American Academy® of Ophthalmology
The Eye M.D. Association

DRY EYE SYNDROME 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 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 ratings of importance are divided into three levels.

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

The panel also rated each recommendation on the strength of evidence in the available literature to support the recommendation made. The "ratings of strength of evidence" also are divided into three levels.

- Level I includes evidence obtained from at least one properly conducted, well-designed randomized controlled trial. It could include meta-analyses of randomized controlled trials.
- 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
- Level III includes evidence obtained from one of the following:
  - Descriptive studies
  - Case reports
  - Reports of expert committees/organizations (e.g., PPP panel consensus with external peer review)

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)

Dry Eye Syndrome (Initial Evaluation)

Initial Exam History

- Ocular symptoms and signs [A:III] (e.g., irritation, tearing, burning, stinging, dry or foreign body sensation, mild itching, photophobia, blurry vision, contact lens intolerance, redness, mucous discharge, increased frequency of blinking, eye fatigue, diurnal fluctuation, symptoms that worsen later in the day)
- Exacerbating conditions [B:III] (e.g., wind, air travel, decreased humidity, prolonged visual efforts associated with decreased blink rate such as reading and computer use)
- Duration of symptoms [A:III]
- Ocular history, including
  - Topical medications used and their effect on symptoms [A:III] (e.g., artificial tears, "eyewash," antihistamines, glaucoma medications, vasoconstrictors, corticosteroids, homeopathic or herbal preparations)
  - Contact lens wear, schedule and care [A:III]
  - Allergic conjunctivitis [A:III]
  - Ocular surgical history [A:III] (e.g., prior keratoplasty, cataract surgery, keratorefractive surgery)
  - Ocular surface disease [A:III] (e.g., herpes simplex virus, varicella zoster virus, ocular mucous membrane pemphigoid, Stevens-Johnson syndrome, aniridia, graft-versus-host disease)
  - Punctal surgery [A:III]
  - Eyelid surgery [A:III] (e.g. prior ptosis repair, blepharoplasty, entropion/ectropion repair)
  - Bell palsy [A:III]
- Medical history, including
  - Smoking or exposure to second-hand smoke [A:III]
  - Dermatological diseases [A:III] (e.g., rosacea, psoriasis)
  - Technique and frequency of facial washing including eyelid and eyelash hygiene [A:III]
  - Atopy [A:III]
  - Menopause [A:III]
  - Systemic inflammatory diseases [A:III] (e.g., Sjögren syndrome, graft-versus-host disease, rheumatoid arthritis, systemic lupus erythematosus, scleroderma)
  - Other systemic conditions [A:III] (e.g., lymphoma, sarcoidosis)
  - Systemic medications [A:III] (e.g., antihistamines, diuretics, hormones and hormonal antagonists, antidepressants, cardiac antiarrhythmic drugs, isotretinoin, diphenoxylate/atropine, beta-adrenergic antagonists, chemotherapy agents, any other drug with anticholinergic effects)
  - Trauma [B:III] (e.g., mechanical, chemical, thermal)
  - Chronic viral infections [B:III] (e.g., hepatitis C, human immunodeficiency virus)
  - Nonocular surgery [B:III] (e.g., bone marrow transplant, head and neck surgery, trigeminal neuralgia surgery)
  - Radiation of orbit [B:III]
  - Neurological conditions [B:III] (e.g., Parkinson disease, Bell palsy, Riley-Day syndrome, trigeminal neuralgia)
  - Dry mouth, dental cavities, oral ulcers [B:III]
  - Fatigue
  - Joint pain, muscle aches

Initial Physical Exam

- Visual acuity [A:III]
- External examination
  - Skin [A:III] (e.g., scleroderma, facial changes consistent with rosacea, seborrhea)
  - Eyelids [A:III] (incomplete closure/malposition, incomplete or infrequent blink, eyelid lag, erythema of eyelid margins, abnormal deposits or secretions, entropion, ectropion)
  - Adnexa [A:III] (enlargement of the lacrimal glands)
  - Proptosis [B:III]
  - Cranial nerve function [A:III] (e.g., cranial nerve V [trigeminal], cranial nerve VII [facial])
  - Hands [B:III] (joint deformities characteristic of rheumatoid arthritis, Raynaud phenomenon, splinter hemorrhage underneath nails)
- Slit-lamp biomicroscopy
  - Tear film [A:III] (height of the meniscus, debris, increased viscosity, mucus strands, and foam break-up time and pattern)
  - Eyelashes [A:III] (trichiasis, distichiasis, madarosis, deposits)
  - Anterior and posterior eyelid margins [A:III] (abnormalities of meibomian glands [e.g., orifice metaplasia, reduced expressible meibum, atrophy], character of meibomian gland secretions [e.g., turbid, thickened, foamy, deficient], vascularization crossing the mucocutaneous junction, keratinization, scarring
  - Puncta [A:III] (patency, position, presence, and position of plugs)
  - Inferior fornix and tarsal conjunctiva [A:III] (e.g., mucous threads, scarring, erythema, papillary reaction, follicle enlargement, keratinization, foreshortening, symblepharon)
  - Bulbar conjunctiva [A:III] (e.g., punctate staining with rose bengal, lissamine green, or fluorescein dyes; hyperemia; localized drying; keratinization, chemosis, chalosis, follicles)
  - Cornea [A:III] (localized interpalpebral drying, punctate epithelial erosions, punctate staining with rose bengal or fluorescein dyes, filaments, epithelial defects, basement membrane irregularities, mucous plaques, keratinization, pannus formation, thinning, infiltrates, ulceration, scarring, neovascularization, evidence of corneal or refractive surgery)

Dry Eye Syndrome (Management Recommendations)

Care Management

- Treat any causative factors that are amenable to treatment as patients with dry eye symptoms often have many contributory factors [A:III]
- Sequence and combination of therapies is determined based on the patient's needs and preferences and the treating ophthalmologist's medical judgment [A:III]
- For mild dry eye, the following measures are appropriate:
  - Education and environmental modifications [A:III]
  - Elimination of offending topical or systemic medications [A:III]
  - Aqueous enhancement using artificial tear substitutes, gels/ointments [A:III]
  - Eyelid therapy (warm compresses and eyelid hygiene) [A:III]
  - Treatment of contributing ocular factors such as blepharitis or meibomianitis [A:III]
  - Correction of eyelid abnormalities
- For moderate dry eye, in addition to above treatments, the following measures are appropriate:
  - Anti-inflammatory agents (topical cyclosporine [A:I] and corticosteroids, [A:II] systemic omega-3 fatty acids supplements [A:II])
  - Punctal plugs [A:III]
  - Spectacle side shields and moisture chambers [A:III]
- For severe dry eye, in addition to above treatments, the following measures are appropriate:
  - Systemic cholinergic agonists [A:I]
  - Systemic anti-inflammatory agents [A:III]
  - Mucolytic agents [A:III]
  - Autologous serum tears [A:III]
  - Contact lenses [A:III]
  - Correction of eyelid abnormalities [A:III]
  - Permanent punctal occlusion [A:III]
  - Tarsorrhaphy [A:III]
- Monitor patients prescribed corticosteroids for adverse effects such as increased intraocular pressure, corneal melting, and cataract formation [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 keratorefractive surgery, particular LASIK, may worsen their dry eye condition. [A:III]