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**ON THE COVER:**

Solutions, Solutions, Solutions! There is never an easy solution to managing our contact lens patients and their contact lens solutions. From patient compliance to solution efficacy, are we providing our patients with the right solutions, proper education and necessary follow-through to make their lens wearing a success beyond the fitting? Then, when all is said and done at the end of the day, are we truly managing our trial lens inventory as we should? In this issue of EyeWitness, read about these solution issues and much more! As the old saying goes “Make sure you are part of the solution and not of the problem…”
Look Inward

What motivates you to be better? Whether as an eye care practitioner, optician, coach or a parent, what drives you to be the best? All of us need motivation to do things in our daily life. Nothing of any significance happens until an individual wants to act. It’s important to recognize that the attitudes of the people we surround ourselves with can have a great impact on our motivation and success.

I believe the CLSA is a successful society because of the amazing members that we surround ourselves with and the self motivation that each of us has to be the best that we can be. CLSA members are the best practitioners, volunteers, writers, educators, mentors and colleagues. CLSA was founded on these principles and they have surpassed generations. We all strive to be the best we can in providing the best patient care and customer service, but at times we are all challenged by the complexity and demands of our patients and the doctors we work with. It’s imperative that we stay motivated to learn and contribute all we can to ourselves and our profession. Not only do our patients, customers and students deserve that level of motivation; we should expect that of ourselves.

Lou Holtz, former NCAA football coach, said, “Your talent determines what you can do. Your motivation determines how much you are willing to do. Your attitude determines how well you do it.” What are you going to do today to motivate yourself to be the best? Who do you surround yourself with to make you better? Take time to look inward and make a difference today.

Be Passionate. Be A Leader. Be CLSA!

The EyeWitness team and the CLSA would like to thank Woody Linn for his contributions and insight to The Bottom Line column over the past many years. We appreciate your hard work, time and dedication to the CLSA!
Great job and thank you, Woody!
This edition will discuss a 40-year-old male who was referred to Emory Contact Lens service following an examination by the cornea service to establish care after his recent move to the Atlanta area. He has a longstanding history of keratoconus that has been managed with a piggyback modality for the past 18 years. His chief complaint is decreased comfort and vision over the past year. He further states he has been happy, as he couldn’t wear gas permeable lenses alone. He is currently using no eye medications and is allergic to penicillin.

Objective

Vision OD 20/40 OS 20/50 (with current CL)
MK OD ~54.00 / ~59 @ 10 2+ mire irregularity
OS ~50.00 / ~55 @ 100 2+ mire irregularity

Topography confirms central steep curvatures and asymmetrical corneal astigmatism OU.

MR OD -15.50 + 5.50 x 10 = 20/80
OS -16.25 + 3.50 x 105 = 20/50

Slit lamp evaluation reveals good position and movement of the contact lenses with moderate injection OU. He has a moderate amount of corneal vascularization in both eyes (Figure 1). Both upper tarsi reveal moderate papillary hyperemia without hypertrophy.

Assessment

- Keratoconus OU
- Decreased tolerance of current piggyback system
- Limited but fair vision with spectacle correction
- Posterior blepharitis

History of Piggyback Lenses

The application of a rigid lens over a soft lens to improve comfort has been utilized clinically for over 40 years (Little L.1971 & Westerhout D. 1973). Obviously, the lens materials available during this era were far less permeable to oxygen than we have now. As a result of poor oxygen exchange, corneal edema and vascularization of the cornea was not an uncommon clinical finding. The development of silicone hydrogel soft and hyper DK rigid materials have allowed this modality of contact lens wear to be more viable.

Figure 1. Bulbar conjunctival injection associated with habitual piggyback lenses and care system.

Figure 2: Decreased bulbar and limbal hyperemia after two weeks with habitual lenses and care system change.

Fitting Methods

There are two fitting techniques a contact lens professional may use to obtain a good result with tandem (piggyback) lenses.

OPTION 1. Fit a low power silicone hydrogel soft lens that provides good comfort, movement and centration. Over that soft lens, obtain the altered keratometric / topographical values. Then using those new values, fit a hyper DK GP that meets the normal criteria of an acceptable fit. Refract over the dual lens system to obtain the lens power needed to maximize the vision.

OPTION 2. Fit a hyper DK GP on the cornea that best meets the criteria of an acceptable fit. Refract over the GP to determine the best power. Then place a low power silicone hydrogel lens under the best-fit GP. Power adjustments to the soft lens may then be.
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**EyeWitness** challenges you to a photo EyeQ. Each issue, test your knowledge and improve your clinical skills by identifying the featured photos. We also welcome YOUR interesting photos for publication in the *EyeWitness*. Answer below.

**What's your photo EyeQ?**

*Poor tear film and decreased surface wetting of a hydrogel soft lens.*

**Just in Case** *Continued from page 3*

incorporated to slightly alter the fit of the dual system. For instance, changing the soft lens power from -0.50 to -1.50 will “tighten” the lens. Conversely, changing from -0.50 to +1.00 will “loosen” the GP lens. These power adjustments to the soft lens to alter the “new surface” are due to the changes in the anterior surface inherent to lens powers. In addition, these small power changes to the soft lens will seldom change the overall power of the lens system. Previous reports of studies agree that effective soft lens powers will yield approximately 20% to the total power of the dual system (Woo & Weissman 2011). For example, a -3.00 soft lens will result in only about -0.50 D to the dual lens system.

We use option two in the majority of cases in our clinic for at least two reasons. One, the soft lens may be used as “training wheels” that allow the patient to adapt to the corneal lenses. Two, the patient can use the same GP lens with or without the soft lens, without requiring a refit when and if they discontinue the soft lens.

Another option is the use of cutout lenses that are available. These lenses have a recessed area on the anterior surface of the soft lens that helps maintain a central position for a GP fit approximately 1.0mm smaller in diameter than the cutout. These lenses are available in the Flexlens custom product line (X-Cel Contacts) and the Recess Pillow Lens system by Fusion Technologies.

**Back to the Patient**

One of the details I failed to share was the patient’s care system. He was using a popular MPS to store his soft lenses and then applied the GP lens to the soft with a GP conditioner solution. He states that previous contact lens professionals he had worked with through the years had not spent any time discussing or advocating any particular care system. He further states he has tried many different solutions and combinations of systems over the years and never felt one was “better” than another. I told him that his lenses could be changed to improve his vision but the majority of his discomfort was probably due to his current care system. I instructed him to use Clear Care for overnight disinfection for both the GP and soft, use Boston cleaner upon removal of the GP lenses, then apply the soft and GP with the neutralized solution in the storage case in the morning. He was given a return visit in two weeks for further evaluation and refit.

**Follow-up Findings**

The patient returned wearing the same habitual piggyback lenses. He reported his eyes felt better than they had in years (Figure 2). He couldn’t believe that he had dealt with all the discomfort and comments from friends and family over the years because one detail was overlooked. NEVER let any GP solution come in “contact” with the soft lens. Go back to the assessment above and add “solution toxicity”. It may be the most important detail that should not be overlooked when it comes to piggyback lens systems.
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What role can solutions play in boosting the financial well-being of a contact lens practice?

Well, elementary logic provides us with a straightforward answer to that broad question. It’s been well documented that paying attention to your patient’s lens care regimen and solution usage is a critical component in helping to achieve a successful contact lens fitting. It’s obvious that successful fittings are the foundation of any financially stable contact lens practice, and it follows that anyone involved in contact lens patient care had better be well-versed on the latest in contact lens solutions. This includes eye drops, disinfecting systems and lens cleaning products, as well as their compatibilities with various lens types and patient needs.

It’s interesting to note that a narrower question on this topic actually elicits a much broader range of considerations — Should a practice carry solutions to sell to patients on a retail basis within the office?

Even with the steady growth of daily use contact lenses, the solution industry is still a multi-billion dollar business. It is easy to understand the desire of a contact lens provider to tap into that revenue stream. But one must consider the competition. With the majority of solution sales occurring in large retailers such as Wal-Mart, Costco, Target and online retailers who can show profits with minimal mark-ups and high sales volume, you have to determine if your practice has the capacity to operate on those terms, especially if you choose to carry the most common “mainstream” lens care products. Do you have sufficient traffic volume to turn over inventory in a cost efficient manner? Could your shelf space be better utilized to display other ophthalmic goods of use to contact lens patients, such as sunglasses or reading glasses?

One approach might be to carry specialty solution products that a patient is less likely to find on retail shelves in the big box stores or pharmacy chains. This makes especially good business sense if these are products you truly believe are superior to the more common solution offerings, or if these products are effective problem solvers for your patients with special needs. This also allows you to counter the commoditization of the contact lens industry by recommending a complete care regimen that is individualized for each patient.

For example, a clinic may stock lipid-enhancing rewetting drops for patients with evaporative dry eye issues along with other brands that are more appropriate for patients with mucin or aqueous deficiency problems. Match the right rewetting drop with a disinfecting system that fits into the patient’s lifestyle and ocular needs, and you are not only improving the patient’s chance for successful lens wear, but you are also reinforcing the importance of proper solution usage. Your expertise in helping the patient get the right care products into their hands, along with the proper contact lenses onto their eyes, helps to demonstrate why your patients are paying you a professional fee in the first place.

However, pay special attention to your retail pricing and mark-up on solution products. Even specialty lens care products can be found online (and yes, assume even your most loyal patients will go online to compare prices), so it is important that your pricing structure and product promotion do not suggest that you are more interested in padding your cash register than you are in serving your patient’s best interests. If you were to lose just one patient due to a change in that patient’s perception of your motivation, chances are you will never be able to make up the difference in lost exam fees and future eyeglass and contact lens sales in what you might earn by selling contact lens care products.

If you can make a few extra dollars by carrying solutions, you may consider that a small bonus. The primary advantage you gain by providing products that are “hand-picked” by you for your patients is in building a stronger practitioner-patient relationship. And there are few things that are as important as establishing and maintaining a good relationship with your patients when it comes to helping your practice’s … Bottom Line.
Office Infection Prevention and Control

Michael A. Ward, MMSc, FAAO, FCLSA

Hand washing remains the single best act to prevent spread of infection among individuals. Alcohol-based hand sanitizing gels and foams are also very effective at eliminating surface organisms from the skin. Hand washing alone is not enough to keep our patients safe. Health care facilities must be clean and all patient encounter areas and devices must be pathogen-free. However, sterilization of all patient-care items is not necessary. An item’s intended use will dictate whether cleaning, disinfection, or sterilization is indicated.

Definition of Terms

Cleaning is the removal of visible soil from surfaces, and is usually accomplished using water with detergents or enzymatic products. Thorough cleaning is essential for surface debris removal prior to disinfection or sterilization because organic and inorganic materials that remain on the surfaces interfere with the effectiveness of these processes.

Sterilization describes a process that destroys all forms of microbial life (such as fungi, bacteria, viruses) by physical (e.g., steam under pressure) or chemical (e.g., ethylene oxide) methods.

Disinfection describes a process that eliminates many or all-pathogenic microorganisms, except bacterial spores, on inanimate objects.

It is incumbent upon medical personnel to prevent transmission of infection. Healthcare workers should be immunized (see Centers for Disease Control recommendations at www.cdc.gov/ncidod/dhq/wkr_immune.html). In fact, most healthcare institutions require regular immunizations as a condition of employment. Infected individuals should follow work restriction policies. Immediately place patients who have known transmissible disease in designated examining rooms to separate them from others.

Cleaning of hands

Before any aseptic procedure
Before and after touching any patient
Entering/exiting patient care rooms; ‘Foam-in / Foam-out’
After handling any soiled item
Before and after handling food
Before and after using the toilet

### INFECTION PREVENTION

**Hand Hygiene**

- Before any aseptic procedure
- Before and after touching any patient
- Entering/exiting patient care rooms; ‘Foam-in / Foam-out’
- After handling any soiled item
- Before and after handling food
- Before and after using the toilet

**About the Author**

Michael Ward is a Past President of the Contact Lens Society of America. He is a recipient of the CLAO Honor Award, the JCAHPO Faculty Award, the Beverly Myers Achievement Award and the Calhoun Medal. He has most recently been named GPLI’s 2014 Practitioner-of-the-year by the Contact Lens Manufacturer’s Association. He is a Certified Ophthalmic Medical Technologist, an Honored Fellow of the Contact Lens Society of America, a Fellow of the Cornea, Contact Lens and Refractive Technologies section of the American Academy of Optometry and member of the Contact Lens and Cornea Section of the American Optometric Association. Areas of interest include ocular microbiology, contact lens care products, and specialty lens fitting.
Adenovirus keratoconjunctivitis (AKC, or epidemic keratoconjunctivitis) is the most common transmissible viral infection in the ophthalmic setting. Dart et al (2009) studied the effect of an infection-control policy. Suspected AKC cases were segregated in separate waiting and examination rooms and had their examinations expedited, thus reducing exposure to staff and patients. They noted that hand washing and instrument disinfection alone were insufficient to prevent nosocomial infections during an epidemic, but that segregating suspected infectious patients reduced nosocomial infection rates from 48.4 percent to 3.4 percent.

There are additional measures that can help prevent the spread of infection. Wipe office furniture and equipment daily with an appropriate disinfectant. Reusable medical equipment must be cleaned and reprocessed (disinfected or sterilized) and maintained according to the manufacturer’s instructions.

To reduce the potential for transmission of viruses (e.g., herpes simplex virus [HSV], adenovirus 8, or HIV) by tonometer tips and ultrasound probes, CDC and the American Academy of Ophthalmology recommended that the tonometer tips be wiped clean and disinfected with 3% hydrogen peroxide for 5–10 minutes [Am J Ophthal.1999 127(1):77-84]. Alternatively, tonometers may be disinfected with a 10% bleach (1:10 bleach: water) solution, or 70% isopropyl or ethyl alcohol. Do not use 95% alcohol because it is microbiologically less effective. Some water is necessary along with alcohol to penetrate and denature proteins in conjunction with the dehydration effect. Hand-held occluders, trial frames, phoropter face shields, stethoscopes, and scleral depressors may also be disinfected with 70% alcohol wipes. Wipe down instrument stands & exam chairs with approved (EPA, CDC, OSHA) disinfectants (e.g., ProSpray, Dispatch, CHLORO-SOL).

In-Office Hydrogel Contact Lens Reprocessing

The majority of soft contact lenses fits today are disposables: either single use, two-week or monthly replacement cycles. This means that the great majority of the trial/diagnostic lenses we evaluate on a patient’s eye will either be discarded or dispensed from stock. This is good news for patient safety. But, what about the occasional patient whom we trial fit with an aphakic, prosthetic or other specialty lens? How do we clean, disinfect and store these seldom-used lenses so as to ensure patient safety? Quite simply, all reusable lenses must be maintained free from microbial contamination, and preferably free from chemical contamination.

Safety Standards

For many years, eye care practitioners, national organizations and industry representatives have participated in ANSI and ISO committees that have attempted to establish standards for contact lens reprocessing. The Centers for Disease Control and Prevention in Atlanta stated in their Morbidity and Mortality Weekly Report at a time when HIV was in the headlines: “Contact lenses used in trial fittings should be disinfected after each fitting by using a hydrogen peroxide contact lens disinfecting system or, if compatible, with heat (78°C–80°C [172.4°F–176.0°F]) for 10 minutes. [CDC. MMWR Supplement August 21, 1987 / 36(SU02):001].

An ANSI proposed standards document dated October 1999, and later adapted by the American Optometric Association, states “Steam sterilization may be used to terminally sterilize trial contact lenses between patient fittings.

Techniques For Healthcare Workers

- Cover coughs and sneezes with a tissue; sneeze into elbow—not hand
- Wash hands or use hand sanitizer before and after each patient encounter
- Stay current with immunizations
- Use gloves, masks and protective clothing when necessary
- Provide tissues and hand sanitizers in waiting areas
- Clothing should be changed daily; uniforms (scrubs), over the course of a day, become a source of microbial infection
The sterility assurance level (SAL) shall then be equal to $10^{-6}$ (a six log reduction) or less. Trial contact lenses may also be subjected to high level disinfection using a hydrogen peroxide system which includes a two-hour soak in 3% hydrogen peroxide solution followed by neutralization and/or dilution of the hydrogen peroxide to 75 ppm or less. The final solution used for storage of a contact lens shall be preserved.” The document then goes on to outline microbiologic testing criteria and methodology.

To my knowledge there are no current US government guidelines for disinfection and storage of in-office, reusable hydrogel diagnostic contact lenses.

Discussion

The ANSI proposal recommends to clean, rinse and initially disinfect the trial lens with hydrogen peroxide, followed by storage in a multipurpose disinfecting solution. This may prove adequate assuming that no biofilm has formed in the storage vial and that the multipurpose storage solution is replaced at least monthly. This practice assumes uncompromised aseptic techniques and sufficient efficacy and stability of the MPS disinfecting solution over time. Chemical multipurpose solutions may breakdown relative to time, temperature, and possible exposure to UV radiation and/or evaporation. Although unlikely, it is possible that lenses stored in multipurpose chemical disinfectants may result in toxic or hypersensitivity reaction when the lens is placed on the next patient’s eye. All lenses stored in MPS products must be reprocessed at least every 30 days.

Recommendations

We reprocess all reusable soft hydrogel contact lenses in the following manner prior to their reuse:

- Digitally clean with 15.7% alcohol based daily cleaner (e.g., Sereine, Optikken International; Walgreen’s Extra Strength Cleaner).
- Rinse with non-preserved sterile saline.
- Return lens to original vial and fill with non-preserved sterile saline; crimp/seal vial.
- Sterilize with steam autoclave ($\geq 121 \, ^\circ C$ for 15 minutes); label with expiration date one year out.

High-water content lenses may be processed only a limited number of times before they should be replaced, and occasionally a vial will break. Since all trial lenses require periodic replacement, these costs should be factored in as overhead.

Fortunately, most of our diagnostic lenses are disposable and therefore pose little threat of contamination or spread of infection. Our special needs patients deserve the same high level of verifiable safety that autoclaving offers.

In-Office Reprocessing of Hybrid, Prosthetic and Certain Other Lenses

Lenses that cannot tolerate steam autoclaving should be reprocessed in the following manner:

- Digitally clean with 15.7% alcohol based daily cleaner (e.g., Sereine, Optikken International; Walgreen’s Extra Strength Cleaner).
- Rinse with non-preserved sterile saline.
- Return lens to original vial and fill with latest generation SCL MPS product (e.g., RevitaLens, Abbott; Opti-Free PureMoist, Alcon; BioTrue, Bausch + Lomb).
- Label vial with reprocessing date. Repeat every 30 days.

Diagnostic Gas Perm (GP) Lens Care Recommendations

GP diagnostic lens sets will last for years with proper care and storage. Some trial lens sets receive regular use, while others may be used only rarely. Regardless of their frequency of use, diagnostic lens sets must be properly cleaned, disinfected, and maintained to ensure patient safety and lens parameter accuracy.

Regularly Check Lens Parameters

Unlike soft lenses, GP contact lens parameters can be accurately measured with standard office instrumentation. A magnifying loupe may be used to inspect contact lens surfaces for scratches and debris, and to verify optic zone size and overall lens diameters. A standard lensometer may be used to check GP lens power and optical quality. Front versus back vertex power measurements become important for high lens powers. It is best to decide on a front vs. back vertex power format and to be consistent with all lens orders. A radiuscope can accurately measure the base curves of spherical and toric lenses, as well as detect lens warpage. Use the magnifying properties of the radiuscope to inspect posterior surfaces.

Periodically inspect all GP diagnostic lenses to ensure that each is in its correctly labeled container and that the parameters haven’t altered over time; replace lenses as necessary.
One thing these instruments can’t tell us is whether the contact lens surfaces are free from microbial contamination. Microbial contamination leads to biofilm formation on the lens or in the lens storage. Once a microbial biofilm is established it cannot be eliminated by any contact lens multipurpose solutions (MPS).

**Preventing Microbial Contamination**

Diagnostic GP contact lenses are best stored dry for long term storage. If GP lenses are stored wet in conditioning/disinfecting solution, they will require regular weekly to monthly maintenance to ensure an aseptic state. No contact lens disinfecting solution is approved for lens storage for greater than 30 days, and that is a stretch for most storage products. Diagnostic lenses (and storage cases) must be re-cleaned and disinfected at least every 7 to 30 days if stored in a wet state. Solution evaporation, drying film formation, and chemical aging may alter the composition of the storage solution, which can compromise its antimicrobial efficacy and even promote microbial growth.

**GP Lens Reprocessing**

All reusable diagnostic contact lenses must be cleaned and disinfected prior to their reuse. The Centers for Disease Control and Prevention recommends using ophthalmic grade 3% hydrogen peroxide for disinfection of rigid diagnostic lenses. Specifically, “Contact lenses used in trial fittings should be disinfected after each fitting by using a hydrogen peroxide contact lens disinfecting system for 10 minutes.” [CDC, MMWR]. The two primary peroxide systems available in the United States are Clear Care (CibaVision/Alcon) and Oxysept UltraCare Formula (Abbott Medical Optics).

Maximum effectiveness from disinfection and sterilization results from first cleaning and removing organic and inorganic materials. All lenses should be cleaned and rinsed prior to exposing them to the disinfection process. Clean GP diagnostic contact lenses after each use:

- Digitally clean with a surfactant cleaner such as Boston Advance Cleaner (Bausch + Lomb), Optimum Extra Strength Cleaner (Lobob Laboratories), or Extra Strength Daily Cleaner (Walgreens) after each use and rinse thoroughly.
- Disinfect the lenses with an approved peroxide system (Clear Care or Oxysept); rinse and dry.
- Store rigid diagnostic lenses dry for long-term storage. Prior to their reuse, clean the GP diagnostic lenses with an approved cleaner, then rinse and wet them with an appropriate wetting agent.

**Summary**

Use disposable hydrogel lenses for in-office diagnostic fitting whenever possible. All reusable diagnostic lenses must be carefully reprocessed and labeled with expiration dates. Sterilize low water soft lenses with steam autoclave. High water content lenses may be heat sterilized, but only a limited number of times before they will need replacing. Specialty products like hybrid and prosthetic lenses may be chemically disinfected but require on-going reprocessing to ensure aseptic state. GP lenses are best stored dry following cleaning and peroxide disinfection. Follow proper hand hygiene and infection prevention techniques to keep our patients safe and enjoying their contact lenses.

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**New from CLSA…Lifetime Membership**

The Contact Lens Society of America is pleased to announce a new membership category. The Board of Directors recently approved Lifetime Membership. This new category is open to most membership types and has no limitation on successive years.

Whether you are an Affiliate, Fellow, NCLE Certified, or Regular Member, you may now sign up as a Lifetime Member for one fee and never have to pay dues again.

The one-time dues are $1,500.

Contact the CLSA Office at (800) 296-9776 for more information and to sign up as a Life Member.

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OF A SOFT LENS

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Astigmatism
Emergent or Fruste Keratoconus
Soft or Small Diameter GP Lens Intolerant
Post-RK, Post-LASIK

THE NEXT GENERATION OF GP LENSES FROM
THE INNOVATORS AT BLANCHARD CONTACT LENS.
The Onefit’s mini-scleral design reduces stress on the cornea for healthier eyes and includes a simple, intuitive 3-step fitting approach.
“Jumbo Shrimp”, “Military Intelligence” and “Boneless Ribs” are famous oxymorons. When these self-contradictory phrases seep into the lexicon, they are funny when they’re noticed. They are often bittersweet but can be clearly confusing.

“Solutions Problems” is one oxymoron that eye care practitioners are, unfortunately, all too familiar. Our industry has been plagued with care system issues since the beginning. Within the last score of years or so, those challenges have ranged from red-eyed sensitivities to various preservatives (e.g., thimerosal, chlorhexidine etc.) to the failure to kill bugs that needed killing, such as Fusaria and Acanthamoeba. The FDA even pulled some systems off the market and, needless to say, that caused a dull roar and went over like a lead balloon.

There has long been a tension in this area between efficacy and convenience. Convenience apparently is the key driver as companies develop more and more care systems that are one-step multi-purpose solutions that can do it all—triple threats that can help keep lenses clean, knock the hell out of a wider and deeper range of nasty microbes, and provide buffered lubrication. Fewer steps. Less is more, it seems.

Biochemists have been working overtime in recent years, trying to create the optimal lens material/ocular surface synergy, and they’re getting better and better at it—I’m terribly pleased to report and in my unbiased opinion.

However, I recently heard a quote from the podium that sounded strangely familiar, “If the fit looks good, but the patient is experiencing redness and discomfort, look to the care system as the culprit.”

When was the last time you actually looked at and compared the kill-ratio efficacy of the care systems out there? Then, when you did, and put your patients on the regimen you believed in, how did you prevent them from buying what’s on sale at Walgreens?

Surveys have shown that the sample care system you send home at the initial dispensing is often not seen as your recommendation by the patient, but just as a nice free gift. Wow. Really? Good Grief.

We always have the hydrogen peroxide option. Many contact lens practitioners began using H2O2 systems to resolve sensitivity problems and have just decided to go that way as their default.

Well, we haven’t heard the last of this lens care conundrum. The fact that we will be dealing with constant change is a definite possibility.

Till the next time. Parting is such sweet sorrow.

Note: There are at least a dozen oxymorons in this article. That’s an exact estimate. Just for fun, find them.
The primary function of contact lens solutions is cleaning and disinfecting. However, choosing the appropriate system and following proper instructions can play an important role in contact lens success by improving comfort and wearing time. For example, a patient that produces more lipids will likely require a different care regimen than a patient that tends to have more protein deposits. A patient working in a salon exposed to fumes and airborne particles from hair products will find care system selection more critical than a patient working in an office environment. It is not only the patient’s tear composition and working environment that will affect care regimen selection but the lenses themselves can also dictate the use of certain products, like in the case of plasma treated lenses or large diameter lenses (i.e. semi-scleral, scleral). Other patient-related factors can also help indicate solution choice such as first-time wearers, frequent or long-distance travel by plane or car, dry eye syndrome, sleep schedules, and the type of lens material. If a patient is not using the optimal lens care system, they can experience decreased wearing time and/or lens intolerance and may eventually discontinue lens wear. Some of the signs and symptoms of solution intolerance include redness, tearing, photophobia, itching, superficial punctate keratitis, edema or microcysts. Understanding available options will help the contact lens fitter recommend the appropriate system. Discussing the proper use of these products with the patient is important in continuing lasting lens comfort and will hopefully facilitate/maintain patient compliance. This is why we’ve included the step-by-step instructions below.

GAS PERMEABLE (GP) LENS SOLUTIONS

Two step cleaning systems: Abrasive Cleaners

The two-step tried and true recommended systems have typically been the Boston Care System (formerly called Original Formula) and the Boston Advance Formula Care System from Bausch + Lomb (B+L). Each system offers a separate cleaner that contains microbeads as a friction enhancer that helps make lenses comfortable by removing lipids and proteins. The two aforementioned cleaners are
not recommended with plasma treated lenses due to their more abrasive nature which could denature the plasma treatment. The Boston Care System (formerly called Original Formula) Conditioning Solution includes a wetting agent that coats the surface of the lens to help cushion and wet the lens surfaces. The new formula provides improved disinfection. The Boston Advance Comfort Formula Conditioning Solution has a dual disinfecting system providing protection against harmful microorganisms. The Advance Conditioning Solution offers a patented surface cushioning system to soothe eyes and provide long-term wearing comfort, according to the company. The importance of the conditioning solution is not only to disinfect the lenses but also to prepare the surface for even wetting. Both systems instruct the patient to clean the lenses, upon removal each day, by rubbing with the cleaner in the palm of the hand for 20 seconds prior to disinfecting in the conditioning solution. The instructions state to remove all traces of the cleaner by thoroughly rinsing with fresh tap water. For complete disinfection, both solution systems require the lenses to be soaked in conditioning solution for a minimum of 4 hours to overnight after rinsing with tap water.

Two step cleaning systems:
Non-abrasive Cleaners

Optimum Care System by Lobob Laboratories provides an Extra Strength Cleaner (ESC), a Cleaning/Disinfecting/Storage Solution (CDS), and a wetting/rewetting (WRW) solution. The CDS removes stubborn deposits of oils, lipids, cosmetic residues and protein. To achieve this, the lenses are cleaned in the palm of the hand using 10 drops of the CDS and rubbed for 30 seconds. The CDS then needs to be rinsed off with fresh tap water or saline solution prior to placing the lens in the case with additional CDS. The lens should then be soaked for a minimum of 6 hours to ensure that harmful organisms are destroyed on the lens surface. Prior to insertion, the Cleaning/Disinfecting/Storage Solution (CDS) needs to be completely rinsed with sterile saline solution to avoid stinging and irritation. The wetting/rewetting (WRW) drop is applied to each surface to promote comfort upon insertion and can also be used throughout the day by placing a couple drops directly in the eye. Because this system does not contain the same preservatives that some patients react negatively to, it can be a good option for those with previous solution sensitivities. It is also acceptable for use with plasma treated lenses.

Menicare GP Care System from Menicon includes a cleaning/disinfection/storage solution (CDS) as well as a wetting/rewetting drop (WRW). The CDS solution instructions require 10 drops of solution to cover the contact lens and then to digitally rub in the palm of the hand for 30 seconds. The lens is rinsed thoroughly with tap water or saline solution. Disinfection is only completed after a minimum of soaking for 6 hours in the case with additional CDS solution. Prior to insertion, the CDS solution needs to be completely rinsed from the lens with saline and two drops of the WRW solution is applied to each surface. This system is preserved with Benzyl Alcohol, which is a preservative that has no known/recognized history of irritation or sensitivity. This makes it another good option for patients with a prior history of solution sensitivities and is also appropriate for use with plasma treated lenses.

One step care systems

Boston Simplus Multi-Action Solution by B+L is a one-bottle daily lens care system that cleans, disinfects and conditions gas permeable lenses. The Boston Simplus System instructs the patient to remove the lenses and place in the case with solution. After the lenses have soaked for at least 4 hours, they should be cleaned/rubbed with fresh Boston Simplus solution for 20 seconds in a spoke-like pattern in the palm of the hand. The lenses are then rinsed again with Boston Simplus to remove the loosened debris and are ready to wear. Because of the ease of use, this solution is often recommended for new or young GP contact lens wearers as well as patients that have a history of being non-compliant. The recommendation that the lenses be rubbed in the morning just before insertion is intended for better patient compliance since rubbing at night is generally the step that is skipped by patients. It is also handy for patients who frequently travel.

Unique pH from Menicon is a convenient multipurpose solution that is effective in removing dirt, protein deposits and debris. Its exclusive formula adjusts to the eye’s natural tear pH to enhance the wettability and comfort of lens wear. This makes it an option for patients that have voiced dry eye complaints with previous contact lens wear. The patient should apply 2-4 drops of solution to clean both sides of the gas permeable lens and then rinse thoroughly with additional Unique pH. The lenses are stored in the lens case with Unique pH for a minimum of 4 hours and are then ready for wear. Once again because of the ease of use, this solution is often recommended for new or young GP contact lens wearers, patients that have a history of being non-compliant, and travelers.

You may have noticed throughout the gas permeable solutions and cleaning instructions that it is suggested to remove the daily cleaner using either fresh tap water or saline solution. Generally speaking, as long as the lenses are disinfected for the appropriate length of time AFTER the use of tap water, the lenses can be safe to wear. However, please be aware that the FDA strongly discourages the use of tap water with contact lenses. Also, when instructing patients to rub
their lenses, we recommend they do so in the palm of their hand using the ring finger or pinky of the opposite hand, rather than the index finger. This reduces the amount of pressure that is put on the lens to prevent warpage and avoid breakage. The patient should not clean the lens between two fingers.

**Extra strength cleaners**

*Boston One Step Liquid Enzymatic Cleaner* from B+L is used to effectively remove protein deposits from rigid gas permeable lenses on a weekly basis. This enzymatic cleaner works right in the lens case during the disinfecting step with the Boston or Boston Advance Conditioning Solution. This replaces the need for enzymatic tablets and eliminates the need for a separate vial. After digitally cleaning the lenses with the daily cleaner and rinsing the cleaner off, place them in the contact lens case with fresh disinfecting solution filled near the top. Release two drops of the enzymatic cleaner into each lens well and soak for 4 hours or overnight. Prior to insertion, rinse the lenses for approximately 5 seconds with either of the Boston Conditioning Solutions to ensure that the enzymatic cleaner is thoroughly removed.

Optimum by Lobob Laboratories also has an Extra Strength Cleaner (ESC) which comes with the Care System or can be purchased separately. This can be used daily to remove stubborn surface deposits of oils, lipids, salts and cosmetic residues without the use of abrasive particles. Prior to disinfection with the CDS, the lens should be rubbed with a couple drops of the ESC. It then needs to be rinsed with fresh tap water or saline and placed in the case with CDS for a minimum of 6 hours.

Menicon’s *Progent Protein Remover* is an amazing GP contact lens product that loosens and removes deposits, such as protein, that may cause irritation or discomfort. The Progent A and Progent B are mixed in a Progent vial and the contact lenses are soaked in the solution mixture for 30 minutes. Soaking the lenses longer than 30 minutes is not recommended. Progent Rinsing Solution is provided for rinsing the lenses and the vial. Previously, this procedure was approved as professional use only and was handled in the practitioner’s office. It is now approved for patient use and can be used up to two times a week. After using Progent, the lenses should be cleaned and disinfected with the care system the patient has been instructed to use by their eye care professional. This unique system is ideal for patients with deposit issues, lenses that are plasma treated, and for specific contact lens designs including OrthoKeratology, some multifocals, reverse geometry, and scleral/corneal-scleral lenses where it is not conducive to buff and polish the surfaces.

**SOFT LENS SOLUTIONS**

### One step care systems

Multi-purpose solutions are rightly named as these one bottle solutions handle multiple jobs. They carry the responsibility of disinfecting, cleaning, removing deposits, conditioning, rinsing and storing. Each brand utilizes different cleaning and disinfecting ingredients to get the job done. The three that will be discussed are approved for soft contact lenses including Silicone Hydrogel (SilHy) materials. The dual disinfectants/preservatives in each system allow safe contact lens storage for up to 30 days. They are often recommended for new or young soft lens wearers, patients who travel frequently, or those that are known to have been non-compliant.

*Biotrue* by B+L is a multi-purpose solution whose pH-balanced formula uses a lubricant found in healthy tears to help with moisture and wettability throughout the day. The unique moisture components create a cushioning layer over the lens surface, making it a good option for patients that tend to have dry eye complaints, such as computer users or gamers. While the dual disinfecting system cleans the lens and eliminates germs, it does not alter beneficial tear proteins. It is recommended to put a few drops of solution on both the inside and outside of the lens and then rub for 20 seconds. Then rinse each side for 5 seconds to remove the remaining debris that was loosened during the rubbing process. The lenses are then soaked in fresh solution for a minimum of 4 hours. The lenses are then ready to go and can be placed directly in the eye.

Alcon’s *Opti-Free PureMoist* utilizes two disinfecting ingredients that work together to reduce microorganisms and provide safe storage for up to 30 days. The solution’s HydraGlyde® Moisture Matrix was specifically developed for silicone hydrogel materials to provide comfort and wettability. During the soaking process, the copolymer sets itself into and across the material’s surface. Because this will bind to dryer areas of the material and helps prevent lipid deposits, it is an option for those patients with heavy lipids in their tear film. This is quite often seen with presbyopic patients and even more specifically, presbyopic females. Patients should be instructed to wet each side of the lens and rub for 20 seconds. Follow this with a thorough rinsing with the solution for 10 seconds. The lens is then ready to be soaked for a minimum of 6 hours. It is during this soaking period that the protein deposits are removed.

RevitaLens OcuTec from Abbott Medical Optics (AMO) is a multi-purpose solution that uses a dual disinfecting system to create an anti-microbial environment. It also contains a surfactant which will loosen and eliminate protein deposits that may have developed during lens wear. Upon removal of lenses, place 3 drops on one side of the
The lenses are then rinsed with Clear Care for 5 seconds. The disinfecting and protein removal is completed while the lens soaks, therefore, a minimum of 6 hours soaking time is recommended. This solution system typically removes proteins well enough to reduce the need for an enzymatic cleaner. This solution would be a good option for patients whose lenses tend to accumulate protein.

**Extra strength cleaner**

Sof/Pro2 by Lobob Laboratories is an extra strength daily cleaner approved for use with soft contact lenses including Silicone Hydrogel (SiHy) materials. The original version, Sof/Pro, did not have approval for SiHy materials. Sof/Pro2 is comparable to Miraflow by CIBA Vision, which had many avid users, but has been discontinued. It is an isopropyl alcohol based cleaner that removes film and deposits from soft contact lens surfaces. It is important to be aware that the main ingredient is alcohol and if it is used off-label for GP cleaning, it should be used in a limited fashion; it can cause the material to soften, which can lead to surface crazing and/or base curve warpage. Sof/Pro2 is used prior to the disinfecting process. Upon removal, 1-2 drops are applied to the lens surfaces and rubbed for 15-20 seconds. The lens should then be thoroughly rinsed with saline or a multi-purpose solution, and disinfected using an approved cleaning system. Since this extra strength cleaner does not need to be used in conjunction with a multi-purpose solution, it would be a good option for soft lens patients that are using a hydrogen peroxide system and are experiencing build up.

**GP and SOFT LENS APPROVED**

Clear Care by CIBA Vision is a 3% hydrogen peroxide system that has been FDA cleared for soft and GP lenses. This solution system uses a special lens case that contains a neutralizing disc and requires a minimum of 6 hours of soaking to fully neutralize the hydrogen peroxide. Patients must regularly replace the Clear Care lens case to assure the integrity of the neutralizing disc. On occasion, a patient using Clear Care may begin to report some lens discomfort upon insertion and quite often that can be linked to the use of an old lens case whose catalyst has become less effective. Once neutralization has occurred, a preservative-free saline is all that remains. This makes it a very mild solution to use for patients that have experienced solution sensitivities to preserved systems. The lack of preservatives only allows safe storage for up to 7 days rather than the 30 day storage as seen with the soft multipurpose solutions. To use this system for soft contacts, the patient removes their lenses and puts them in the correct basket labeled R or L. The lenses are then rinsed with Clear Care for 5 seconds.

The lens case is filled to the fill line and the lens holder is placed in the case. The visible bubbling that begins to occur actively removes debris and deposits. The lens case needs to remain upright and should not be shaken. After soaking for 6 hours, the lenses are ready to wear. The same process is followed for GP contacts, with the exception of an extra step of rubbing the lenses. Both lenses are removed from the eye and put in the appropriate side of the lens case marked R or L. Then, one lens at a time is put in the palm of the hand, rubbed with a couple drops of Clear Care, and returned to the lens case. It is important that both lenses are removed from the eyes before any lens rubbing is done. This is to ensure that un-neutralized Clear Care does not come into contact with the eye which will cause burning and redness. Often surprising, most GP wearers can simply remove the lenses after the solution has been neutralized and insert them without the use of any type of conditioning or wetting solution, and still experience great comfort and wettability.

**Extra strength cleaner**

Opti-Free SupraClens from Alcon is a daily protein remover that is approved for both soft and GP lenses. This is an enzymatic cleaner that helps to eliminate the build-up of proteins that may accumulate on the lens surface during the wearing cycle. Many of today’s care systems have reduced the need for a separate enzymatic cleaner. However, for patients who continue to heavily deposit lenses due to tear composition, or those who require lenses in a higher Dk material prone to attracting deposits, Opti-Free SupraClens is a convenient and effective solution. This is used in conjunction with a multi-purpose solution and breaks down proteins while the lens is soaking. Because of this, it is important to follow the recommended soaking time. A single drop is added to each side of the lens case along with the multi-purpose solution. For soft lenses, the lenses are soaked for a minimum of 6 hours and for GP lenses, the lenses are soaked for a minimum of 4 hours. After the appropriate time has lapsed for effective use of the enzymatic cleaner as well as the proper length of time for the multi-purpose disinfecting process, the lenses can be removed from the lens case, rinsed thoroughly with the multi-purpose solution, and are then ready to wear.

**CONTACT LENS SPECIFIC**

Plasma treated GP lenses need to be handled differently to gain the maximum benefits of the treatment. The cleaning system prescribed for the patient should not include an abrasive cleaner as this may denature the treatment. There are several GP approved cleaning systems that do not contain abrasive cleaners. These systems include: Boston Simplus, Unique pH, Optimum Care System, Menicare,
and Clear Care. It is also acceptable to use extra strength cleaners as well as enzymatic cleaners on plasma treated lenses. Rewetting drops approved for use with GP materials are not a concern for the treated surfaces. Plasma treated lenses should not be modified or cleaned and polished to remove deposits. Should a plasma treated lens become heavily coated, Progent, which is reviewed above, would be the recommended cleaning option. With proper care and handling, patients should be able to achieve normal lens life with their plasma treated lenses.

Scleral and Semi-scleral lenses require particular attention to cleaning regimens and solutions used for insertion. These lens designs do not allow for full tear exchange as corneal diameter lenses do, which necessitates that the lens be free of preservatives on insertion. The closed chamber effect dramatically slows down the tear exchange behind the lens and allows the preservatives to come into prolonged contact with the cornea. This can cause an allergic reaction resulting in corneal irritation and redness. This is not always observed instantaneously but can build over a few weeks and have an adverse effect on patient comfort. It is recommended that patients use a preservative-free saline, such as Unisol 4 by Alcon, to fill the bowl of the lens at insertion. For cleaning and soaking, the patient can use a multi-purpose solution or care system that contains preservatives but if so, they would need to rinse the lens with a preservative-free saline before filling the bowl and re-inserting. Clear Care is often recommended because after the peroxide has been neutralized, the lens is ready to go and does not require the patient to rinse off any preservatives before insertion. For those patients that find insertion difficult because they cannot keep the bowl of the lens filled with saline, a non-preserved artificial tear such as Refresh Optive Sensitive by Allergan may be a better option. It is more viscous than saline and will not spill over as easily. The key takeaway here is to stress the use of preservative-free products for insertion.

Hybrids and piggyback systems involve both soft and gas permeable lenses. Hybrid lenses have a gas permeable center with a soft lens skirt and a piggyback system uses a gas permeable lens placed on top of a soft lens. For piggyback systems, the gas permeable lens could be disinfected with a GP approved solution and the soft lens disinfected with a soft lens approved solution. However, before insertion, the GP lens would need to be rinsed with sterile saline or soft lens multi-purpose solution to remove the remaining GP product. If this step is not done, the soft lens can become toxic and cause corneal irritation. An off-label alternative for either hybrid or piggyback systems is using only soft lens approved solutions. While the soft lens solution is not harmful to GP materials, it may not be as effective in removing deposits. It is therefore best to use a care system that is FDA cleared for both soft and GP materials, such as Clear Care, to insure optimal cleaning and disinfecting of both materials.

CONCLUSION

A critical process in cleaning and disinfecting contact lenses is proper hand washing to avoid any contamination. This should be stressed and reviewed as well as demonstrated by the practitioner and the eye care professional’s staff. The patient should be instructed to thoroughly rinse their contact lens case with saline or a disinfecting solution and let it air dry on a daily basis. Replacing the case frequently is also recommended to avoid potential microbial contamination. And it seems that we should be able to assume that patients know to change the disinfecting solution in their case daily and not to “top off” solution. Warnings often clearly state that failure to discard solution from the lens case after each use may lead to contamination which could result in eye injury and potential loss of vision. But explaining why and what could complicate their success should be stressed to make certain this is not happening.

Follow-up visits after contact lens dispensing are important to ensure the patient is maintaining good visual acuity, comfort and corneal health. Evaluating proper fit of the contact lens as well as staining the cornea for any signs of reaction or toxicity related to contact lens solutions is integrally important. These visits also provide the opportunity to review their daily procedures for lens insertion, removal and storage. Hopefully, their routine always starts with hand washing! During your review, be sure to key in on whether the patient’s cleaning and handling routine includes rubbing their lenses. As seen in the step-by-step instructions provided above, each system requires some form of rub and rinse technique, but rubbing remains the step that is often skipped by the patient. If needed, a gentle reminder of proper care and handling instructions can be reviewed to promote better comfort. The more a patient hears and reads the same information, the better the chance of retaining the information presented.

Practitioners and contact lens fitters work very hard to fit their patient with the best contact lenses to maintain corneal health, vision and comfort. So why not ensure complete success by suggesting the proper disinfecting regime to your patients, and explaining in detail how “prescribing” that specific system assists in achieving overall lens success.

Want NCLE Credit for this Course?

This course has been submitted for NCLE credit and will appear on the CLSA University site as a new course. Go to www.clsal.org/clsa-university and start earning credit for this course. If you would like to view the c.e. quiz, please call CLSA at (800) 296-9776. Note, courses are FREE to CLSA members.
CLSA: Education to Unlock Your Possibilities

59th CLSA Annual Education Meeting

April 24–26, 2014
Hilton Savannah Desoto
Savannah, Georgia
Continuing Education

All CLSA courses have been approved or have approvals pending for continuing education by the following national, state and local boards:

- JCAHPO: Joint Commission on Allied Health Personnel in Ophthalmology
- NCLE: National Contact Lens Examiners
- Florida Board of Opticianry
- Ohio Optical Dispensers Board
- Tennessee Board of Dispensing Opticians
- Selected courses have been submitted to COPE for approval

As each organization accredits a different number of cec units, announcement of the credit approval will be issued. Please visit: www.clsainfo for an updated listing of course descriptions and final accreditation approvals.

Program Education Chair

Michael A. Ward, MMSc, FAAO, FCLSA
Emory University School of Medicine

Michael Ward is a Past President of the Contact Lens Society of America. He is a recipient of the CLAO Honor Award, the JCAHPO Faculty Award, the Beverly Myers Achievement Award and the Calhoun Medal. He has most recently been named GPLI’s 2014 Practitioner-of-the-year by the Contact Lens Manufacturer’s Association. He is a Certified Ophthalmic Medical Technologist, an Honored Fellow of the Contact Lens Society of America, a Fellow of the Cornea, Contact Lens and Refractive Technologies section of the American Academy of Optometry and member of the Contact Lens and Cornea Section of the American Optometric Association. Areas of interest include ocular microbiology, contact lens care products, and specialty lens fitting.

Thursday, April 24, 2014

8:00 am–11:00 am
Contact Lens Boot Camp
Trudy Grout, FCLSA (Moderator)
Sherrie Lee Young, FCLSA
Val Shellman, FCLSA

Topics will include:
- Corneal topography
- Materials & Optics
- Basic SCL
- SCL toric
- Basic RGP fitting
- CL Dispense: I&I, Lens Care

COURSES

8:00 am–8:50 am
Pearls and Gems of Hybrid Lens Fitting
Peg Achenbach, OD, FAAO

9:00 am–9:50 am
Update on Prosthetic Lens Options
R. Lee Hewitt, FCLSA

10:00 am–10:50 am
Best Practices in Corneal Reshaping
Craig W. Norman, FCLSA; Ken Kopp, FCLSA

11:00 am–12:30 pm
Break/lunch on own

2:45 pm–4:45 pm
GENERAL SESSION 2
Irregular Astigmatism Symposium
Moderator: Stephen P. Byrnes, OD, FAAO

Soft Lens Correction Options for Irregular Astigmatism
Mark P. Andre, FAAO, FCLSA

Corneal GP Correction for Irregular Astigmatism
Ledonna Buckner, FCLSA

GP Scleral Lens Update: Diameter Vs. BC Vs. Vault
Stephen P. Byrnes, OD, FAAO

Hybrid and Tandem IA Correction
Buddy Russell, FCLSA

5:00 pm–6:30 pm
Exhibit Hall Grand Opening Reception

6:30 pm–7:00 pm
Fellow Reception

Friday, April 25, 2014

7:00 am–8:00 am
Breakfast with Exhibitors

8:00 am–9:00 am
GENERAL SESSION 3
New Technologies Symposium
Moderator: Craig W. Norman, FCLSA

9:00 am–10:00 am
Future of Contact Lenses—Where do we go from here?
Craig W. Norman, FCLSA

10:00 am–10:15 am
Break

10:15 am–12:15 pm
GENERAL SESSION 4
Clinical Strategies for the Contact Lens Practice
Moderators: Brooke Messer, OD; Jason Jedlicka, OD, FAAO, FSLS

12:30 pm
The Harrison Tour
CLSA Annual Golf Tournament
Sponsored by Contamac

12:30 pm – 5:00 pm
Old Savannah Tour
Saturday, April 26, 2014

7:00 am–8:00 am
Manufacturer’s Breakfast Session
Moderator: Michael S. Gzik, FCLSA

8:00 am–10:00 am
GENERAL SESSION 5
How Would You Handle this Scenario? Interactive Grand Rounds and Case Reports
Moderator: Buddy Russell, FCLSA
Additional Speakers: Brooke Messer, OD; Mark P. Andre, FAAO, FCLSA; Edward S. Bennett, OD, MSEd

10:00 am–11:00 am
Break in the Exhibit Hall

11:00 am–12:00 pm
GENERAL SESSION 6
Free Papers
Moderator: Jane Beeman, FCLSA
Research Update: Evidence based Results of Collagen Cross-Linking
Jason Jedlicka, OD, FAAO
Latest Generation Silicone Hydrogels
Computer Vision Syndrome: Real vs. Illusion
Michael S. Gzik, FCLSA

12:00 pm–2:00 pm
Lunch in Exhibit Hall

COURSES

2:00 pm–2:50 pm
Refraction and Refinement Workshop Part 1
Bernie V. Stewart, FCLSA; Val Shellman, FCLSA

2:00 pm–2:50 pm
Myopia Control
Patrick J. Caroline, FAAO

3:00 pm–3:50 pm
Refraction and Refinement Workshop Part 2
Bernie V. Stewart, FCLSA; Val Shellman, FCLSA

3:00 pm–3:50 pm
GP Multifocal Fitting and Problem Solving
Edward S. Bennett, OD, MSEd

4:00 pm–4:50 pm
Slit-Lamp Examination Techniques: What Am I Seeing?
Wendy Ford, COMT, FCLSA

4:00 pm–4:50 pm
Scleral Lens Troubleshooting
Brooke Messer, OD

5:30 pm–6:30 pm
Kevin Tuohy Lecture
Patrick J. Caroline, FAAO

Awards Presentations

6:30 pm–10:00 pm
Closing Night Event

Exhibitors
Ophthalmic manufacturers and eyecare organizations are expected to exhibit this year. In order to help better serve your patients, join us in the Exhibit Hall and spend time learning about their products and services.

Past exhibitors have included:
ABB Optical Group
Accu Lens
Advanced Vision Technologies
Alcon Laboratories
Alden Optical
Bausch + Lomb
CooperVision
Hydrogel Vision Corp
Medcorp International
Menicon
Metro Optics
National Contact Lens Examiners
OCULUS, Inc.
OCuSOFT, Inc.
Optical Distributor Group
Paragon Vision Sciences
Safigel
SpecialEyes
SynergEyes
TruForm Optics
Vistakon
X-Cel Contacts

Exhibit Hall Hours

Thursday, April 24
5:00 pm–6:30 pm
Grand Opening

Friday, April 25
7:00 am–10:15 am
Exhibit Hall Open
7:00 am–8:00 am
Breakfast with Exhibitors

Saturday, April 26
10:00 am–11:00 am
Exhibit Hall Break
12:00 pm–2:00 pm
Lunch in Exhibit Hall
If Savannah’s Trees Could Talk…

They’d tell you about pirates, cotton, and a revolutionary town dating to 1733. They’d tell you about citizens that consider hospitality as an art form and of a city’s beauty so profound that it stopped even General Sherman in his tracks. They’d tell you about a group of women who banded together to protect this historic treasure, inventing the modern preservation movement in the process. Those same trees—an urban canopy unequalled in the United States—would offer a more recent story. They’d tell you about things happening on the Coast that are transforming Georgia’s first city into one of the most dynamic and creative economies in the southeast.

Who Should Attend?

This meeting is for the eye care professional with a passion for contact lenses. It is not only for the experienced fitter, but also for those interested in becoming a contact lens fitter. Whether you are a technician, optician, optometrist or work in an ophthalmology setting, this meeting offers educational courses appropriate for you.

The Contact Lens Society of America is dedicated to providing you with the best contact lens education in the country. Courses and General Sessions are presented at Levels 1, 2 and 3, Basic, Intermediate and Advanced, respectively.

MEETING HEADQUARTERS

The Hilton Savannah DeSoto

Step into the Hilton Savannah DeSoto and experience the new definition of Southern style, service and hospitality. Surrounded by beautiful landscaped gardens, magnificent homes, and architectural gems, our contemporary hotel in the Savannah Historic District offers a mix of warm Southern charm and modern style in the heart of Georgia’s First City. Whether you’re traveling for pleasure or business, your rendezvous with history is filled with 21st century comfort and the light of Southern hospitality. Experience an inviting hotel retreat in the Savannah historic district and get into the spirit of this alluring coastal city.

Hilton Savannah DeSoto
15 East Liberty Street, Savannah, GA 31401
(877) 280-0751

Room Rate $169.00. Remember to say you are attending the CLSA Annual Education Meeting.

Deadline for reserving your room at the convention rate is: March 26, 2014. After this date, rooms will not be available at the convention rate.

Evening Dining

Dine at the Leadership Awards Dinner and Auction. A fun, social event to benefit the CLSA Foundation. Check out the silent auction tables and enjoy raffles, a live auction and more. 8:00—10:00pm—reservations required

CLSA Annual Golf Tournament

The Harrison Tour

Friday, April 25, 2014
Cost per player: $100
(Bus departs at 12:30pm—lunch included)

Fellow Exam

Since 1966, achieving Fellow status in the Contact Lens Society of America has been recognized as an industry standard of educational excellence. Fellow Members are considered among the finest contact lens professionals in the business.

To become a CLSA Fellow, one must first be a Regular Member of the CLSA. Becoming a Fellow is a three-step process involving passing the NCLE Advanced Exam, a professional development aspect where candidates choose from a number of projects to complete, and to sit for the practical Fellow exam, a hands-on test administered by the Fellow Committee.

Contact the CLSA office at (800) 296-9776 by February 14, 2014 with your intent to take the Fellow Practical Exam in Savannah, Georgia, on April 24, 2014!
CLSA 59th Annual Education Meeting
April 24–26, 2014 | Hilton Savannah DeSoto | Savannah, Georgia

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Daytime Phone __________________ Fax Number ___________________ Email ________________________

Have you attended a CLSA meeting before?  □ YES  □ NO

REGISTRATION FEES

Full Registration Fee includes General Sessions and Courses on Friday and Saturday, Exhibit Hall functions, the Kevin Tuohy Lecture, and the Closing Night Party on Saturday.

<table>
<thead>
<tr>
<th>Early Bird Received by Feb. 1, 2014</th>
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<tr>
<td>Full Member Fee $345</td>
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<td>Each Additional Member from Same Company/Office $300</td>
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<td>Full Non-Member Fee $460</td>
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<td>Thursday Morning Boot Camp $60</td>
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<td>Saturday Refraction Course $40</td>
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(Space is limited)

Weekend Registration Fee includes all courses on Saturday, Kevin Tuohy & Lecture, and the Closing Night Party.

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<th>Weekend Member Fee $245</th>
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SPECIAL EVENTS—FRIDAY

- CLSA Annual Golf Tournament—The Harrison Tour
  (Bus departs at 12:15 pm—lunch included) $100 = $ __________
- Historic Savannah Tour (Space is limited) $50 = $ __________

TOTAL (U.S. dollars drawn on a U.S. bank) $ __________

PAYMENT INFORMATION

- Enclosed is my check made payable to Contact Lens Society of America for TOTAL amount shown above.

Bill my credit card:

- American Express  □ Discover  □ MasterCard  □ VISA

Card Number ___________________________ Exp. Date __________

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Register online at www.clsainfo
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Contact Lens Society of America
491A Carlisle Drive • Herndon, VA 20170
(703) 437-5100 • (800) 296-9776

Register for the hotel by calling the Hilton Savannah DeSoto at 1-877-280-0751. Single/Double $169/night. Be sure to mention that you are attending the CLSA Annual Education Meeting.

Hotel reservations must be received at the hotel no later than March 26, 2014. After March 26, 2014, reservations will be accepted on a “space available” basis at the CLSA rate.

REFUND POLICY

All Annual Education Meeting cancellations and refund requests MUST BE IN WRITING and sent to the CLSA office at 491A Carlisle Drive, Herndon, VA 20170 or clsa@clsainfo.

Cancellations received before March 24, 2014 will receive a full refund. Cancellations received after March 24, 2014 entitle the registrant to a 50% refund. No refunds will be made unless request is received in writing. Refunds will not be made for no-shows.
Correct the vision rather than mask the problem.

KeraSoft® IC

Treating irregular corneas with anterior aspheric optics.

For keratoconus and other corneal irregularities, KeraSoft® IC provides vision correction by using anterior aspheric optics, and "drapes" over the cornea rather than using thickness of material to "mask" the irregularity. The patented design is customizable and offers balanced overall thickness with spherical aberration control. It features an adjustable periphery, allowing the lens to fit most any corneal shape. Made of silicone hydrogel® and with a Dk of 60, KeraSoft® IC soft contact lenses provide a comfortable option for your patients with irregular corneas.

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CONSULTANT’S PERSPECTIVE

Cleaning and Disinfecting Contact Lenses
Al Vaske, BA, NCLEC

This article comes from the practical side of solution use and not the chemistry side. I know there are many articles in this edition on the chemistry.

Soft Lens Cleaning
Cleaning and disinfecting soft lenses is not the problem it was before frequent lens replacement programs. My best advice for soft lenses is hydrogen peroxide systems. These systems kill ALL the nasty critters on Earth and Galaxies far, far away. My experience is that they are effective and gentle on the eye after eight hours of neutralization. (I hope my gas perm bias isn’t showing too much!)

Gas Perm (GP) Cleaning
I tend to recommend a single purpose lens cleaner as opposed to multipurpose solutions. I find them more effective.

CLINICAL PEARL
When you have a steep base curve lens or a patient with rough skin or large fingers, have them do the cleaning/rubbing with a clean Q-Tip, instead of their finger. This creates fewer scratches, fewer broken lenses and cleaner surfaces. Wet the Q-Tip with cleaner and gently roll/rub it over the lens.

- Boston Advance Cleaner and Boston Cleaner by Bausch + Lomb—These two veteran cleaners have proven very effective over the years. I recommend them on any GP lens that is NOT plasma treated.
- Sereine by Optikem—Excellent GP cleaner but sometimes hard to find in stores.
- Optimum Extra Strength Cleaner by Lobob—Another excellent GP cleaner but a bit hard to find.
- Alcon Opti-Free Daily Cleaner—I don’t have enough experience with this product to offer an opinion.

GP Storage & Disinfecting
- Hydrogen peroxide systems are my “go to” products for disinfecting because of their outstanding effectiveness.
- Bausch + Lomb and Optikem make storage solutions that work.

GP Combination Solutions
By now, I think you get my bias against combination products. I am not saying they don’t work, but when I review the literature on effectiveness, hydrogen peroxide systems outperform the others. I find combination products to be less heroic from a cleaning perspective, than single purpose lens cleaners.

Combination products include: MeniCare Cleaning, Disinfection and Storage (CDS) Solution, Boston Simplus, Menicon Unique pH.

Progent From Menicon
I have found Progent to be the biggest advance in cleaning GP lenses since I have been in the business. If you have not used this product, you need to start. When Menicon brought this product to the U.S., it was only approved for use in a lab or practitioner’s office. I referred to Progent then as a “Liquid Clean and Polish”. It cleans everything off GP lenses, and lenses don’t get ruined by a polishing machine or technician. Progent is now approved for in-home patient use.

Summary
There are many good solutions on the market. I would advise to take a practical approach when choosing lens care. Use common sense and educate your patients thoroughly, because a clean lens is the best lens.
As practitioners, have we forgotten what it is like to be in the position of the patient? Although many of us reside professionally and make our greatest contribution in the field of eye care, do we at times forget the basic needs of our patients? Personally, I believe many of us gravitate towards our profession from firsthand experience with our own visual struggles and demands. If our patients are to benefit from our experiences, we should always try to put ourselves in their shoes...thus remembering the “Patient’s Perspective”.

I often find myself pondering the patient’s perspective at my local drugstore or grocery store. When I happen to wander towards the solutions aisle—that very long aisle filled with an overwhelming number of options for contact lens solutions—I think is it any wonder why the patients are confused on solution choices? As with most things in life, it is good to have choices. But in the world of contact lens solutions, it can be frustrating to the patient. I have lost track of the number of times I have identified that “deer in the headlights” look from other patrons in the store, and felt compelled to offer a few words of guidance. When hearing the type of solution they are looking for, I at least guide them towards the soft or gas permeable lens solutions before walking away. It makes me realize how many people are in the dark when it comes to how to care for their lenses.

With all of this being said, I think we can agree there is confusion when it comes to contact lens solutions. Even as eye care providers, keeping up with the latest technology and advancements can be tough. Can you imagine being a patient and trying to keep track? I would like you to consider the following question: What is the greater problem—patient compliancy or patient confusion? Seriously, are patients from your practice clear on your expectations and recommendations when it comes to their contact lenses and their solutions? Are they leaving your practice with a bag full of free or complimentary solutions? That is great—or is it? Once it comes time for them to purchase replacement solutions, will they be clear on what to purchase? If you have doubts, perhaps it is time to revisit this basic but necessary part of dispensing contact lenses to your patients. The mentoring process should continue past the initial fit. The instruction of handling, proper cleaning, and even rewetting solutions should be made clear.

The last area that can cause confusion in the eyes of the patient has been with the improvement in the disposability of contact lenses. With disposable lenses offering a wide range of options to include even one-day lenses, patients can often think that solutions are not necessary or important. Disposable contact lens wearers should receive thorough instructions as well. Sometimes they may not feel there is prudent reason to care for them in the same manner. Even disposable lens patients can end up in your office due to lack of proper care of their lenses. Make sure your disposable contact lens wearers do not have a false sense of security by means of their lens wearing modality.

Lastly, it is great for us and our staff to have interaction and good verbal communication with our patients. However, what I still think valuable is to provide patients with a written reminder of what is recommended and why. Consider a patient contract. You can decide how involved it needs to be. Many practices use them for various reasons. For example, you can provide a brief description of what type of lenses they have been fit with, how to care for them, and what solutions to use. Additionally, you can provide a business-size card with specific solution recommendations that can easily slip in their wallet or purse for future reference. On the other side, you could list your contact and office information. It is a personal reminder, as well as a quick reference, when they go to replenish their contact lens solutions. They will be grateful, and I think you will find there will be less issues and more compliancy with your contact lens patients.

Another option is to offer retail solutions for purchase in the practice. This will keep the patients “on point” with the current solutions and create a one-stop shopping experience. This will also alleviate the “deer in the headlights” look I spoke about earlier. It also can provide another source of income for the practice.

When fitting any type of contact lens patient, it is imperative to make sure we are being thorough and clear on what recommendations are being made. I believe you will find better patient compliancy and fewer incidents with your patients moving forward.
the pedigree

He's unique in every way, even his astigmatism.
A breed apart, custom soft contact lenses from SpecialEyes.
For the hard-to-fit Toric
In the prescribing of soft contact lenses, their soft pliable nature affords them the ability to fit over a broad range of corneal shapes and sizes, and with modern manufacturing techniques, power can be precisely manufactured in a range of parameters. However, it is when the corneal profile and/or patient’s refractive error fall outside the range of commodity lenses that a custom soft contact lens becomes necessary.

With a wide range of material choices and technologically advanced lathing techniques, custom soft contact lens manufacturers are able to create an incredible range of options for our patients. The practitioner can essentially order any base curve, power, and diameter needed, as well as control the center thickness and optic zone of the lens, in order to precisely prescribe for the patient. The practitioner has the ability to vary the material independent of the other parameters, unlike with regular commodity lenses.

This broad range of parameter and material selection can become overwhelming. By closely examining the patient’s central keratometry values and horizontal visible iris diameter (HVID), the practitioner can more closely approximate the appropriate base curve and diameter. In analyzing those anatomic features that control the overall sagittal height of the eye (Figure 1) as it relates to the soft contact lens fit, it is the corneal diameter that has the greatest impact, and the central corneal curvature follows.

The average corneal diameter is 11.8mm, which is the diameter commodity lenses are based off of for their intended fit. Once the patient’s cornea falls outside the 11.8mm HVID, the fit of the commodity soft contact lens may suffer. Consideration for a custom soft contact lens design would be appropriate.

One clinical tip off of corneal mismatch is minimal or excessive limbal extension of the overall soft lens diameter as compared to the patient’s limbus. Several techniques to measure visible iris diameter (corneal diameter) may be employed and include corneal topography, a slit lamp reticule, and a PD ruler. The more accurate the measurement of corneal diameter and central keratometric reading, the better the practitioner is able to arrive at an appropriate base curve and diameter to match that particular patient’s anterior segment. The SpecialEyes Arc Length Calculator intends to do just that (Figure 2). It treats the cornea as an “arc” and assumes the curvature across that arc is the central corneal curvature, and the area over which that curve extends is the corneal diameter. The calculator measures the distance across the arc and converts that into a contact lens “arc” with a base curve and diameter larger than the visible iris diameter to ensure centration and comfort.

Also built within the calculator is a vertex calculator to put the manifest refraction at the plane of the cornea for appropriate contact lens power.

Other parameters that may be varied within a custom soft lens design include the optic zone and material thickness. The ability to vary optic zone is particularly helpful for those patients who experience flare and halos with their soft lenses. The custom soft lens manufacturer may independently increase the optic zone of the lens in an attempt to limit flare and halos. In addition, central thickness of the material may be increased in order to approximate the tear lens effect found beneath a rigid contact lens, and is useful for those patients with irregular astigmatism. This increased central thickness is a core design feature of many modern custom soft lenses for keratoconus as it increases the “regularity” of the cornea.

In conclusion, those patients in our practice with unusually large or small, flat or steep corneas and unique refractive errors are typically those who struggle the most in commodity soft contact lenses. It is these patients that have the most to gain from the integration of custom soft contact lenses and in my experience, are the most rewarding to help. Custom soft lens patients tend to become lifelong loyal patients and are happy to refer their friends and family to us because we are the ones who “figured it out!”
Future Eye Care Professionals

Vicky Sheppard, FCLSA, NCLE-AC

Learning. n. the acquisition of knowledge or skills through experience, practice, study, or by being taught.

We are all in different stages of learning: many of us have experience; we all seek knowledge; we practice what we have been taught. Highlighting our future eye professionals, here are two student papers about dry eyes submitted to the CLSA by students Erin Page from Roane State Community College in Harriman, Tennessee and Justyna Kaniewski from Middlesex Community College in Middletown, Connecticut.

Reducing the Symptoms of Dry Eyes

by Erin Page, Roane State Community College

According to Review of Optometry, October 2012, “Dry eyes affect an estimated 14.4% of the U.S. population over the age 40 as well as 50% of all contact lens wearers.” Dry eyes can affect nearly anyone at any time and there are numerous factors that contribute to a person developing dry eyes, including the environment, certain medications, diseases, age, gender, use of contact lenses and allergies.

During an eye exam, a doctor can perform several different tests to evaluate tear production. Then, after determining that a person suffers from dry eyes, it is up to the patient and the ECP as to what type of treatment would be the most beneficial.

The eyeball is an incredibly complex organ. The moisture surrounding the eye, the precorneal tear film, is made up of three layers: the lipid layer, the aqueous layer and the mucous layer. The lipid layer contains oils that prevent evaporation of the fluid in the aqueous layer. The aqueous layer sits between the lipid and mucous layer, and is responsible for tear production. The mucous layer is the most interior layer, which allows the tears to spread and remain on the eyeball.

The precorneal tear film provides a smooth surface on the eyeball allowing the eyelids to open and close with no irritation. The motion of blinking is responsible for spreading the precorneal tear film over the eye, providing the eye with the moisture it needs. Adequate blinking is a must! Without tears, your eyes would dehydrate.

Not every patient will experience the same symptoms for dry eye. Common symptoms include redness, itching, or complaints of the eyes feeling “gritty.” In severe cases, there is a reduction in visual acuity.

Several environmental conditions affect dry eyes, such as location and allergies. Dry climates play a huge role in the development of dry eyes. It stands to reason that those who live in drier climates, such as the desert, tend to have a higher incidence of dry eyes. Climates that have a high incidence of pollen exposure and ragweed are also influential on patients with dry eyes. Incidentally, patients who suffer from allergies commonly use antihistamines, which are also very drying to the eyes.

Certain medications and surgeries can also play a role. Prescription drugs such as hormone replacement therapy and beta blockers, or over-the-counter medications such as antihistamines and ibuprofen, must be factored in when diagnosing dry eye and fitting contact lenses. Ocular surgeries, including refractive and cataract surgeries, can create a higher risk for developing dry eye symptoms. Because these surgeries are invasive, they can often reduce nerve sensitivity. This can result in the inability to detect the need for lubrication resulting in insufficient tear production.

Factors influencing dry eye can be as simple as the age of the patient or the patient’s gender. Women are at a higher risk of developing dry eyes, from pregnancy and
nursing, as well as menopause. Pregnant and nursing women experience dry eyes in relation to hormonal changes. Women who are post- or pre-menopausal often suffer from dry eye due to their lower levels of estrogen production and use of prescription hormone medications. Additionally, patients over the age of 40 often suffer from dry eyes.

According to Louise A. Sclafani, OD, “Dry eye is a common problem among contact lens wearers: symptoms have been reported in 44 to 75 percent of wearers. Dryness-related discomfort is the primary reason patients say they discontinue contact lens use.”

Educating the contact lens patient is an important part of dry eye prevention. The patient needs to understand the types of cleaning solutions available and which among them are appropriate for their type of contacts. It is important to use a preservative free contact lens cleaning solution such as Clear Care by CibaVision/Alcon for dry eye prevention. A contact lens fitter must obtain all medical history in order to determine if the patient is a good candidate for contact lens wear.

In the ophthalmic community, keratitis sicca, or keratoconjunctivitis sicca, is commonly referred to as dry eyes. The definition of keratitis sicca is actually “inflammation of the cornea due to dryness associated with a tear deficiency.” There are several tests that contact lens fitters or eye care professionals can perform to evaluate tear production. One such test is called the BUT (break-up time) test. It is a simple test that is non-invasive. The BUT test is performed by placing fluorescein in the patients eye and evaluating the tear film with the slit-lamp. Another is the Schirmer Tear test. It is performed by inserting a piece of filter paper underneath the lower eyelid and evaluating the wetness upon removal after leaving the filter paper in place for five minutes.

There are several things that a patient experiencing dry eyes can do on their own to provide some relief of symptoms. These include taking in an adequate amount of water daily and including Omega-3 fatty acids in their diets. Omega-3 fatty acids can aid in calming the symptoms associated with inflammation of the eye. These fatty acids can be found in both flaxseed oil and fish oils.

Dry eye treatment can sometimes be as easy as an over-the-counter rewetting medication or as complex as electric cautery. For mild dry eyes, the use of an over-the-counter artificial tear solution generally relieves symptoms experienced by the patient. For moderate dry eyes, the solution isn’t as simple, but use of a lubricating gel or ointment at bedtime can often relieve symptoms. The gel and ointment treatment can result in blurred vision. Additionally, it also prevents the patient from wearing contact lenses during ointment application. For severe dry eyes, it is often recommended that the patient have a procedure done to place punctual plugs. This procedure will provide relief of symptoms, but in some cases, causes discomfort. When discomfort occurs without relief, the patient will often be referred for electric cautery.

The future of the treatment of dry eyes is evolving with constant technological advances. A new device known as the LipiFlow Thermal Pulsation System is the latest innovation in the fight against dry eyes. Invented by Donald Korb, O.D., this device not only massages the meibomian glands, but also simultaneously heats the eyelids. LipiFlow boasts that “this device has the potential to reduce or eliminate symptoms for six to 12 months.”

While dry eyes are often irritating and bothersome to the patient, the treatments available are ever changing and generally successful. It is important that the contact lens wearer doesn’t give up on their desire to wear contacts despite experiencing dry eyes. Making just a few lifestyle changes can dramatically reduce the discomforts related to living with this disease. Some examples would include the use of humidification in the household, decreasing the use of fans, and decreasing the time spent on the computer.

Dry eyes are actually considered an ocular disease. There is currently no known “cure”, but with ongoing treatment of symptoms, the discomfort one may experience can be lessened.

Managing Dry Eyes
by Justyna Kaniewski, Middlesex Community College

Dry eye is common in both genders and almost all ages whether the person wears contact lenses or not. Although dry eye affects more women than men, it is especially common in women over 40 who wear contact lenses. In my professor’s practice, where I am an intern, about 70% of the patients have dry eyes; often, they are unaware of the cause of the condition. Eyes can over tear but still be affected by the dryness.

Dry eye symptoms may include pain, light sensitivity, a feeling of a foreign body or sand in the eye, itchiness, redness and blurred vision. Symptoms can be more severe in the wind, a dry or cold climate, or a room with air conditioning or heat. Wearing contact lenses with dry eye
can worsen the symptoms and cause the contact lens to stick to the surface of the eye. Severe dry eye can damage the epithelium—further triggering a reduction in visual acuity and contrast sensitivity.

The type of dry eye must be determined before proper treatment can begin. Evaporative dry eye is caused by meibomian gland dysfunction (MGD) or blocked glands that create a deficiency in the oil layer of the tear film. Evaporative dry eye could be caused by not enough blinking or sleeping with the eyes open.

Systemic dry eye is connected directly or indirectly with other diseases that have an ocular impact. The systemic dry eye is characterized by a repeated decrease in the amount of tears and could be caused by eye diseases and disorders such as keratoconjunctivitis sicca, rheumatoid arthritis, and systemic lupus erythematosus.

The tear film is very important in the proper functioning of eyes. The film lubricates, nourishes, provides oxygen to the cornea and washes out debris. Its function is to protect the epithelium from damage caused by drying. The tear film is produced by different types of glands, each producing different components of the film. It also contains lysozyme, a bacteriocidal enzyme that helps prevent eye infections. The quality and quantity of the tear film both affect dry eye.

The slit lamp evaluation is important not only with contact lens fitting, but also with dry eye. Our evaluation begins with areas around the eyes—the eyelids. Pay attention to how often a patient is blinking and check the lid tension. Start with the anterior surface of the eyelids, then check the surface of the cornea for quick tear evaporation and possible epithelial staining. During the evaluation, the observation of the patients’ eyelids is very important. Although some patients blink at an average frequency, they do not blink completely but blink only half way down. There may be a milky biofilm accumulated on the bottom half of the contact lens. Many of these patients can be sleeping with open eyes as well. To support our diagnosis, we let the patient close their eyes and observe the lid tension. If we see the tension and incomplete closure, it means that the patient is sleeping with open eyes.

Measuring the amount and quality of tear film is important not only in dry eye symptoms but in fitting the contact lens as well. The tear film between the blinking will often be unstable in the dry eye patient; therefore, we measure the tear break-up time between the blinks. To observe the tear break-up time (TFBUT), we use the fluorescein stain and slit lamp. The normal blinking rate is five seconds therefore, we will ask the patient to force his/her eyes to keep open. After fifteen or more seconds, the fluorescein will show a break-up in the tear film. If the TFBUT is less than the blink rate, the ocular surface is left unprotected which can adversely affect dry eye. You can also measure the tears accumulated on the bottom eyelid, called the tear meniscus. Evaluation of the tear meniscus is very important not only in dry eye cases but also in contact lens fitting. The tear meniscus is most visible by using the fluorescein staining. The high is usually reached between 0.25 – 0.50 mm. If there are not enough tears, eyes can develop dry eye, while too much means that there is overproduction or not enough drainage.

With dry eye, the dysfunction of the meibomian gland is very common. The meibomian gland dysfunction can be caused by blepharitis, poor hygiene, and some eye cosmetics (liner, mascara). The dysfunction of this gland occurs when the glands are clogged, jammed up with a cheesy, hardened, buttery substance of exfoliated skin, protein and mucous. The gland cannot release the fine oil-like substance that coats eyelashes and natural tears. The thinner the oil layer the greater the evaporation on the eye, thus increasing the possibility of developing a dry eye. During the slit lamp evaluation, we check for oily lid margins, excess oil in the tear film, dilated meibomian glands, mild injection and the occasional inspissated gland. Among the most popular solutions for opening the meibomian glands are warm compresses, eyelid scrubs, antibiotics or anti-inflammatory drugs, Omega-3 acid supplements, and the LipiFlow Thermal Pulsation System. The LipiFlow System works on the same principle as the warm compresses. The warm compress and eyelid scrubs will help to solve the problem with blepharitis, too.

Blepharitis can also cause symptoms of dry eye. This is an inflammation of the eyelid margins from a bacterial infection. Some doctors feel this condition could be one of the most under diagnosed reasons for contact lens intolerance. The main symptoms of blepharitis are itchiness, inflammation of the eyelids, red eye and eyelids, burning, sensitivity, dandruff on the eyelids, sticky discharge on the eyelids, and missing eyelashes. Blepharitis treatment includes avoidance of cosmetics like eyeliner, mascara, and eye shadow. Blepharitis and meibomian gland dysfunction are strongly connected with each other.

Dry eye can be caused by hormone changes. Deficiency of the androgens, testosterone, and estrogen could be responsible for dry eye. Women can develop dry eyes due to hormonal changes caused by pregnancy, the use of oral contraceptives, and menopause. Deficiency of testosterone during aging can also raise the risk of evaporative dry eye.

For reducing eyelid inflammation, the doctor usually recommends an antibiotic; for cornea inflammation, there are eye drops which contain immune-suppressing cyclosporine or corticosteroids to control inflammation.
In cases of occasional and mild dry eye, doctors can recommend over-the-counter eye drops. Some of the over-the-counter medicines just help temporarily. In treating dry eye, we should remember that it could be in combination with other diseases and could be very complicated to resolve.

Addressing the problem of insufficient tear quantity, plugs can be installed in the puncta. Punctal occlusion is a frequently used technique for treating dry eye, after artificial tear supplements. The two general approaches to punctal occlusion are punctal plugs (small plugs inserted in the puncta or canalicular) or punctal cautery (surgical sealing of the puncta). Punctal occlusion blocks the tear drainage duct to increase the amount of tears available to bathe the eye.

Dry eye patients are more likely to have complications with wearing contact lenses. Many dry eye patients complain of itchiness, burning, or blurry vision after wearing contact lenses for just a few hours. Often patients in my professor’s practice explain that, after various amounts of time, their vision is not sharp anymore. They have to blink repeatedly, or if this does not help, they have to remove the contacts and rinse. When the patient has an evaporative dry eye, tears evaporate more with contact lenses. A contact lens is like a sponge—taking some water from the surface of our eye. Although we have special contact lenses for dry eye patients, often this is still not enough. The dry eye can cause the contact lens to stick to the epithelium and, in severe cases; the contact lenses can irritate or scratch the epithelium.

Presently, extended computer use is a common cause of dry eye. While working on the computer, we force our eyelids to stay open so we can focus more on reading or writing. We learn not to blink as often, causing eye fluids to evaporate resulting in dry eye. Similarly, watching TV, or reading books and magazines, can increase the chances of developing dry eye symptoms.

Young women should pay attention to the cosmetics that they are using and how they use them. Some of the cosmetics can cause irritation and allergic reaction on the eyelids, conjunctiva, cornea, or dysfunction of the meibomian glands. The cosmetics should be not used when they are expired and it is recommended that they be changed every six months.

Sometimes we don’t have control over developing dry eye. Age, medicine that we are taking, and the environment could be the main factors that cause dry eye. Dry eye is not end of the world and usually, it can be managed with proper diagnosis and treatment.
Associate Members

CLA is proud to list the names and addresses of the following suppliers who support the Society as Associate Members.

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