



## SUMMARY BENCHMARKS FOR PREFERRED PRACTICE PATTERN® GUIDELINES

### Introduction

These are summary benchmarks for the Academy's Preferred Practice Pattern® (PPP) guidelines. The Preferred Practice Pattern series of guidelines has been written on the basis of three principles.

- Each Preferred Practice Pattern should be clinically relevant and specific enough to provide useful information to practitioners.
- Each recommendation that is made should be given an explicit rating that shows its importance to the care process.
- Each recommendation should also be given an explicit rating that shows the strength of evidence that supports the recommendation and reflects the best evidence available.

**Preferred Practice Patterns provide guidance for the pattern of practice, not for the care of a particular individual.** While they should generally meet the needs of most patients, they cannot possibly best meet the needs of all patients. Adherence to these Preferred Practice Patterns will not ensure a successful outcome in every situation. These practice patterns should not be deemed inclusive of all proper methods of care or exclusive of other methods of care reasonably directed at obtaining the best results. It may be necessary to approach different patients' needs in different ways. The physician must make the ultimate judgment about the propriety of the care of a particular patient in light of all of the circumstances presented by that patient. The American Academy of Ophthalmology is available to assist members in resolving ethical dilemmas that arise in the course of ophthalmic practice.

**The Preferred Practice Pattern® guidelines are not medical standards to be adhered to in all individual situations.** The Academy specifically disclaims any and all liability for injury or other damages of any kind, from negligence or otherwise, for any and all claims that may arise out of the use of any recommendations or other information contained herein.

For each major disease condition, recommendations for the process of care, including the history, physical exam and ancillary tests, are summarized, along with major recommendations for the care management, follow-up, and education of the patient. For each PPP, a detailed literature search of PubMed and the Cochrane Library for articles in the English language is conducted. The results are reviewed by an expert panel and used to prepare the recommendations, which are then given a rating that shows the strength of evidence when sufficient evidence exists.

To rate individual studies, a scale based on the Scottish Intercollegiate Guideline Network (SIGN) is used. The definitions and levels of evidence to rate individual studies are as follows:

- I++: High-quality meta-analyses, systematic reviews of randomized controlled trials (RCTs), or RCTs with a very low risk of bias
- I+: Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias
- I-: Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias
- II++: High-quality systematic reviews of case-control or cohort studies; high-quality case-control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal
- II+: Well-conducted case-control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
- II-: Case-control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal
- III: Nonanalytic studies (e.g., case reports, case series)



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### **Introduction** *(continued)*

Recommendations for care are formed based on the body of the evidence. The body of evidence quality ratings are defined by Grading of Recommendations Assessment, Development and Evaluation (GRADE) as follows:

- Good quality (GQ): Further research is very unlikely to change our confidence in the estimate of effect
- Moderate quality (MQ): Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate
- Insufficient quality (IQ): Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate; any estimate of effect is very uncertain

Key recommendations for care are defined by GRADE as follows:

- Strong recommendation (SR): Used when the desirable effects of an intervention clearly outweigh the undesirable effects or clearly do not
- Discretionary recommendation (DR): Used when the trade-offs are less certain—either because of low-quality evidence or because evidence suggests that desirable and undesirable effects are closely balanced

The PPPs are intended to serve as guides in patient care, with greatest emphasis on technical aspects. In applying this knowledge, it is essential to recognize that true medical excellence is achieved only when skills are applied in a such a manner that the patients' needs are the foremost consideration. The AAO is available to assist members in resolving ethical dilemmas that arise in the course of practice. (AAO Code of Ethics)

## Amblyopia (Initial and Follow-up Evaluation)

### Initial Exam History (Key elements)

- Demographic data, including sex, date of birth, and identity of parent/caregiver
- Identity of the historian and relationship to the patient, and any language barriers that may exist
- Identity of health care providers involved in the child's care
- Chief complaint and reason for the eye evaluation
- Current eye problems
- Ocular history, including prior eye problems, diseases, diagnoses, and treatments
- Systemic history, birth weight, gestational age, prenatal and perinatal history that may be pertinent (e.g., alcohol, tobacco, and drug use during pregnancy), past hospitalizations and operations, and general health and development, including presence of developmental delay
- Current medications and allergies
- Family history of ocular conditions and relevant systemic diseases

### Initial Physical Exam (Key elements)

- Binocular red reflex (Brückner) test
- Binocularity/stereoacuity testing
- Assessment of VA and/or fixation pattern
- Binocular alignment and ocular motility
- Pupillary exam
- External exam
- Anterior segment exam
- Cycloplegic retinoscopy/refraction with subjective refinement when indicated
- Fundusoscopic examination

### Care Management

- All children with amblyopia should be offered treatment regardless of age, including older children and teenagers, especially if not treated previously
- Prognosis for attaining normal vision depends upon age of onset, cause, severity, and duration of amblyopia, history of and response to previous treatment, adherence to treatment and concomitant conditions

- First goal is to correct any cause of visual deprivation; second goal is to correct refractive errors likely to cause blur; third is to promote use of the amblyopic eye, ultimately to achieve equal VA between the two eyes
- Choose treatment based on patient's age; VA; adherence and response to previous treatment; and physical, social, and psychological status
- Once maximal VA has been obtained, treatment intensity can be tapered to maintenance therapy
- If VA in amblyopic eye is maintained as therapy is tapered, treatment may be stopped but with follow up planned because approximately one-fourth of children experience a recurrence within first year off treatment

### Follow-Up Evaluation

- Follow-up visits should include:
  - Determine VA of amblyopic eye
  - Interval history, including:
    - Adherence to treatment plan
    - Side effects of treatment
    - VA in the fellow eye
- Follow-up examination should be arranged 2 to 3 months after initiation of treatment
- Timing varies according to intensity of treatment and age of child
- Continued monitoring is necessary and additional treatment, if needed, is associated with long-term durability of the VA improvement

### Patient Education

- Discuss findings with the patients when appropriate and/or parent/caregivers to enhance understanding of diagnosis and rationale of treatment and to include them in a collaborative approach to therapy
- Formulate treatment plans in consultation with the patient and/or family/caregiver, and accounting for their perceptions of the existing alignment
- For patients for whom the potential for binocularity is poor, surgery to restore normal appearance may be an appropriate treatment
- Provide instructions on paper, reading materials, weblinks and video information to promote better understanding

## Esotropia (Initial and Follow-up Evaluation)

### Initial Exam History (Key elements)

- Demographic data, including sex, date of birth, and identity of parent/caregiver
- Documentation of identity and relationship of historian
- Identity of other pertinent healthcare providers
- The chief complaint and reason for the eye evaluation, including date of onset and frequency of the ocular misalignment; which eye is deviated and in what direction; and the presence or absence of diplopia, squinting, closing one eye, or other visual symptoms. Review of photographs and/or videos of the patient may be helpful.
- Ocular history, including other eye problems, injuries, diseases, surgery, and treatments (including eyeglasses and/or amblyopia therapy)
- Systemic history, birth weight, gestational age, pertinent prenatal and perinatal history (e.g., alcohol, drug, and tobacco use during pregnancy), past hospitalizations and operations, and general health and development
- Family history, including eye conditions (strabismus, amblyopia, type of eyeglasses and history of wear, extraocular muscle surgery, or other eye surgery, and genetic diseases)
- Social history (e.g., grade level in school, learning difficulties, behavior problems, or issues with social interactions)

### Initial Physical Exam (Key elements)

- Visual acuity and verification of eyeglass prescription with a lensometer
- Binocular alignment at distance and near in primary gaze, up and down gaze, and horizontal gaze positions, if possible. If eyeglasses are worn, alignment testing should be performed with correction; alignment testing without correction may also be appropriate in some circumstances.
- Extraocular muscle function (ductions and versions, including incomitance such as found in some A and V patterns)
- General facial examination to note any pronounced dysmorphism or asymmetry
- Detection of latent or manifest nystagmus
- Assessment of head posture
- Sensory testing, including fusion and stereoacuity
- Cycloplegic retinoscopy/refraction
- Fundoscopic examination

### Care Management

- Consider all forms of esotropia for treatment and re-establish binocular alignment as soon as possible
- Significant refractive errors should be corrected
- If eyeglasses and amblyopia management are ineffective in aligning the eyes, then surgical correction is indicated
- Amblyopia treatment is usually started before surgery because it may alter the angle of strabismus and/or increase the likelihood of good postoperative binocularity

### Follow-Up Evaluation

- Periodic evaluations necessary because of high risk of developing amblyopia, losing binocular vision, and having a recurrence of strabismus
- Children who are well-aligned and do not have amblyopia may be followed up every 6 to 12 months
- Frequency of follow-up visits can be reduced as the child matures
- New or changing findings may indicate need for more frequent follow-up examinations
- Detection of uncorrected or undercorrected hyperopia is essential in the child with a recurrence of esotropia after successful initial treatment
- Repeat cycloplegic refraction should be performed before concluding that the esotropia has a nonaccommodative component

### Patient Education

- Discuss findings with the patient when appropriate and/or parents/caregivers to enhance understanding of diagnosis and rationale of treatment and to include them in a collaborative approach to therapy
- Formulate treatment plans in consultation with the patient and/or family/caregivers, responsive to the preferences and expectations of the parent/caregiver and patient, and accounting for their perceptions of the existing alignment
- For patients for whom the potential for binocularity is poor, surgery to restore normal appearance may be an appropriate treatment

## Exotropia (Initial and Follow-up Evaluation)

### Initial Exam History (Key elements)

- Demographic data, including sex, date of birth, and identity of parent/caregiver
- Documentation of identity and relationship of historian
- Identity of other pertinent health care providers
- The chief complaint and reason for the eye evaluation, including date of onset and frequency of the ocular misalignment; which eye is deviated and in what direction; and the presence or absence of diplopia, squinting, closing one eye, or other visual symptoms. Review of photographs and/or videos of the patient may be helpful.
- Ocular history, including other eye problems, injuries, diseases, surgery, and treatments (including eyeglasses and/or amblyopia therapy)
- Systemic history, birth weight, gestational age, pertinent prenatal and perinatal history (e.g., alcohol, drug, and tobacco use during pregnancy), past hospitalizations and operations, and general health and development
- Family history, including eye conditions (strabismus, amblyopia, type of eyeglasses and history of wear, extraocular muscle surgery, or other eye surgery, and genetic diseases)
- Social history (e.g., grade level in school, learning difficulties, behavior problems, or issues with social interactions)

### Initial Physical Exam (Key elements)

- Visual acuity and verification of eyeglass prescription with a lensometer
- Binocular alignment at distance and near in primary gaze, up and down gaze, and horizontal gaze positions, if possible. If eyeglasses are worn, alignment testing should be performed with correction; alignment testing without correction may also be appropriate in some circumstances.
- Extraocular muscle function (ductions and versions, including incomitance such as found in some A and V patterns)
- General facial examination to note any pronounced dysmorphology or asymmetry
- Detection of latent or manifest nystagmus
- Assessment of head posture
- Sensory testing, including fusion and stereoacuity
- Cycloplegic retinoscopy/refraction
- Fundoscopic examination

- Assessment of the fusional control of the exodeviation at both distance and near fixation
- Prism and alternate cover test measures total deviation, and as such, used to quantify the amount of surgery, if required

### Care Management

- All forms of exotropia should be monitored and some require treatment
- Young children with intermittent exotropia and good fusional control should be followed without surgery
- Deviations that are present most or all of the time often require treatment
- Prescribe corrective lenses for any clinically significant refractive error causing reduced vision in one or both eyes
- Optimal therapy for exotropia, the long-term benefit of early surgical correction, and the relative merits of bilateral versus unilateral surgery are not well established
- Amblyopia is uncommon in patient with intermittent exotropia, but, if present, should be treated

### Follow-up Evaluation

- Periodic evaluations necessary because of high risk of developing amblyopia, losing binocular vision and having a recurrence of strabismus
- Children who are well-aligned and do not have amblyopia may be followed up every 6 to 12 months
- By age 7 to 10 years, the frequency of exams may be reduced
- New or changing findings may indicate need for more frequent follow-up examinations
- Includes frequency of any deviation, adherence to treatment (if any), assessment of ocular motility and update of refractive correction, if needed

### Patient Education

- Discuss findings with the patient when appropriate and/or parents/caregivers to enhance understanding of disorder and recruit them in a collaborative approach to therapy
- Formulate treatment plans in consultation with the patient and/or family/caregivers, responsive to the preferences and expectations of the parent/caregiver and patient, and accounting for their perceptions of the existing alignment
- For patients for whom the potential for binocularity is poor, surgery to restore normal appearance may be an appropriate treatment