
 - Interval history **(A:III)**
 - Visual acuity **(A:III)**
 - External exam **(A:III)**
 - Slit-lamp biomicroscopy **(A:III)**

Patient Education

- Counsel patients about the chronicity and recurrence of the disease process. **(A:III)**
- Inform patients that symptoms can frequently be improved but are rarely eliminated. **(A:III)**

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks, November 2006 \(www.aao.org\)](http://www.aao.org)

Back to the list of Guidelines

Cataract (Initial and Follow-up Evaluation)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical
Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History

- Symptoms **(A:II)**
- Ocular history **(A:III)**
- Systemic history **(A:III)**
- Assessment of visual functional status **(A:II)**

Initial Physical Exam

- Visual acuity, with current correction **(A:III)**
- Measurement of BCVA (with refraction when indicated) **(A:III)**
- Ocular alignment and motility **(A:III)**
- Pupil reactivity and function **(A:III)**
- Measurement of IOP **(A:III)**
- External examination **(A:III)**
- Slit-lamp biomicroscopy **(A:III)**
- Evaluation of the fundus (through a dilated pupil) **(A:III)**
- Assessment of relevant aspects of general and mental health **(B:III)**

Care Management

- Treatment is indicated when visual function no longer meets the patient's needs and cataract surgery provides a reasonable likelihood of improvement. **(A:II)**
- Cataract removal is also indicated when there is evidence of lens-induced diseases or when it is necessary to visualize the fundus in an eye that has the potential for sight. **(A:III)**
- Surgery should not be performed under the following circumstances: **(A:III)** glasses or visual aids provide vision that meets the patient's needs', surgery will not improve visual function; the patient cannot safely undergo surgery because of coexisting medical or ocular conditions; appropriate postoperative care cannot be obtained.
- Indications for second eye surgery are the same as for the first eye. **(A:II)** (with consideration given to the needs for binocular function)

Preoperative Care

Ophthalmologist who is to perform the surgery has the following responsibilities:

- Examine the patient preoperatively **(A:III)**

- Ensure that the evaluation accurately documents symptoms, findings and indications for treatment **(A:III)**
- Inform the patient about the risks, benefits and expected outcomes of surgery **(A:III)**
- Formulate surgical plan, including selection of an IOL **(A:III)**
- Review results of presurgical and diagnostic evaluations with the patient **(A:III)**
- Formulate postoperative plans and inform patient of arrangements **(A:III)**

Follow-up Evaluation

- High-risk patients should be seen within 24 hours of surgery. **(A:III)**
- Routine patients should be seen within 48 hours of surgery. **(A:III)**
- Components of each postoperative exam should include:
 - Interval history, including new symptoms and use of postoperative medications **(A:III)**
 - Patient's assessment of visual functional status **(A:III)**
 - Assessment of visual function (visual acuity, pinhole testing) **(A:III)**
 - Measurement of IOP **(A:III)**
 - Slit-lamp biomicroscopy **(A:III)**

Nd:YAG Laser Capsulotomy

- Treatment is indicated when vision impaired by posterior capsular opacification does not meet the patient's functional needs or when it critically interferes with visualization of the fundus. **(A:III)**
- Educate about the symptoms of posterior vitreous detachment, retinal tears and detachment and need for immediate examination if these symptoms are noticed. **(A:III)**

Patient Education

- For patients who are functionally monocular, discuss special benefits and risks of surgery, including the risk of blindness. **(A:III)**

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks, November 2006 \(www.aao.org\)](http://www.aao.org)

Back to the list of Guidelines

Conjunctivitis (Initial Evaluation)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History

- Ocular symptoms and signs (e.g., itching, discharge, irritation, pain, photophobia, blurred vision) **(A:III)**
- Duration of symptoms **(A:III)**
- Unilateral or bilateral presentation **(A:III)**
- Character of discharge **(A:III)**
- Recent exposure to an infected individual **(A:III)**
- Trauma (mechanical, chemical, ultraviolet) **(A:III)**
- Contact lens wear (e.g., lens type, hygiene and use regimen) **(A:III)**
- Symptoms and signs potentially related to systemic diseases (e.g., genitourinary discharge, dysuria, upper respiratory infection, skin and mucosal lesions) **(A:III)**
- Allergy, asthma, eczema **(A:III)**
- Use of topical and systemic medications **(A:III)**
- Use of personal care products **(A:III)**
- Ocular history (e.g., previous episodes of conjunctivitis **(A:III)** and previous ophthalmic surgery) **(B:III)**
- Systemic history (e.g., compromised immune status, prior systemic diseases) **(B:III)**
- Social history (e.g., smoking, occupation and hobbies, travel and sexual activity) **(C:III)**

Initial Physical Exam

- Visual acuity **(A:III)**
- External examination
 - Regional lymphadenopathy (particularly preauricular) **(A:III)**
 - Skin **(A:III)**
 - Abnormalities of the eyelids and adnexae **(A:III)**
 - Conjunctiva **(A:III)**
- Slit-lamp biomicroscopy
 - Eyelid margins **(A:III)**
 - Eyelashes **(A:III)**
 - Lacrimal puncta and canaliculi **(B:III)**
 - Tarsal and forniceal conjunctiva **(A:II)**
 - Bulbar conjunctiva/limbus **(A:II)**
 - Cornea **(A:I)**
 - Anterior chamber/iris **(A:III)**
 - Dye-staining pattern (conjunctiva and cornea) **(A:III)**

Diagnostic Tests

- Cultures, smears for cytology and special stains are indicated in cases of suspected infectious neonatal conjunctivitis. **(A:I)**
- Smears for cytology and special stains are recommended in cases of suspected gonococcal conjunctivitis. **(A:III)**
- Confirm diagnosis of adult and neonate chlamydial conjunctivitis with immunodiagnostic test and/or culture. **(A:I)**
- Biopsy the bulbar conjunctiva and take a sample from an uninvolved area adjacent to the limbus in an eye with active inflammation when ocular cicatricial pemphigoid is suspected. **(A:III)**
- A full-thickness lid biopsy is indicated in cases of suspected sebaceous carcinoma. **(A:II)**

Care Management

- Use systemic antibiotic treatment for conjunctivitis due to *Neisseria gonorrhoeae* **(A:I)** or *Chlamydia trachomatis*. **(A:II)**
- Treat sexual partners to minimize recurrence and spread of disease when conjunctivitis is associated with sexually transmitted diseases and refer patients and their sexual partners to an appropriate medical specialist. **(A:III)**
- Refer patients with manifestation of a systemic disease to an appropriate medical specialist. **(A:III)**

Follow-up Evaluation

- Follow-up visits should include:
 - Interval history **(A:III)**
 - Visual acuity **(A:III)**
 - Slit-lamp biomicroscopy **(A:III)**

Patient Education

- Counsel patients with contagious varieties to minimize or prevent spread of diseases in the community. **(A:III)**

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks, November 2006 \(www.aao.org\)](http://www.aao.org)

Back to the list of Guidelines

Diabetic Retinopathy (Initial and Follow-up Evaluation)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History (Key elements)

- Duration of diabetes **(A:I)**
- Past glycemic control (hemoglobin A1c) **(A:I)**
- Medications **(A:III)**
- Systemic history (e.g., onset of puberty**(A:III)**, obesity**(A:III)**, renal disease**(A:II)**, systemic hypertension**(A:I)**, serum lipid levels**(A:II)**, pregnancy**(A:I)**)

Initial Physical Exam (Key elements)

- Best-corrected visual acuity **(A:I)**
- Measurement of IOP **(A:III)**
- Gonioscopy when indicated (for neovascularization of the iris or increased IOP) **(A:III)**
- Slit-lamp biomicroscopy **(A:III)**
- Dilated funduscopy including stereoscopic examination of the posterior pole **(A:I)**
- Examination of the peripheral retina and vitreous, best performed with indirect ophthalmoscopy or with slit-lamp biomicroscopy, combined with a contact lens **(A:III)**

Diagnosis

- Classify both eyes as to category and severity of diabetic retinopathy, with presence/absence of CSME. **(A:III)** Each category has an inherent risk for progression.

Follow-up History

- Visual symptoms **(A:III)**
- Systemic status (e.g., pregnancy, blood pressure, renal status) **(A:III)**
- Glycemic status (hemoglobin A1c) **(A:I)**

Follow-up Physical Exam

- Visual acuity **(A:I)**
- Measurement of IOP **(A:III)**
- Slit-lamp biomicroscopy with iris examination **(A:II)**
- Gonioscopy (if neovascularization is suspected or present or if intraocular pressure is increased) **(A:II)**

- Stereo examination of the posterior pole with dilation of the pupils **(A:I)**
- Examination of the peripheral retina and vitreous when indicated **(A:II)**

Ancillary Tests

- Fundus photography is seldom of value in cases of minimal diabetic retinopathy or when diabetic retinopathy is unchanged from the previous photographic appearance. **(A:III)**
- Fundus photography may be useful for documenting significant progression of disease and response to treatment. **(B:III)**
- Fluorescein angiography is used as a guide for treating CSME **(A:I)** and as a means of evaluating the cause(s) of unexplained decreased visual acuity. **(A:III)** Angiography can identify macular capillary nonperfusion **(A:II)** or macular edema (or both) as possible explanations for visual loss.
- Fluorescein angiography is not routinely indicated as part of the examination of patients with diabetes. **(A:III)**
- Fluorescein angiography is not needed to diagnose CSME or PDR, both of which are diagnosed by means of the clinical exam.

Patient Education

- Discuss results or exam and implications. **(A:II)**
- Encourage patients with diabetes but without diabetic retinopathy to have annual dilated eye exams. **(A:II)**
- Inform patients that effective treatment for diabetic retinopathy depends on timely intervention, despite good vision and no ocular symptoms. **(A:II)**
- Educate patients about the importance of maintaining near-normal glucose levels and near-normal blood pressure and lowering serum lipid levels. **(A:III)**
- Communicate with the attending physician, e.g., family physician, internist, or endocrinologist, regarding eye findings. **(A:III)**
- Provide patients whose conditions fail to respond to surgery and for whom treatment is unavailable with proper professional support and offer referral for counseling, rehabilitative, or social services as appropriate. **(A:III)**
- Refer patients with significant visual impairment to a provider experienced in vision rehabilitation who can equip the patient with appropriate aids. **(A:III)**

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks, November 2006 \(www.aao.org\)](http://www.aao.org)

Back to the list of Guidelines

Diabetic Retinopathy (Management Recommendations)

Management Recommendations for Patients with Diabetes

Severity of Retinopathy	Presence of CSME*	Follow-up (Months)	Scatter (Panretinal) Laser	Fluorescein Angiography	Focal Laser†
1. Normal or minimal NPDR	No	12	No	No	No
2. Mild to moderate NPDR	No	6-12	No	No	No
3. Severe or very severe NPDR	Yes	2-4	No	Usually	Usually* ^
4. Severe or very severe NPDR	No	2-4	Sometimes‡	Rarely	No
5. Non-high-risk PDR	Yes	2-4	Sometimes‡	Usually	Usually**
6. Non-high-risk PDR	No	2-4	Sometimes‡	Rarely	No
7. High-risk PDR	Yes	2-4	Sometimes‡	Usually	Usually^
8. High-risk PDR	No	3-4	Usually‡	Rarely	No
9. High-risk PDR not amenable to photocoagulation (e.g., media opacities)	Yes	3-4	Usually‡	Usually	Usually**
10. High-risk PDR not amenable to photocoagulation (e.g., media opacities)	–	1-6	Not Possible††	Occasionally	Not Possible† †

* Exceptions include: hypertension or fluid retention associated with heart failure, renal failure, pregnancy, or any other causes that may aggravate macular edema. Deferral of photocoagulation for a brief period of medical treatment may be considered in these cases. Also, deferral of CSME treatment is an option when the center of the macula is not involved, visual acuity is excellent, and the patient understands the risks.

† Focal photocoagulation refers to direct focal laser to microaneurysms or a grid photocoagulation pattern to areas of diffuse leakage or nonperfusion seen on fluorescein angiography.

^ Deferring focal photocoagulation for CSME is an option when the center of the macula is not involved, visual acuity is excellent, close follow-up is possible, and the patient understands the risks. However, initiation of treatment with focal photocoagulation should also be considered because although treatment with focal photocoagulation is less likely to improve the vision, it is more likely to stabilize the current visual acuity.

‡ Scatter (panretinal) photocoagulation surgery may be considered as patients approach high-risk PDR. The benefit of early scatter photocoagulation at the severe nonproliferative or worse stage of retinopathy is greater in patients with type 2 diabetes than in those with type 1.74. Treatment should be considered for patients with severe NPDR and type 2 diabetes. Other factors, such as poor compliance with follow-up, impending cataract extraction or pregnancy, and status of fellow eye will help in determining the timing of the scatter photocoagulation.

** Some experts feel that it is preferable to perform the focal photocoagulation first, prior to scatter photocoagulation, to minimize scatter laser-induced exacerbation of the macular edema.

†† Vitrectomy indicated in selected cases.

CSME = clinically significant macular edema; NPDR = nonproliferative diabetic retinopathy; PDR = proliferative diabetic retinopathy

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks, November 2006 \(www.aao.org\)](http://www.aao.org)

Back to the list of Guidelines

Dry Eye Syndrome (Initial Evaluation)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History

- Ocular symptoms and signs **(A:III)**
- Exacerbating conditions **(B:III)**
- Duration of symptoms **(A:III)**
- Topical medications used and their effect on symptoms **(A:III)**
- Ocular history, including
 - Contact lens wear, schedule and care **(A:III)**
 - Allergic conjunctivitis **(B:III)**
 - Corneal history (prior keratoplasty, LASIK, PRK) **(A:III)**
 - Punctal surgery **(A:III)**
 - Eyelid surgery (e.g., prior ptosis repair, blepharoplasty, entropion/ectropion repair) **(A:III)**
 - Bell's palsy **(A:III)**
 - Chronic ocular surface inflammation (e.g., ocular cicatricial pemphigoid, Stevens-Johnson syndrome) **(A:III)**
- Systemic history, including
 - Smoking **(A:III)**
 - Dermatological diseases (e.g., rosacea) **(A:III)**
 - Atopy **(A:III)**
 - Menopause **(A:III)**
 - Systemic inflammatory diseases (e.g., Sjogren's syndrome, graft vs host disease, rheumatoid arthritis, systemic lupus erythematosus, scleroderma) **(A:III)**
 - Systemic medications (e.g., antihistamines, diuretics, hormones and hormonal antagonists, antidepressants, cardiac antiarrhythmic drugs, isotretinoin, diphenoxylate/atropine, beta blockers, chemotherapy agents, any other drug with anticholinergic effects) **(A:III)**
 - Trauma (e.g., chemical) **(A:III)**
 - Chronic viral infections (e.g., chronic hepatitis C, human immunodeficiency virus) **(B:III)**
 - Surgery (e.g., bone marrow transplant, head and neck surgery) **(B:III)**
 - Radiation of orbit **(B:III)**
 - Neurological conditions (e.g., Parkinson's disease, Bell's palsy, Riley-Day syndrome) **(B:III)**
 - Dry mouth, dental cavities, oral ulcers **(B:III)**

Initial Physical Exam

- Visual acuity **(A:III)**
- External examination
 - Skin **(A:III)**
 - Eyelids **(A:I)**
 - Adnexae **(A:III)**
 - Proptosis **(B:III)**
 - Cranial nerve function **(A:III)**
 - Hands **(B:III)**
- Slit-lamp biomicroscopy
 - Tear film **(A:III)**
 - Eyelashes **(A:III)**
 - Anterior and posterior eyelid margins **(A:III)**
 - Puncta **(A:III)**
 - Inferior fornix and tarsal conjunctiva **(A:III)**
 - Bulbar conjunctiva **(A:III)**
 - Cornea **(A:III)**

Care Management

- For patients with aqueous tear deficiency, the following measures are appropriate:
 - Elimination of exacerbating medications where feasible **(A:III)**
 - Ocular environmental interventions **(A:III)**
 - Humidification of ambient air **(A:III)**
 - Computer work site intervention **(A:III)**
 - Aqueous tear enhancement **(A:III)**
- For patients with aqueous tear deficiency, the following surgical therapies are used when medical treatment has not been adequate or appropriate:
 - Correction of lid abnormality resulting from blepharitis, trichiasis or lid malposition (e.g., lagophthalmos, entropion/ectropion) **(A:III)**
 - Punctal occlusion **(A:III)**
 - Tarsorrhaphy for severe cases **(A:III)**

Patient Education

- Counsel patients about the chronic nature of dry eye and its natural history. **(A:III)**
- Provide specific instructions for therapeutic regimens. **(A:III)**
- Reassess periodically the patient's compliance and understanding of the disease, risks for associated structural changes and realistic expectations for effective management, and reinforce education. **(A:III)**
- Refer patients with manifestation of a systemic disease to an appropriate medical specialist. **(A:III)**

- Caution patients with pre-existing dry eye that LASIK or PRK may worsen their dry eye condition. **(A:III)**

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks, November 2006 \(www.aao.org\)](#)

Back to the list of Guidelines

Esotropia (Initial and Follow-up Evaluation)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History (Key elements)

- Ocular symptoms and signs **(A:III)**
- Ocular history (date of onset and frequency of the deviation, presence or absence of diplopia) **(A:III)**
- Systemic history (review of prenatal, perinatal and postnatal medical factors) **(A:III)**
- Family history, including presence of strabismus, amblyopia, extraocular muscle surgery **(A:III)**

Initial Physical Exam (Key elements)

- Visual acuity **(A:III)**
- Ocular alignment (at distance and near) **(A:III)**
- Extraocular muscle function **(A:III)**
- Sensory parameters **(A:III)**
- Evaluation of the fundus, with attention to macular position **(A:III)**
- Cycloplegic refraction **(A:III)**

Care Management

- First prescribe corrective lenses for any clinically significant refractive error. **(A:III)**
- Consider all forms of esotropia for treatment and re-establish ocular alignment promptly. **(A:III)**
- If optical correction does not align the eyes, then surgical correction is recommended. **(A:III)**
- Treat significant amblyopia prior to esotropia surgery to increase likelihood of binocularity. **(A:III)**

Follow-up Evaluation

- Follow-up visits should include:
 - Tolerance and side effects of therapy **(A:III)**
 - Visual acuity and/or fixation pattern with correction of refractive error **(A:III)**
 - Deviation at distance and near fixation with correction of refractive error **(A:III)**
 - Observation of A or V patterns and/or oblique dysfunctions **(A:III)**
 - Status of binocular vision **(A:III)**
- Assess hyperopia using cycloplegia at least yearly, and 4 to 6 month intervals may be necessary **(A:III)**

Esotropia Follow-up Evaluation Intervals **(A:III)**

Age (years)	Routine Interval Follow-up (months)*
0-1	1-3
1-5	3-6
5-10	6-12

*More frequent visits may be necessary if amblyopia is present or if there is a recent deterioration of alignment.

Patient Education

- Discuss findings with the patient when appropriate and/or parents/caregivers to enhance understanding of disorder and to recruit them in a team effort for therapy. **(A:III)**
- For adult patients, discuss advantages and disadvantages of various modes of treatment in developing a treatment plan. **(A:III)**
- Formulate treatment plans in consultation with the patient and/or family/caregivers, and the plans should be responsive to their expectations and preferences. **(A:III)**
- Discuss the potential psychological side effects with the patient and parent/caregiver as appropriate. **(A:III)**

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks, November 2006 \(www.aao.org\)](http://www.aao.org)

Back to the list of Guidelines

Eye Disease in Leprosy (Initial Evaluation and Management)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History

- Ocular symptoms (decreased vision, epiphora, symptoms of irritation) **(A:III)**
- Duration of lagophthalmos (<or>6 months) **(A:III)**
- Duration of leprosy (usually from date of diagnosis) **(B:III)**
- Type of leprosy **(A:III)**
- MDT treatment; what drugs and for how long **(A:III)**
- History of leprosy reactions **(CB:III)**

Initial Physical Exam

- Visual acuity **(A:III)**
- Eyelids and lid closure **(A:III)**
- Corneal sensation **(A:III)**
- Conjunctiva **(A:III)**
- Sclera **(A:III)**
- Pupil **(A:III)**
- Nasolacrimal apparatus **(A:III)**
- Slit lamp biomicroscopy
 - Corneal epithelial integrity **(A:III)**
 - Corneal nerve beading, stromal opacity **(B:III)**
 - Anterior chamber **(A:III)**
 - Iris atrophy **(A:III)**
 - Iris "pearls" **(B:III)**
 - Posterior synechiae **(A:III)**
 - Cataract **(A:III)**

Care Management

The main important conditions (cataract, lagophthalmos, anterior uveitis) are managed as for any patient, and people with leprosy should be integrated into the normal eye care service, specifically:

- Cataract should be removed when it adversely affects patient's visual function **(A:III)**
- IOL is not contraindicated as long as quality of surgery is good and eye is quiet **(A:III)**

- Chronic lagophthalmos should be treated surgically if cornea is compromised or cosmesis is a problem, regardless of severity of lagophthalmos, by whatever procedure the surgeon does best **(A:III)**
- Special considerations in a person afflicted with leprosy include:
 - New onset lagophthalmos (duration <6 months) should be treated with oral prednisolone 25-30 mg per day tapered over 6 months. **(A:III)**
 - Acute uveitis should be treated with intensive topical steroid; associated systemic leprosy reaction must be ruled out or treated if present with systemic steroid give dose) **(A:III)**

Patient Education

- At the end of MDT all patients should be warned that lagophthalmos could develop and understand the risks associated with this. **(A:III)**
- Patients with residual lagophthalmos must be told about the risk from exposure and specifically warned about development of red eye and decreased vision. **(A:III)**
- Patients should understand risks to eye during reaction and given explicit instructions on where to report if reaction develops. **(A:III)**
- All patients should be informed of significance of decreased vision and told to report this to case worker for referral to higher level. **(A:III)**

Back to the list of Guidelines

Posterior Vitreous Detachment, Retinal Breaks and Lattice Degeneration (Initial and Follow-up Evaluation)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History (Key elements)

- Symptoms of PVD **(A:I)**
- Family history (e.g., Stickler syndrome) **(A:II)**
- Prior eye trauma, including surgery **(A:II)**
- Myopia **(A:II)**
- History of cataract surgery **(A:II)**

Initial Physical Exam (Key elements)

- Examination of the vitreous for detachment, pigmented cells, hemorrhage, and condensation **(A:III)**
- Examination of the peripheral fundus with scleral depression **(A:III)** The preferred method of evaluating peripheral vitreoretinal pathology is with indirect ophthalmoscopy combined with scleral depression **(A:III)**

Ancillary Tests

- Perform B-scan ultrasonography if peripheral retina cannot be evaluated. **(A:II)** If no abnormalities are found, frequent follow-up examinations are recommended. **(A:III)**

Surgical and Postoperative Care if Patient Receives Treatment:

- Inform patient about the relative risks, benefits and alternatives to surgery **(A:III)**
- Formulate a postoperative care plan and inform patient of these arrangements **(A:III)**
- Advise patient to contact ophthalmologist promptly if they have a significant change in symptoms such as new floaters or visual field loss **(A:II)**

Care Management

Management Options

Type of Lesion	Treatment
Acute symptomatic horseshoe tears	Treat promptly (A:II)
Acute symptomatic operculated tears	Treatment may not be necessary (A:III)
Traumatic retinal breaks	Usually treated (A:III)
Asymptomatic horseshoe tears	Usually can be followed without treatment (A:III)
Asymptomatic operculated tears	Treatment is rarely recommended (A:III)
Asymptomatic atrophic round holes	Treatment is rarely recommended (A:III)
Asymptomatic lattice degeneration without holes	Not treated unless PVD causes a horseshoe tear (A:III)
Asymptomatic lattice degeneration with holes	Usually does not require treatment (A:III)
Asymptomatic dialyses	No consensus on treatment and insufficient evidence to guide management
Fellow eyes atrophic holes, lattice degeneration, or asymptomatic horseshoe tears	No consensus on treatment and insufficient evidence to guide management

PVD = Posterior vitreous detachment

Follow-up History

- Visual symptoms **(A:I)**
- Interval history of eye trauma, including intraocular surgery **(A:I)**

Follow-up Physical Exam

- Visual acuity **(A:III)**
- Evaluation of the status of the vitreous, with attention to the presence of pigment or syneresis **(A:II)**
- Examination of the peripheral fundus with scleral depression **(A:II)**
- B-scan ultrasonography if the media is opaque **(A:II)**
- Patients who present with vitreous hemorrhage sufficient to obscure retinal details and a negative B-scan should be followed periodically. For eyes in which

a retinal tear is suspected, a repeat B-scan should be performed about 4 weeks later **(A:III)**

Patient Education

- Educate patients at high risk of developing retinal detachment about the symptoms of PVD and retinal detachment and the value of periodic follow-up exams. **(A:II)**
- Instruct all patients at increased risk of retinal detachment to notify their ophthalmologist promptly if they have a significant increase in floaters, loss of visual field, or decrease in visual acuity. **(A:III)**

*Adapted from the [American Academy of Ophthalmology Summary Benchmarks, November 2006 \(www.aao.org\)](http://www.aao.org)

Back to the list of Guidelines

Primary Open-Angle Glaucoma (Initial Evaluation)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History (Key elements)

- Ocular history **(A:III)**
- Systemic history **(A:III)**
- Family history **(A:II)**
- Assessment of impact of visual function on daily living and activities **(A:III)**
- Review of pertinent records **(A:III)**

Initial Physical Exam (Key elements)

- Visual acuity **(A:III)**
- Pupils **(B:II)**
- Slit-lamp biomicroscopy of anterior segment **(A:III)**
- Measurement of IOP **(A:I)**
 - Time of day recorded because of diurnal variation **(B:III)**
- Central corneal thickness **(A:II)**
- Gonioscopy **(A:III)**
- Evaluation of optic nerve head and retinal nerve fiber layer with magnified stereoscopic visualization **(A:III)**
- Documentation of the optic disc morphology, best performed by color stereophotography or computer-based image analysis **(A:II)**
- Evaluation of the fundus (through a dilated pupil whenever feasible) **(A:III)**
- Visual field evaluation, preferably by automated static threshold perimetry **(A:III)**

Management Plan for Patients in Whom Therapy is Indicated

- Set an initial target pressure of at least 20% lower than pretreatment IOP, assuming that the measured pretreatment pressure range contributed to optic nerve damage. **(A:I)** The more advanced the damage, the lower the initial target pressure should be. **(A:III)**
- In many instances, topical medications constitute effective initial therapy. **(A:III)**
- Laser trabeculoplasty is an appropriate initial therapeutic alternative. **(A:I)**
- Filtering surgery may sometimes be an appropriate initial therapeutic alternative. **(A:I)**
- Choose a regimen of maximal effectiveness and tolerance to achieve desired therapeutic response. **(A:III)**

Surgery and Postoperative Care for Laser Trabeculoplasty Patients

- Ensure the patient receives adequate postoperative care. **(A:III)** Plan prior to and after surgery includes:
 - Informed consent. **(A:III)**
 - At least one preoperative evaluation and IOP measurement by the surgeon. **(A:III)**
 - At least one IOP check within 30 to 120 minutes following surgery. **(A:I)**
 - Examine within 6 weeks of surgery or sooner if concerned about IOP-related optic nerve damage. **(A:III)**

Surgery and Postoperative Care for Filtering Surgery Patients

- Ensure the patient receives adequate postoperative care. **(A:III)** Plan prior to and after surgery includes:
 - Informed consent. **(A:III)**
 - At least one preoperative evaluation by the surgeon. **(A:III)**
 - Follow-up on first day (12 to 36 hours after surgery) and at least once from the second to tenth postoperative day. **(A:II)**
 - In absence of complications, additional routine postoperative visits during a 6-week period. **(A:III)**
 - Use topical corticosteroids in the postoperative period, unless contraindicated. **(A:II)**
 - Add more frequent visits, if needed, for patients with postoperative complications. **(A:III)**
 - Additional treatments as necessary to maximize chances for long-term success. **(A:III)**

Patient Education for Patients with Medical Therapy

- Discuss diagnosis, severity of the disease, prognosis and management plan, and likelihood that therapy will be lifelong. **(A:III)**
- Educate about eyelid closure or nasolacrimal occlusion when applying topical medications to reduce systemic absorption. **(B:II)**
- Encourage patients to alert their ophthalmologist to physical or emotional changes that occur when taking glaucoma medications. **(A:III)**
- Educate about the disease process, rationale and goals of intervention, status of their condition, and relative benefits and risks of alternative interventions so that patients can participate meaningfully in developing an appropriate plan of action. **(A:III)**

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks, November 2006 \(www.aao.org\)](http://www.aao.org)

Back to the list of Guidelines

Primary Open-Angle Glaucoma (Follow-up Evaluation)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Exam History

- Interval ocular history **(A:III)**
- Interval systemic medical history **(B:III)**
- Side effects of ocular medication **(A:III)**
- Frequency and time of last IOP-lowering medications, and review of use of medications **(B:III)**

Physical Exam

- Visual acuity **(A:III)**
- Slit-lamp biomicroscopy **(A:III)**
- Measurement of IOP and time of day of measurement **(A:III)**
- Evaluation of optic nerve and visual fields (see table below) **(A:III)**
- Pachymetry should be repeated after any event that may alter central corneal thickness **(A:II)**

Management Plan for Patients on Medical Therapy:

- Reconsider current IOP and its relationship to the target IOP at each visit. **(A:III)**
- At each exam, record dosage and frequency of use, discuss adherence to the therapeutic regimen and patient's response to recommendations for therapeutic alternatives or diagnostic procedures. **(A:III)**
- Perform gonioscopy if there is a suspicion of angle closure, anterior-chamber shallowing or anterior-chamber angle abnormalities or if there is an unexplained change in IOP. **(A:III)** Perform gonioscopy periodically (e.g., 1-5 years). **(A:III)**
- Assess treatment regimen if target IOP is not achieved and maintained in light of potential risks and benefits of additional or alternative treatment. **(A:III)**
- If a drug fails to reduce IOP, replace with an alternate agent until effective medical treatment is established. **(A:III)**
- Adjust target pressure downward if disc or visual field change is progressive. **(A:III)**
- Within each of the recommended intervals, factors that determine frequency of evaluation include the severity of damage, the stage of disease, the rate of progression, the extent to which the IOP exceeds the target pressure and the number and significance of other risk factors for damage to the optic nerve. **(A:III)**

- Deleting or adding medication justifies a follow-up visit at an interval appropriate for washout or maximal effect of medication withdrawn or added. **(A:III)**

Follow-Up:

Recommended Guidelines for Follow-up:

Target IOP Achieved	Progression of Damage	Duration of Control (months)	Follow-up Interval [B:III]	Optic Nerve Head Evaluation [A:III]	Visual Field Evaluation [A:III]
Yes	No	≤ 6	Within 6 months	3-12 months	3-12 months
Yes	No	> 6	Within 12 months	3-12 months	3-12 months
Yes	Yes	(n/a)	Within 4 months	1-12 months	12 months
No	Yes or No	(n/a)	Within 4 months	1-12 months	12 months

Patient Education for Patients with Medical Therapy:

- Encourage patients to alert their ophthalmologist to physical or emotional changes that occur when taking glaucoma medications. **(A:III)**
- Refer for or encourage patients with significant visual impairment or blindness to use appropriate vision rehabilitation and social services. **(A:III)**

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks, November 2006 \(www.aao.org\)](http://www.aao.org)

Back to the list of Guidelines

Primary Open-Angle Glaucoma Suspect (Initial and Follow-up Evaluation)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical)

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History (Key elements)

- Ocular history (A:III)
- Systemic history (A:III)
- Family history (A:III)
- Review of pertinent records (A:III)
- Assessment of impact of visual function on daily living and activities (A:III)

Initial Physical Exam (Key elements)

- Visual acuity (A:III)
- Pupils (B:II)
- Slit-lamp biomicroscopy of anterior segment (A:III)
- Measurement of IOP (A:I)
- Central corneal thickness (A:II)
- Gonioscopy (A:III)
- Evaluation of optic nerve head and retinal nerve fiber layer, with magnified stereoscopic visualization (A:III)
- Documentation of the optic disc morphology, best performed by color stereophotography or computer-based image analysis (A:II)
- Evaluation of the fundus (through a dilated pupil whenever feasible) (A:III)
- Visual field evaluation, preferably by automated static threshold perimetry (A:III)

Management Plan for Patients in Whom Therapy is Indicated:

- An appropriate initial goal is to set target pressure 20% less than mean of several IOP measurements and ≤ 24 mm Hg. (A:I)
- Choose regimen of maximal effectiveness and tolerance to achieve desired therapeutic response. (A:III)

Follow-Up Exam History

- Interval ocular history (A:III)
- Interval systemic medical history and any change of systemic medications (B:III)
- Side effects of ocular medications if patient is being treated (A:III)

- Frequency and time of last glaucoma medications, and review of use, if patient is being treated **(B:III)**

Follow-Up Physical Exam

- Visual acuity **(A:III)**
- Slit-lamp biomicroscopy **(A:III)**
- IOP and time of day measurement **(A:III)**
- Gonioscopy is indicated when there is a suspicion of an angle-closure component, anterior chamber shallowing or unexplained change in IOP **(A:III)**

Recommended Guidelines for Follow-up [A:III]

Treatment	Target IOP Achieved	High Risk of Damage	Follow-up Interval	Frequency of Optic Nerve Head and Visual Field Evaluation
No	N/A	No	6-24 months	6-24 months
No	N/A	Yes	3-12 months	6-18 months
Yes	Yes	Yes	3-12 months	6-18 months
Yes	No	Yes	≤ 4 months	3-12 months

Patient Education for Patients with Medical Therapy:

- Discuss number and severity of risk factors, prognosis, management plan and likelihood that therapy, once started, will be long term. **(A:III)**
- Educate about disease process, rationale and goals of intervention, status of their condition, and relative benefits and risks of alternative interventions. **(A:III)**
- Educate about eyelid closure and nasolacrimal occlusion when applying topical medications to reduce systemic absorption. **(B:II)**
- Encourage patients to alert their ophthalmologist to physical or emotional changes that occur when taking glaucoma medications. **(A:III)**

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks](http://www.aao.org), November 2006 (www.aao.org)

Back to the list of Guidelines

Primary Angle Closure (Initial Evaluation and Therapy)

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical)

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History (Key elements)

- Systemic history (e.g., use of topical or systemic medications) **(A:III)**
- Ocular history (symptoms suggestive of intermittent angle-closure attacks) **(A:III)**
- Family history of acute angle-closure glaucoma **(B:II)**

Initial Physical Exam (Key elements)

- Visual acuity **(A:III)**
- Refractive status **(A:III)**
- Pupils **(A:III)**
- Slit-lamp biomicroscopy **(A:III)**
 - Anterior chamber inflammation suggestive of a recent or current attack
 - Corneal edema
 - Central and peripheral anterior-chamber depth
 - Iris atrophy, particularly sector types, posterior synechiae or mid-dilated pupil
 - Signs of previous angle closure attacks
- Measurement of IOP **(A:III)**
- Gonioscopy of both eyes **(A:III)**
- Evaluation of fundus and optic nerve head using direct ophthalmoscope or biomicroscope **(A:III)**

Diagnosis

- Establish a diagnosis of primary angle closure, excluding secondary forms **(A:III)**

Management Plan for Patients in Whom Iridotomy is Indicated

- Treat acute PAC by laser iridotomy or incisional iridectomy if a laser iridotomy cannot be successfully performed. **(A:III)**
- In acute angle-closure attacks, usually use medical therapy first to lower the IOP, to reduce pain and clear corneal edema in preparation for iridotomy. **(A:III)**
- Perform prophylactic iridotomy in fellow eye if chamber angle is anatomically narrow. **(A:II)**

- Perform surgery on one eye at a time for patients requiring bilateral incisional iridectomy (several days apart) whenever feasible to avoid simultaneous bilateral complications. **(A:III)**

Surgery and Postoperative Care for Iridotomy Patients

- Ensure the patient receives adequate postoperative care. **(A:III)** Plan prior to and after surgery includes:
 - Informed consent **(A:III)**
 - At least one preoperative evaluation by the surgeon **(A:III)**
 - At least one IOP check within 30 to 120 minutes following laser surgery **(A:II)**
 - Use of topical anti-inflammatory agents in the postoperative period, unless contraindicated **(A:III)**
- Follow-up evaluations include:
 - Evaluation of patency of iridotomy **(A:III)**
 - Measurement of IOP **(A:III)**
 - Gonioscopy, if not performed immediately after iridotomy **(A:III)**
 - Pupil dilation to reduce risk of posterior synechiae formation **(A:III)**
 - Fundus examination as clinically indicated **(A:III)**
- Use medications perioperatively to avert sudden IOP elevation, particularly in patients with severe disease. **(A:III)**
- Refer for and encourage patients with significant visual impairment or blindness to use vision rehabilitation and social services. **(A:III)**

Evaluation and Follow-up of Patients with Iridotomy:

- After iridotomy, follow patients with glaucomatous optic neuropathy as specified in the Primary Open-Angle Glaucoma PPP. **(A:III)**
- Follow all other patients as specified in the Primary Open-Angle Glaucoma Suspect PPP. **(A:III)**

Education for Patients if Iridotomy is not Performed:

- Inform patients at risk for acute angle closure about symptoms of acute angle-closure attacks and instruct them to notify immediately if symptoms occur. **(A:III)**
- Warn patients of danger of taking medicines that could cause pupil dilation and induce an angle-closure attack. **(A:III)**

* Adapted from the [American Academy of Ophthalmology Summary Benchmarks](http://www.aao.org), November 2006 (www.aao.org)

Back to the list of Guidelines

Trachoma

(Ratings: A: Most important, B: Moderately important, C: Relevant but not critical

Strength of Evidence: I: Strong, II: Substantial but lacks some of I, III: consensus of expert opinion in absence of evidence for I & II)

Initial Exam History

- Living in a trachoma-endemic region **(A:I)**
- Duration of red eye (an acute follicular conjunctivitis may be due to other organisms) **(C:III)**
- Any previous similar episodes (active trachoma is often recurrent) **(C:III)**
- Household contacts with history of trachoma or chronic conjunctivitis **(B:I)**
- Purulent discharge (although active trachoma is often sub-clinical or asymptomatic) **(C:III)**
- Duration of trichiasis **(C:III)**
- History of previous lid surgery **(A:III)**

Initial Physical Exam

- Using 2.5x magnification loupes and adequate lighting (daylight or torchlight) or using a slit lamp, assess signs of trachoma using the WHO simplified grading scale:
http://www.who.int/ncd/vision2020_actionplan/documents/Simplifiedgradingoftrachoma.PDF **(A:III)**
- Briefly, note any trichiasis or corneal opacity. Evert the upper palpebral conjunctivae and note follicles over the tarsal plate (5 follicles greater than 0.5 mm in the central tarsus constitutes the WHO grade of TF), intense inflammatory thickening obscuring 50% of the normal, underlying conjunctival vasculature (TI), and easily visible scarring (TS).

Diagnostic (Laboratory) Tests

- PCR testing for chlamydial DNA – this is the gold standard for identifying infection but not for diagnosing trachoma **(B:I)**
- Direct Chlamydial Immunofluorescence test +/- chlamydial culture of conjunctival epithelial cells **(C:II)**
- Chlamydial culture (difficult to perform) **(C:II)**
- Giemsa stain of conjunctival scrape to look for:
 - Basophilic intracytoplasmic inclusion bodies in epithelial cells **(C:III)**
 - Polymorphonuclear leucocytes **(C:III)**

Management

- **Management of trachoma should be community based. The WHO recommends the integrated SAFE Strategy, surgery for trichiasis, community**

wide antibiotic treatment, facial cleanliness education and environmental improvements (B:III)

- Surgical: Trichiasis surgery (bilamellar tarsal rotation or the related Trabut procedure) should be considered if any of the following are present:
 - one or more in-turned eyelashes are abrading the cornea when the patient is looking straight ahead (A:II)
 - pre-existing evidence of corneal damage from trichiasis (B:II)
 - severe discomfort from trichiasis (C:III)
- Contra-indications to trichiasis surgery include defective lid closure, children with trichiasis (may need general anesthetic), and poor general health. (C:III)
- Epilation is considered an alternative for refusal to have surgery (B:III)
- Community-wide antibiotic treatment is recommended if there is >10% active trachoma in children aged 1-9 years of age in the community. Targeted treatment of clinically active cases is recommended for a lower prevalence. Household contacts, and in particular, siblings, may also be treated, even if they have no active signs of infection (B:II)
- The following antibiotic treatment is recommended by the WHO:
 - Single dose azithromycin: in children aged <16 years dosage is 20mg/kg (maximum dose 1g); in adults dosage is 1g (A:I)
 - Or, use topical 1% tetracycline eye ointment in pregnant women, children aged below 6 months and those allergic to macrolides, used twice daily in both eyes for 6 weeks (A:I)
 - It is acceptable to treat follicular conjunctivitis in a trachoma-endemic area with antibiotics even without laboratory documentation of active chlamydial infection (A:I)
- Facial Cleanliness: promote regular face-washing with clean water. Clean faces have been associated with clinically active trachoma, but it should be noted that face-washing interventions have not been shown to reduce ocular chlamydial infection (B:II)
- Environmental Improvements: (improving water supply, latrine provision and fly control). The face fly *Musca sorbens* has been implicated as a possible vector for trachoma and breeds preferentially on human feces. These flies cannot breed in latrines, so latrine construction is thought to reduce fly populations and trachoma transmission (B:II)

Follow-up Evaluation

- WHO recommends annual, community based treatment with reassessment at three years. (B:II)
- Note that follicles can take months to clear even after infection has been eliminated, and that re-treatment may not be warranted if follicles are slowly improving depending on the time that has elapsed since the last treatment was given. (B:II)

- **For treatment of individual more frequent examinations can be undertaken. Follow-up 1 month after treatment, with retreatment as necessary is reasonable.**
- Re-infection frequently occurs in endemic areas, so patient education regarding methods that may reduce transmission is useful. **(C:III)**
- After trichiasis surgery, patients should be seen within 2 weeks for suture removal, and annually to ensure that trichiasis has not returned. **(A:III)**

[Back to the list of Guidelines](#)