



Complete Summary

GUIDELINE TITLE

Cataract in the adult eye.

BIBLIOGRAPHIC SOURCE(S)

American Academy of Ophthalmology (AAO), Anterior Segment Panel. Cataract in the adult eye. San Francisco (CA): American Academy of Ophthalmology (AAO); 2001. 62 p. [301 references]

COMPLETE SUMMARY CONTENT

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SCOPE

DISEASE/CONDITION(S)

Cataract in the adult eye

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Treatment

CLINICAL SPECIALTY

Ophthalmology

INTENDED USERS

Health Plans
Physicians

GUIDELINE OBJECTIVE(S)

To improve functional vision and the quality of life for a patient with a cataract by addressing the following goals:

- Identify the presence and characteristics of cataract
- Assess the impact of the cataract on the patient's visual and functional status and on quality of life
- Inform the patient about the impact of a cataract on vision, functional activity and natural history, as well as the benefits and risks of surgical and nonsurgical alternatives so that the patient can make an informed decision about treatment options
- Establish criteria for a successful treatment outcome with the patient
- Perform surgery when there is the expectation that it will benefit the patient's function and when the patient elects this option
- Provide necessary postoperative care, rehabilitation, and treatment of any complications
- Perform surgery when indicated for management of coexistent ocular disease

TARGET POPULATION

Adults (18 years or older) with cataracts

INTERVENTIONS AND PRACTICES CONSIDERED

1. Diagnosis by evaluation of visual impairment, ophthalmic evaluation, and supplemental preoperative ophthalmic testing, as appropriate
2. Nonsurgical management, such as educating patients about the benefits of smoking cessation
3. Surgical management of cataracts, including: selection of appropriate candidates for surgery; preoperative medical evaluation; patient counseling regarding costs, risks, benefits, expected outcomes of surgery and care planning; discussion of anesthesia techniques and effects with patient; infection prophylaxis (5% solution of povidone iodine); selection of appropriate surgical technique (small-incision surgery preferred); intraocular lens implantation (monovision and multifocal); postoperative care, such as managing complications, discharge, medications, follow-up and examination, counseling and referral
4. Surgical management, as indicated, for co-existent ocular disease
5. Neodymium-Yttrium-Aluminum Garnet (Nd:YAG) laser capsulotomy

MAJOR OUTCOMES CONSIDERED

- Visual function
- Quality of life
- Vision-specific functional status
- Emotional well-being
- Patient satisfaction with vision

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

In the process of updating the 1996 guideline, a detailed literature search of MEDLINE for articles in the English language was conducted on the subject of cataract for the years 1996 to 2000.

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-analysis 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 stated

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 cataract were reviewed by the Anterior Segment 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

- External Peer Review
- Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

These guidelines were reviewed by representatives of national medical organizations, medical subspecialty organizations, and other relevant organizations such as the American Association of Retired Persons. These guidelines were reviewed by Council and approved by the Board of Trustees of the American Academy of Ophthalmology (October, 2001). All Preferred Practice Patterns are reviewed by their parent panel annually or earlier if developments warrant.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The ratings of importance to the care process (i.e., A, B, C) and the ratings of strength of evidence (i.e., I, II, III) are given in brackets after each recommendation. Definitions used in the rating schemes follow the recommendations.

Initial Ophthalmic Evaluation

- Patient history (including patient’s assessment of functional status).[A: III]
- Visual acuity and refraction.[A: III]
- External examination.[A: III]
- Examination of ocular alignment and motility.[A: III]
- Assessment of pupillary function.[A: III]
- Measurement of intraocular pressure.[A: III]
- Slit-lamp biomicroscopy of the anterior segment.[A: III]
- Dilated examination of the lens, macula, peripheral retina, optic nerve, vitreous.[A: III]
- Assessment of relevant aspects of the patient’s mental and physical status.[B: III]

Patients should be informed that they should contact the ophthalmologist if they have a change in visual symptoms during the interval between the last examination and surgery.[A: III]

Indications for Surgery

The primary indication for surgery is visual function that no longer meets the patient’s needs and for which cataract surgery provides a reasonable likelihood of improvement.[A: III] Cataract removal is also indicated when the lens opacity inhibits optimal management of posterior segment disease or the lens causes inflammation (phakolysis, phakoanaphylaxis), angle closure, or medically unmanageable open-angle glaucoma.[A: III]

The indication for second-eye surgery is the same as for the first eye, i.e., when the cataract-impaired vision no longer meets the patient's needs and the anticipated benefits of surgery exceed the risks.[A: III]

Management recommendations are described in the main body of the text of the original guideline document.

Components of each postoperative examination should include: [A: III]

- Interval history, including new symptoms
- Patient’s assessment of visual functional status
- Measurement of visual function
- Measurement of intraocular pressure
- Slit-lamp biomicroscopy
- Counseling/education for the patient or patient’s caretaker
- Management plan
- Assessment of compliance with postoperative medications

A final refractive visit should be made to provide an accurate prescription for spectacles to allow for the patient’s optimal visual function.[A: III]

Posterior Capsular Opacification

The indication for performing Nd:YAG (neodymium: yttrium-aluminum-garnet) laser capsulotomy is posterior capsular opacification consistent with an impairment of vision to a level that does not meet the patient’s functional needs

or that critically interferes with visualization of the fundus.[A: III] All patients and particularly high-risk patients (e.g., young patients with long axial length, pre-existing lattice degeneration, or a history of retinal detachment in either eye) should be informed of the symptoms of posterior vitreous detachment, retinal tears and detachment, and the need for prompt examination if these symptoms are noticed.[A: III]

Provider and Setting

It is the unique role of the ophthalmologist who performs cataract surgery to confirm the diagnosis of cataract and to formulate and carry out a treatment plan.[A: III]

Nearly all cataract surgery is performed in an outpatient setting, which may be in a hospital ambulatory surgical center or freestanding surgical center. The surgical facility should comply with standards governing the particular setting of care (e.g., the Accreditation Association for Ambulatory Health Care, Inc., Joint Commission for Accreditation of Healthcare Organizations, American Hospital Association).[A: III]

Counseling/Referral

The ophthalmologist who is to perform the surgery is responsible for informing the patient or the patient's surrogate decision maker about the risks, benefits and expected outcomes of surgery, including anticipated refractive outcome and the surgical experience.[A: III] The ophthalmologist who performs surgery has an obligation to inform the patient about appropriate signs and symptoms of possible complications, eye protection, activities, medications, required visits and details for access to emergency care.[A: III]

The patient and ophthalmologist should discuss the benefit, risk, and timing of second-eye surgery when they have had the opportunity to evaluate the results of surgery on the first eye.[A: III]

Patients with functionally limiting postoperative visual impairment should be referred for vision rehabilitation and social services.[A: III]

Definitions:

Ratings of importance:

Level A, defined as most important

Level B, defined as moderately important

Level C, defined as 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-analysis 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
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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

Cataract extraction has yielded excellent outcomes in terms of improvement in visual acuity. Pooled results of literature before 1992 show that postoperative visual acuity reached 20/40 or better in 90% of all cases of cataract surgery and in 95% of cases without presurgical ocular comorbidity. The Cataract Patient Outcomes Research Team (PORT) study showed an improvement in VF-14 (visual functional status index) in 89% of patients and an improvement in satisfaction in 85% of patients and an improvement in self-reported trouble with vision in 80% of patients. The Activities of Daily Vision Study of elderly patients with a high prevalence of coexisting ocular and medical diseases reported improved visual function in 80% of patients at 12 months after surgery. A Swedish study found that regardless of the preoperative visual acuity in the better eye, most patients reported improvement in their ability to perform visually dependent tasks after undergoing cataract surgery. Poor predictive validity of visual acuity was also reported in other studies.

The National Eyecare Outcomes Network (NEON) database also found similar rates of success, with an improvement in visual acuity in 92.2% of patients and improvement in VF-14 in over 90% of patients. Best-corrected visual acuity of 20/40 was achieved by 89% of all NEON patients and 96% of NEON patients without preoperative ocular comorbid conditions. Seventy-eight percent of patients were within ± 1.0 diopter (D) of target spherical equivalent. Ninety-five percent of patients reported being satisfied with the results of their surgery.

The American Society of Cataract and Refractive Surgery (ASCRS) National Cataract Database reported that at 3 months 85.5% of all patients had a 20/40 or

better postoperative best-corrected visual acuity, 57.2% of patients had 20/25 or better postoperative best-corrected visual acuity, and 74.6% of patients were within ± 1.0 D of target spherical equivalent. Based on 5,788 responses, the mean visual function index score at 3 months was 70.3% compared with 55.0% preoperatively. (The score is based on a scale of 0 to 100, with 0 indicating an inability to perform any of the activities.) The European Cataract Outcome Study reported for 1999 that 89% of patients achieved a postoperative visual acuity of 0.5 or more, the average induced astigmatism was 0.59 D, and 86% of patients had an induced astigmatism within ± 1.0 D.

A National Swedish Cataract Register study using the Catquest questionnaire for the patients' self-assessed visual function found that 91% of patients reported a benefit from surgery.

Nevertheless, patients and ophthalmologists must recognize that occasional complications may occur and cataract surgery cannot be considered a "risk-free" or "minor" procedure. Overall, studies demonstrate that physical function, emotional well-being, and overall quality of life can be enhanced when visual function is restored by cataract extraction.

Improved visual function as a result of cataract surgery includes the following:

- Better optically corrected vision
- Better uncorrected vision with reduced spectacle dependence
- Increased ability to read or do near work
- Reduced glare
- Improved ability to function in dim levels of light
- Improved depth perception and binocular vision
- Improved color vision

Improved physical function as a critical outcome of cataract surgery includes the following:

- Increased ability to perform activities of daily living
- Increased opportunity to continue or resume an occupation
- Increased mobility (walking, driving)

Improved mental health and emotional well-being as a second critical outcome of cataract surgery includes the following benefits:

- Improved self-esteem and independence
- Increased ability to avoid injury
- Increased social contact and ability to participate in social activities
- Relief from fear of blindness

Subgroups Most Likely to Benefit:

Patients without preoperative ocular comorbidities are more likely to have better outcomes from cataract surgery than patients with ocular comorbidities.

POTENTIAL HARMS

Cataract Surgery: Complications that may result in a permanent loss of vision are rare. Major complications that are potentially sight-threatening include infectious endophthalmitis, intraoperative suprachoroidal hemorrhage, cystoid macular edema (CME), retinal detachment, corneal edema, and intraocular lens dislocation. A synthesis of the literature published prior to 1992 found weighted mean complication rates of 0.13% for endophthalmitis, 0.3% for bullous keratopathy, 1.4% for cystoid macular edema detected by physical exam, 3.5% for angiographically demonstrated cystoid macular edema, 0.7% for retinal detachment, and 1.1% for intraocular lens dislocation (see Table 3 in the original guideline document).

A number of other complications such as wound leak, retained lens material, or damage to the iris can be managed but may require further surgery. Less common but also sight-threatening complications of cataract surgery include secondary glaucoma, suprachoroidal effusion and/or hemorrhage, and vitreous hemorrhage. Rates for less severe complications, also garnered from literature synthesis, are 0.6% for wound gape, 0.2% for sterile hypopyon, 1.3% for iris damage, 3.1% for posterior capsule rupture, 0.8% for vitreous loss, and 0.8% for iritis. Short-term or transient perioperative complications, as reported by the Cataract Patient Outcomes Research Team (PORT) study, include corneal edema (8.65%), hyphema (6.28%), and intraocular pressure greater than 30 mmHg (5.58%). Ocular and orbital consequences of anesthesia injection have been reported at 0.7%.

Nd:YAG (Neodymium: Yttrium-Aluminum-Garnet) Laser Capsulotomy: Complications include transient increased intraocular pressure, retinal detachment, cystoid macular edema (CME), damage to the intraocular lens, hyphema, dislocation of the intraocular lens, and corneal edema. The Agency for Health Care Policy and Research (now known as the Agency for Healthcare Research and Quality) Cataract Guideline estimated that there was about a 1% or greater rate of the following events after Nd:YAG laser capsulotomy: retinal detachment, glaucoma, failure to improve visual function, increased need for medication, and adverse effects from additional drugs. One study that controlled for all other known risk factors for retinal detachment found a fourfold increase in the risk of retinal detachment or break in patients undergoing Nd:YAG laser capsulotomy after cataract surgery.

Intraocular Lens Implantation: Infrequent complications include decentration, incorrect power, dysphotopsia, and rarely, opacification.

Anesthesia: Anesthesia techniques with needle injection may be associated with complications such as strabismus, globe perforation, retrobulbar hemorrhage, and macular infarction not seen with topical, blunt cannula, and other non-needle injection techniques.

Subgroups Most Likely to be Harmed:

The incidence of major complications is higher in selected subgroups, such as high myopes and patients with diabetes.

Cataract procedures: For the year 1995, a highly selected group of 34 practices submitted data on 13,631 cataract procedures. For those individuals with other

planned procedures, prior eye treatment, and other ophthalmic conditions, there was a higher rate of intraoperative complications, or 9.8%, 4.4%, and 3.7%, respectively.

Nd:YAG (Neodymium: Yttrium-Aluminum-Garnet): Axial myopia increases the risk of retinal detachment after Nd:YAG laser capsulotomy, as does pre-existing vitreoretinal disease, male gender, young age, vitreous prolapse into the anterior chamber, and spontaneous extension of the capsulotomy.

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. Depending on a host of medical and social variables, it is anticipated that it will be necessary to approach some patients' needs in different ways. The ultimate judgment regarding the propriety of the care of a particular patient must be made by the physician in light of all the circumstances presented by the patient. Adherence to these Preferred Practice Patterns will certainly not ensure a successful outcome in every situation. These guidelines should not be deemed inclusive of all proper methods of care or exclusive of other methods of care reasonable directed at obtaining the best results.

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

Getting Better

IOM DOMAIN

Effectiveness
Patient-centeredness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

American Academy of Ophthalmology (AAO), Anterior Segment Panel. Cataract in the adult eye. San Francisco (CA): American Academy of Ophthalmology (AAO); 2001. 62 p. [301 references]

ADAPTATION

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

DATE RELEASED

1996 Sep (updated 2001 Oct)

GUIDELINE DEVELOPER(S)

American Academy of Ophthalmology - Medical Specialty Society

SOURCE(S) OF FUNDING

American Academy of Ophthalmology

GUIDELINE COMMITTEE

Anterior Segment Panel; Preferred Practice Patterns Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previously released version (Cataract in the adult eye. San Francisco [CA]: American Academy of Ophthalmology [AAO], 1996).

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

None available

NGC STATUS

The original NGC summary was completed by ECRI on February 20, 1999. The information was verified by the guideline developer on April 23, 1999. This summary was updated on January 8, 2002. The updated information was verified by the guideline developer as of February 19, 2002.

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Date Modified: 11/8/2004

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