



CONTINUING EDUCATION

DRY EYE DISEASE IN OPTOMETRIC PRACTICE

Clinical Diagnosis, Patient Management,
and Practice Integration

A Continuing Education Program by

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A Continuing Education Program

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THE DRY EYE OPPORTUNITY

Incidence and Prevalence

Dry eye disease symptoms are commonly seen in primary eyecare patients, making dry eye diagnosis and treatment a potentially rewarding area of optometric practice. Key to making dry eye treatment a successful part of the practice is the realization that patients who actively complain of dry eye disease symptoms are just the tip of the iceberg.

According to a 2007 Gallup survey, less than half of those with dry eye symptoms have been diagnosed by a physician. The same survey reported that almost four in 10 teens and adults experience one or more dry eye symptoms occasionally and nearly 28 million experience them frequently.¹

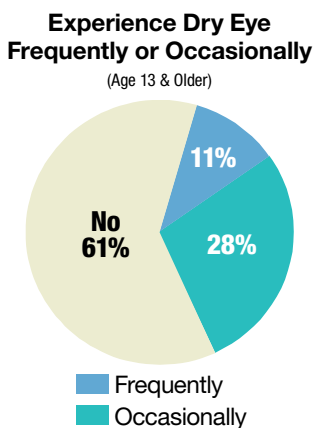


Figure 1 Experience Dry Eye Frequently or Occasionally (Age 13 & Older)

In addition to the tens of millions of current sufferers, the incidence of dry eye is increasing. Baby Boomers, 78 million strong, will begin reaching Medicare age in 2011. Of these, roughly 40 million are peri- or postmenopausal women, the group with the highest incidence of dry eye.

Because more than two-thirds of the nation's eye exams are performed by optometrists, we can assume that the majority of patients with untreated

chronic dry eye are being seen in optometric practices. This is not to say they are being seen for dry eye symptoms, however; most are in our offices for other primary eyecare services—an annual checkup, new glasses, or contact lenses, etc.

These people may not even realize that their dry eye symptoms are part of a recognized and treatable condition—many mistake their ocular dryness for allergies, “eye strain,” or just one more unpleasant, but natural, aspect of aging. Unless specifically asked, the majority of these patients won't bring up their dry eye symptoms during their visit. Thus, practitioners looking to build a successful dry eye practice must be proactive and screen for it.

Why Treat Dry Eye?

To patients who suffer from it, dry eye disease is not trivial. And because dry eye is chronic and often progressive, it makes sense to begin treatment while symptoms are relatively mild. There is new evidence that dry eye disease is less stable than many had thought and that treatment given early in the course of the disease can prevent progression to more serious and debilitating late-stage illness that may be resistant to treatment.²⁻⁴ Early treatment can mean better outcomes and better quality of life for patients.

For practitioners, the time has never been better to begin treating dry eye disease. The general population is increasingly aware of this condition, and, for the first time, we have treatments that specifically and effectively address dry eye disease.

Furthermore, treating dry eye disease can be immensely rewarding. For those who haven't already done so, adding dry eye disease treatment is an excellent—low cost, low risk—way to begin building a therapeutic practice. Upfront expenses are very low, and treating dry eye disease brings in revenue immediately. Treating dry eye disease is also a practice builder, as helping dry eye sufferers creates loyal patients who refer others and grow the practice.

The Value of a Dry Eye Patient

As optometrists, we face financial challenges from declining reimbursement for services, decreased margins on the products we sell, and increased operating costs. Embracing dry eye disease treatment as a subspecialty can offset losses in other areas, keeping our practices on track for growth. For those wishing to add a therapeutic component to their practices, the treatment of dry eye disease provides a near-perfect entry point.

Proper diagnosis of dry eye disease typically requires a dedicated visit, and, once treatment is initiated, follow-up is almost always required to monitor the patient's response to therapy. Each patient visit is a billable event, with the level of coding determined by the specifics of the work documented at each visit. Unlike spectacle patients, who typically present only every year or 2 years, dry eye patients have a chronic disease that brings them to the office frequently.

Depending on the region of the country (which determines the reimbursement level) and the history, exam, and medical decision making documented, reimbursement for a dry eye evaluation can range from \$40.00 to upwards of \$125.00, with additional payments for each subsequent visit. Punctal occlusion, if required, can add \$200 to \$400 in revenue, so optometrists' net revenue for multiple dry eye visits can easily be in the \$200 to \$700 range.

Dry eye services can be paid by Medicare, private insurance carriers, or patients themselves. When dry eye is discovered on a vision care visit (as it typically is) it is important to let patients know that the subsequent visit(s) for dry eye diagnosis and treatment will be submitted to their medical insurance, not their vision plan. Even if the practice doesn't participate in the patient's medical plan, make sure the patient knows the cost of evaluation and follow-up visits. If dry eye is enough of a problem to them, many patients will be willing to pay out of pocket for relief.

TYPICAL DRY EYE CODES AND REIMBURSEMENT

VISIT	CODE	VALUE
Clinical exam and tests: 1 visit	99213-99214	\$60.94-\$91.56*
Treatment and follow up: 1-3 visits	99212-99213	\$39.19-60.94*
Punctal occlusion OU (1 set)		\$200-\$400
Net revenue		\$200-\$700

*Medicare allowable rates in the State of Nevada, 2008.

THE ELEMENTS OF DRY EYE DIAGNOSIS

Screen Patients

Many things put a patient at risk for dry eye disease, including age, female gender, environment, systemic disease, medications, and recent LASIK or PRK (Table 1). Because dry eye disease is so prevalent, it makes sense to screen all patients for it. This can be done with a brief, targeted questionnaire that can be used either by itself or incorporated into the lifestyle questionnaire that many practices use to guide patients to the most appropriate vision correction options. Short but useful dry eye questionnaires include the Ocular Surface Disease Index (OSDI) and the Salisbury Eye Evaluation.^{5,6} Optometrists can also make their own questionnaires with questions about risk factors, symptoms, and palliative therapies (see “Screening for Dry Eye”).

Screening is necessary because, as noted, patients who have come in for other reasons typically will not bring up their dry eye symptoms unless asked. A questionnaire is a simple tool that allows optometrists to identify potential cases without taking up a lot of time. While the questionnaire does not on its own provide a diagnosis, it does serve to open a dialog with those patients whose answers indicate the possibility of dry eye disease.

In that discussion, the optometrist can explain that the condition is treatable and that treatment is valuable because it can both improve the patient’s quality of life and prevent progression to more serious disease.² By emphasizing the progressive and chronic nature of dry eye, providers will encourage patients to take current or future dry eye symptoms seriously.

Reappoint for Dry Eye Evaluation

When patients indicate dry eye symptoms on the questionnaire, the subsequent discussion should probe the frequency and severity of symptoms, the time of day when symptoms are worst (dry eye symptoms tend to be greater in the evening), and the degree to which symptoms interfere with daily activities.⁷

SCREENING FOR DRY EYE

- 1 – Are you currently on antihistamines or hormone replacement therapy?
- 2 – Over the past week, which of the following ocular symptoms have you experienced?
 - Light sensitivity
 - Gritty feeling in the eyes
 - Painful or sore eyes
 - Blurred vision
 - Poor vision
- 3 – Have you ever had eye surgery (LASIK, PRK, cataract surgery, other)?
- 4 – Do you use artificial tears? Yes No
- 5 – If yes, how long does the relief last? _____
- 6 – Typically how many artificial tear drops do you use per day?
 3 or less 4 or more

If symptoms are very mild and the patient does not currently use artificial tears, the optometrist can prescribe a good over-the-counter tear product and provide instructions for its proper use. This may be all that the patient needs to treat very mild disease. Have the patient make an appointment to come back for a more complete diagnostic workup and assess the effectiveness of the artificial tear.

If questionnaires and follow-up questions indicate that patients’ problems are more significant, explain that they have symptoms of dry eye disease and recommend that they come back for a full dry eye evaluation. Trying to shoe-horn a dry eye evaluation into an appointment for glasses or contact lenses will rush practitioners and shortchange patients, so it is typically best to dedicate a visit to dry eye diagnosis. Not only will this allow adequate time to perform the necessary tests, it will allow the time

Table 1. Risk factors for dry eye

LEVEL OF EVIDENCE		
MOSTLY CONSISTENT*	SUGGESTIVE†	UNCLEAR‡
Older age	Asian race	Cigarette smoking
Female sex	Medications	Hispanic ethnicity
Postmenopausal estrogen therapy	Tricyclic antidepressants	Medications
Omega-3 and omega-6 fatty acids	Selective serotonin reuptake inhibitors	Anticholinergics
Medications	Diuretics	Anxiolytics
Antihistamines	Beta-blockers	Antipsychotics
Connective tissue disease	Isotretinoin	Botulinum toxin injection
LASIK and refractive excimer laser surgery	Diabetes mellitus	Oral contraceptives
Radiation therapy	HIV/HTLV1 infection	Menopause
Hematopoietic stem cell transplantation	Systemic chemotherapy	Alcohol
Vitamin A deficiency	Large incision ECCE and penetrating keratoplasty	Acne
Hepatitis C infection	Low humidity environments	Gout
Androgen deficiency	Sarcoidosis	Pregnancy
	Ovarian dysfunction	

* Mostly consistent evidence implies the existence of at least one adequately powered and otherwise well-conducted study published in a peer-reviewed journal, along with the existence of a plausible biological rationale and corroborating basic research or clinical data.

† Suggestive evidence implies the existence of either 1) inconclusive information from peer-reviewed publications or 2) inconclusive or limited information to support the association, but either not published or published somewhere other than in a peer-reviewed journal.

‡ Unclear evidence implies either directly conflicting information in peer-reviewed publications or inconclusive information with some basis for a biological rationale.

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to properly educate the patient as to the complexity of chronic dry eye disease.

As with most decisions, patients deciding whether or not to pursue a dry eye evaluation will weigh the time and cost against the perceived benefit of dry eye relief. If their symptoms are significant enough to them, patients will be happy to return for a dry eye evaluation and treatment. If the symptoms are not consequential, the patient may not want to do anything about them immediately, but the groundwork will have been laid for action if the symptoms get worse. Hence, the key is not only to determine what the symptoms are but how deleterious they are to the patient's perceived quality of life. Patients who discover their discomfort need not be a lifelong burden will appreciate your care.

Patient History

On the return visit, go over the symptoms that were identified in the dry eye questionnaire. A 2003 study indicates that patients' complaints may have a higher correlation to dry eye severity

than clinical signs and objective tests.⁷ This is an important finding, as it highlights the value of the patient history and reminds providers not to take patients' complaints lightly.

Because lifestyle and demographic factors can predispose patients to dry eye, it is important to ask questions about computer use, extensive reading, caffeine consumption, contact lens wear, and history of ocular surgery. Ask about medications, such as antihistamines or hormone replacement therapy, because these are known drying agents. Find out whether patients have an autoimmune condition, such as lupus erythematosus, or a systemic disease, such as diabetes, thyroid disease, or rheumatoid arthritis, which can also cause significant dry eye disease. Finally, ask whether patients are using artificial tears and, if so, if they are getting at least 1 hour's relief from an application.

Clinical Examination

Once the patient history is complete, the next step is a thorough clinical exam. To start, examine the tear meniscus at the slit lamp. Look at the lid

margin for blocked or missing meibomian glands to make sure that symptoms aren't caused by meibomian gland disease. In a high percentage of dry eye referrals, meibomian gland dysfunction is either the cause or a concomitant condition.

Take a quick look at the cornea for filaments, scarring, or neovascularization. Next, instill fluorescein and lissamine green dyes, which can be used simultaneously. With fluorescein, look at the cornea using cobalt blue light. Fluorescein may show punctate corneal staining related to dry eye. With lissamine green, use a white light to look at the conjunctiva. Like fluorescein, lissamine green stains areas of the ocular surface that are not protected by mucin. Consider taking photographs of lissamine green staining in order to show patients areas of vulnerability.

The tear film breakup time (TFBUT) test provides a good indication of the stability of the patient's tear film. As a general rule, if the TFBUT is less than 7 seconds, a problem with the lipid component of the tear film is likely.

Perform Schirmer's test for tear volume when Sjogren syndrome is suspected. Schirmer testing is easy to perform, but results may vary, and the

PEARLS FOR FAST, SIMPLE, AND RELIABLE DIAGNOSIS

- ✓ Screen for dry eye symptoms with questionnaire
- ✓ Address any symptoms patients bring up in questionnaire. Ask about:
 - Frequency
 - Severity
 - Time of day when symptoms are worst
 - Degree to which symptoms interfere with daily activities
- ✓ Reappoint for separate evaluation if symptoms suggest possibility of dry eye disease
- ✓ During dry eye evaluation, take a history and perform a clinical exam with this sequence of tests:
 - Slit lamp
 - Fluorescein staining
 - Lissamine green staining
 - Tear film breakup time
- ✓ Grade dry eye severity according to Table 2

Table 2. Dry eye severity grading scheme

DRY EYE SEVERITY LEVEL	1	2	3	4*
Discomfort, severity & frequency	Mild and/or episodic; occurs under environmental stress	Moderate episodic or chronic, stress or no stress	Severe frequent or constant without stress	Severe and/or constant disabling
Visual symptoms	None or episodic mild fatigue	Annoying and/or activity-limiting episodic	Annoying, chronic and/or constant, limiting activity	Constant and/or possibly disabling
Conjunctival injection	None to mild	None to mild	+/-	+ / ++
Conjunctival staining	None to mild	Variable	Moderate to marked	Marked
Corneal staining (severity/location)	None to mild	Variable	Marked central	Severe punctate erosions
Corneal/tear signs	None to mild	Mild debris, ↓ meniscus	Filamentary keratitis, mucus clumping, ↑ tear debris	Filamentary keratitis, mucus clumping, ↑ tear debris, ulceration
Lid/meibomian glands	MGD variably present	MGD variably present	Frequent	Trichiasis, keratinization, symblepharon
TFBUT (sec)	Variable	≤ 10	≤ 5	Immediate
Schirmer score (mm/5 min)	Variable	≤ 10	≤ 5	≤ 2

* Must have signs AND symptoms. TFBUT: fluorescein tear breakup time. MGD: meibomian gland disease.

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test has poor reproducibility except in patients with advanced disease.⁸ Still, a Schirmer reading of less than 5 mm may confirm a diagnosis of Sjogren syndrome in symptomatic patients.⁹

By following a full testing sequence (slit lamp, fluorescein staining, lissamine green staining, and TFBUT) and all required elements of a comprehensive exam, optometrists can code using established patient evaluation and management codes of 99213 or 99214, depending on the extent of the history, exam elements, and medical decision making. The code 92012 (intermediate established ophthalmic exam) can be used if the exam is complicated with a new problem.

While it helps to perform a battery of tests on the first visit, subsequent visits can be greatly simplified by performing only the test that provided the most information on the first visit. This becomes the doctor's yardstick for measuring either progression or treatment efficacy at subsequent visits.

Finally, grade the dry eye. Use Table 2 to correlate symptoms and test results with specific grades. Generally, more severe cases (grades 3 or 4) are characterized by macropunctate staining filaments, frequent or severe ocular discomfort, TFBUT of 5 seconds or less, and activity-limiting visual symptoms.

COMPONENTS OF DRY EYE THERAPY

Artificial Tears

Artificial tears are first-line treatment for dry eye; they increase tear volume and lubrication and make patients comfortable. The key is to get patients on a good artificial tear, one that truly protects and doesn't exacerbate the condition. (Artificial tears that contain a vasoconstrictor may exacerbate a dry eye condition.) Patients with very mild disease can often obtain relief by using artificial tears on a regular basis (rather than on an as-needed basis) plus making some environmental modifications (see "8 Simple Environmental Modifications for Patients"). For patients who are self-treating, make sure they are using a good tear that gives them at least one hour's relief and/or that they do not require the tear more than four times a day.

Immunomodulation: Cyclosporine and Corticosteroid

Many patients with dry eye symptoms have already tried palliative therapies like artificial tears and have not gotten adequate relief. Palliative measures can reduce some of the symptoms and signs of dry eye and temporarily increase comfort, but they do not act directly on the underlying inflammatory processes that produce symptoms.

For patients who don't get adequate relief from palliative therapies, the next step is therapy with topical cyclosporine 0.05% (Restasis®, Allergan) twice a day, typically for 6 months. By blocking T-cell mediated inflammation, cyclosporine helps to break the inflammatory cycle. Cyclosporine is the only medication that is currently FDA approved to treat dry eye.

A number of studies now confirm that cyclosporine works to heal dry eye disease in several important ways. In many patients it provides a significant increase in the number of mucin-secreting goblet cells—essential for tear film stability and a healthy ocular surface.^{3,10} (Goblet cell density is often decreased in dry eye patients.) Cyclosporine also increases production of the immunoregula-

EIGHT SIMPLE ENVIRONMENTAL MODIFICATIONS

- 1 – Use artificial tears on a schedule. Don't wait for discomfort before taking a drop.
- 2 – Limit caffeine intake.
- 3 – Avoid drafts and fans blowing in the face.
- 4 – Direct automobile air conditioning away from the face.
- 5 – Where possible, use sunglasses outdoors in dry or windy conditions.
- 6 – Position computer monitors below eye level.
- 7 – Drink plenty of water.
- 8 – Avoid smoking and second-hand smoke.

tory factor TGF-beta-2.³ Because the drug has been shown to increase patients' natural tear flow, it relieves dry eye discomfort more permanently than artificial tears.²

While topical cyclosporine is an effective drug, it does not provide instant relief. Cyclosporine should be taken over a period of months to gain the maximum effect—although it starts working and there are noticeable effects well before then.

A safe corticosteroid, such as loteprednol etabonate, can be paired with cyclosporine to minimize the discomfort that some patients report upon cyclosporine instillation. Corticosteroids are potent antiinflammatory agents that can also provide fairly rapid symptom relief for dry eye patients. However, corticosteroids have significant risks, especially when used over long periods of time. Hence, it is common to give steroids for a shorter period of time but to continue cyclosporine for longer or even indefinitely, as topical cyclosporine appears to be safe for long-term use.

Punctal Occlusion

For more severe cases of dry eye, optometrists may offer punctal occlusion but typically after therapeutics such as cyclosporine have been taken for enough time to significantly reduce the load of inflammatory mediators in the tears. Punctal occlusion consists of plugging one or more puncta to slow the drainage of tears from the eye. Plugs are available in several materials. Temporary collagen plugs dissolve after a few days; synthetic collagen plugs last longer but are not permanent; silicon plugs stay in until they are removed; and there are other plugs that mold themselves to the shape of the portion of the nasolacrimal drainage system in which they are placed. Puncta can also be surgically closed, although this is usually a last resort. Since there is a chance that patients will develop epiphora once punctal plugs are inserted, some providers prefer to start with temporary collagen plugs to gauge patients' response to the procedure before inserting permanent plugs. While response to collagen plugs won't always predict response to permanent plugs, using them can help identify patients who are most likely to have problems with epiphora, especially if considering occlusion of all four puncta.

Lid Disease Treatment

In many cases, dry eye is complicated by blepharitis. Lid disease is typically treated with topical and/or systemic antibiotics and lid hygiene (warm compresses, then massage, followed by lid cleansers). As with treating aqueous-deficient dry eye disease,

blepharitis treatment should attack all the elements of the cycle that is maintaining the disease.

Follow Up

The purpose of follow-up visits is to check progress and adjust medications. Plan to see patients at least at 1, 3, and 6 months for follow up. To evaluate dry eye improvement, use the test that was initially most diagnostic of the condition. If patients are taking a corticosteroid, be sure to check intraocular pressure.

Most patients will have begun to notice improvement at the 1-month visit, especially with dual corticosteroid/cyclosporine therapy. If, on the other hand, relief is slow to come, and there are signs of blepharitis, discuss the use of an oral omega-3 essential fatty acid supplement or low-dose oral doxycycline or topical azithromycin to combat lid inflammation. Omega-3 fatty acids have been shown to be beneficial in the treatment of mild to moderate dry eye¹¹, while doxycycline, a type of tetracycline, inhibits the formation of cytokines (inflammatory mediators) and damaging enzymes. Azithromycin also has both antiinflammatory and antiinfective effects and can be administered topically.

Typical coding for a 1-month visit can be 99213 depending on the elements of history, exam, and medical decision making. Complexity, change in diagnosis, and therapy could, in certain circumstances, warrant coding of 99214. If patients are doing well and there is little need for adjustment, coding can be as low as 99212.

OPTIMIZING RESULTS OF DRY EYE THERAPY

Treat Early for Maximum Impact

Dry eye is a progressive condition that responds best to early and aggressive treatment. Treating for a minimum of 6 months can get the disease process under control. The goal is to keep the condition from progressing to the point of significant symptoms that are much more difficult to reverse. Left untreated, the cycle of inflammation that characterizes dry eye can cause permanent damage to the lacrimal gland.

When teaching patients about the dangers of untreated dry eye disease, it is also important to help them understand the need for prolonged treatment by explaining that dry eye is a chronic disease that may have been developing for many years before becoming symptomatic. Therefore, resolution of symptoms cannot be expected to happen overnight. Once patients understand the importance of prompt, prolonged treatment, they will be more likely to work with providers to make their condition better.

When to Prescribe Cyclosporine

Good reasons to consider treatment with cyclosporine are: mild to moderate dry eye disease as diagnosed by clinical exam, tests, and patient history; surface tissue damage as revealed by corneal or conjunctival staining; and failure to get adequate relief from artificial tears taken at least three times a day. Cyclosporine plus a safe corticosteroid like loteprednol can be helpful in bringing relief to patients with severely dry eyes, but the combination works faster and more effectively in earlier-stage patients.

GOOD CANDIDATES FOR CYCLOSPORINE THERAPY

- ✓ Have mild to moderate symptoms of dry eye
- ✓ Fail to get more than an hour's relief with artificial tears
- ✓ Experience discomfort and decreased use of contact lenses
- ✓ Show evidence of surface tissue damage
- ✓ May have had previous eye surgeries

Discuss Treatment Goals

By explaining the goals of cyclosporine treatment, optometrists can involve patients in their own care and increase compliance. Take time to describe: (1) what cyclosporine does, (2) what the steroid does, and (3) how the combination can help achieve long-term therapeutic goals.

Prepare patients by explaining that treatment will begin aggressively and may be eased up as the condition improves. Additionally, let patients know what to expect from treatment. It may take 3 to 5 weeks for patients to begin feeling relief. When they do, they can expect less grittiness, pain, and blurry vision, and an easier time performing tasks such as reading, using the computer, and driving at night.

DRY EYE TREATMENT IN THE OPTOMETRIC PRACTICE

Adding a dry eye treatment component to an optometry practice makes sense for many reasons. First, the potential market is very large—depending on how the condition is defined, there may be as many as 76 million undiagnosed dry eye sufferers.¹ Second, we now have effective treatments to address dry eye disease—and new therapies continue to evolve. Although FDA approval issues have kept some of them off the market, there are many new agents at different points in the pipeline. Third, patients are increasingly aware that their dry eye symptoms are not just a nuisance they have to tolerate. That's good news because it brings patients to the office early in the disease process, when aggressive management gets the best results. Finally, treating dry eye creates a revenue stream that can offset decreased reimbursements in other areas.

Adopting the Medical Model

Today, the most effective way to grow an optometric practice's patient base is by integrating primary medical care with vision care. While that makes sense on a practice level, on the patient level it is rarely efficient to attend to both vision and medical care in one visit. Making a commitment to offer comprehensive dry eye treatment

FOUR REASONS TO TREAT DRY EYE

- 1 – Large potential market
- 2 – Effective treatments are available, and more are on the way
- 3 – Patient awareness of dry eye disease is growing
- 4 – Revenue from dry eye treatment can offset decreased reimbursements in other areas

means switching from a single-visit to a multiple-visit mindset.

Once patients realize that their dry eye symptoms are treatable, they are usually amenable to return visits for an evaluation and treatment. To make this happen efficiently, optometrists will want to structure their practices to (1) screen for dry eye in *all* patients using a brief questionnaire, (2) commit to educating patients that dry eye is treatable but, left untreated, may progress, and (3) reappoint for clinical examination and follow-up.



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DRY EYE DISEASE IN OPTOMETRIC PRACTICE:

Clinical Diagnosis, Patient Management, and Practice Integration

General Information

In order to receive CE credit, participants should read this report and then take the test at the end. On completion, fill out the test online at:

www.candeoesc.com/ceindex/dryeyeoptprac.htm

A score of 70% is required on the post-test to qualify for CE credit. A certificate will be sent to you directly from SUNY State College of Optometry within 60 days. There is no fee to participate in this activity.

Statement of Need and Program Description

Dry eye disease is a highly prevalent condition. Depending on how it is defined, the dry eye population in the US is at least 40 million.¹ While dry eye is highly prevalent, it is also underdiagnosed. Because more than two-thirds of the nation's eye exams are performed by optometrists, we can assume the majority of patients with untreated chronic dry eye are being seen in optometric practices.

Despite increasing awareness of the prevalence of dry eye disease, many optometrists miss opportunities to offer their patients effective treatment for this condition. Studies have identified the following barriers to dry eye management within an optometric practice:

- Optometrists' lack of familiarity with practical screening and diagnostic methodologies;
- Inability to readily identify patients who do not declare themselves symptomatic;
- Lack of time to perform the required testing in a patient visit, the primary purpose of which is a condition other than dry eye disease; and
- Lack of understanding of the practice value of providing medical therapy for dry eye patients.

Recent research indicates that treating dry eye early, in its mild to moderate stages, can positively benefit patients with dry eye disease by preventing progression to more serious and more debilitating illness.²⁻⁴ Optometrists who screen for, diagnose, and treat dry eye disease in its early stages will provide a valuable service to patients and enhance practice rewards.

The program is designed to: (1) make dry eye disease management more attractive to optometrists by addressing the barriers identified above, and (2) increase the efficiency and efficacy of dry eye diagnosis and management in those optometrists who currently treat dry eye disease.

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Target Audience Optometrists

Learning Objectives

Upon completion of this exercise, participants should be able to:

- Use clinical tools to diagnose dry eye disease;
- Use recent findings on the efficacy of early diagnosis and therapy in dry eye disease to demonstrate how managing this condition will improve the quality of patients' lives;
- Integrate dry eye disease diagnosis and management into the practice without interfering with other practice functions;
- Understand which patients are most at risk for dry eye disease and offer treatment guidelines based on current research; and
- Enter the world of primary eyecare through the treatment of dry eye disease.

Faculty Listed with Disclosure Statement

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Accreditation Statement This activity has been planned and implemented in accordance with Continuing Education requirements through the joint sponsorship of the SUNY State College of Optometry and Candeo Clinical/Science Communications, LLC. SUNY College of Optometry is accredited by the Council of Optometric Practitioner Education (COPE), to provide continuing education for optometrists.

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CE EXAMINATION

For **IMMEDIATE CE credit**, please go to
www.candeocsc.com/ceindex/dryeyeoopract.htm

Please fill out and submit the Examination Answer Sheet on the following page.

In the following, please record the *one* best answer.

- 1. Which of the following is a group at high risk of dry eye disease?**
 - A. Postmenopausal women
 - B. Children of either sex under the age of 10
 - C. High school and college athletes
 - D. Adolescent boys
- 2. Which of the following is *not* a risk factor for dry eye disease?**
 - A. Age > 50
 - B. Female sex
 - C. Uncorrected refractive error
 - D. Recent LASIK
- 3. Which of the following is an efficient screening tool for dry eye disease?**
 - A. Schirmer testing
 - B. Refraction
 - C. Tear film breakup time
 - D. Patient questionnaire
- 4. Common symptoms of dry eye disease include all of the following except:**
 - A. Blurred vision
 - B. Migraine-like headaches
 - C. Light sensitivity
 - D. Gritty feeling in the eyes
- 5. Which of the following is *not* part of the typical dry eye examination?**
 - A. Tear film breakup time testing
 - B. Visual field testing
 - C. Slit lamp examination
 - D. Lissamine green staining
- 6. Typical follow-up visits for a dry eye patient occur at:**
 - A. 1, 3, and 6 weeks
 - B. Annual intervals for life
 - C. Monthly intervals for the first year
 - D. 1, 3, and 6 months
- 7. Intraocular pressure measurements are necessary for patients on topical:**
 - A. Cyclosporine
 - B. Doxycycline
 - C. Corticosteroids
 - D. Vasoconstrictors
- 8. The most severe levels of dry eye disease (levels 3 and 4) are characterized by:**
 - A. Tear film breakup time of 5 seconds or less
 - B. Absent to mild corneal staining
 - C. Schirmer score greater than 10
 - D. Moderate episodic visual symptoms
- 9. Treating dry eye in its mild to moderate stages:**
 - A. Is not cost effective
 - B. Can prevent or slow progression to more serious disease
 - C. Does not improve treatment outcomes
 - D. Is appropriate only when autologous serum is used as a first-line treatment
- 10. Coding for dry eye disease is based on:**
 - A. Work performed and documented
 - B. What patients can afford to pay
 - C. The specifics of the patient's insurance
 - D. The patient's response to treatment

EXAMINATION ANSWER SHEET

DRY EYE DISEASE IN OPTOMETRIC PRACTICE: Clinical Diagnosis, Patient Management, and Practice Integration

This CE activity is jointly sponsored by SUNY State College of Optometry and Candeco Clinical/Science Communications, LLC, and is supported by an unrestricted educational grant from Allergan, Inc. SUNY State College of Optometry assumes responsibility for this CE assessment.

FOR IMMEDIATE CE CREDIT GO TO: www.candecoesc.com/ceindex/dryeyeoptprac.htm

or Mail to: CCS, 75 Maiden Lane, Suite 802, New York, NY 10038

Release date: March 2009 • Expiration date: March 31, 2010

Directions: Select the *one* best answer for each question in the exam on the previous panel (Questions 1-10). Participants must score at least 70% on the questions and complete the entire Evaluation section to receive CE credit.

ANSWERS

- | | |
|------------|-------------|
| 1. A B C D | 6. A B C D |
| 2. A B C D | 7. A B C D |
| 3. A B C D | 8. A B C D |
| 4. A B C D | 9. A B C D |
| 5. A B C D | 10. A B C D |

EVALUATION SECTION:

Please complete the following evaluation section, so that we can serve you better in the future.

1= Poor 2= Fair 3= Satisfactory 4= Good 5= Outstanding

Rate the overall effectiveness of how the activity:

Related to my practice needs: 1 2 3 4 5

Will influence how I practice: 1 2 3 4 5

Will benefit my patients: 1 2 3 4 5

Stimulated my intellectual curiosity: 1 2 3 4 5

Quality of material: 1 2 3 4 5

Met my expectations: 1 2 3 4 5

Avoided commercial bias/influence: 1 2 3 4 5

Will the information presented cause you to make any changes in your practice? Y N

If yes, describe how: _____

How committed are you to making these changes?

(not committed) 1 2 3 4 5 (very committed)

Are future activities on this topic important to you? Y N

If you wish to receive credit for this activity, please fill in the following information.

Please retain a copy for your records.

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