Before you can fit these lenses for patients, they have to fit your practice. Here’s help with both.

HOW THE CDC HELPS IN COMBATING KERATITIS

EARN 1 CE CREDIT — GLAUCOMA AND DRY EYE: PRINCIPLES AND PARALLELS
Menicon PROGENT removes protein and disinfects lenses without the mechanical rubbing or abrasive cleaners that can damage plasma treated lenses or complex surface geometries.

PROGENT every two weeks with daily use of Menicon Unique pH® multipurpose solution helps maintain deposit-free lenses for healthy and comfortable lens wear.

Before and after photos courtesy of Stephen P. Byrnes, OD, Londonderry, NH. 16.5mm diameter FSA lens with a Dk of 141: US-WS102

The Menicon GP lens care system is available for in-office sales or on the Menicon WebStore. For a sample, contact us at 1.800.MENICON or information@menicon.com
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REVIEW OF CORNEA & CONTACT LENSES

IN BRIEF

• Hepatitis C virus (HCV) RNA, commonly found in the tear fluid of patients with chronic HCV, may also be prevalent in the tears of dry eye patients who exhibit no clinical evidence of HCV, according to a study published in the January 2015 Cornea. Researchers used real-time polymerase chain reaction testing to detect HCV RNA in tear fluid collected from 36 dry eye patients and 20 healthy controls. Twenty-one of the 36 (i.e., 58.3%) dry eye tear samples tested HCV RNA-positive, while none of the control samples tested positive. These findings, say the researchers, may indicate a possible etiological role of HCV in causing dry eye.

The researchers also evaluated 15 serum samples collected from dry eye patients. Enzyme-linked immunosorbent assay for anti-HCV was negative in all 15—a result they say further confirms the presence of HCV RNA without active viral infection. Normal levels of alanine aminotransferase were also observed in all 15, but alkaline phosphatase was abnormal in 12 of the 15 samples. This indicates the patients likely do not have subclinical hepatitis, but it cannot be completely ruled out.


• A new hydrophilic daily disposable soft multifocal lens for presbyopic correction, called NaturalVue, has received FDA 510(k) clearance. Similar to a spherical contact lens, the NaturalVue 1-day multifocal is designed to be easy to fit, with one base curve, one diameter and one “universal” add power, which accommodates up to 3.00D of equivalent near power, says manufacturer Visionering Technologies.

• SynergEyes has released eight video tutorials designed to assist doctors with fitting the Duette Progressive lens for astigmatic presbyopes who no longer attain acceptable near vision from soft multifocal contact lenses. The step-by-step tutorials cover lens design, fitting and dispensing, as well as how to achieve good near vision, distance vision and patient compliance.

The purpose of the study was (1) to determine if mesenchymal stem cells present in limbal biopsy-derived stromal cells (LBSCs) differentiate into corneal keratocytes in vitro and (2) to evaluate whether LBSCs can prevent corneal scarring.

The researchers first obtained and cultured LBSCs from tissue harvested from the limbus region of human donor corneas. The cells proliferated quickly, and were then tested to determine that they had indeed become keratocytes. In the second half of the study, researchers used fibrin glue to engraf the cells onto the debrided corneas of mice. A separate control population was similarly debrided, but without the addition of LBSCs.

OCT performed at two and four weeks after debridement showed a marked increase in light scatter in the untreated scars; conversely, light scatter in the LBSC-treated scars was similar to levels in the preoperative normal corneas. Transmission electron micrography also revealed that collagen organization in the stroma appeared similar to that of native tissue in the LBSC-treated corneas. Reduced corneal vascularization in response to the LBSC treatment was also observed.

“Even at the microscopic level, we couldn’t tell the difference between the tissues that were treated with stem cells and undamaged cornea,” Dr. Funderburgh says. “We were also excited to see that the stem cells appeared to induce healing beyond the immediate vicinity of where they were placed. That suggests the cells are producing factors that promote regeneration, not just replacing lost tissue.”

The study suggests LBSCs could eventually be used to treat corneal scarring in humans. Indeed, a small pilot study based on this research—in which a handful of patients will receive their own corneal stem cells as treatment—is underway in India.

Descemet membrane endothelial keratoplasty (DMEK) is successful in restoring visual acuity in vitrectomized eyes, says a new study published in the January 2015 Cornea. However, graft failure and the overall complication rate are both higher than in standard DMEK procedures.

Researchers at Eberhard-Karls University, in Tubingen, Germany, reviewed 20 cases of DMEK surgery; seven of these eyes had a history of anterior vitrectomy and 13 eyes had a history of complete removal of the vitreous body. Subjects ranging in age from 37 to 78 years were evaluated the day before surgery, on the day of surgery and during the first, second and fourth week after the procedure. Additional three-month follow-up exams occurred after the initial first month.

Following surgery, researchers reported an improvement in best-corrected visual acuity from 1.4 (± 0.5) logMAR (20/500) preoperatively to 1.0 (± 0.5) logMAR (20/200) at four weeks. Subsequent improvement to 0.8 (± 0.6) logMAR (20/125) at six months, and to 0.6 (± 0.3) logMAR (20/80) at 12 months, were also observed, despite the presence of comorbidities, including age-related retinal disease, glaucoma, corneal scarring and total retinal detachment.

Even with surgical success, however, complications occurred in 13 of the 20 eyes. Graft dislocation occurred in 11 cases, requiring surgical intervention consisting of one or more additional air injections. In the immediate postoperative period, two eyes experienced iatrogenic primary graft failure, while four eyes had late graft failure.

Other complications included exacerbation of pre-existing glaucoma and intraocular pressure elevation of up to 40mm Hg during follow-up in two eyes. “With more experience, probably better results could be achieved in vitrectomized eyes,” the authors concluded.

DMEK in Vitrectomized Eyes: Successes, Setbacks

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Antibiotic Resistance: Applauding the President’s Council Report

Ocular concerns differ somewhat from systemic ones, but in many respects the risks and consequences are comparable.

The President’s Council of Advisors on Science and Technology (PCAST) recently convened to discuss the ongoing problem of “superbugs”—bacteria that have become resistant to antibiotics. The Council’s panel of scientists, researchers and engineers released a seven-part proposal on antibacterial resistance to antimicrobial therapies in September that lays out the stakes for medical professionals and offers many practical recommendations.1-3

Historically, complications from disease were common and often serious. Roughly 30% of children died before their first birthday.1 A scrape or insect bite could be a fatal malady, and consequences of sore throats often included rheumatic fever and heart failure.1,2

Life changed with the advent of antibiotics in the 20th century, which have since saved millions of lives and increased life expectancy.1,3 Within the last decade, however, bacterial resistance has become a crisis—one that is outpacing the development of new countermeasures for treating infections in humans.1,3


KEEP AN EYE ON IT

A major part of combating antibiotic resistance is providing adequate surveillance and rapid response capacity.1,3 Surveillance—the systematic collection and analysis of samples to ascertain the presence and characteristics of antibiotic-resistant bacteria—is absolutely essential for detecting resistant pathogens, tracing their spread and determining their origin.1,2 Real-time tracking can help with early detection and identification of outbreaks or epidemics and rapid response to prevent the spread.2

Topical ophthalmic drugs generally achieve significantly higher concentrations than their systemic counterparts achieve in serum levels.4 Nevertheless, the ophthalmic community should still heed the warnings regarding bacterial adaptation.

COUNTING THE COST

The CDC estimates that antibiotic-resistant infections cost the United States $20 to $50 billion or more annually in direct health care, and up to $35 billion in lost productivity.1,2 A staggering 23,000 deaths annually are reported as a result of antibiotic-resistant infections.1 Thus, aggressive action is necessary to contain this public health and financial crisis.

PCAST gives a number of recommendations in its report:1,3


(2) Establish a national laboratory network for pathogen surveillance based on genome analysis.

(3) Allocate $150 million per year over seven years to support investigation of non-traditional approaches to overcoming antibiotic resistance.

(4) Initiate clinical trials with new antibiotics. Establish an infrastructure and common protocols, and develop new regulatory pathways to evaluate urgently needed antibiotics.

(5) Expand economic incentives for developing antibiotics. PCAST estimates an investment of $800 million will yield one new FDA-approved antibiotic each year.

(6) Revise stewardship of existing antibiotics in health care by creating Medicare and Medicaid reimbursement incentives that encourage appropriate antibiotic use and establishing federal regulations for hospitals, long-term care facilities and outpatient settings.

(7) Limit the use of antibiotics in animal agriculture.

Overall, there is still much to be learned regarding resistance. Staying ahead will require novel approaches including anti-sense therapies, new narrow-spectrum drugs, agents to enhance immune response and drugs to attack virulence factors.1,3

1. Report to the President on Combating Antibiotic Resistance, Executive Office of the President/President’s Council of Advisors on Science and Technology, September 2014.


The benefits of using scleral lenses to treat ocular surface disease are well known and have been supported by studies in recent years, as well as decades of anecdotal reports of success. In short—sclerals vault the cornea and rest on the sclera, protecting the compromised ocular surface while providing space for a “liquid bandage.” There are problems specific to this combination of the distressed eye and specialty lens, however—namely, mucin and debris buildup under the lens.

Mucin forms deposits on the lens over time, decreasing comfort and affecting visual clarity. This is especially problematic in patients with severe ocular surface disease, as the greater the irritation, the more mucus is produced. To limit this complication, I recommend weekly or bi-weekly prophylactic cleaning with Progent (Menicon America) to remove deposits and improve lens wear for all my scleral patients.

THE CASE FOR PROGENT IS COGENT

Progent effectively disinfects and removes protein buildup from the surface of GP lenses. Primarily used as a cleaner to eliminate excess protein, Progent also has strong disinfection capabilities and has been shown to be effective against bacteria, molds, yeasts and viruses, as well as Acanthamoeba trophozoites and cysts, even after just a five-minute soak. It also has been shown to deactivate the following virus strains: poliovirus type 1 and adenovirus type 5.

Previously only available in-office, Progent was FDA-approved for home use in 2010. Due to the toxic nature of the compounds, this product cannot be sold without a doctor’s approval, so doctors may either dispense it from their practices or patients can get it online using their doctor’s access code.

SOLUTION SPECIFICS

The Menicon Progent kit comes with two 5ml vials of fluid. Ampule A contains sodium hypochlorite, sodium carbonate, sodium hydroxide and purified water, while ampule B contains potassium bromide, sodium carbonate and purified water. An accompanying large scleral lens-holding container allows both lenses to be cleaned at the same time; if using the smaller container, scleral lenses can be accommodated by turning the holders 90 degrees. Once the fluids mix, the lenses should soak for no more than 30 minutes to prevent lens discolouration. After removal, the lenses should be rubbed with a GP lens cleaner and soaking solution.

The first solution in ampule A (comprised principally of sodium hypochlorite) is a clear, pale yellow liquid commonly known as bleach. Because it can form explosive compounds with common substances like ammonia, amines, charcoal and organic sulfides, it should be used only as directed to prevent spillage. Furthermore, because hypochlorite solutions are basic (i.e., pH = 11 to 13.5), ocular exposure to liquid hypochlorite can result in a chemical burn. Burn severity is related to a number of factors, including pH, concentration and length of exposure time; thus, in the case of contact, it is imperative the eyes be irrigated immediately.

The solution in ampule B, containing potassium bromide, is colorless and odorless. Though it has a neutral pH, contact with the eye can cause irritation and redness. When the potassium bromide is combined with the sodium hypochlorite—a strong oxidant—the resulting oxidation-reduction reaction triggers protein degradation.

In closing, regular prophylactic use of Progent has solved comfort and vision issues for many of my scleral patients. I would recommend you consider it as an option to keep your patients healthy and happy.

Dr. Sindt has no financial interest in any products mentioned in this article.

Ocular surface disease. Meibomian gland dysfunction. Blepharitis. Every eye care meeting is teeming with lectures on these topics, and rightly so. Although practitioners have always seen a multitude of patients with complaints of dryness, irritation and redness, it is only recently that diagnostic tools and treatments have improved enough to better pinpoint the exact problem and treat each individual patient appropriately and more effectively than ever before.

But there’s one more word that needs to be incorporated into our daily lexicon: *Demodex*. While we may not wish to embrace the notion that infestation of this intradermal parasitic mite is the cause of a host of eyelid problems, we cannot ignore the facts.

Consider this: in a study by Hyun Koo, MD and colleagues, *Demodex* were found in 84% of patients with ocular discomfort (i.e., dryness, pruritus, ocular pain, or visual disturbance).\(^1\) Prevalence was also found to increase with age: *Demodex* was identified in 84% of the population at age 60 and 100% of the population over the age of 70.\(^2\)

These are staggering statistics for a condition that is routinely overlooked. Many of us have patients in our practice who we are doggedly treating for blepharitis, with little to marginal improvement. In cases like this, we need to consider that *Demodex* could be the cause when the problem is refractory to the standard therapies of artificial tears, warm compresses or prescription topical or oral antibiotic or steroid formulations. First, however, we need to know how to identify a *Demodex*-laden lid and then how to eradicate the problem.

**A MITE-Y CHALLENGE**

A classic presentation of *Demodex* blepharitis appears as cylindrical, waxy collarettes at the base of the eyelashes, thought to be an accumulation of *Demodex folliculorum* excreta, epithelial hyperplasia and reactive hyperkeratinization.\(^3\)\(^,\)\(^4\)

The mites consume epithelial cells at the hair follicle, causing lash distention.

Infestation is caused primarily by *Demodex brevis*, which reside deep in the meibomian glands, leading to blockage and lipid tear film insufficiency, and sometimes recurrent and refractory chalazia.\(^5\)\(^,\)\(^6\) Dying mites themselves may trigger a cascade of inflammatory responses involving the lid margin, conjunctiva and cornea that can be visually devastating.\(^4\)

Often, the mites are not easily visible at the slit lamp. Traditional examination involves the epilation of four non-adjacent eyelashes that are evaluated under a microscope. However, a newer method has recently been described in which, with gentle tension, the eyelash is rotated manually with forceps scraping around the inner perimeter of the eyelash follicle to dislodge nonvisible mites that may reside deeper within the lash follicle.\(^7\)\(^,\)\(^8\) This rotational maneuver may help isolate *Demodex* mites in follicles whose lashes may not display the characteristic tubular base cuffing. However, additional research is needed to determine the efficacy of this technique.

Tea tree oil has been previously shown to be effective in treating *Demodex*, though early treatments with the full-strength formulation
proved irritating to some patients and required cumbersome in-office dilution. Ying-Ying Gao, MD and Jingo Liu, MD, among others, have demonstrated lid scrub with 50% strength tea tree oil and/or lid massage with 5% tea tree ointment and the use of tea tree oil shampoo to be effective in eradicating ocular Demodex. The treatments worked either by directly killing the mites or interrupting their life cycle by preventing mating, with marked subjective and objective improvement noted in the lid margin, conjunctiva and cornea.9,10

Cliradex (Bio-Tissue) is a pre-moistened lid, lash and facial towelette that contains the specific ingredient in tea tree oil, 4-terpinol, that has been shown to be the most efficacious in killing Demodex in vivo.11 The wipes are recommended for once daily use for six to eight weeks for mild to moderate symptoms, or twice daily use for six to eight weeks for moderate to severe symptoms.12 The new Cliradex Complete Advanced Lid Hygiene Kit also contains a stronger concentration of 4-terpineol for in-office application by a doctor or trained technician for more severe cases of Demodex, in addition to the wipes for at home use.

The FDA recently approved Advanced i-Lid Cleanser (NovaBay Pharmaceuticals), a liquid lid and lash cleanser formulated with 0.001% hypochlorous acid (called Neutrox), a broad-spectrum antimicrobial.13 While the product is indicated for use against organisms such as Staphylococcus aureus and epidermidis, as well as methicillin-resistant Staphylococcus aureus (MRSA), NovaBay says its independent studies suggest that cleansing may also help reduce Demodex-associated bacteria and minimize the inflammatory cascade caused by the bacterial exotoxins.14

Additional Demodex-fighting options include the BlephEx in-office exfoliation procedure from Rysurg, Ocusoft’s Lid Scrub Plus, over-the-counter cleansers from Ovanté, and other interventions. As we increasingly encounter an aging population, we need to be fully cognizant of the possibility that many of these patients may have Demodex as a contributing factor in their eyelid and ocular surface dysfunction. Fortunately, we have simple and effective in-office and at home treatments to eradicate the problem.

11. Tighe S, Gao YY, Tseng SCG. Terpinen-4-ol is the most active ingredient of tea tree oil to kill demodex mites. Transl Vis Sci Technol. 2013 Nov;2(7):2.
In the last few years, the use of scleral contact lenses has expanded beyond specialty contact lens centers into mainstream practices. Practitioners have numerous scleral lens options to choose from, as most GP lens manufacturers now offer at least one design. With this growth, the indications for scleral lens wear have begun to more clearly divide into two groups of scleral lens patient candidates: those for whom the lenses are medically necessary and others whose needs are purely refractive. This article will review the relevant indications for use of scleral contact lenses with respect to both groups.

**MEDICALLY NECESSARY**

From the early use of a “contact shell” to treat keratoconus in 1888, scleral contact lenses have come to occupy a distinctive yet comprehensive position in eye care, suited to treat a variety of eye conditions in patients whose corneal surfaces range from clinically normal all the way to extremely unique.¹

- **The irregular cornea.** Scleral lenses are most commonly prescribed in the case of corneal irregularity, which induces higher-order aberrations; it can result from keratoconus, cornal surgery or trauma, or complications of otherwise routine surgery.

  Such patients are often managed with corneal GP lenses; this modality’s ability to mask front surface corneal irregularity leads to dramatically improved vision. However, contact lens practitioners have struggled for decades to fit corneal GP lenses on patients with moderate to severe irregularity because of one inherent problem: the lenses’ small relative size forces them to distribute their weight directly onto the uneven corneal surface, which can lead to destabilization of the fit (Figure 1). Scleral contact lenses, on the other hand, vault over the cornea and rest on the sclera. As a result, centration and stability will remain unaffected.

  Patients who have moderate to severe corneal irregularity, especially those who have previously failed in corneal GP lenses, make excellent candidates for scleral lenses. Be sure to explain to these patients why scleral lenses may be a better option than other contact lens modalities, and keep in mind that patients with small apertures or poor dexterity may have difficulty applying lenses. Patients may also be apprehensive about converting to a larger lens design. Demonstrating scleral lens comfort and stability in the office with a diagnostic lens will often result not only in patient acceptance but excitement.

- **Ocular surface disease.** Another common reason for prescribing scleral lenses is to manage ocular surface disease. Patients with systemic conditions such as Sjögren’s syndrome, Graft-versus-host disease and Stevens-Johnson syndrome often present with co-morbid ocular surface disease that can further decrease their quality of life and inhibit daily activities (Figure 2). For these patients, the rigid, curved shape of a scleral lens creates a liquid “cushion” that not only masks irregularity but also acts as liquid bandage that continuously bathes the anterior ocular surface. Scleral lenses also provide a barrier that protects the compromised anterior ocular surface from exposure.

  Additionally, many patients with OSD may also present with corneal irregularity. With scleral lens use, patients with OSD typically experience quick, dramatic improvement in comfort and vision, allowing them to return to their normal routines and activities. Be sure to work in tandem with any other eye care specialists who are managing the patient’s care; patients are often able to reduce their palliative and therapeutic ophthalmic drop regimen if they are successful with scleral lenses. Make sure to avoid any bearing of

**ABOUT THE AUTHOR**

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for Scleral Lenses?

By Greg DeNaeyer, OD

the lens on the cornea that could result in epithelial compromise.

REFRACTIVE ERROR

Though modern scleral lenses have been used successfully to manage medically related eye conditions for over 20 years, there has been relatively little research on the effects—especially long-term—of scleral lens use. Making the jump from using scleral lenses for patients who require them for medical reasons to patients with refractive error or dry eye is significant; thus, each practitioner needs to take into account the possible unknown risk of scleral lens use for patients where scleral lenses are merely an option rather than a necessity.

- **GP burnout.** Patients generally appreciate the sharp vision that corneal GP lenses provide, but some experience lens-related problems that limit wear time or lead to dropout. Patients with corneal GP lenses may complain of intermittent lens decentration or expulsion that interrupts wear time. This is especially problematic if the patient is active in sports. Corneal GP patients may also complain that occasional foreign bodies like dust or debris get trapped underneath the lens, leading to irritation that can force the patient to remove the lens for relief. Soft lenses can offer improved comfort or stability, but at the cost of sharp vision.

For such patients, scleral lenses can eliminate these symptoms while still providing the sharp vision that GP contact lenses offer.

First and foremost, sclerals are inherently more comfortable to wear because they rest on the sclera, which is far less sensitive than the cornea. Scleral lenses also semi-seal to the eye and when fit correctly, will not reposition with eye movement or blinking. This fitting characteristic not only improves comfort, but stability as well. Additionally, the semi-sealed fit keeps environmental foreign bodies from getting underneath the lens.

Consider scleral contact lenses for patients who develop difficulties wearing their corneal GP lenses. Keep in mind that while you may have empirically ordered corneal lenses, scleral lenses will require a diagnostic lens fitting. Also, remember it’s possible that if you refit patients just out of their GP lenses, a power shift could occur over the first month during which their corneal curvature rebounds because they no longer have a lens that is supported by the cornea.

- **Astigmatism.** Patients with moderate to severe astigmatism may have a history of poor visual performance with traditional soft and corneal GP lenses. Soft lenses can be unstable for some patients, causing visual fluctuation that is frustrating for patient and practitioner alike.

Corneal GP lenses can effectively mask corneal astigmatism and are
WHO'S A CANDIDATE FOR SCLERAL LENSES?

a great option for some of these unhappy soft lens patients; however, corneal GP lenses are also notoriously unstable for patients who have against-the-rule astigmatism, in which the horizontal meridian is steepest (Figure 3). In these patients, corneal GP lenses will often slide horizontally, causing lens instability.

Additionally, corneal GP lenses are not a great option for patients with lenticular astigmatism—they are unable to mask crystalline lens toricity with their tear lens, as they do for corneal toricity. Consequently, corneal GPs have to be manufactured with front surface toricity to correct the patient’s full refractive error. Just like soft lenses, front surface toric GP lenses can be unstable, leading to intermittent visual disturbances.

In contrast, the liquid reservoir that gets trapped underneath a scleral GP is able to mask corneal astigmatism, and the fit is stable regardless of astigmatic orientation because the lens fits the sclera, not the cornea. Front surface toricity can also be added to scleral lenses for cases of lenticular astigmatism. Unlike corneal GP lenses, ballasted scleral lenses are stable due to their large diameter and semi-sealed fit.

Patients with moderate to severe astigmatism, especially those who have failed in other traditional lens modalities, are good candidates for scleral lenses. Be sure to do a sphero-cylindrical over-refraction during the fitting and follow up. If the over-refraction yields astigmatism, check over-topography to make sure the lens isn’t flexing, which can induce astigmatism. Increasing center thickness can eliminate flexure. If the lens isn’t flexing, correct the residual astigmatism by adding front surface toricity. Sphero-cylindrical over-refraction at follow-up can allow you to fine tune the power for any induced cylinder secondary to lens rotation. This is more accurate than trying to apply LARS (left add, right subtract).

- **Dry eye.** Patients suffering from dry eye who require refractive correction may be candidates for scleral lenses, though this use is considered off-label. Scleral lenses have several advantages over traditional lenses for these patients: first, unlike soft contact lenses, GP material doesn’t dehydrate, which can lead to discomfort after several hours’ wear. Scleral lenses also hold a liquid reservoir, as mentioned earlier, which provides a continuously lubricating tear layer against the compromised ocular surface. Even patients who are successfully medically managing their dry eye condition may still have difficulty wearing other contact lenses and so could benefit from scleral lenses.

When fitting a dry eye patient, start with scleral lenses designed for the regular or normal cornea because you likely won’t need the size or geometry that scleral lens designs offer for fitting irregularity. Sonsino and Mathe reported that the amount of central vault does not seem to affect success.2 Make

"BALLASTED SCLERALS ARE STABLE DUE TO THEIR LARGE DIAMETER AND SEMI-SEALED FIT."
Scleral lenses are a viable option for many patients who have struggled or been unsuccessful with soft, corneal GP or hybrid contact lenses. As such, with the growing popularity of these lenses it is recommended that you have a few diagnostic fitting sets in your practice that allow you to fit a broad spectrum of eyes—in particular, at least one diagnostic set designed for managing corneal irregularity or OSD and a second set that can be used for patients with regular corneas who have failed in traditional lens designs secondary to poor fit, irritation, uncorrected astigmatism or dryness.

Diameters for designs for corneal irregularity typically range from 16mm to 18mm, while diameters for refractive error and dry eye typically fall between 14.5mm and 16mm. Additionally, some designs are available with multifocal optics that can be added to the front surface for both for presbyopic patients with mild irregularity or those with regular corneas.

Overall, investigating scleral lenses to fit a broad spectrum of patients will improve your fitting success.

Once only available in specialized tertiary care centers, scleral lenses have become increasingly popular in general optometric practice during the past several years. Recent proliferation of scleral lens designs, the ready availability of diagnostic fitting sets and growth of educational programs and workshops designed to teach those interested in this lens modality how to fit them properly have vastly increased awareness and availability of these lenses among eye care providers.

Indications for scleral lens prescriptions are expanding as well. Originally, the lenses were reserved for eyes with severe irregularity or surface disease and were used only when all other therapeutic options had been exhausted. Now, not only are scleral lenses being prescribed for less severe disease, they are also being marketed as an option for correction of uncomplicated refractive error. Despite this overall progress, however, many optometrists remain wary of incorporating scleral lenses into their practice due to concerns regarding excessive cost, time or potential complications.

**THE KEYS TO THE KINGDOM**

Fortunately, there are a number of considerations you can make to simplify the process of fitting scleral lenses. Don’t be afraid to pick and choose, or come up with your own ideas!

1. **You don’t need to spend a fortune to fit scleral lenses.** Depending on what images you have seen presented during scleral lens courses or lectures, you may have the impression that fitting these lenses requires a considerable capital investment. Not to worry—fitting sclerals is a surprisingly low-tech affair for most patients.

It’s true that anterior segment OCT can precisely define the fitting relationship between the lens and anterior ocular structures and confocal microscopy can provide much information on how scleral lens wear may affect corneal structure and function. However, this...
equipment is by no means necessary to fit scleral lenses. Additionally, more commonly available imaging technology such as corneal topography—while extremely useful in fitting corneal rigid gas permeable lenses—may be of only limited value in fitting scleral lenses because precise alignment between the anterior corneal and posterior lens surfaces is unnecessary in scleral lens fitting.1 Slit lamp photography can also be used to document lens fit as well as anterior segment structures, which may be helpful in following the condition of the eye over time, but is not essential in scleral lens fitting.

Realistically, an eye care provider who is interested in developing a scleral lens practice needs only the most basic equipment to get started. A diagnostic scleral lens fitting set, a slit lamp and a trial lens set or phoropter are all that is necessary. These rudimentary items, along with careful observation and evaluation, can provide all of the information necessary to successfully fit scleral lenses. Diagnostic lenses will allow you to assess the fit of the lenses, and over-refraction with either handheld trial lenses or a phoropter will provide the refractive information that you need to order the initial lens.

Fig. 1. Fitting scleral lenses isn’t a high-tech endeavor; all you need is a diagnostic lens fitting set, slit lamp and phoropter.

2 Learn how to use one or two lens designs well. There are dozens of scleral lens designs available today. While there are certainly differences between them, the fitting goals for all designs share some common characteristics. First, scleral lenses are designed to land on the conjunctival tissue overlying the sclera without causing excessive compression of tissue or blanching of conjunctival vasculature. Second, the lenses should completely and measurably vault the cornea and limbus. Finally, the lenses should exhibit minimal vertical or lateral movement on the blink.

Most major laboratories now offer scleral lens designs, so consult with your lab to get recommendations on their most successful designs. While it is not necessary to become familiar with all scleral designs, it may be helpful to procure fitting sets for one larger (approximately 17.0mm to 18.0mm) and one smaller (approximately 15.0mm to 16.0mm) design. This will allow for successful scleral lens fitting for a variety of indications.

Laboratory consultants are also typically well versed in scleral lens fitting, and can provide invaluable assistance to novice scleral lens fitters. Additionally, educational resources are available both at formal professional meetings and online through organizations such as the Scleral Lens Education Society and Gas Permeable Lens Institute.

3 Make the most effective use of your time. Selecting an initial diagnostic lens can be challenging for the first-time scleral lens fitter. So, make use of all the tools at your disposal. Manufacturers’ guidelines can be
useful, as can simple observation of the contour of the cornea and sclera as viewed from the patient’s side (Figure 2). Once you become familiar with your lens design, it’s likely you will be able to better predict which diagnostic lens will provide an appropriate fitting relationship on the basis of observation alone.

If you are uncertain of which lens to select, err on the side of greater sagittal depth. It is much easier to estimate the amount of excessive clearance in a lens that is too steep than it is to estimate the amount of additional sagittal depth required to clear the cornea in a lens that fits with considerable corneal touch.

Although we know that scleral lenses tend to settle with time, evaluating lens fit immediately after application will allow you to identify a lens that obviously provides too much or too little clearance. Bracket the fit in large intervals until you find a lens that demonstrates approximately 100µm to 150µm more clearance than would be considered ideal. Once you’ve identified an appropriate lens, allow the lens to settle for 20 to 30 minutes before final evaluation of fit.

It should be noted the “ideal” amount of clearance in scleral lens fitting has yet to be defined. Although recent studies have suggested that decreased oxygen transmissibility through an excessively deep fluid reservoir may be undesirable, successful scleral lens wear has been achieved with lenses providing between 100µm and 600µm of clearance. Get creative with initial lens application. Patients may be apprehensive during initial lens application, even if they have had previous experience with contact lenses. Distracting them from the application process, either by giving them something to do (such as holding their lower lid down while you apply the lens) or by encouraging them to look at something (such as a bottle cap or other object held on their lap) may make initial lens application easier.

While opening the lids widely enough to apply the lens directly to the ocular surface is ideal, it is not always possible. Sometimes, you may need to apply the lens by placing one edge beneath either the upper or lower lid and then “folding” or “tipping” the lens into place. If you find that you need to manipulate the angle of the lens during application, it may be helpful to use Celluvisc or another relatively viscous non-preserved product to prevent excessive fluid loss during application. Patients may also find it easier to avoid entrapped air bubbles if they use a more viscous product during initial lens application training. Using these products as “training wheels” can give patients confidence in their ability to successfully handle and wear lenses.

If you wish to use fluorescein to define the fluid reservoir during the fitting process, the dye can either be placed in the bowl of the lens prior to application or applied to the ocular surface directly. While the concentration of dye in the post-lens fluid reservoir may be somewhat diminished if fluorescein is applied to the ocular surface prior to lens application, the concentration will still be sufficient to allow for easy visualization of the fluid reservoir. Applying fluorescein to the ocular surface rather than placing the dye in the bowl of the lens also reduces the risk of staining clothing or fingers during lens application.

Perform a careful spherocylindrical over-refraction. The tear film beneath a corneal rigid gas permeable lens is of negligible thickness, and allows for reasonably accurate calculation of power for a lens of a given base curve on a given eye. Not only are most scleral lenses considerably thicker than corneal lenses, but the post-lens fluid reservoir is of considerably greater depth than the tear layer behind a corneal lens. Increased lens and fluid reservoir thickness could potentially alter effective lens power, so careful refraction over a diagnostic scleral lens is recommended to avoid power calculation errors.

Consider using handheld trial lenses to refine the prescription. Trials lenses can frequently be held very close to the anterior surface of the scleral lens, and can even touch the surface of the lens, if desired. This minimizes the need to calculate power adjusted for vertex distance.
Unlike spherical corneal GP lenses, scleral lenses tend to be very stable on the ocular surface. This rotational stability allows for incorporation of front surface toricity onto scleral lenses to correct residual astigmatic refractive error. Numerous lens designs now offer this option. Patients with as little as 0.75D to 1.00D of residual astigmatism with a spherical scleral lens may appreciate improved clarity with a toric lens. If your patient demonstrates improved visual acuity with a spherocylindrical over-refraction compared to a spherical over-refraction, consider ordering a front surface toric lens.

Follow your patients closely. Sclerals are still relatively new additions to the market. Although they are made of materials that have long been used, these lenses exhibit considerably different fitting characteristics than any other lens modality. We should not simply assume complications associated with scleral lens wear are identical to those we see with other lens modalities, nor should we assume risk factors for those complications are exactly the same as those that have been identified for other lenses. Though there have been case reports of microbial keratitis, we do not know for certain if risk factors are the same with sclerals as with corneal lenses; ideally, a national or international complications registry is needed. It should be noted, however, that application error might be a scleral-related complication—patients can give themselves corneal abrasions if the lens scrapes the cornea during insertion.

When scleral lenses are used in the treatment of severe ocular surface disease or corneal ectasia, the risk of complications that could be caused by scleral lens wear are outweighed by potential benefits, including the avoidance of more aggressive surgical intervention and maintenance of ocular surface integrity. However, as indications for scleral lenses have expanded to include correction of simple refractive error, we would do well to carefully evaluate relative risks and benefits of scleral lens wear compared to other options for refractive correction.

Ongoing management of ocular disease necessitates frequent follow-up for patients who use scleral lenses as therapeutic devices. Although patients who choose to wear scleral lenses for correction of uncomplicated refractive error may not have medical conditions that require frequent evaluation, regular examination of anterior ocular structures is prudent even in these patients. Frequent follow-up would allow for early identification of potential tissue changes, and would enable adjustments in lens design to minimize the potential for irreversible tissue damage.

Define your success. Characteristics of the “ideal” scleral lens fit have been described, but there may be more than one lens design that could provide an acceptable fit for a given patient. A scleral fit can be considered successful if the lens is stable on the eye, the patient achieves the best possible vision with the lens, there are no changes in ocular surface structures or tissue as a result of lens placement and long-term wear is comfortable. If the lens meets these criteria, you may declare success!

How to Incorporate Scleral Lenses Into Your Practice

By Stephanie L. Woo, OD

With scleral lenses increasing in popularity, more practitioners than ever are considering how to incorporate them into their practice. So you’ve attended the workshops, seen the lectures, browsed through articles and maybe invested in a scleral lens diagnostic set. But, how do you bring this new modality into your practice so that it enhances rather than disrupts your office? Here are some points to consider in developing the best method that works for your patients and your practice.

INFORM YOUR STAFF
Staff members play a critical role in enhancing patient experience, from the receptionist who answers the phone to the technician who works the patient up and the optician who fits the patient with glasses or contacts. Educating your team on the new service you are now offering will better enable them to recommend scleral lens options to patients and answer some patient questions before the patient even sits in your chair. Having knowledgeable staff members also enhances patients’ opinions of your practice.

When you make the decision to start fitting scleral lenses, organize a staff meeting to let them know of this new service. Educate them on what these contact lenses are, how they differ from other types of lenses and which patients are good candidates (i.e., those with keratoconus, corneal transplant, a history of LASIK, extreme dry eye, corneal scarring.). This way, staff members will be prepared when patients inquire about scleral lenses, and possibly even confident enough to recommend that certain patients look into this design for the best possible vision. It will also ensure patients get a consistent message no matter who in the practice they happen to be talking to.

Not too long ago, one of our newest staff members came to my office and said, “There is a patient on the phone and they were wondering if we treat keratoconus?” Imagine the incredulous look I must have given the poor girl! But then I realized this lack of knowledge is my fault; I did not properly train her regarding the services we offered or which patients we could help. Since then, I’ve added an introduction to the practice and an explanation of what makes us different to my new employee orientation. During this meeting, I always mention that our practice has the ability to fit difficult corneal problems and I give

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examples of various typical cases. I also changed the system of how newly hired employees are trained—now all staff members are well informed of the services that we provide.

GET THE WORD OUT
It’s important to let people know you’re now offering this new service. Place an ad in the local paper announcing that you can now assist more difficult-to-fit patients, including those with keratoconus or other corneal irregularities, such as irregular astigmatism following a transplant or other corneal surgery.

If you distribute an electronic or paper newsletter, highlight scleral lenses and the kinds of patients you can help in it. And make it personal: tell the story of a successful patient. Avoid overuse of technical terms about the lenses and medical jargon.

Be sure to also update your website, social media pages and any online business listings. You will be surprised at how many people call your office to inquire about the new product and ask if they can try these special lenses.

OFFER FREE CONSULTATIONS
A great way to capture a potential patient’s interest is to offer a free contact lens consultation at your office. When the patient calls to inquire about specialty lenses, have your staff explain the benefits of a free consultation. You can also advertise this service on your social media page or in your newsletter.

The services included in the consultation depend on what you deem appropriate, so feel free to develop your own. In my practice, we check the patient’s vision, verify their glasses, perform topography and evaluate their eyes briefly with the slit lamp. After this, I spend five to 10 minutes reviewing the findings with them and discussing contact lens options. I also review pricing and go over what to expect during the fitting process so there will be no surprises.

Typically, when patients are aware of their condition and understand why they cannot wear standard contacts or glasses, they are more receptive to the treatment options that you, as the doctor, recommend. Overall, these consultations have been extremely successful in my practice, and I hope they are in yours too!

INFORM LOCAL DOCTORS
You may think, ‘Why would another eye care provider refer a patient to me? Can’t they just fit the patient themselves?’ The answer is: not everyone wants to fit specialty contacts—many don’t even want to touch scleral lenses! I find this especially true of optometrists who have been practicing for more than 10 years. Many learned to fit corneal GP lenses, and that is what they are comfortable with—which is great for you! As you know, scleral lenses can work for a variety of patients, and, in some cases, are the only viable option.

If you let other optometrists in the area know that you can fit scleral lenses, many will be happy to send patients your way, especially if you make it clear that you are simply trying to help their patient, not steal them. Many of these ODs have likely already tried other designs that have failed, so they may welcome the assistance. To maintain this relationship, I always make a point to send the patient...
back to their referring doctor for everything that is unrelated to the contact lens services I’m providing, whether it’s a request for glasses or ocular health issues I observe that may need treatment. This serves as a good form of mutual advertisement—they will circulate your name to patients, and, if you’re so inclined, you can do the same for them.

Sclerals can also be a great way to establish or strengthen collaborative relationships with local ophthalmologists, especially those who do a lot of corneal and refractive surgery. Some of their patients will need specialty contact lenses after a procedure, and scleral lenses are not always part of the services offered at an ophthalmology practice. It’s to their benefit, and yours, if you know each other’s capabilities.

OVERDO THE EDUCATION
You can never give a scleral lens patient too much information about their new modality. Most patients have difficulties with their lenses, and many who drop out do so because of simple problems like lens insertion. Providing patients with adequate information—before, during and after the fit—will greatly decrease their chances of dropping out.

After the lenses are dispensed, the patient should be given articulate instructions about insertion, removal, lens care and frequently asked questions. Increase their chances of success by demonstrating a variety of methods for lens insertion and removal (Figure 1). This way, if they get home and one method doesn’t work, they don’t have a panic attack. Also, make sure to provide written step-by-step instructions about insertion, removal, lens care and frequently asked questions. Increase their chances of success by demonstrating a variety of methods for lens insertion and removal (Figure 1).

FIG. 1. Give your patient multiple ways to insert and remove the lens. It’s to their benefit, and yours, if you know each other’s capabilities.

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instructions for the patient to take home—just like a good portion of patients in general, many new scleral lens wearers forget instructions as soon as they leave the office (Figure 2).

Providing a list of online resources where patients can find information and videos on lens insertion, removal and care is another way to decrease dropout. I recommend www.gpli.info and www.scleral-lens.org as good sources for both practitioners and patients. Your staff can also create this content in-house. (See “Using Social Media to Market Scleral Lenses,” below.)

Fig. 2. Provide your patient with a variety of scleral lens resources, such as an informative DVD and written instructions to take home.

APPOINT A STAFF MEMBER AS YOUR BILLING GURU

You do not need an experienced biller to be successful with scleral lens reimbursement; instead, pick a team member who is committed to finding out the correct answers and willing to do the research needed. Some practices call the insurance company before the patient is even seen for a consult or their comprehensive exam; others wait until the patient has been seen to report the proper diagnosis and procedure codes. Some insurance companies do not require a preauthorization letter, while others do.

If you designate a staff member at your practice to help you with specialty contact lens research, billing and coding, they can help you determine the best approach for your practice, thus making your life easier.

bombarded with information. The latest statistics place the average attention span at eight seconds in 2013, down from 12 seconds in 2000. In line with this trend, short Facebook posts, tweets and six-second video clips have largely supplanted and in some cases replaced newspaper, radio and television ads, as well as older forms of online advertising like website banners. These small campaigns can be quickly and easily shared and “reshared” between hundreds of thousands of social media users, creating a ripple effect.

Try getting your staff involved in creating and distributing videos or tweets for your practice to raise patient awareness. Many marketing research firms and social media giants like Twitter have published studies on, for example, how to best construct posts and when to send them.

Tweak your website. In this day and age, your website is just as important as the receptionist sitting at your front desk. Many prospective patients may visit your site well before calling to schedule a consultation. As this is their first impression of your practice, make sure your website is clean, easy to navigate and as informative as possible.

“Our website is a big tool for us,” says Jason Jedlicka, OD, at the Cornea and Contact Lens Institute of Minnesota. “We make sure to have a page devoted to scleral lens information.” He points out that he and his colleagues named their practice expressly to focus on their contact lens expertise.

“We are not a routine eye care practice that happens to have a scleral lens fitting set—we are first and foremost there for the patients that need specialty contact lenses. Patients will see our name and know what we are about.”

The rise of “content marketing” has also impacted the way businesses reach customers and so should be taken into account when designing a website. Content marketing, or the distribution of media and written content with the intent of influencing consumer behavior, is a good way to educate scleral lens candidates while also making them aware of your practice in particular. Posting a small article on the benefits of wearing scleral lenses or useful tips to keep in mind on your practice’s website may also help boost patient confidence and trust. Additionally, writing or contributing to articles published elsewhere can also enhance patient referrals.

“We have written many articles on scleral lenses and it is amazing how many patients find us by searching the web for information,” Dr. Jedlicka says. Patients “stumble across an article we wrote about how we fitted someone like them in sclerals and helped them, and they call wanting to know if we can do the same for them.”

Employing search engine optimization (SEO)—the process of improving a website’s natural search engine ranking using a combination of certain keywords, images and other components—can also make the content on your site appear higher in search results, helping to drive web traffic to your website and increase awareness of your practice. Google offers a guide for getting started with SEO.

(Continued on page 22)
HOW TO INCORPORATE SCLERAL LENSES INTO YOUR PRACTICE

Many vision insurance companies like Eyemed, VSP, Spectera, Davis and Avesis also have good staff to assist you in determining medically necessary contact lens benefits. Remember that most vision plans make scleral lens fitting very easy to bill.

DON’T OVERLOOK YOUR “REGULAR” PATIENTS!
Many patients who come in for their routine exam expect to simply receive their annual check-up and an updated glasses and/or contact lens prescription. If you feel, however, that a patient might benefit from a scleral contact lens evaluation, mention it to them! I can’t tell you how many post-refractive surgery patients show up for their routine exam unaware there are contact lens options for them. This is especially true of the early adopter group who underwent refractive surgery using previous techniques that are no longer state of the art, such as radial keratotomy (RK)—it’s likely that they’ve been walking around with unaddressed vision problems for years.

Even if your patient reports seeing relatively well, ask them about dry eye or fluctuating vision. Then, inquire if they would be interested in contact lenses. Many patients will be shocked at the possibility because they are under the impression they could never wear contact lenses again. I challenge you to ask your next RK patient who comes in for their comprehensive exam if they would be interested in contact lenses. You’ll likely be excited by their answer and even more excited to fit them with scleral lenses!

Social Media Marketing
(Continued from page 21)

• Combine social media with other platforms. Although social media has in many ways revolutionized marketing, more traditional methods like television and radio still hold significant cultural weight. In fact, cross-platform advertising may be the most effective way to market your practice. Research by Nielsen and Google found nearly 75% of consumers remember an ad when viewed across all media platforms, compared to just 50% when viewed only on TV. A separate Nielsen study in 2013 found many marketers still view television as the most effective way to reach customers, but also noted that Internet advertising jumped by more than 32% in a year’s time.

“In our practice, we try to do public relations-type stories on patients who are in keratoconic lenses,” for instance, says, Dr. Schaeffer. Local news media in his area have featured representatives of the practice discussing new treatments for keratoconus and other corneal diseases. “And of course that’s where we talk about the advantages of scleral lenses.” Consider taking out an ad on a local television channel or in the newspaper.

• Don’t forget the original social network: word of mouth. “I market specifically to corneal surgeons,” says Shelley Cutler, OD, founder of Scleral Lens Associates in Pennsylvania. “I started out with a letter. I went through the phone book and online to find as many corneal-trained doctors in the Philadelphia area, and Delaware and New Jersey, and I sent them out a letter and some business cards, then I followed up with a postcard maybe four to six months later.”

Derek Louie, OD, of Casey Eye Institute in Oregon, uses similar methods. “I speak to other practitioners in the community and let them know we are using these types of lenses frequently and have [the] familiarity to help their patients. Internal marketing to our existing patients also works if someone is struggling or looking for something different than their current contact lenses.”

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Contact lens wear has been a safe and successful modality for millions of patients over the last several decades. It’s an accomplishment and a source of pride for everyone involved. But clinicians, manufacturers and regulatory agencies all have a stake in continually striving to reduce adverse events. Do your efforts to encourage compliance and mitigate risk reflect the latest consensus guidelines? Perhaps some new initiatives from the Centers for Disease Control and Prevention (CDC) can help.

Recently, the CDC closely collaborated with the FDA, eye care providers, manufacturers and academic institutions to create the Healthy Contact Lenses Program, an initiative to reduce the burden of contact lens-associated eye infections in the United States. Since July 2013, the CDC and partners have worked to increase awareness of behaviors and risk factors that can affect the eye health of contact lens wearers by developing and disseminating recommendations about the proper wear, care and maintenance of contact lenses. These recommendations address key risk factors for corneal infections among contact lens wearers.

CORNEAL INFECTIONS IN CONTACT LENS WEARERS
Improper wear and care of contact lenses can significantly increase the risk of corneal infections, including microbial keratitis. With rates of noncompliance with contact lens wear and care recommendations ranging anywhere from 40% to 91%, many contact lens users are at risk for these painful, sometimes blinding eye infections as a result of inadequate lens hygiene.

Poor contact lens sanitation habits have been implicated in multi-state outbreaks of microbial keratitis. Outbreak investigations of *Fusarium* and *Acanthamoeba* keratitis in 2006 and 2007 identified specific multipurpose solutions with inadequate disinfection capabilities that were consequently recalled from the market. However, further investigation also pointed to noncompliant contact lens wear and care practices as additional contributing factors to these outbreaks.

Behavioral risk factors for contact lens-related corneal infections are well known to many eye care providers; these include sleeping in contact lenses, poor storage case hygiene, “topping off” of solution in the storage case and exposing contact lenses to water, among others. Eye care providers play an important role in educating patients on proper wear and care practices that can reduce the risk of serious eye infections; however, the CDC and its partners identified several factors that suggested the need for a coordinated effort to promote healthy wear and care: persistence of contact lens-related eye infections, continued high rates of non-compliant behaviors and lack of consistent messaging around proper wear and care practices. Factors driving non-compliant behavior remain for the most part poorly understood, but economics, time requirements and regimen complexity are all thought to play a part.

ENCOURAGING LENS HEALTH
The CDC’s Healthy Contact Lenses Program was implemented in July 2013 using financial support from the nonprofit Contact Lens Institute® with the mission of developing clear and consistent contact lens wear and care recommendations. The program team at CDC, within the Waterborne Disease Prevention Branch, convened a workgroup

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Ms. Rao is a health communications specialist and the coordinator of the Healthy Contact Lenses Program at the Centers for Disease Control and Prevention. She received her Master of Public Health degree from Emory University in Atlanta.
of experts in eye health, contact lenses and epidemiology to advise program activities. With assistance from this advisory group, the CDC continues to work on creating data-driven recommendations and health promotion materials that are available on the CDC Healthy Contact Lens Wear and Care website (www.cdc.gov/contactlenses).

The website provides a range of information on the care of contact lenses, including decorative lenses, and the peer reviewed, microbiologic, epidemiologic and clinical studies that provide scientific evidence for these recommendations. Data on germs, infections and eye complications related to contact lens wear and promotional materials geared towards certain target audiences, including parents of children who are either current or potential contact lens wearers, are also available. Eye care providers can also use the health promotion materials to assist with patient education in their practice.

In addition to the website, the CDC expanded its contact lens health promotion efforts by implementing the first annual Contact Lens Health Week campaign, which took place the week of Nov. 17-21, 2014. The goal of this campaign was to actively promote healthy contact lens wear and care among older teens and young adults, a group predisposed to an increased risk of corneal inflammatory events related to contact lens wear. Healthy contact lens wear and care messages were disseminated through social media channels popular among older teens and young adults, such as Twitter, Facebook, Instagram and Pinterest. These messages conveyed the risks of improper contact lens use as well as tips for avoiding infection, such as keeping water away from contact lenses, cleaning and replacing storage cases and visiting an eye care provider on an annual basis.

The CDC also collaborated with university campus groups, eye health organizations and the contact lens industry to distribute campaign materials and messages to young adult contact lens wearers and their eye care providers. Materials developed for the campaign include a toolkit for professional eye care organizations, college campuses, members of the contact lens industry, public health organizations and non-profit organizations; a video collaboration with Medscape and podcasts on keratitis and contact lens use; promotional material distributed through Twitter, Google+, Pinterest and other CDC social media channels; a feature article on healthy contact lens wear and care on the CDC’s website; and the Morbidity and Mortality Weekly Report (MMWR), which covered the estimated burden of keratitis in the US. The authors of the MMWR article analyzed insurance claims data from 2010 and found that Americans made nearly one million doctor and emergency department visits per year for keratitis and contact lens-related diagnostic codes, resulting in $174.9 million in direct healthcare costs and the use of over 250,000 hours of clinician time. The authors also referenced poor contact lens hygiene as an important risk factor for keratitis and provided tips for contact lens wear and care to reduce the risk of keratitis.

Thanks to support from partner organizations and media coverage from the MMWR, the CDC successfully achieved the following outcomes:

- 20 partners from clinical, regulatory, public health, academic, industry and non-profit sectors helped promote the Contact Lens Health Week campaign.

"RATES OF NON-COMPLIANCE RANGE FROM 40% TO 91%."
THE QUEST FOR COMPLIANCE

- 13 reporters called in to CDC’s media briefing on the MMWR keratitis article, including the Associated Press, National Public Radio and The Washington Post.
- 463 news articles on contact lens health were published by top news sources, including The Examiner, The Washington Post and Reuters
- 2,493 tweets about contact lens health were sent from CDC and external groups
- 727 Facebook posts about contact lens health were generated
- One Twitter chat on contact lens health occurred with Good Morning America’s Rich Besser
to collaborate with other partner organizations in the future to field an online survey of contact lens wearers that will establish a baseline for these outcome measures. A follow-up survey after subsequent contact lens health campaigns could then provide information on changes in behavior, attitudes and awareness as a result of the health promotion efforts.

Since the conclusion of the Contact Lens Health Week campaign, CDC has continued to work on promoting healthy habits among contact lens wearers. Plans are in place to make this campaign an

"ECONOMICS, TIME AND REGIMEN COMPLEXITY ARE ALL THOUGHT TO PLAY A PART IN NON-COMPLIANCE.”

This campaign was the first coordinated effort to distribute CDC’s newly developed contact lens health recommendations and materials to the public and resulted in an estimated reach of 48.6 million individuals—including eye care providers and the general public—through traditional and social media. Campaign efforts also contributed to a 427% increase in traffic to the CDC contact lenses website, indicating a significant increase in the program’s visibility. While resources were not available to collect information on behavior, attitudes and awareness with regards to contact lens hygiene prior to the campaign, the CDC aims

GLAUCOMA AND DRY EYE: PRINCIPLES and Parallels

Can one progressive eye disease teach us how to best treat another?

By Leslie O’Dell, OD

Dry eye disease (DED) and glaucoma: though fundamentally different in many ways, their similarities are more numerous than you might expect. Both are chronic, progressive diseases with an age-related increase in prevalence. Both require diligent medication compliance from patients. Both can be confounded by a mismatch between the subjective and objective findings. And neither is likely to ever be “cured,” instead subjecting patients to a lifelong management regimen and some diminution of quality of life.

While advanced diagnosis and treatment of ocular surface disease is still in its infancy, a lot can be learned from earlier developments made in the field of glaucoma—from obtaining a definitive diagnosis and driving progressive research to developing effective treatment options and raising public awareness.

Early in my career in private practice, I realized ocular surface disease was the driving force behind many patient complaints and emergency visits. Patients with red, itchy, irritated eyes were a common occurrence, so much so that I dreaded these patients at first. However, as I learned the nuances of how to make the right diagnosis and subsequently developed best-practice treatments, my confidence and patient outcomes both improved. Today, my patient base is strong—both from colleague referrals for glaucoma evaluation and patient self-referrals for dry eye consultations.

DEFINING THE PROBLEM

Glaucoma took more than a century and a half to be truly understood. In the early 1970s, Drance developed the modern definition of glaucoma as a disease of optic neuropathy, not that of elevated IOP.1 Although the meibomian glands were initially defined by Heinrich Meibom in the 1600s, it wasn’t until 1980 that Korb and Henriquez defined meibomian gland dysfunction (MGD). Since then, we have gained a much better understanding of their role in ocular surface disease.2 In the last three decades, a paradigm shift has occurred with respect to DED, and meibomian gland dysfunction is now recognized as the main cause of patient symptoms as well as a dry eye cascade resulting in inflammation of the ocular surface.3,4 With the help of the Tear Film and Ocular Surface Society, the DEWS and MGD workshops have introduced definitions of DED and MGD, respectively:

- **Dry eye disease** is defined as a multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance and tear film instability, with potential damage to the ocular surface. It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface.3,4
- **Meibomian gland dysfunction** is defined as a chronic, diffuse abnormality of the meibomian glands, commonly characterized by terminal duct obstruction and/or qualitative and quantitative changes in the glandular secretion. It may result in alteration of the

ABOUT THE AUTHOR

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tear film, eye irritation, clinically apparent inflammation and ocular surface disease.5

These definitions are the first step in directing future research in this area. To properly treat patients with both glaucoma and ocular surface disease, their condition must first be defined. In glaucoma management, defining the disease’s primary and secondary forms helps when establishing a treatment plan. For a dry eye patient, differentiating aqueous deficient from evaporative or a combination lays the foundation to build an effective treatment plan.

STRUCTURE VS. FUNCTION

Both glaucoma and ocular surface disease are chronic, progressive ocular pathologies with an endstage that results in vision loss. In glaucoma, patient vision loss is due to progressive optic neuropathy, while in dry eye, corneal melts can cause loss of vision. Both groups of patients face increased depression as a result of their respective diseases.6

Both conditions pose the question: when should treatment be initiated with respect to structure vs. function?

Glaucoma specialists have been arguing for years over the clinical significance of structural changes of the optic nerve head (ONH) and retinal nerve fiber layer (RNFL) associated with visual field changes or functional vision loss, and it remains an important topic for research.7 In MGD, structural changes of the meibomian glands are associated with a change in the function or secretion of the gland, leading to alterations in the tear film and inflammation to the ocular surface.

In both cases, a change in structure affects function. So, should we as dry eye specialists adopt the thought process already used by our colleagues treating glaucoma—namely, to treat before symptoms emerge in hopes of delaying onset or at least dampening their impact?

Preventative exams are recommended twice a year in the dental profession to help reduce the risk of tooth decay, often well before symptoms like tooth sensitivity and pain appear. Similarly, dermatologists suggest applying sunscreen well before sun exposure to prevent skin damage. Clearly, preventative care works in other contexts. It stands to reason that an ocular wellness evaluation could be a beneficial part of every exam as well, as it may help identify nascent or subclinical pathology.

Much as the optic nerve and NFL can be evaluated using high-powered lenses and red-free settings without expensive OCT testing, evaluating the structure of the meibomian gland can be done simply with transillumination of the eyelid at the slit lamp. Additionally, manual gland expression can be performed to properly assess function. Using a tool such as the meibomian gland evaluator (MGE), we can determine the number of glands producing clear, healthy oil under normal physiological blinking.8 This procedure is important to use, as dry eye can easily be missed by only looking at the lid margin without expressing the glands—a condition known as “non-obvious” MGD, which can become serious if not identified quick enough.9 Thus, evaluating and caring for meibomian glands early, before they atrophy, is likely the best course of action; however, further, large-scale research needs to support this concept.
RESEARCH IS KEY
Modern glaucoma management is based on several multicenter, randomized clinical studies.10-12 These findings have served as a seminal guide on how to slow disease progression and what the goal of treatment should be. The main risk factor for glaucoma progression and severity is intraocular pressure; treatment has primarily focused on this because it is the only modifiable risk factor. For glaucoma, the gold standard for progression has been optic nerve photographs and changes over time from baseline.

In the case of evaporative dry eye, the patient’s blink pattern and/or lipid layer thickness are the main modifiable risk factors. One limitation with current treatments and research, however, is that much of it is geared toward relieving symptoms, which can vary significantly with different contributing factors. Recent studies have also shown treatment can be challenging for some dry eye patients with low pain thresholds.13

When managing dry eye, the focus should be on rehabilitating the ocular surface. Patients should be informed that this process can be difficult, and may require many treatments and ongoing care. Studies are still somewhat lacking in the management of the ocular surface, but a few have offered some compelling insights. For example, Korb found debridement of the meibomian glands increased their function.14 Much like the dentistry model, scheduling routine exams to track overall ocular surface and meibomian gland health is a good first step; it can make a big difference in tackling symptoms.

When considering treatment methods, be sure to look at the data and research—not the cost of treatment. LipiFlow has been demonstrated to provide repeatable results and 79% to 88% symptom improvement for patients.15 These same studies also showed improved function of the meibomian glands.16-17 Additionally, new technologies like the MiBoFlo ThermoFlo, which helps improve meibomian gland function, and at-home treatments like warm compresses or masks, are also emerging.

FOCUSING ON THE CORRECT DIAGNOSTICS
Much as with glaucoma, new diagnostic tools can provide the dry eye specialist with more key information we need to develop an integrated, clinical approach to making the best diagnosis. These tests will help improve diagnosis and progression analysis and hopefully continue to drive research forward towards better treatment methods.

For example, we now have questionnaires and history intake forms that provide information on modifiable factors, including environment, hormone changes, allergy and other medications, while TBUT has proven to be a valuable tool for evaluating tear stability. Tear volume can be evaluated with Schirmer testing, tear film meniscus and anterior segment OCT, while meibomian gland function, lid seal and blink are also important elements to consider. Finally, emerging blood tests like Sjö are demonstrating that Sjögren’s syndrome is far more common than once thought and can be associated with both aqueous and evaporative dry eye.

<table>
<thead>
<tr>
<th>Table 1. Similarities Between Glaucoma and Ocular Surface Disease</th>
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<tr>
<td><strong>GLAUCOMA</strong></td>
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</table>
| Natural Course of Disease | • Chronic  
• Progressive |
| Loss of Function | • Optic nerve ganglion cell atrophy  
• Melibomian gland atrophy  
• Lacrimal gland atrophy |
| Symptoms | • Asymptomatic to start  
• Symptoms vary greatly for patients  
• Early disease asymptomatic |
| Modifiable Risk Factor(s) | • IOP  
• Blink |
| Structure/Function | • Structure: OCT (ganglion cells, RNFL)  
• Function: Visual field exam (optic nerve)  
• Structure: Meibography (MG imaging and atrophy)  
• Function: Meibomian gland expression |
| End-stage Disease | • Vision loss resulting from total loss of ganglion cells  
• Vision loss resulting from corneal scarring  
• Sterile corneal melt  
• Mucous membrane pemphigoid |
| Barriers to Treatments | • Adherence  
• Cost  
• Education  
• Adherence  
• Cost  
• Education |
PERSONALIZE YOUR APPROACH TO CARE

All glaucoma patients receive an individualized treatment plan based on their unique risk factors, symptomatology and likelihood of progression. These personalized treatment plans are under constant scrutiny during follow-up exams to determine if the risk of progression has been completely halted or only significantly slowed, to prevent vision loss.

Treatments for these patients do not typically follow an all-or-none philosophy—some patients need multiple medications, while others require surgical intervention. In making these decisions for our patients, we develop our best treatment plans when we rely on pre-existing knowledge and ongoing research to guide us. The medications we prescribe all have pros and cons and do not always work for each patient, and even surgical interventions can fail.

Dry eye patients also need to be managed just like other chronic progressive disease patients. Planned follow-ups to continually reassess the ocular surface health and wellness of the eye are vital. Schedule a follow-up exam whenever any treatment is initiated, even if it is only an artificial tear. Reassess the ocular surface and symptoms to determine if that treatment is effective and if not, reconsider what factors might still be contributing to the condition. Evaluating each patient’s disease and risk factors helps guide treatment plans to improve ocular health and patient comfort. Consider a patient with tear film instability to be a “dry eye suspect” (akin to a “glaucoma suspect” in similarly vulnerable patients) and follow patients with risk factors accordingly.

Follow-up exams after treatment is initiated also allow better assessment of adherence to therapy. Adherence is a fairly common problem when managing glaucoma, even with the threat of blindness. The same barriers to adherence are present for dry eye patients—cost, increased age and comorbidities such as dementia or arthritis that make it hard to use eye drops. Changing the concept of DED begins with the prescribing doctor’s attitude, so make it an important part of the general eye exam.

In any case, optometrists need to recognize one another as specialists and refer more within our profession. The eye is undoubtedly very complex; to master every aspect is a challenge. According to Malcolm Gladwell, it takes 10,000 hours of practice to master a field, making it an intimidating and unlikely goal to attempt to know everything is to know about many subjects. Many fields often separate into subcategories—for example, there are at least nine specialties within ophthalmology, ranging from general ophthalmology to neuro-ophthalmology. Thus, it is important to know what subspecialties the other eye care professionals in your referring network might have so you can refer a patient before their condition progresses too far.

Work together with the appropriate specialist to initiate a treatment plan and achieve the goal of a healthy ocular surface. And as always, be sure to keep track of new dry eye research—change takes time, but the growing amount of interest in the area of ocular surface disease will likely continue to improve the understanding of the condition and the available treatments.
### CE TEST - JANUARY 2015

1. What recent paradigm shift has been identified for ocular surface disease?
   - a. Aqueous deficiency is the most common type.
   - b. Allergy does not co-exist for dry eye patients.
   - c. Evaporative dry eye is the most common form, contributing to a dry eye cascade resulting in inflammation.
   - d. None of the above.

2. Which of the follow is NOT true about the natural history of glaucoma?
   - a. It was first identified as a disease of elevated IOP.
   - b. Only in 1973 was glaucoma thought of as a disease of optic neuropathy.
   - c. IOP is considered the main modifiable risk factor for glaucoma.
   - d. Co-morbidities are the main risk factors for a glaucoma patient.

3. When paralleling MGD to glaucoma, what structural component that can be monitored is analogous to the nerve fiber layer in a glaucoma patient?
   - b. Schirmer test.
   - c. Corneal health.
   - d. Conjunctival staining patterns.

4. Applying the dental model to the treatment of dry eye means:
   - a. Recommending routine follow-up to evaluate a patients overall ocular surface wellness.
   - b. Debridement of the meibomian gland orifice to improve the glands overall function.
   - c. Increasing public awareness about ocular surface wellness.
   - d. All of the above.

5. Which is NOT an effective method to view the meibomian glands for atrophy and/or dropout?
   - a. Transillumination of the lid.
   - b. Meibography.
   - c. Osmolarity.
   - d. Anterior segment OCT.

6. Advanced ocular surface dryness can have grave visual consequences. Which of the following can cause vision loss for these patients?
   - a. Starts corneal neovascularization.
   - b. Superficial keratitis.
   - c. Meibomian gland atrophy.
   - d. None of the above; dryness will not result in vision loss.

7. Patients living with chronic diseases such as ocular surface disease and glaucoma often suffer from which of the following other chronic illnesses?
   - a. Hypertension.
   - b. Diabetes.
   - c. Depression.
   - d. Hypercholesterolemia.

8. Adopting a clinical approach similar to that used when caring for a glaucoma patient or glaucoma suspect can improve management for dry eye patients. This may include:
   - a. Performing a series of diagnostic tests for a patient to determine the overall health of the tear film.
   - b. Repeating diagnostic testing to determine the effectiveness of treatments.
   - c. Scheduling recalls to re-evaluate any treatment initiated, even something as “simple” as starting a tear supplement.
   - d. All of the above.

9. What might be one of the most modifiable risk factors for patients with MGD, similar to IOP in a glaucoma patient?
   - a. Schirmer score.
   - b. Blink.
   - c. Osmolarity.
   - d. Tear meniscus.

10. Similar to glaucoma management, treatments available for dry eye patients do not follow a one-size-fits-all approach. New diagnostic testing will prove both helpful and challenging to interpret. What is the best strategy for managing these patients, and any patient with a chronic condition?
    - a. Refer to a specialized provider when conventional treatments fail.
    - b. Base treatments solely on symptom relief.
    - c. Base treatments solely on personal success, not clinical research.
    - d. Wait for symptoms to start before recommending treatment or educating patient of their disease.

### EXAMINATION ANSWER SHEET

**Glaucoma and Dry Eye: Principles and Parallels**

Valid for credit through January 1, 2018

Online: This exam can also be taken online at [www.reviewofcontactlenses.com](http://www.reviewofcontactlenses.com). Upon passing the exam, you can view your results immediately. You can also view your test history at any time from the website.

Directions: Select one answer for each question in the exam and completely darken the appropriate circle. A minimum score of 70% is required to earn credit.

Mail to: Jobson Optometric CE, Canal Street Station, PO Box 488 New York, NY 10013

Payment: Remit $20 with this exam. Make check payable to Jobson Medical Information LLC.

Credit: COPE approval for 1 hour of CE credit is pending for this course.

Sponsorship: Joint-sponsored by the Pennsylvania College of Optometry

Processing: There is an eight-to-10 week processing time for this exam.

**Answers to CE exam:**

| 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 |
| 5. | A | B | C | D | 10. | A | B | C | D |

**Evaluation questions**

| 11. | Met the goal statement: | 1 | 2 | 3 | 4 | 5 |
| 12. | Related to your practice needs: | 1 | 2 | 3 | 4 | 5 |
| 13. | Will help improve patient care: | 1 | 2 | 3 | 4 | 5 |
| 14. | Avoided commercial bias/influence: | 1 | 2 | 3 | 4 | 5 |
| 15. | How do you rate the overall quality of the material? | 1 | 2 | 3 | 4 | 5 |
| 16. | Your knowledge of the subject increased: | 1 | 2 | 3 | 4 | 5 |
| 17. | The difficulty of the course was: | 1 | 2 | 3 | 4 | 5 |
| 18. | How long did it take to complete this course? | | | | |

**Comments on this course:**

___________________________________________________________________

**Identifying information (please print clearly):**

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The following is your: ☐Home Address ☐Business Address

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By submitting this answer sheet, I certify that I have read the lesson in its entirety and completed the self-assessment exam personally based on the material presented. I have not obtained the answers to this exam by fraudulent or improper means.

Signature: _____________________________ Date: _____________

Please retain a copy for your records. LESSON 110881, RO-RCCL-0115
Obvious Problem, Elusive Cause

Diagnosing contact lens-related discomfort is not always as simple as you may think.

A 47-year-old female presents complaining of mild discomfort while wearing her contact lenses. A comprehensive ocular examination reveals no physiological basis for the discomfort, as the ocular surface appears normal.

In this case, many of us may try to alleviate the discomfort using a new lens material, solution or even a daily disposable lens. These technologies may make the patient comfortable for now, but will she return in a year and report more discomfort? And if she does, should she be re-fit again, or is there an underlying cause that needs to be treated first?

THE MEIBOMIAN GLANDS

The meibomian glands produce the lipid layer of the tear film that acts to prevent evaporation of the underlying aqueous layer. A robust lipid layer is critical for a healthy tear film, so the meibomian glands need to be functioning properly. In a healthy individual, the meibum has a melting point between 660°F and 890°F, meaning it exists in a fluid state at normal body temperature (98.60°F).6

Traditional thinking on meibomian gland dysfunction (MGD) suggests that a deficiency in the glands is accompanied by inflammation of the eyelid margins, visible capping of the gland orifices and generalized conjunctival injection. There are two types of meibomian gland dysfunction: obvious MGD and non-obvious MGD. The obvious form is the scenario just described. Non-obvious MGD, on the other hand, is not characterized by visible inflammation. Rather, the glands look normal, but the meibum is of abnormal consistency when expressed.7 The meibum may be completely stagnant—application of pressure yields no visible meibum—or abnormally thickened, instead of fluid as expected.

The clinical challenge here is that non-obvious MGD, as the name implies, is elusive. Often, the lid margin appears normal. Only upon attempted expression would the clinician notice any abnormalities in gland function; unfortunately, if gland expression is not attempted, there will be no obvious reason to consider MGD treatment.

In light of this, think about attempting gland expression at every visit, regardless of whether the patient is exhibiting dry eye symptoms. This is the only way to determine for sure whether the meibum is in fact being expressed properly from the gland.

Most examiners can easily perform this by applying gentle pressure along the eyelid margin and visualizing the meibum that is expressed. Certain specialized tools can also assist with this procedure, such as the meibomian gland expressor (MGE), a device that applies pressure to the lid margin similar to the amount placed by the eyelids during a normal blink. This allows for an assessment of the meibum released from the glands under the pressure of a normal blink. Additionally, meibography allows the examiner to view the meibomian glands to determine abnormalities in structure that may exist in symptomatic patients.

NON-OBJECTIVE MGD DIAGNOSIS—NOW WHAT?

Once the diagnosis has been made, it is important to educate the patient on the cause of the decreased comfort and your plan to increase functionality of the glands by producing meibum that is more fluid in nature. Often, this will require sustained heat to the eyes. A number of eyelid heating systems are available, such as the Tranquileyes goggles from Ocusoft and moist heat compresses from Bruder.8,9 Recommended application time varies; many practitioners suggest 10 minutes at a time, twice a day.

Ocular nutrition has also become important in helping normalize the tear film in those with MGD.10,11

Derailed Dropouts

By Mile Brujic, OD, and Jason Miller, OD, MBA

A comprehensive ocular examination reveals no physiological basis for the discomfort, as the ocular surface appears normal.

In this case, many of us may try to alleviate the discomfort using a new lens material, solution or even a daily disposable lens. These technologies may make the patient comfortable for now, but will she return in a year and report more discomfort? And if she does, should she be re-fit again, or is there an underlying cause that needs to be treated first?
following this process, we will have the best chance of preserving the wearing experience in individuals who are finding their lenses to be increasingly uncomfortable.

**BACK TO THE PATIENT AT HAND**

So, how do we handle the patient in question? First, we need to determine whether the patient’s meibomian glands are in fact producing quality meibum. As said before, this requires gentle pressure to determine the quality of the meibum. In this patient, it was evident that there was very little meibum expressed from the glands—in fact, significant pressure was needed to express any meibum at all.

The patient was started on a regular regimen of heat applied to the eyelids in the morning and evening for 10 minutes per session, as well as an ocular nutraceutical that contained multiple ingredients to help with dry eye. She was also given a lipid-based artificial tear to use before inserting her contact lenses and then as needed throughout the day.

Of course, it’s important to remember treating non-obvious MGD is only one way to improve lens wear. Always be sure to try a multi-faceted approach—the use of daily disposable lenses, a change in solutions and experimentation with different new materials can also enhance a patient’s wearing experience.

### References

It’s often stated by many practitioners, “A larger percentage of my practice is dedicated to medical eye care vs. contact lenses because it’s more profitable.” Unsurprisingly, in many practices, contact lens patients comprise only about 15% of the total patient base. The key question remains, however: Is this number too low, too high or just right? What is the best percentage breakdown of medical care, eyeglasses and contact lenses?

**ROBBING PETER TO PAY PAUL**

From a purely profit perspective, you might think that if a practice with 10% of its total services—we’ll use the term “points”—devoted to medical eye care doubles that amount to 20%, that practice’s profit margin would also increase.

Unfortunately, it’s not quite that simple: there are only 100 percentage points or “slices” in the pie, so to speak, and those extra 10 points have to come from somewhere.

Putting clinical considerations aside for the moment, you want to make sure the points “stolen” by the increase in medical services are more profitable there than in the division they were initially allocated to.

Consider this example: patient A hands you a check for $100 for something medically related, while patient B hands you a check for $100 for something non-medically related. Which is more profitable? Without more specifics, you can’t answer this question. Similarly, those who believe non-contact lens related care is more profitable than contact lenses without considering the details are not always correct. It really depends on the particular services you’re talking about: for example, $100 vision care plan eyeglass dollars are probably less profitable than $100 corneal reshaping dollars (given the much lower cost of goods sold for services) or, for that matter, a higher margin pair of glasses (for self-evident reasons).

**THE BIG PROBLEM WITH THIS THINKING IS THAT IT’S JUST PLAIN WRONG.**

When looking at net income, not gross, in our experience the practice with the highest net incomes are still the ones with larger proportions of contact lens-related sales.

Yes, there is no cost of goods sold associated with an OCT exam (after the capital equipment cost is covered), but you shouldn’t just take a snapshot of a single visit. In a well-run office, with a great recall system, a patient who buys a pair of glasses will return and do the same many times over their lifetime. Ideally, they get a pair of glasses and an OCT scan. In the case of contact lenses, a patient who purchases lenses from the practice now will eventually get back-up glasses, and may require medically-related services as well.

**NO RIGHT ANSWER**

So, what is the best combination? Thus far, we’ve only discussed it from the perspective of profitability. When doctors make comments like, “My contact lens practice is X% of my total practice,” they are usually thinking the same way. The big problem with this thinking, which is unfortunately pervasive in our industry, is that it is just plain wrong. Simply put, there is no single “best” combination; rather, it’s a function of how you best care for your patients. If a patient will benefit from multifocal GP lenses...
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