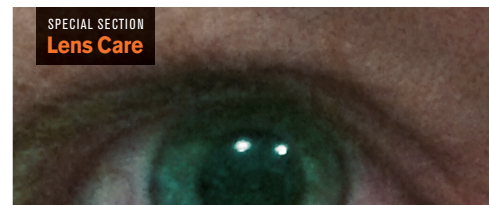


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References: 1. Based on ratio of lens oxygen transmissibilities; Alcon data on file, 2013. 2. Based on in vitro measurement of contact angles of unworn lenses; significance demonstrated at 0.05 level. Alcon data on file, 2009. 3. Eiden SB, Davis R, Bergenske P. Prospective study of lotrafilcon B lenses comparing 2 versus 4 weeks of wear for objective and subjective measures of health, comfort, and vision. *Eye & Contact Lens.* 2013;39(4):290-294.

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Comparing refractive cataract surgery methods

Premium IOLs improve visual & refractive outcomes



A. Dr. Jenkins docking the suction ring onto the patient's eye in preparation for laser-assisted cataract surgery. **B.** Screenshot of laser application locations on the eye.

By Loretta T. Ng, OD, FAAO; Tyrie L. Jenkins, MD; and Andrew L. Nguyen, PhD

Cataract surgery is one of the most commonly performed medical procedures and the leading diagnosis for outpatient surgery visits (3 million) in the U.S.¹ In the past decade, the introductions of presbyopic and toric intraocular lenses (IOLs) have elevated cataract surgery into a refractive procedure. The latest introduction of femtosecond laser-assisted cataract surgery may further improve the predictability and safety of refractive cataract surgery and enhance refractive outcomes.

Numerous studies have documented that laser-assisted cataract surgery can increase precision and reproducibility of the anterior capsulotomy,²⁻⁴ reduce ef-

fective phacoemulsification time,^{2,5,6} cause less anterior chamber inflammation post-operatively,⁷ and potentially lessen surgically induced endothelial cell damage⁸ as compared with conventional cataract surgery. All these factors associated with laser-assisted cataract surgery may further enhance the safety profile and visual outcomes of the current conventional cataract procedure.

Any new medical technology needs to be vetted in a real-life clinical setting to see if the results justify the extra out-of-pocket fees patients incur for the elective laser-assisted refractive portion of the surgery. One study found no difference in visual outcomes between laser and conventional cataract surgery with the ReStor (Alcon) IOL.⁹

See **Laser cataract** on page 30



Why peroxide is still a good choice for lens care

Comfort and efficacy are reasons to reach for it

By Ernie Bowling, OD, FAAO
Chief Optometric Editor

Go down the eyecare aisle at your local pharmacy or big box retailer and take a look at the contact lens care solutions. The choices can seem quite daunting to patients who have been given no recommendations before heading to the store.

See **Peroxide** on page 24

FDA CONTACT LENS UPDATE

FDA holds CL safety workshop

By Gretchyn M. Bailey, NCLC, FAAO
Editor in Chief, Content Channel Director

The Food and Drug Administration (FDA) held a contact lens microbiology workshop in early September as a follow-up to its May meeting to discuss updating recommendations for contact lens and lens care guidance documents. (See "FDA convenes to discuss updating contact lens guidance" in the June issue.) The goal is safer contact lens wear for patients.

Keratitis outbreaks, *Fusarium* in 2006 and *Acanthamoeba* (AK) in 2007, have prompted researchers and industry to more closely examine the safety of contact lens wear, includ-

See **FDA** on page 5

Q&A | **DR. JOE BARR** discusses transitioning from corporate to academia, innovation, and legacy. SEE PAGE 42

THIS IS WHY YOU CAN give your patients comfort that lasts.



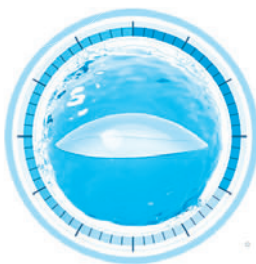
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Is an optometric education cost-effective?



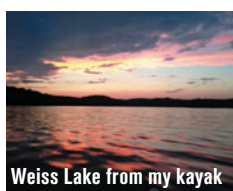
By Ernie Bowling, OD, FFAO
Chief Optometric Editor

He is in private practice in Gadsden, AL, and is the Diplomate Exam Chair of the American Academy of Optometry's Primary Care Section

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Just came in from our habitual end-of-the-weekend sunset cruise around Weiss Lake.

The setting sun had turned the sky a faded orange before it set over Lookout Mountain. It is evenings like this I give thanks for my life, my family,



Weiss Lake from my kayak

and the profession that has made all this possible. I think every week at this time, if the Man upstairs takes me now, I'll go with no regrets.

Then I wonder if this generation will be as prosperous as those before. I have a real heart for optometry students, and two items recently gave me pause. The first was a recent *Optometry Times* article covering a report from *Business Insider*, which said ODs have surprisingly low salaries compared to

other healthcare professions.¹ The other was the entering class profile of 2013 Colleges of Optometry, specifically the average estimated four-year cost of attendance.²

Looking at the nice chart from the ODCareer website, which was derived from data supplied by the Association of Schools and Colleges of Optometry (ASCO), the estimated cost of a four-year optometric education, including living expenses, ranged from \$143,000 for an in-state resident to \$278,000 for an out-of-state student. And for this capital outlay the average OD can expect to earn about \$112,000 annually, according to *Business Insider*. The article, while acknowledging that optometry is "a prestigious job," goes on to say optometrists "make just a fraction as much as some medical professionals. For comparison, the average physician earns \$191,880 a year, and dentists, who undergo a similar amount of training, earn \$168,870." I was more than a little shocked, so I went to the source, the Bureau of Labor Statistics. Perusing those tables, I noticed that ODs make roughly the same annual salary as pharmacists and lawyers.³

High-paying careers all require an education, many beyond an undergraduate degree. Yet optometry faces challenges that

have the potential to further erode income. We all know what they are and space does not allow a prolonged discussion of those topics here. But those matters need to be addressed profession-wide, for both the benefit of those currently in practice and those who will join us. Business people are comfortable performing a cost-benefit analysis when determining whether to make a particular financial decision. Has anyone ever done such an analysis concerning an optometric education? I know it was a great personal and financial decision for myself, and I'm certain most of us can say the same. I want the next generation of optometrists to feel the way I do every Sunday evening. ●

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Read more from Dr. Bowling
See the cover for an article on peroxide.

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VIDEO GALLERY

Take a look at our latest video offerings to hear what's going on from those in the know.

A FEMALE PERSPECTIVE IN OPTOMETRY

Dr. Dori Carlson, OD, FAAO, and Dr. April Jasper, OD, FAAO, recently sat down with *Optometry Times* to talk about the female perspective in primary care optometry. The doctors share stories of times they took a slightly different approach to treating patients. <http://ow.ly/BUOWi>

COOPER ON UPP FOR SAUFLON CLARITI

CooperVision President Bob Ferrigno announces the company's UPP plan for Sauflon clariti products <http://ow.ly/BUPz8>

PEROXIDE AND CONTACT LENS CARE

Dr. Ernie Bowling explains why hydrogen peroxide is a good lens care choice. <http://ow.ly/BUQjt>

EXCEPTIONAL SERVICE

Joe Quitoni of the Ritz-Carlton discusses the company's method for customer service. <http://ow.ly/BURwF>

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Have you seen our video with Dr. @justinbazan on responding to negative online reviews? Check it out! <http://ow.ly/zY81z> #optometry

Amanda Hoffman
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RT "@OptometryTimes: When it comes to dry eye, are you asking the right questions? <http://ow.ly/A6unb> #optometry"

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- Being a forum for optometrists to communicate their clinical knowledge, insights, & discoveries.
- Providing management information that allows optometrists to enhance and expand their practices.
- Addressing political and socioeconomic issues that may either assist or hinder the optometric community, and reporting those issues and their potential outcomes to our readers.

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1 7 tech trends to use in your practice

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2 Are there too many optometrists?

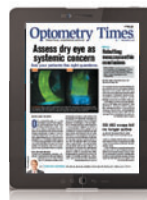
<http://ow.ly/BUNqz>

3 Report says ODs have 'surprisingly low' salaries

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FDA

Continued from page 1

ing the role of contact lens care solutions.

The workshop brought together representatives from the ophthalmic community to discuss how to revamp microbiology testing for better safety with contact lenses and lens care products targeting key areas in evaluating disinfection efficacy. Participating groups were:

- FDA
- American Academy of Ophthalmology (AAOphth)
- American Academy of Optometry (AAOptom)
- American Optometric Association (AOA)
- Contact Lens Association of Ophthalmologists (CLAO)

AAOptom representative Loretta Szczotka-Flynn, OD, PhD, commented that panelists recommended changes that were reasonable, rational, achievable, and reproducible. “The speakers didn’t completely change the current recommendations, which some were afraid might happen,” she said. “They were enhanced. These changes are achievable by manufacturers, who are making these solutions that are both gentle to the eye and effective against these organisms. Nothing came out of here that was shocking.”

Said Joseph T. Barr, OD, MS, FAAO, “This was pleasingly candid. This group of experts spoke freely. The best thing that would happen would be if the FDA really is open to their recommendations. It’s going in a good direction for doctors to

We need to remember that disinfection does not eliminate all microorganisms

have confidence that contact lenses are a safe modality and can build their practices.” Dr. Barr is emeritus professor at The Ohio State University College of Optometry.

Panelist discussion

Much discussion focused on current testing methods for lens care products.

“We need to remember that disinfection does not eliminate all microorganisms,” said Ralph P. Stone, PhD, former vice president of consumer products research and development at Alcon, who presented at the meeting.

Three panels addressed specific topics.

Emerging pathogens in keratitis

Panel 1 looked at emerging pathogens in contact lens-related keratitis. Part of the discussion addressed international patterns. According to Moorfields Eye Hospital consultant ophthalmologist John Dart, AK in the UK has greatly increased over last 2 to 4 years, with cases more severe and less responsive to therapy.

Also noted by Elmer Tu, MD, director of the cornea and external disease section of the department of ophthalmology and visual sciences, University of Illinois College of Medicine, contact lenses are responsible for more than 50 percent of microbial keratitis (MK) cases, regardless of pathogen type, and there have been no significant improvements in the rates of MK over the past two decades.

Panel 1 determined that the current list of pathogens for testing is adequate, with the addition of *Acanthamoeba*, to determine disinfection efficacy for lens care products.

“*Acanthamoeba* needs to be added, and all strains should be updated to those that come from corneal infections, preferably from contact lens wear, and as recently as possible,” said Suzi Fleiszig, OD, PhD, panelist and professor of optometry at the University of California, Berkeley. It is important that any new strains come from a validated culture collection.

Soil and efficacy testing

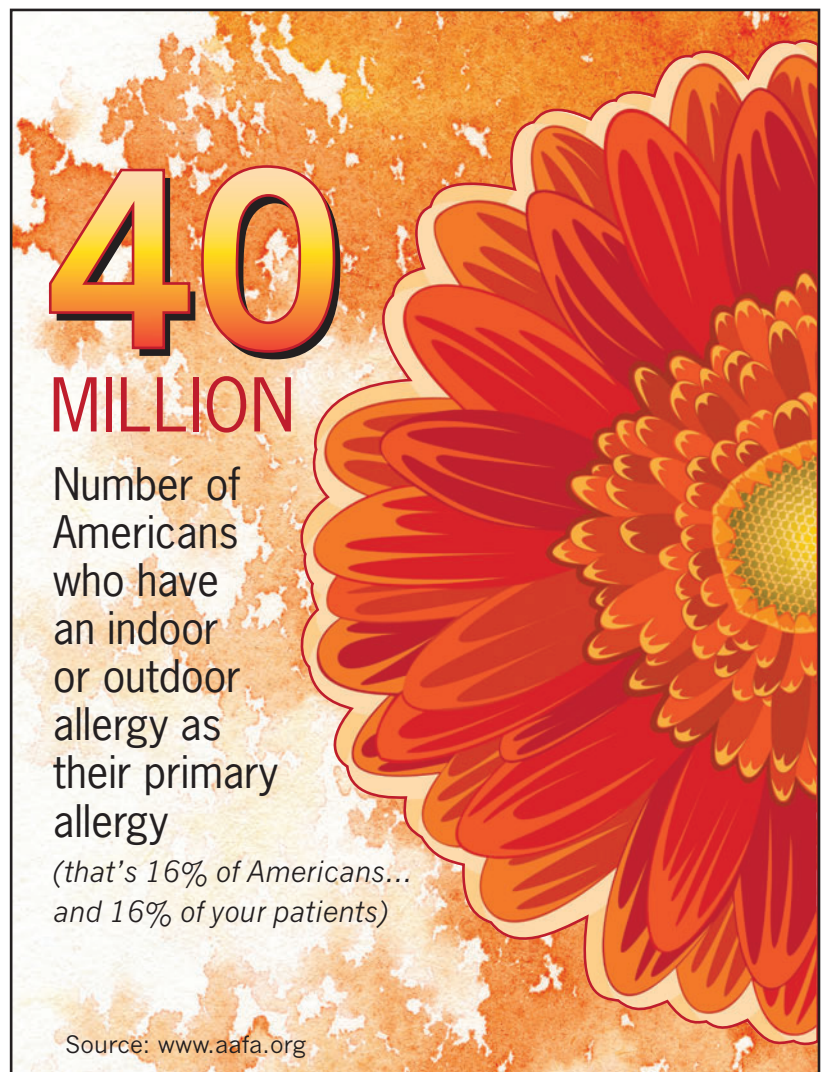
Panel 2 looked at the role of soil in disinfection efficacy testing. It determined that defining testing process steps for consistency would be help-

ful, and the soil should model the tear film for better assessment of efficacy and better replication of “real-world” scenarios could be considered. Note that “soil” used in efficacy testing is not soil in the true definition of the term but rather a composition of bovine serum and heated deactivated yeast cells used as an artificial contaminant for testing, providing both a broad spectrum of ingredients as well as cellular debris as may be present on worn lenses. The “soil” used for disinfection efficacy may not be appropriate for testing cleaning efficacy.

Acanthamoeba

Panel 3 looked at *Acanthamoeba*. At this time, there is no universally accepted protocol for disinfection test-

See **FDA** on page 6



40
MILLION

Number of Americans who have an indoor or outdoor allergy as their primary allergy

(that's 16% of Americans... and 16% of your patients)

Source: www.aafa.org



CooperVision®

Fewer Allergan sales reps, still serving ODs

By **Gretchyn M. Bailey, NCLC, FAAO**
Editor in Chief, Content Channel Director

Recently, Allergan reduced its sales force, causing concern in the marketplace about sales rep availability to optometry. Some practitioners believed the move was a perceived slight to optometry in favor of ophthalmology, adding to a long-held perception that Allergan is not committed to optometry.

“We are absolutely dedicated to optometry,” says David Gibson, director, optometric professional relations and strategic initiatives, speaking exclusively to *Optometry Times*. “It’s one of our big growth areas at Allergan. We have to make sure that we’re totally working to ensure coverage of optometrists.”

The sales team is currently being realigned to maximize sales efforts, according to the

company.

“Back during our second quarter earnings call, CEO David Pyott indicated there would be significant changes to our structure,” says Gibson. “Our goal is to be a leaner and more efficient company. As part of that, our eyecare sales team is being realigned. We traditionally had four parallel selling teams calling on ODs and MDs. One of those four has been a contract sales force. With changes being made, we decided to eliminate our contract sales force and realign the rest of the group to maximize our efforts.”

According to Gibson, these changes mean an increase in the number of sales reps to optometry as well as four new positions in the optometry marketing team.

“We’ve been working hard over the past several years to increase the number of pro-

grams dedicated to optometry,” he says. “None of those are going away. We wanted to protect these efforts and position ourselves for growth in optometry and continue to deliver on these resources.”

Those optometry programs include:

- Academic Partnership Program to provide education, support and resources to U.S. optometry schools
- Optometry Jumpstart to support new optometrists within the first five years of graduation
- Pathways in Medical optometry Boot Camps to train optometrists on medical optometry
- Visionary Insight for Eye Care Women (VIEW) programs to provide training and inspiration to current and future female optometric leaders●

FDA

Continued from page 5

ing of *Acanthamoeba*, according to panelist Donald G. Ahearn, PhD, emeritus professor of microbiology at Georgia State University.

AK is the most difficult disease to diagnose and manage successfully, said Simon Kilvington, PhD, senior lecturer in the department of infection, immunity and inflammation at the University of Leicester, UK. The recent outbreaks could not have been predicted from current ISO standards, he said.

“The incidence [of AK] in the U.S. has not

The incidence of AK in the U.S. has not returned to baseline seven years after the outbreak

returned to baseline seven years after the outbreak and recall of the implicated contact lens care solution,” he said.

Dr. Kilvington also commented that the method of *Acanthamoeba* cyst production significantly affects the efficacy of the test solution. “If you want to kill cysts, you need a two-step peroxide solution,” he said.

The panel addressed questions regarding

the strains of *Acanthamoeba* currently used for testing. Dr. Tu commented that a 40-year-old strain may not reflect the current virulence. Selection of a strain or strains is important in developing methods for evaluation.

Panelists also commented on specific protocols for disinfection efficacy testing and starting such testing with an actual contact lens.

Said Dr. Tu: “The overarching theme here is that multi-purpose solutions were very good and well accepted. But things change. We’re faced with a different risk now than we were even 10 years ago. There’s a difference in designing contact lens disinfection systems for those who live in New York vs. the Amazon in Brazil. If there’s a change in environment, it’s not the fault of the solution. It needs to be better, and we need to decide how to do that.”

Said Dr. Stone: “Do as much as you can do for the patient and doctor on high-risk behavior, such as swimming and water sports. We need to deal with those first high-risk behaviors, even if we’re not able to do much about the products. We’re a long way from the products being able to do a lot.”

Said Malvina Eydelman, MD: “We are well aware of high-risk behavior contribution. We have spent enormous effort on trying to educate patients and doctor. I would like to emphasize that it’s not just FDA’s role to educate patients and doctors.” Dr. Eydelman is director, division of ophthalmic, neurological and ear, nose and throat devices at FDA.

Dr. Stone said that an international standard

for *Acanthamoeba* encysting testing on care products should appear within the next year.

Denise Hampton, PhD, branch chief of the contact lenses and retinal devices branch of FDA, commented that FDA’s research shows that the lens material makes a difference in contact lens uptake of biocide from lens solutions.

Mary Mowry-McKee, PhD, former research scientist at CIBAVision and Bausch + Lomb, said that such uptake does affect efficacy; a new ISO standard for evaluating lenses and case with the solution has been approved and will be issued by year’s end.

Additional discussion focused on the use of tap water with GP lenses. Said Dr. Szczotka-Flynn, “I agree you can’t change behavior that easily. But you have to give patients tools to change their behavior. The majority of patients say, ‘I’ve been using tap water for 30 years, why should I change now?’ But then they ask, ‘What should I use instead?’ Why don’t we have larger bottles of aerosol saline?”

Other comments focused on obtaining evidence that tap water is a risk factor for GP lens wear and exploring options for other products.

Regarding developing new products for GP lenses, Jim Cook, head of corneal product development at Abbott Medical Optics, said, “We’re not a charitable organization. There needs to be a good market for it. If the contact lens organizations develop that market, then we could develop those products.”

As William Benjamin, OD, pointed out, tap water is easily available and costs nothing.●

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*Compared to Clear Care

REFERENCES: **1.** Results from a 22-investigator, multi-site study of PeroxiClear™, with a total of 440 eligible subjects. Subjects were randomized to use either PeroxiClear™ or Clear Care for 3 months. Subjects completed performance surveys at 2-week, 1-month, 2-month, and 3-month visits. **2.** Results from a 21-investigator, multi-site study of PeroxiClear™, with a total of 297 eligible subjects who were habitual Clear Care users. After 7 days of use, subjects completed an online survey. Consumers rated the performance of PeroxiClear™ across a range of attributes and compared the performance to their habitual Clear Care solution. **3.** High-resolution/accurate-mass (HR/AM) mass spectrometry was used to detect and quantitate the relative amounts of surfactant retained on lenses from PeroxiClear™ and Clear Care solutions after 20 hours of wear. PureVision®2, ACUVUE OASYS, and AIR OPTIX AQUA lenses were soaked in solutions for 12 hours prior to patients wearing lenses for 20 hours. **4.** Results of an in vitro study measuring deposits on ACUVUE OASYS lenses. Lenses were subjected to 14 cycles of deposition with a lipid and protein solution mimicking the human tear film followed by a cleaning regimen with either PeroxiClear™ or Clear Care 3% hydrogen peroxide systems. Each deposition/cleaning cycle was representative of one day of patient use. Cycled lenses (n=3) were analyzed for deposits using image analysis. After 14 cycles, lenses cleaned with PeroxiClear™ had only 8.0% surface coverage compared to 33.0% for lenses cleaned with Clear Care. **5.** Results of an ex vivo study measuring deposits on worn contact lenses to compare the clinical performance of PeroxiClear™ and Clear Care solutions. Lenses were worn daily for 1 month (silicone hydrogel and Group IV hydrogel lenses) or 3 months (gas permeable lenses). A total of 374 lenses were randomly selected for image analysis. Lenses were scored for mean density of deposits and percent coverage of deposits.

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Why I work on Saturdays

Weekend hours provide a unique opportunity for optometric practices

By Bill Potter, OD

The discussion of providing Saturday office hours can rile a group of ODs like few other topics. In the non-health-care world, Saturdays are revered as a day off from the daily grind and a chance to spend time with family and friends. Unfortunately, economic realities and those of providing comprehensive patient care tend to push us toward working on Saturdays.

Here is a rationale for doing so from a slightly-aging doc who has been providing Saturday services on two weeks out of three for 29 years.

It works

Saturdays are enormously productive. We've established the reputation for being open, often when no one else in the community is. Yes, it's a great profession that we have, and yes, it does require some sacrifice.

Financial and personal rewards have made the downside seem small. Emergency care quadruples because hospitals and walk-in clinics know that we may be the only practice open within many miles.

Patients are relaxed and compliant

There is something about seeing patients on an "off" day. There is no rush off to school

We've established the reputation for being open, often when no one else in the community is.

or work. The stresses of the workweek are abated, at least temporarily. Patients' attitude, dress, and body language are completely different—mostly to the good.

Scheduling is easy

The before-noon schedule fills far in advance once the reputation is established. Cases tend not to be urgent or require great resources,

but we are more than prepared if they do. Patients tend to not schedule as many full exams after noon on a Saturday, allowing ample time for the emergencies that may call.

Competitors fall away

Frequently, we have an injury or lost eyewear that can be remedied quickly. We've had patients drive many miles to see us on a Saturday afternoon, often driving past competitors who did not have the will or resources to be open.

There is tremendous bonding with patients who know that we were a nearly last resort for their care. Establishing routine care in our office is not a stretch of the imagination, as we provide a top product in our service and care.

Families are easily seen together

School, work, and recreational obligations are less problematic in total. Two family members find great convenience in being seen in consecutive appointments. Eyewear purchase is strong because feedback from family members is (usually) helpful.

Satisfaction

Saturday's patient troubles tend to be quite rewarding to solve. Because Sunday care is much more difficult to attain, patients have tremendous relief when the burden is lifted early on a Saturday.

A painful abrasion, broken frame, or meds that have run out are easily handled. Patient gratitude and bonding with the practice seem to increase exponentially.

We once saw a fellow who was gored by a bull at a rodeo 60 miles away. He called everyone in the phone book, and even drove past the bridge to Philadelphia and its world-class eye hospitals, when he found that we were open. Patient and bull did just fine.

The counter arguments

Oh yes, there are downsides to working Saturdays. But to us, the positives far outweigh the negatives.

Patients don't show up

Yes, they do, but it takes work. A first-class reminder system (ours is a computer-gener-

ated phone call) is key in making sure patients walk through our doors on Saturdays. It's kind of like building a practice, but then, we *are* building a practice. We rarely book more than two family members on a given day because three or more tends to increase the no-show potential. A little gentle over-booking seems to work out nicely. (We do not charge for no-shows.)

I'd rather spend Saturdays with family

Oh, me too. But, when the kids were small, I got to attend field day, coach soccer, get teary at the school play, and be a normal dad by being off on a weekday...or two.

In an era of awfully stagnant optometric incomes and changes in our healthcare system, accessibility is no longer an option. In fact, it is a major feature that a carrier will consider when adding a practice to its panel.

Staff hates to work Saturdays

See above.

Insurance authorizations are difficult

Sure, experiencing an authorization foul-up on a Saturday is going to happen. But if the staff gets the authorization ducks in line in advance, it is seldom a problem. Any number of carriers offer practice services on Saturdays, and it is critical to know which ones can be reached for an authorization.

Working Saturdays works for us

Saturday hours have helped us to bond with our patients in ways that no other service can. Availability for rapid relief of problems has no equal. Happy Saturday patients are especially likely to refer their families and friends, which is critical for success our multi-subspecialty practice.

Our staff has bought in well due to a slightly later start time and the conveniences that the hours provide for *their* working lives.

This strategy fits nicely with the demands of the modern healthcare environment, and is one that should be considered by all practices. ●



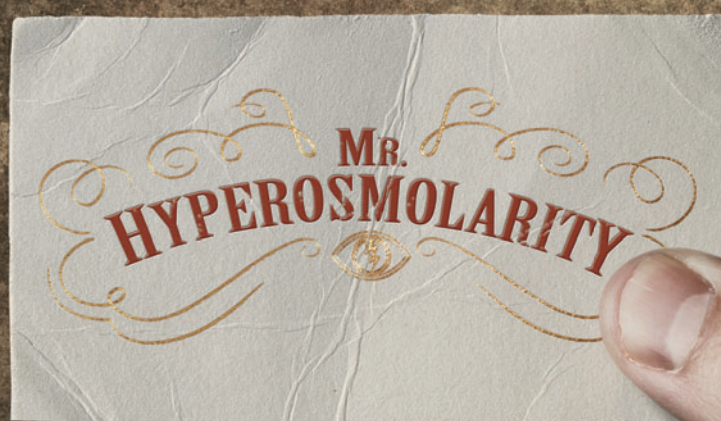
WILLIAM B. POTTER, OD, is chief of optometry and contact lens services at Millennium Eye Care, LLC in Freehold, NJ, a multi-subspecialty, MD/OD practice where he has practiced for 29 years.

Dr. Potter is also president of Optometry on West 44th, LLC, a company that provides continuing education programs for optometrists.

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Hyperosmolarity is not your friend. Find out why at the TearLab Academy Booth.



MY FAVORITE APP

Apps for mind, body, and soul

Your phone can take care of all of your needs, plus a bonus

By Justin Bazan, OD

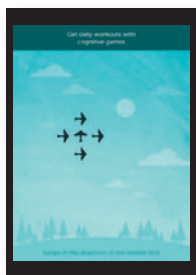
Mind, body, and soul need to be regularly fed in order to feel like a complete person. Most of us now live and die by our phones, so you can take care of all of your needs with your device.

Here are my recommendations to feed your mind, body, and soul.

Mind: Lumosity

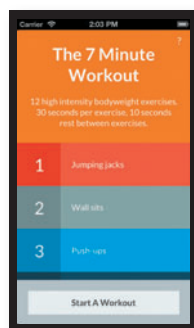
Doing a 10-minute mental work out can't hurt. I haven't cared enough to see how conclusive any of the studies are regarding

the science behind Lumosity, but I can feel the difference. This app is also a replacement for the unhealthy, time-wasting video games I gave up a few years ago. It gives me a chance to get my competitive fix on, pitting me against brains in my age group.



The app also provides a bit of a morale booster as well because your improvement is easily seen via the progress charts.

Download it: <http://ow.ly/BrbOp>



Body: 7-Minute Workout

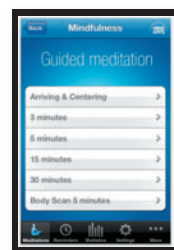
There are a few secrets to my six-pack. I put the right amount of good things into my body, and I keep fit with simple calisthenics. The key is having a virtual personal trainer helping you out.

For those of you who spend an hour at the gym, you are probably wasting a lot of time. Go hard for 7 minutes with this app, and I bet you will find it comparable to the hour you spend in the gym.

Download it: <http://ow.ly/BrbQt>

Soul: Mindfulness

For about a year, I have been meditating on a consistent basis. As a newbie, I still

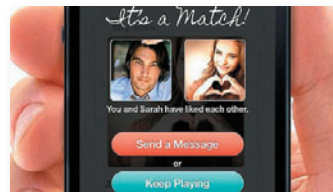


enjoy the guided meditations found in the Mindfulness app. It keeps track of how much meditation I have done, and it provides me with reminders to do it. For me, meditation helps keep chaos at bay and my soul at ease.

Download it: <http://ow.ly/BrbWs>

Bonus: Meet all three with Tinder

Tinder is a people-connecting app that can possibly help with all three. Mind, body, and soul might be taken care of if you find that special someone. Tinder connects you with locals with a mutual interest in setting up a meeting. This app is great if you're travelling and don't want to eat alone. Hop on Tinder



and find a dinner date!

Download it: <http://ow.ly/Brc3K>

Dr. Bazan is a 2004 SUNY grad.

Reach him on his Facebook page.

IN BRIEF

Congenital cataract DNA test leads to faster diagnosis

San Francisco—Advanced DNA testing for congenital cataracts can quickly and accurately diagnose a number of rare diseases marked by childhood blindness, according to a study published in *Ophthalmology*.

According to researchers at the University of Manchester, doctors were able to use a single test to tailor care specifically to a child's condition based on their mutations, reducing the time and money spent on diagnosis and enabling earlier treatment and genetic counseling.

Congenital cataracts can arise following a maternal infection or be inherited as an isolated abnormality. They can also appear as a symptom of more than 100 rare diseases, making mutations in the 115 asso-

ciated genes useful as diagnostic markers for the illnesses. However, diagnosing these diseases can be costly, and it can take a long time to complete the necessary tests.

With new DNA sequencing technology called targeted next-generation sequencing, researchers sped up diagnosis to a matter of weeks by testing for mutations in all 115 known congenital cataracts genes at once.

According to researchers, in 75 percent of the 36 cases tested, the DNA test determined the exact genetic cause of congenital cataracts.

In one case, the DNA test helped diagnose a patient with Warburg Micro syndrome, a very rare disease which is marked by an abnormally small head and the development

of severe epilepsy, among other medical issues. Having a clear diagnosis allowed for genetic counseling and appropriate care to be delivered quicker than previously possible without the test.

In the course of their work, researchers also found previously undescribed mutations linked to cataract formation.

Infants and children who have congenital cataracts can be tested as well as prospective parents with a history of the condition who wish to evaluate the risk to their child.

While available only in the UK, the congenital cataract DNA test can be requested by registered medical facilities through international referral. Results generally take about two months.●

The evolution of tear substitutes

A better understanding of the ocular surface has led to better efficacy, safety

In an ongoing effort to ameliorate the discomfort and blurred vision that stems from dry eye, tear substitutes have undergone numerous improvements to enhance their efficacy and safety to the ocular surface.

Considerations in creating a tear substitute include:

- Therapeutic efficacy
- Stability
- Tolerability/comfort
- Patient expectations (including tear packaging and price)
- Excipients
- Residence time
- Preservation
- Immediate impact on vision post-installation (blur)

As we learn more about the changes of the ocular surface in disease, so have we improved the effectiveness of tear replacements.

Generations of tear substitutes

First-generation tears were simply a saline-based, isotonic or hypotonic solution with preservatives, notably benzalkonium chloride (BAK). Although these tear substitutes did not blur vision, they were short acting and needed frequent re-application.

Second-generation tears added natural and synthetic polymers (methylcellulose derivatives) and synthetic polymers (e.g., polyvinyl alcohol, povidone, polysorbate-80, HP guar) with gentler preservatives or preservative-free products. These agents are of thicker viscosity or a gel-forming nature and afford higher retention times. Often, the trade-off for this improvement can be short-term blur.

Third-generation tears are considered those that incorporate hyaluronic acid (HA). Hyaluronic acid is found naturally in the human body, mainly in connective tissue, but also in vitreous body and synovial fluid and in the tear fluid of the eye. Sodium hyaluronate (sodium salt of hyaluronic acid) has water-retaining properties and reduces the shear forces of the

blink. It is highly effective at entrapping water and preventing evaporation prolonging beneficial effects. Hyaluronic acid, with its natural bio-adhesive properties, provides longer hydration. Sodium hyaluronate also seems to have protective effects on the corneal epithelium.¹

Considered fourth-generation tears because of the addition of lipid oil-in-water nanoemulsions, these most advanced tear replacements address the evaporation concern of other tear replacements. Artificial tears with a lipid component are presumed to replenish the lipid layer. They have been shown to have a long residence time in the tear film, reduce the tear evaporation rate, improve the signs and symptoms of dry eye, improve the structure of the lipid layer, and to improve diagnostic test results, particularly the Schirmer score and tear break-up time.²

Creating artificial tears

The process of developing a lipid-containing artificial tear can be hampered by many factors, including the combination of immiscible (unmixable) liquids, instability, irregular spreading, effects on visual acuity, and light scattering. There have been varying degrees of success at producing lipid-containing artificial tears in the past, the first being TearGard (Bio Products Ophthalmics Inc.) in 1983, which was successful in protecting the integrity of the tear film and providing relief for dry eye patients.³

An emulsion is a mixture of two or more liquids that are normally unblendable; common examples of emulsions are milk, mayonnaise, and paint. In tear replacements, oil and water nanoemulsions reduce tear evaporation without blurring while providing surface hydration. Nanoemulsions also improve ocular bioavailability of lipophilic or poorly water-soluble drugs. Generally emulsions need “surface active agents,”

or surfactants to stabilize them. The most common surfactant agents create a negatively charged (anionic) preparation.

NovaSorb, the delivery system in RetaineMGD (OCuSOFT) (currently the only marketed cationic lipid emulsion lubricating therapeutic) is a unique oil-in-water nanoemulsion that carries a positive (cationic) charge that delivers ingredients through the electrostatic attraction between positively charged droplets and the negatively charged ocular surface.⁴ Electrostatic interaction increases the lubricants dwell time

(residence time), intuitively enhancing bioactivity. In addition, the nanosize of the oil droplets creates an increased contact surface with the ocular surface cells. RetaineMGD is preservative-free, supplied in single-use vials.

Other lipid tear replacements include Refresh Optive Advanced (Allergan), Systane Balance (Alcon), Tears Again Liposome Spray (OCuSOFT) and recently re-released SootheXP (Bausch + Lomb). The first marketed ophthalmic emulsion drug product was Restasis (Allergan), a preservative-free anionic emulsion of cyclosporine A (CsA) at 0.05 percent. Interestingly, Allergan’s preservative-free Refresh Endura, discontinued in 2009, was a castor oil-in-water emulsion.

It is an exciting time for clinicians and patients as our knowledge and experience in ocular surface disease is tested and refined. New diagnostic technologies can help us analyze and define ocular surface disease and guide our new and sophisticated therapeutic choices for our patients.●



BY KATHERINE M. MASTROTA, MS, OD, FAAO, center director of Omni Eye Surgery in New York City.

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CLEAR CARE® Stands the Test of Time

Kasey Minick and
Peter D. Bergenske, OD, FAAO

With the disinfecting power of hydrogen peroxide and no added preservatives, CLEAR CARE® Cleaning and Disinfecting Solution remains a top option for contact lens care.

Decades of Progress

Since the introduction of reusable soft contact lenses, a series of lens care products have come and gone. In the 1980s, heat was used to disinfect. Unfortunately, the electronic thermal units were cumbersome to use, damaged lenses, and occasionally malfunctioned — rarely, some even caught fire.

Heat disinfection was replaced by what was called “cold,” or “chemical,” disinfection, using preservative-based solutions. At first, these systems required multiple steps and assorted components for cleaning, rinsing, and disinfection. Although effective, strong disinfectant chemicals, including thimerosal and chlorhexidine, were poorly tolerated by many patients.¹

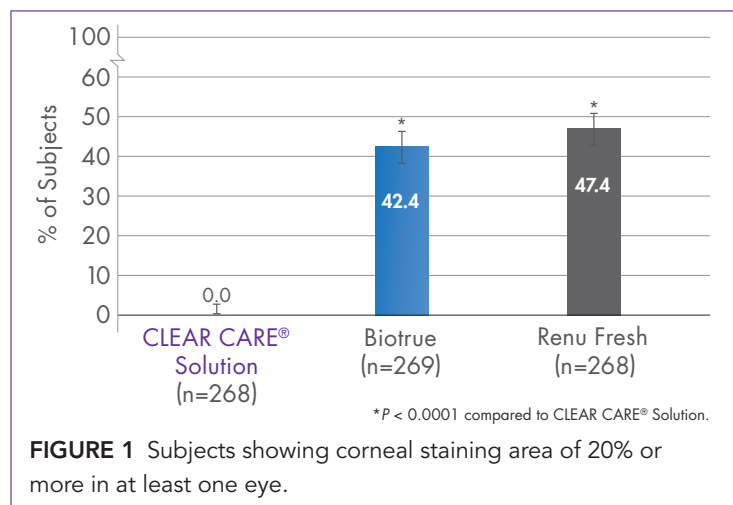


FIGURE 1 Subjects showing corneal staining area of 20% or more in at least one eye.

The original hydrogen peroxide-based systems — introduced in the mid 1980s — also provided excellent disinfection and, like the cold chemical systems, required multiple steps, including one to neutralize the peroxide before lenses could be safely reapplied to the eye. Some peroxide systems also required users to apply mild abrasive cleaners and to time peroxide soaks.² But by the late 1980s, the first disposable lenses and one-step peroxide and polyhexamethylene biguanide (PHMB)-based multi-purpose solutions had been introduced. With them, our current era of contact lens wear — characterized by an increasing focus on convenience and comfort — had begun.

Why CLEAR CARE® Solution Works

CLEAR CARE® has broad antimicrobial activity against bacteria, fungi, and protozoans — even in the form of biofilms

After neutralization, CLEAR CARE® is essentially a mild phosphate buffered saline solution — without added preservatives that can irritate eyes

Patients find lenses treated with CLEAR CARE® comfortable to insert and wear — so fresh, they feel like new

Building on the success of these advanced products, CLEAR CARE® Cleaning and Disinfecting Solution has been available for over a decade and remains very popular. Employing platinum disc-based neutralization that is built into the special lens case, CLEAR CARE® offers a long list of advantages, which have kept it the disinfectant method of choice for a large group of soft contact lens wearers — more loyal users than any other lens care brand.³ In fact, while many other disinfection products have been declining in sales (due to the growing popularity of daily disposable lenses) CLEAR CARE® use is on the rise.⁴

The CLEAR CARE® Advantage

The patented CLEAR CARE® formulation stands the test of time because of its effective antimicrobial activity, and no added preservatives. The gentle saline solution that remains after CLEAR CARE® has neutralized helps to promote wearer comfort — comparable to that achieved with daily disposable lenses.⁷ This is why CLEAR CARE® Solution, like saline, offers outstanding biocompatibility with the ocular surface and results in very minimal corneal staining (1–2% of corneal area after 2 hours).⁸ It has been shown that patient-reported solution/lens comfort ratings are consistently lower when the staining area exceeds 20%.⁸ This correlation is something to consider when recommending a lens care solution.

Although benign after neutralization, the hydrogen peroxide in CLEAR CARE® is a broadly potent antimicrobial agent — it effectively kills a range of microbes, including organisms that normally reside on the lids and periocular skin, and highly pathogenic species that can be introduced from the environment.^{9–11} Studies have shown that CLEAR CARE® is effective against *Acanthamoeba* in both trophozoite and cyst forms.^{9,12} Further, CLEAR CARE® is highly active against soft contact lens-associated bacterial and fungal biofilms.^{10,11}

CLEAR CARE® Comfort

When placed on the eye, lenses disinfected with

CLEAR CARE® solution are both exceptionally clean and virtually free of residual peroxide that could irritate the eye.¹³ Indeed, four out of five users agreed that CLEAR CARE® got their lenses so fresh they felt like new.⁶ The platinum disc neutralization system reliably catalyzes the breakdown of the hydrogen peroxide to oxygen and water, so that after 6 hours, only traces remain — and these are readily eliminated by the natural peroxidases abundant in ocular tissues and fluids. At the end of the CLEAR CARE® disinfection cycle, lenses are left soaking in a pH-neutral, phosphate-buffered saline solution.

Comfort is also a function of lens cleanliness, as deposit buildup can create irregularities on the lens surface that affect vision and comfort. Protein deposits may also make the lens more susceptible to bacterial adhesion to the lens surface.¹⁴ With CLEAR CARE®, deposits are eliminated in three ways: First, hydrogen peroxide penetrates the lens to deep clean and kill bacteria; second, a proprietary surfactant, Pluronic 17R4, breaks down debris and deposits and lifts them away; and, finally, the mechanical force of the bubbling provides further cleaning action and enhanced protein removal (in addition to being a signal for the patient that the solution is working).

Patients are enthusiastic about the comfort of lenses cleaned with CLEAR CARE®.⁵ In an investigator masked study, a majority of patients reported that the CLEAR CARE® was easy to use; and most said they could not feel their lenses after disinfecting them with CLEAR CARE®. Compared with other solutions, CLEAR CARE® was reported to clean lenses better and was preferred overall.⁵ In addition, a recent analysis of 28 separate studies showed that lenses cleaned with CLEAR CARE® provided comfort similar to daily disposables.⁷

Peace of Mind

CLEAR CARE® was designed to be powerfully effective against microorganisms, but safe and gentle to ocular surface tissue. In comparative clinical trials of lens care solutions, lenses cleaned and disinfected with CLEAR CARE® were associated with negligible corneal staining and high patient comfort — performing similarly in comfort to the saline control solution (Figure 1).⁸

Studies have consistently shown that CLEAR CARE® has superior antimicrobial activity against a range of serious ocular pathogens — including bacterial and fungal biofilms and *Acanthamoeba* species — compared with preservative-based chemical disinfecting agents.⁹⁻¹¹

Talking to Patients

All wearers of reusable lenses are candidates for CLEAR CARE® Solution, provided they are able to comply with basic instructions for appropriate use. For the reasons we have discussed, many eye care providers recommend CLEAR CARE® to nearly all of their reusable lens patients. Others reserve CLEAR CARE® for patients who are intolerant to multi-purpose solution, which they

may recommend first in the belief that multi-purpose solutions are easier to use. However, a significant majority of patients in clinical studies consider CLEAR CARE® easy to use and prefer it to alternative lens care systems.⁵

A perceived advantage of multi-purpose solutions is that they carry no risk for accidental ocular exposure to unneutralized peroxide, which can cause acute burning and stinging.² Accidental exposure has been reported among persons who unwittingly purchased a peroxide-based solution thinking it to be a multi-purpose solution, failed to heed the cautionary markings, and used it without neutralization. However, when patients have been taught how to use CLEAR CARE®, such events have been rare.^{5,15} As with so many things, good patient communication is the key to ensuring proper and successful use of CLEAR CARE®.

Summary

CLEAR CARE® remains the gold standard for contact lens cleaning and disinfection, offering patients unsurpassed antimicrobial efficacy and comfort. With no added preservatives, and an advanced neutralization process, the unique CLEAR CARE® formulation is engineered to leave only negligible, non-irritating traces of peroxide on lenses. Despite an ever-evolving assortment of lenses and care options, CLEAR CARE® continues to garner the trust of practitioners and the loyalty of patients.



Kasey Minick (left) is a principal scientist/formulation manager in the Vision Care Development Group of Alcon Laboratories, Inc. Peter Bergenske, OD, FAAO, (right) is the director of professional and clinical support for US Vision Care at Alcon Laboratories, Inc.

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What we can learn from the Ice Bucket Challenge

The profession has an opportunity to create a viral sensation of its own

The ALS Ice Bucket Challenge: Over \$100 million donated; a staggering 259,505 new donors to the ALS Association; millions and millions of people posting on social media.¹ The groundswell of support has been tremendous. One can only hope that the cure will come about with these research dollars raised.

August 2014 saw a public awareness campaign show the world the power of social media. This unprecedented viral video initiative is something that optometry hopefully can learn from and replicate for its own public awareness campaigns. Let's take a look at the how this all happened and see if we can come up with a similar social sensation.

Going viral

For a solid period of at least two weeks beginning in mid-August, if your Facebook newsfeed looked anything like mine, you were bombarded with people pouring buckets of ice water over their heads, raising funds and awareness for ALS. Traditional fundraising and public awareness campaigns have had limited impact. In fact, the same 30-day period last year yielded only less than \$3 mil-

and technology was just right for this movement to occur.

How did this movement start? Pete Frates is a 29-year-old former Boston College baseball star who is suffering with amyotrophic lateral sclerosis (ALS). He initiated the challenge to his friends. But thanks to the power of social media, the challenge spread across the Internet. The premise of the challenge is simple: somebody nominates you, and you have 24 hours to donate \$10 to the ALS Association and dump a bucket of ice water on your head or donate \$100 to the ALS Association. If you accept

the challenge and dump the ice bucket on your head, you get to nominate a new set of people. The cascade soon reached and raised millions.

Optometry has many noble causes and worthy charities that are in need of a lit-



BY JUSTIN BAZAN, OD, owner of Vision Source Park Slope Eye in Brooklyn.

We have eye diseases and conditions that could greatly benefit from a boost in public awareness. Optometry is in need of an Ice Bucket Challenge.

lion. The difference this year was that the movement was utilizing new technology. Platforms like YouTube, Facebook, and Twitter are ideal environments for the ALS IBC to be posted, liked, shared, commented on, and retweeted. The best part is that the content is user driven. With so many mobile devices out there, nearly everyone can be a content producer using their smartphone video camera and posting via an app. The timing

of the challenge was just right for this movement to occur. We have eye diseases and conditions that could greatly benefit from a boost in public awareness. Optometry is in need of an Ice Bucket Challenge. To create our own IBC, let's break down the characteristics of the ALS IBC.

1 It was a challenge. You were being called out by name by a friend. When a friend challenges you, you feel a strong sense of urgency to accept the

challenge. This helped to ensure the challenge's longevity.

2 It was self-perpetuating. By design, it was viral. Part of the challenge is passing it on by nominating new people to take it.

3 It was for charity. Doing something for a good cause helps to motivate people. People often are on the lookout for a worthy cause to be involved with. It also makes people feel good to help. Letting everyone know you are a do-gooder via social media serves to amplify this physiological reward.

4 It was simple. A bucket, some ice water, and you're there. Camera phones and social media apps are ubiquitous. Keeping the effort low ensures the action remains high.

5 It was scalable. Many groups and organizations did it together. In fact, one whole town even turned out to do the challenge!

6 The timing was right. Catch us longing for a way to cool down during the dog days of summer, and you're onto something. The ALS IBC hit just at the peak of summer for many of us. Taking an icy plunge sounded pretty refreshing.

7 It was fun. The freezing rush experienced looked like a lot of fun. People wanted to do it.

8 It was safe. A few Internet challenges have had some serious consequences and have an inherent danger built in. The ALS IBC is for the most part safe. There were a few accidents along the way, but nobody was in danger of dying from doing the challenge as originally designed.

9 Celeb endorsement. Everyone from Leonardo DiCaprio to Bill Gates got in on the action. It really helped build awareness because those videos were viewed by millions.

10 It was exciting to watch. There were some really entertaining videos! This greatly added to the level

13 It was outrageous. People love doing things that are considered a little outside the norm. Deliver-

The challenge posed to our profession is to come up with a challenge that meets or exceeds these characteristics. Let's see those creative optometric minds in action!

of virality. These popular videos were shared and passed onto others via social networks.

11 You could get creative. There isn't just one way to do it. There were literally hundreds of clever variations.

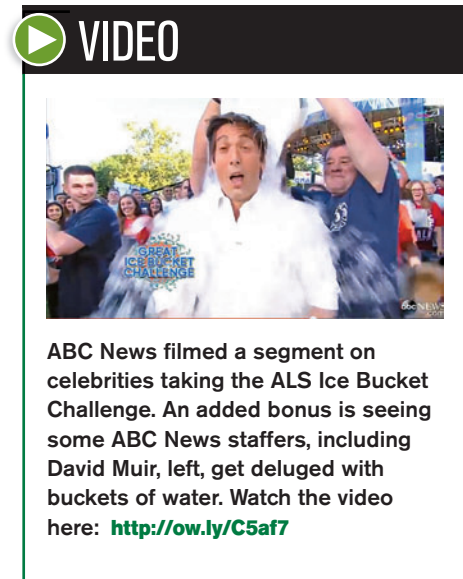
12 It was quick and easy. The time commitment to engage in the challenge was minimal. There was a very low barrier to participate.

ing a shivering shock fits just such a bill.

Optometry can replicate the success of the ALS IBC. So the challenge posed to our profession is to come up with a challenge that meets or exceeds these dozen plus characteristics. Let's see those creative optometric minds in action! What ideas for a challenge do you have? Let us know, and let's make a difference.●

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ABC News filmed a segment on celebrities taking the ALS Ice Bucket Challenge. An added bonus is seeing some ABC News staffers, including David Muir, left, get deluged with buckets of water. Watch the video here: <http://ow.ly/C5af7>

www.alsa.org/news/media/press-releases/ice-bucket-challenge-inspires.html. Accessed 09/15/2014.

Dr. Bazan is a 2004 SUNY grad.

Reach him on his Facebook page, www.facebook.com/JustinBazan.

IN BRIEF

Eyecare practitioners must be proactive in discussing healthy digital device use with patients to prevent digital eye strain

LAS VEGAS—Digital eye strain is becoming an increasingly common problem for Americans, and optician's need to be more proactive in discussing the problem with their patients. So said Michael Vitale, ABOM, LDO, NCLEC, lens division liaison for The Vision Council, who stressed the lack of public awareness of what have been dubbed "computer glasses" at Vision Expo West.

Computer vision syndrome (CVS) is referenced more frequently as workloads continue to move more and more toward computer use. Encompassing a broad range of pain issues and eyestrain experienced by computer users, CVS is estimated to affect between 50 to 90 percent of people who work at a computer screen. The main culprit behind the eyestrain is the blue light emitted by screens.

"We're looking at pixels now, not just black and white print," Vitale said. "That's what's causing all that eye strain."

Those pixels are emitting harmful UVB light and, as newer research suggests, high-energy visible light, which has wavelengths centered around 430 nm (+/- 20 nm). Staring into screens for long periods of time—and the associated reduced blinking—can bring about digital eye strain, symptoms of which can include red, dry or irritated eyes, blurred vision, and eye fatigue.

To help combat the issue, Vitale encourages opticians to recommend glasses specifically for work, regardless if the patient uses glasses for everyday use. So-called "computer glasses" should have specialty filters with anti-reflective coating and a blue-light filter to help block out the higher spectrum blue light. And if patients resist getting glasses for a specialty use, Vitale scoffs at the idea.

"What makes any consumer out there think that just one pair of glasses will work?" he asked.

"They have more than one pair of walking shoes these days."

It's in their best interest if they spend a lot of time in front of screens, he said, and if the latest statistics are any indication, that pretty much includes the entire U.S. population. When surveyed, a third of respondents said they spent one to four hours per day in front of a screen.

About 32 percent claimed four to nine hours was more common, while 28 percent said they spent more than 10 hours per day.

The sheer volume of screen use is a clear indicator of a shift in human behavior, and as a result new associated problems are popping up.●



Learn more about digital eye strain by seeing our library of content on this subject on our website: <http://ow.ly/CaKx8>

Reviewing an optic pit in a glaucoma suspect

The possibility of serous retinal detachment secondary to the optic pit remains

FA, a 24-year-old, was referred to the Ocular Disease Service at UAB Eye Care for a glaucoma evaluation. Other than a history of spectacle correction for myopic refractive error, the personal ophthalmic history is negative. He reports that his maternal grandfather had glaucoma, but this is unconfirmed. He has never smoked and drinks alcohol socially. Visual acuity is correctable to 20/20 in each eye.

Pupils are round and equally reactive without RAPD. Goldmann applanation tonometry was 16 mm Hg in each eye at 9:55 a.m. Pachymetry was 619 and 622 μ m in the right and left eyes, respectively. The anterior segments of each eye were

unremarkable in each eye.

As a baseline, a visual field was performed, as was an OCT. These are depicted in Figures 1 and 2, respectively.

Dilated fundus evaluation of the optic

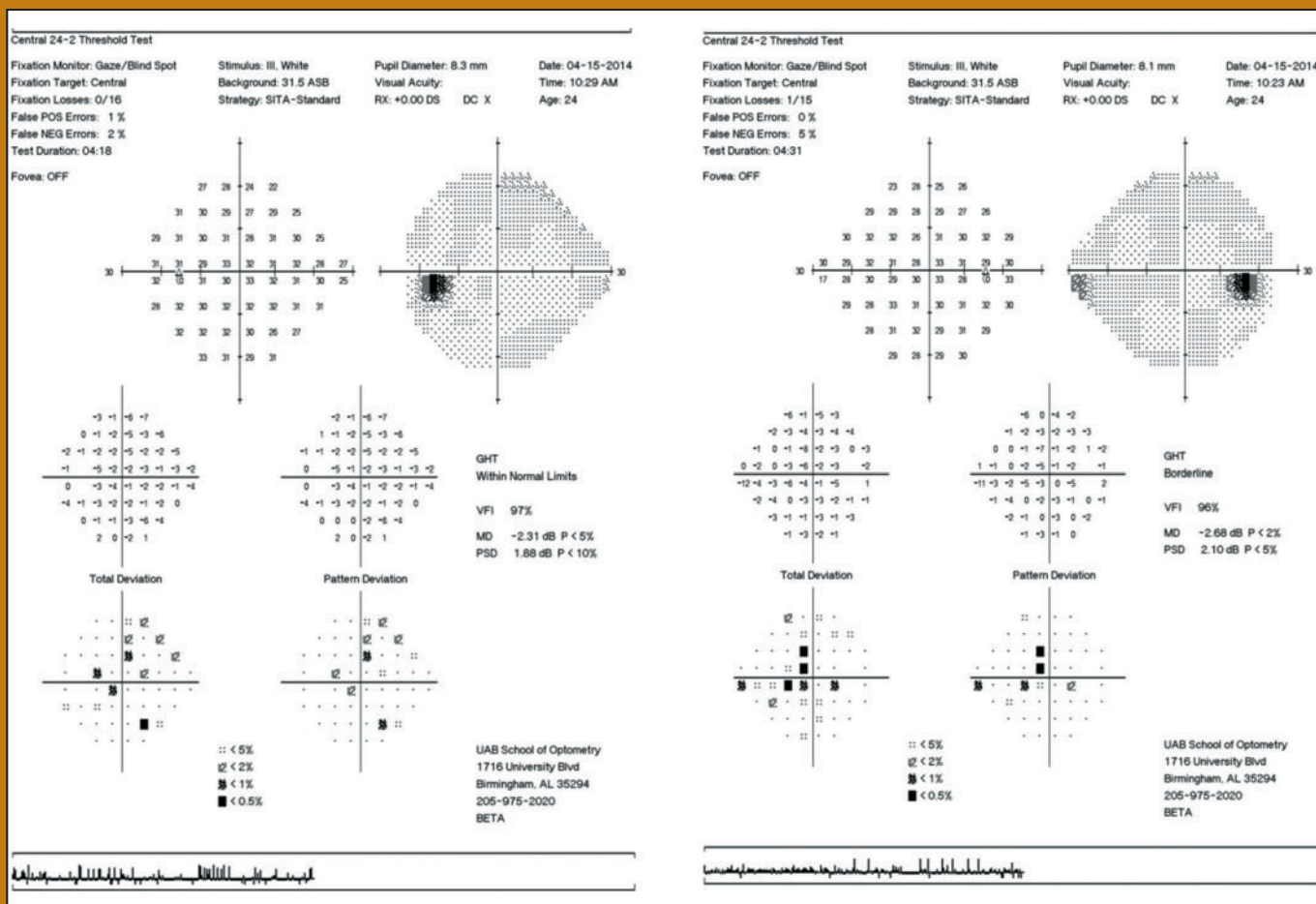
nerves is shown in Figure 3. Note particularly the asymmetry between the disc appearances.

The appearance of an optic pit can present clinical challenges. Careful stereoscopic observation may lead to the diagnosis, but additional testing, such as the OCT images obtained in this case may be helpful. Looking at the appearance of the optic nerve head of the patient's left eye, it may be difficult to appreciate the depth of the pitting. Stereoscopically, it becomes evident. What would not be clear at clinical examination is the extent of any communication between the pit and the sub-sensory retina space. The potential

See **Optic pit** on page 18



BY LEO SEMES, OD, FAAO, professor of optometry at the University of Alabama-Birmingham



FIGURES 1 AND 2. Visual field of the left and right eyes in the left and right panes, respectively. Note that there is good data and a normal result.

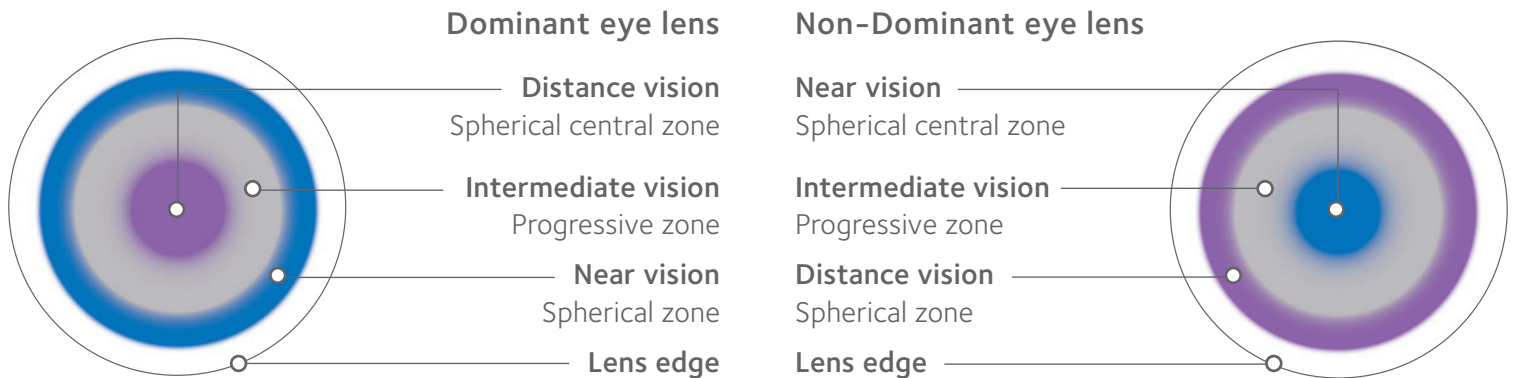
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Optic pit

Continued from page 16

conduit can be seen in the cross-sectional images from the OCT. (See Figure 3.)

The images confirm the presence of the optic pit, which is felt to be congenital/developmental, and not the so-called acquired pit of the optic nerve (APON) that has been reported in glaucomatous optic atrophy.¹

The patient's baseline data will serve as a starting point for follow-up. We are planning to monitor the patient, who appears to be as low risk for glaucomatous damage. However, the possibility of serous retinal detachment secondary to the

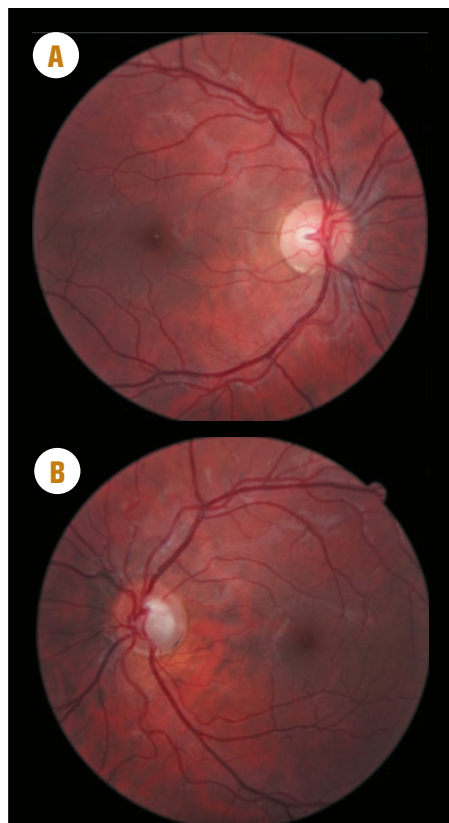


FIGURE 2. A. On the left is the right posterior pole. Note that the optic nerve is of average size with distinct disc margins and healthy rim tissue. The macula and vasculature are intact. **B.** On the right is the left posterior pole. Note that the optic nerve is of average size with distinct disc margins and healthy rim tissue superiorly with a deep cup that is larger than that of the right eye. In addition, there is some parapapillary pigmentation and inferior temporal stretching. Looking carefully at the optic disc stereoscopically, the optic pit is evident.

The patient's baseline data will serve as a starting point for follow-up.

optic pit remains.^{2,3} The patient was asked to report if any visual changes occur in the left eye.●

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Dr. Semes is a founding member of the Optometric Glaucoma Society and a founding fellow of the Optometric Retina Society.

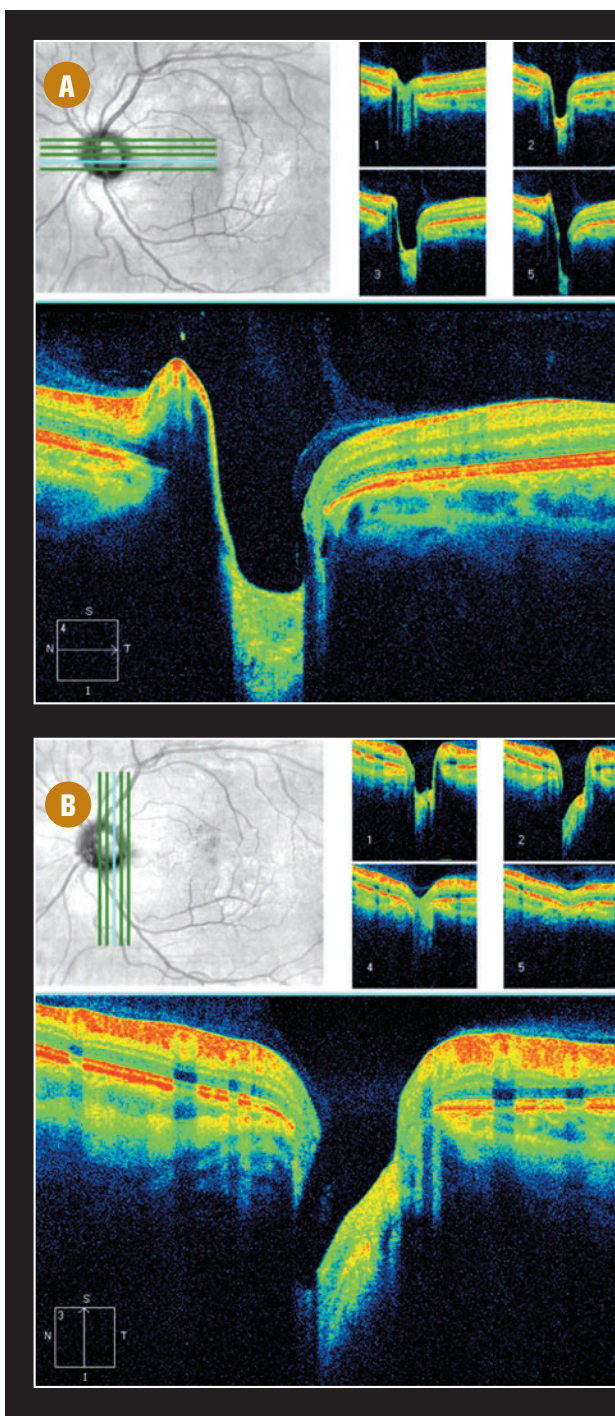


FIGURE 3.

A. OCT, five-line raster high definition horizontally and vertically through the left optic nerve.

B. These images show the depth and extent of the optic pit and allows anatomical visualization of the potential for sub-retinal fluid to invade the sub-sensory retinal space.

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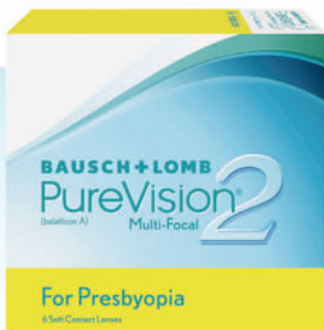
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How patients perceive your practice

The front of the house defines their view and counts more than you might think

As things change in our practices, we tend to force new methods and techniques into old categories. Sooner or later, things become antiquated. To more accurately reflect the way our office is currently organized, we recently created five zones. The most dramatic shift from the traditional is the concept of the front of the house.

The front of the house (FOH) is defined as the part of a business where employees typically deal directly with the customers and the customers are in proximity with one another. In other words, the FOH is the area of the business that is open to the public. Because the entrance and exit are usually through the same door, the FOH provides the first impression of a business and the last. This term is used frequently in hotels, restaurants, and theaters.

As eyecare practitioners, we realize the importance of providing quality care, and our patients have to feel comfortable while in our practices. Because we know that this is critical and a challenge to solve,

Take the time to think about the atmosphere you want to create for patients as they walk into your practice.

here are a few suggestions to at least take a step in the right direction.

Define the feel

Creating the environment is difficult, but it is impossible if you haven't defined what that environment will be. If the culture of your practice is more medically oriented, then the FOH needs to feel efficient and complete. If providing eyewear is the top priority of the practice, then a pleasant shopping experience is essential.



BY MICHAEL ROTHSCHILD, OD
Director of What's Next-Leadership OD.

Take the time to think about the atmosphere you want to create for patients as they walk into your practice. What do you want them to see, hear, and smell? How are they greeted and by whom? What are some of the activities they will see other patients doing? Visualize, then verbalize, and get input from everyone on the team. This is what we call "creating a vision" and is the fun part.

Remove distractions

Usually, there is a big desk right in the middle of the FOH. A lot of things naturally occur at this front desk that can disrupt the vision of your FOH. The most common and biggest distraction is the telephone. Move the phones away from the front desk.

Define which other tasks can be performed somewhere else. Insurance verification, routing slip creation, scanning papers into records, taking photos of patients, and many other tasks should be taken away from the front desk, if it is feasible.

Set expectations for frame selection, check in/out

Look at the vision you have created for your practice. If you are a practice that thrives on providing quality products to your patients, you owe it to them to ensure they see the best you have to offer. If you stand on delivering the best care, you must incorporate systems to make sure everyone is fully educated about the differences in your offerings.

While the personality of the frame stylist/eyewear consultant/optician is important, there must be a basic system that everyone follows. This basic system can be flexible, but must always include a clear demonstration of your best stuff vs. the "frames covered by my insurance."

Write out every normal interaction that occurs in the FOH. Most patients have insurance that provides some benefit, but not complete coverage. Many times, there is partial or double coverage. The point is that it can be confusing. Go over these details before the visit ever starts.

Most offices also have paperwork to complete that helps the exam flow better and confirms some demographic information. Find the best way to ask for this information that leaves the patient comfortable while checking in. This needs to be coordinated with patient care and always needs to be improved.

With today's technology, we should reduce as much time at check-in as possible. We can do this by gathering what we can before the patient arrive using available technology. Take as much stress as you can away from the FOH.

The variation in the insurance coverages is amplified when patients get to "check-out." Regardless of how well you explain benefits, some hear only, "Everything is free today." Glasses or contact lenses? Vision or medical? Deductible or wellness? It can be so confusing. The answer is simply to be ready for every situation.

I recommend to presumptively bill every patient (including a year's supply of contact lenses). Apply all available benefits available and ask for payment. This is, of course, where the objections begin. So, have a planned response to each one. It is important to do this because our patients are counting on our recommendations. Instill in your FOH that it is OK to ask for large amounts of money from patients, and it is OK for them to have questions about that. It is not OK to force the patient to pick and choose what he wants.

Implement and review

The FOH is an area that gets out of control from time to time. But it is arguably the most critical area and deserves significant attention. So, give it some attention now and again in a few months, then a few months after that, and repeat.●

Dr. Rothschild is also a consultant for Alcon, Optos, and Vision Source; a member of the speakers' bureau for VSP; and a clinical researcher for CIBA Vision.

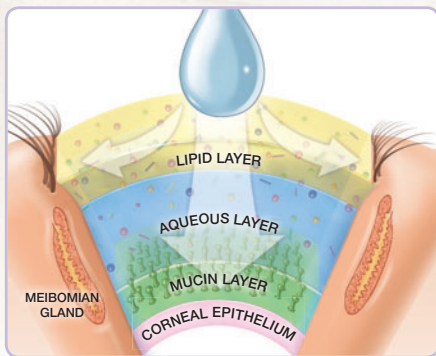
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Lens care

4 steps to selling premium products

Establish value for your recommendation, then let patient decide

It's not a new problem. But for many ODs, it continues to be a significant challenge. Too many times we hesitate to present patients with upgraded products or services when there is an added expense. If you offer upgraded items in your office, then you certainly recognize and appreciate well-made products. But to actually sell them on a routine basis, one must truly believe in the difference they make to the quality of life and vision of the patient. And that's merely step one! On the flip side of that coin are those doctors who truly believe in a product but are not confident in their ability to present it convincingly to the patient. Regardless of where you are, here are four steps to help improve your success.



CRYSTAL M. BRIMER, OD, FFAO is in private practice in Wilmington, NC.

TAKE-HOME MESSAGE If you assume your patient can't afford a premium product, you are depriving your patient of the opportunity to achieve maximum comfort and vision and diminishing the level of care you provide. These four steps can help you better present premium products to your patients.

STEP 1 Believe! Optometry is a profession fortunate enough to have quality companies vested into research and development to better our profession. Their contributions have provided us with exceptional products. We can differentiate our services by thoroughly researching available options and aligning ourselves with the best of the best. Use your resources—trade journals, company websites, and sales representatives—to learn as much as you can. Going

Detail how the product will benefit your patient. Patient benefit is key.

through this process of internal investigation and product comparison allows you to have sincere conviction on the worthiness of the products you have chosen. This knowledge and conviction is essential in being able to successfully sell premium products.

STEP 2 Staff engagement The ultimate goal is belief on the part of the staff that this product is the best available and will truly change the patient's life. While you cannot control the beliefs of your staff, you can control what they are taught. Relay your own knowledge and invite reps to conduct "lunch and learn" sessions to help bring them to the same conclusions you have made. In reality, consistency of action is more convincing than anything. Be consistent in presenting new technology to your patients and repeat that recommendation during the handoff to the

staff. At least once a week, share a premium product success story with the entire staff, detailing the patient benefit and resultant gratitude. Ask staffers to take turns presenting stories. The more patient stories they hear, the more they believe. It also equips them with testimonials they can share with other patients to transfer that excitement and further support your recommendations.

STEP 3 Establish value Cost is often the first question patients ask. Is it because cost is *really* more important than value, or because it's the *only* question they know to ask? The responsibility to educate patients on the difference between cost and value lies with us. And the only way to accomplish that is to thoroughly detail *how* the product will benefit them. *Patient benefit is key.* Don't present patients with a solution until they know they have a problem. If a patient claims to be "fine" in his glasses or contact lenses, ask specific questions about his comfort and vision or what he would like to change. This creates an opportunity for you to prescribe superior products in order to improve his experience. You can also link superior products or treatments to a specific diagnosis or lifestyle need. An example is in prescribing a premium AR coating *because* the patient has cataracts and secondary glare. Never talk about specific products or price until this step is complete. For a recommendation to be impactful, it has to be tailored to the patient. When you make a recommendation after detailing the individual complaint, diagnosis, or lifestyle need, it resonates as being specific to that patient. Reiterate the full message of the problem and solution when transitioning him to your staff member.

STEP 4 Make it real Now that the patient realizes he has a problem and you have a premium product that will likely help, all he has to do is accept the cost. This is an easier task now that value has been established. No matter our economic status, we all spend at least some of our paycheck on wants instead of needs. The key is to identify what this particular patient might be willing to give up and compare it to the benefit and value of your product. For example, "The difference in price is about the same as one nice dinner out per year. In turn, you get a fresh pair of contact lenses every day." Maybe it's one Starbucks per week, or maybe one 12-pack or bottle of wine per month. Everyone has something they could exchange for ocular comfort and visual clarity.

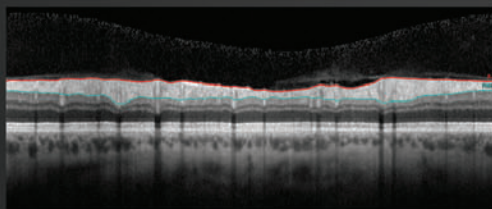
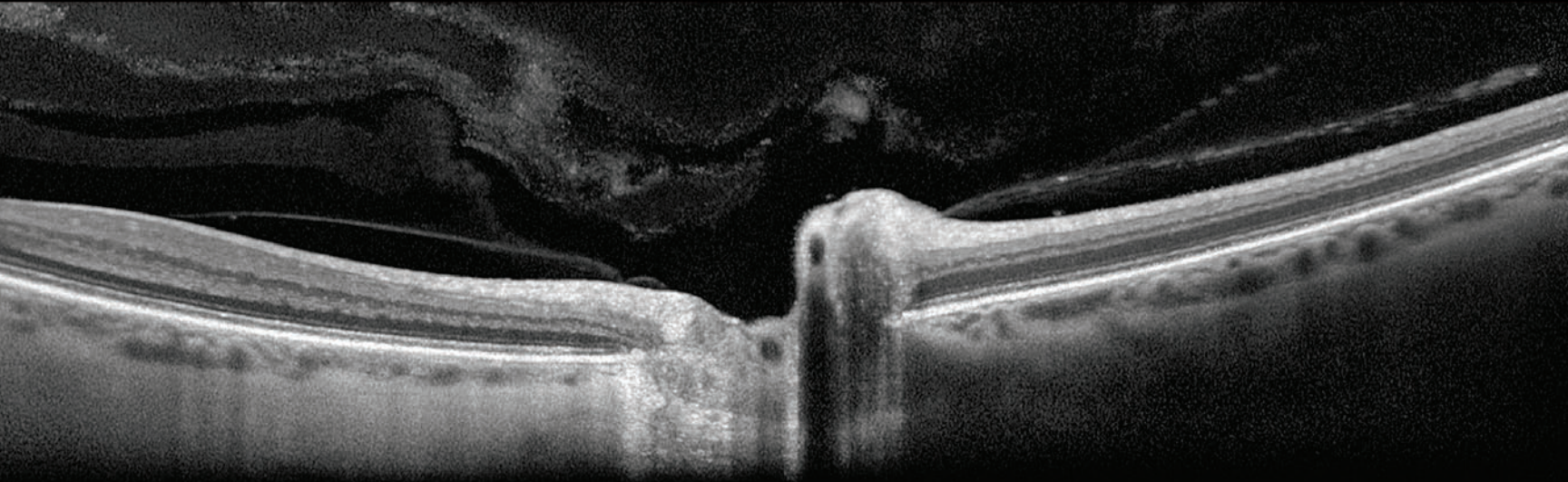
Give your patients options

It is quick and comfortable to take the easy way out and avoid conversations that seem more difficult. But we have to stop spending our patients' money for them! In doing so, we deprive them of the opportunity to achieve maximum comfort and vision. It's OK if they decline the benefits of a premium product; at least they know it was an option. But when we make the decision for them by not offering it confidently, it diminishes the level of care they receive. An even bigger threat is when they learn about it from a friend or colleague. Then we have a much greater chance of losing the patient. So offer the best of the best, but maintain your focus on ultimate patient comfort and vision as opposed to the end purchase. ●

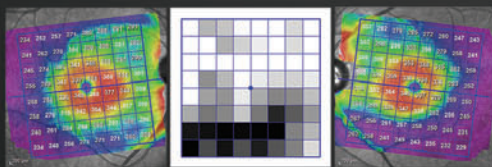
Dr. Brimer has special interests in contact lenses and dry eye.
✉ drbrimer@crystalvisionservices.com

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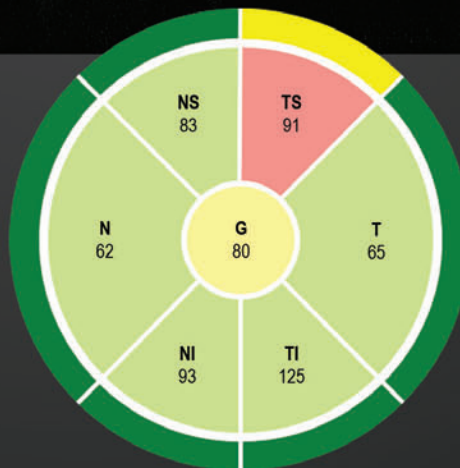
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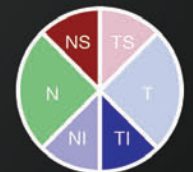


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Peroxide

Continued from page 1

There are a multitude of products available, yet they fall into two categories: multi-purpose solutions (MPS) and hydrogen peroxide (H_2O_2). MPS have the same general mode of action: they disrupt microbial cell membranes and lead to cell death.¹ We often think of H_2O_2 as a fairly harmless chemical compound because it breaks down into oxygen and water, yet H_2O_2 is a strong oxidizing agent and acts on proteins, lipids, and microbial DNA, all of which lead to cell death. Hydrogen peroxide provides excellent antimicrobial efficacy. It works by penetrating the lens material and cleans by expanding the lens matrix and oxidizing microbes. Because of its hypotonic nature and pH of 4.00, H_2O_2 is also able to break protein and lipid bonds and remove trapped debris.² H_2O_2 is highly effective against microorganisms when used in a 3 percent concentration but is non-selective in its activity.

Hydrogen peroxide has been in use as a contact lens disinfecting agent since the 1970s and remains a viable option for a reason—it works extremely well. Three percent H_2O_2 effectively disinfects the contact lens against a wide variety of pathogens that may adhere to a contact lens during a normal wearing cycle.^{3,4} The human body is well equipped to metabolize H_2O_2 in low concentrations (up to 800 ppm in topically applied ophthalmic drops).^{5,6} Because H_2O_2 is a common byproduct of human physiol-



ERNIE BOWLING,
OD, FFAO
Chief Optometric
Editor

biofilms on lens surfaces.⁹ A study by Loretta Szczotka-Flynn and associates showed that clinical and reference strains of *Pseudomonas aeruginosa*, *Serratia marcescens*, and *Staphylococcus aureus* formed biofilms on contact lenses. Of the solutions her group tested (five MPS and one peroxide system), only the H_2O_2 solution (Clear Care, Alcon) showed activity against all three strains.¹⁰ In another study, her group also found that only peroxide systems were effective against fungal biofilms of *Fusarium oxysporum* and *Fusarium solani* on the three lens types tested.¹¹

Corneal infiltrates

While corneal infiltrates have long been a recognized problem with extended wear contact lenses, they can be seen in daily

wear patients who have hypersensitivity concerns. H_2O_2 disinfection is a good option in this patient cohort. Chalmers and colleagues published a large-scale retrospective study involving thousands of lens wearers, and H_2O_2 had a lower rate of corneal infiltrates than the multi-purpose solutions as a group. The authors speculated that, “even though hydrogen peroxide solutions do not carry a rubbing step, the volume of solution required and agitation created by the oxidation process may provide a less antigenic lens surface.”¹²



THIS PATIENT DEVELOPED a sensitivity to her MPS solution. MPS are a first choice for most patients, and there is no way to predict which patients will develop solution sensitivities. For those sensitive patients, hydrogen peroxide disinfecting is a great alternative and often allows the patient to return to normal, comfortable lens wear.

Comfort

Hydrogen peroxide care systems are preservative-free and are often used by contact lens wearers who may be sensitive to preservatives found in multi-purpose contact lens solutions. Patients who experience contact lens discomfort often benefit from changing to an H_2O_2 solution. Many patients in my practices who have discontinued contact lens wear can return to comfortable wear when they change to an H_2O_2 solution. In fact, I will change patients presenting with nonspecific comfort complaints to an H_2O_2 system before changing the lens type.

Hydrogen peroxide brands available

I found two name brands of peroxide systems in the eyecare aisles I visited (along with several generics): Clear Care and PeroxiClear (Bausch + Lomb). Clear Care combines a surfactant cleaner and functional wetting agent with peroxide in a single bottle. It has a six-hour neutralization period and disinfected lenses can be stored for up to seven days. It has been FDA cleared for use with silicone hydrogel lenses. PeroxiClear allows for a four-hour neutralization cycle vs. the six-hour cycle of other systems. It also features a redesigned basket system and includes Triple-Moist Technology which helps to provide up to 20 hours of moisture.

Generic hydrogen peroxide contact lens systems are appearing on store shelves. Patients often make choices based on cost alone, yet they may not get what they are paying for. There are significant differences in formulations among apparently similar products, and for that reason alone I believe it is important to recommend name-brand H_2O_2 care systems as well as MPS systems. Don't assume your patients are using what you recommend. Constant reinforcement is

See **Peroxide** on page 26

Hydrogen peroxide-based contact lens disinfection systems are known for their exceptional disinfecting ability and compatibility with the ocular surface

ogy, both the tear film and the ocular surface tissues have an abundance of enzymes capable of rapidly neutralizing dilute H_2O_2 .^{5,7}

Biofilm formation

Hydrogen peroxide can also penetrate bacterial biofilms. Biofilms are microbial communities adhering to a surface, and bacteria in biofilms have increased resistance to antimicrobials and host immune responses.⁸ One explanation for contact lens-induced infection despite good lens wear and care compliance is the ability of organisms to form

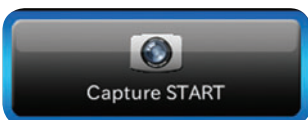
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CONNECTING VISIONS

Peroxide

Continued from page 24

necessary to make sure patients understand they need to use the care system we recommend.

Not the end all

One problem with H₂O₂ systems is that after the hydrogen

peroxide has been neutralized, the solution remaining in the lens case has no disinfecting ability. It is possible the case and lenses can become contaminated if the case is opened and used to store contact lenses without adding fresh disinfecting solution. Patients also need to be careful that they do not apply hydrogen peroxide directly to the eyes.

H₂O₂ can be toxic to the epithelium, so we must instruct our patients about the importance of full neutralization of the peroxide. Emphasize to your patients this can be achieved only with the special case enclosed with the system. What remains after neutralization is unpreserved saline; patients should apply their lenses

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Patients using peroxide are the most loyal to that solution than any I have ever seen, and patient satisfaction is our ultimate goal

directly from the case. Rinsing the contact lenses with sterile saline is acceptable. The rare accidental instillation of full-strength 3 percent H₂O₂ usually produces temporary conjunctival injection and corneal epithelial staining and edema with ocular discomfort. While this incident alarms the patient, rinsing the eye, use of artificial tears, and discontinuing lens wear for a short while usually resolves the presentation. It is important to reassure the patient that no permanent damage is done.

Hydrogen peroxide-based contact lens disinfection systems are known for their exceptional disinfecting ability and compatibility with the ocular surface. It is these characteristics that have allowed hydrogen peroxide disinfection to remain an important option for our contact lens patients. In my practice, patients using H₂O₂ are the most loyal to that solution than any I have seen, and patient satisfaction is our ultimate goal.●

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Rx lid cleanser aids blepharitis, MGD

Contact lens wearers may also see benefit in resumed or increased wear time

By Julie Crider, PhD

Everything from our high-tech lifestyles,¹ outdoor environmental factors, and the general aging of the population can lead to blepharitis, dry eye disease (DED), and meibomian gland dysfunction (MGD). Sustained tasks using the eyes, such as reading, can reduce the blink rate to as low as five blinks per minute.² This slow blink rate can cause additional stress on an ocular surface that is already compromised due to one of the aforementioned disorders.

It is not surprising that the limited prevalence data currently available suggest ocular disorders, such as dry eye, are increasing in prevalence.³ Patients with these disorders experience discomfort as well as reductions in both productivity and overall quality of life. Blepharitis, for example, tends to be a chronic condition, and no one treatment has proven curative thus far.⁴ Some of the treatments used for these ocular diseases have included: lid scrubs, mild shampoos, warm compresses, and antibiotic ointments. The Food and Drug Administration (FDA) recently approved novel Rx eyelid cleanser i-Lid (NovaBay Pharmaceuticals, Inc.), which is designed to enhance lid hygiene and help to alleviate these conditions.

DED, MGD, and blepharitis

DED is typically the result of insufficiency of tear quality or volume, which leads to inadequate lubrication of the ocular surface.⁵ A variety of signs and symptoms are associ-

ated with DED, including: grittiness, burning, irritation, foreign body sensation, redness, fluctuating vision, and increased blink rate.^{6,7} The link between the signs and symptoms of DED has proven inconclusive to date.⁸

MGD is one of the leading causes of DED throughout the world.⁹ The Tear Film and Ocular Surface Society (TFOS) described MGD as “a chronic, diffuse abnormality of the meibomian glands, commonly characterized by terminal duct obstruction and/or qualitative/quantitative changes in the glandular secretion.”⁹

Blepharitis is one of the most common eye disorders,^{10,11} but the condition often goes undiagnosed due to the fact that it can sometimes be perceived by the patient as being a nuisance rather than a legitimate medical concern. Blepharitis is an inflammatory disease of the lid margin with a multifactorial etiology.¹⁰ This condition encompasses pathologic conditions of the pilosebaceous unit of the anterior lid or the meibomian gland of the posterior lid.¹² The anterior form is usually caused by bacterial overgrowth and/or sebaceous gland activity, while the posterior form is caused by MGD, the most common causative factor for evaporative dry eye. Blepharitis is typically diagnosed using several hallmark signs and symptoms including:¹²

- Heavy/puffy eyelids
- Itching/burning eyelids
- Dry, irritated eyes
- Crusting or flaking of the lids on awakening



JULIE CRIDER, PHD, worked in the ophthalmic pharmaceutical industry for over 20 years

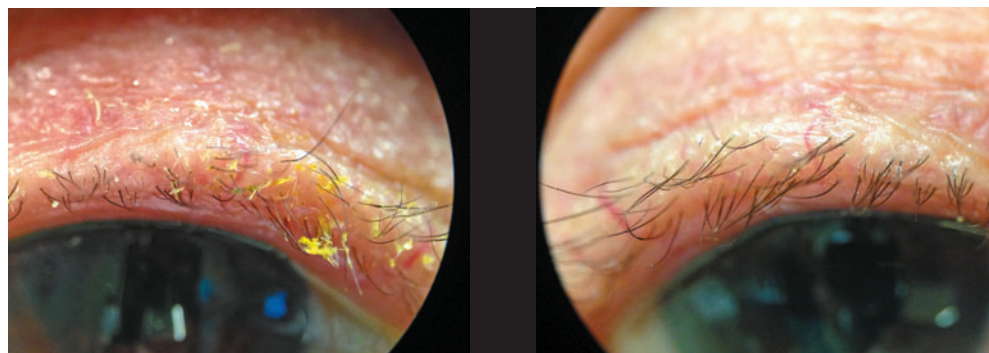
TAKE-HOME MESSAGE A new Rx product, i-Lid Cleanser from NovaBay Pharmaceuticals, helps to enhance lid hygiene. The product is formulated with hypochlorous acid, an antimicrobial agent, which reduces bacterial toxins. Suggested conditions for use include blepharitis, dry eye/MGD, preop or periop care, and after contact lens wear.

Currently, there is a paucity of prevalence data regarding blepharitis.^{10,11} This is due, in part, to the fact that the disease often exists as a comorbid condition with DED, seborrheic dermatitis, atopy, acne rosacea, etc.,¹² which makes a differential diagnosis more challenging. To address this knowledge gap and increase our understanding of blepharitis, Lemp and Nichols conducted a survey of 5,000 individuals in the U.S. and found that 79.3 percent had experienced at least one symptom related to blepharitis during the previous 12 months.¹² Furthermore, 32 percent of respondents experienced at least one symptom half of the time.

Lemp and Nichols also surveyed 120 ophthalmologists and 84 optometrists to evaluate the frequency of ocular surface symptoms associated with blepharitis.¹² About 47 percent of optometry patients and 37 percent of ophthalmology patients were suffering from these symptoms. Most ODs (97 percent) agreed or strongly agreed that DED is a common comorbidity with blepharitis/MGD. Most (94 percent) of ODs agreed or strongly agreed that posterior blepharitis/MGD is the most common cause of DED. This is important because MGD is a major component of DED and contact lens intolerance. Optometrists rated their most important treatment goals for anterior blepharitis:¹²

- Reduced symptoms: 44 percent
- Decreasing the bacterial load: 30 percent
- Reducing inflammation: 14 percent

According to the optometrists surveyed, the most important product attributes for the management of blepharitis and MGD were: safety beyond short-term exposure, tolerability, dosing regimen, and antibacterial properties. The two most important factors for blepharitis patients to seek treat-



BEFORE AND AFTER. These images show a patient's lid both before and after usage of i-Lid Cleanser. Note the difference in lashes and lash margin.

Blepharitis

Continued from page 27

ment were blepharitis symptoms (34 percent) and dry eye symptoms (41 percent).

Clinicians should be aware of the effect of blepharitis, dry eye, and other disorders on contact lens patient dropout rates. Mean rates in the U.S. have been estimated at about 16 percent.¹³ A survey by Rumpakis found the number one reason for dropouts in the U.S. appeared to be discomfort (50 percent of respondents). Furthermore, dropouts can constitute a substantial loss of practice revenue.

Treatment paradigms for blepharitis appear to be changing.¹² Although lid hygiene is still important, the recent trend is moving away from traditional antibiotic ointments and toward Rx products.

A new treatment option

The i-Lid Cleanser product was developed to enhance lid hygiene. The cleanser is formulated with 0.01 percent hypochlorous acid,¹⁴ a naturally occurring compound¹⁵ that provides an oxidative burst produced by neutrophils and monocytes. Hypochlorous acid in solution is a fast-acting/broad spectrum¹⁵⁻¹⁷ antimicrobial agent, with >99.99 percent kill for numerous pathogens including:

- *S. aureus*
- Methicillin-resistant *S. aureus* (MRSA)
- *S. epidermidis*
- *H. influenzae*

This rapid bacterial kill results in reduced levels of bacterial toxins, which would oth-

Treatment paradigms for blepharitis appear to be changing. The recent trend is moving toward Rx products.

erwise stimulate the inflammatory cascade. Biofilms are known to delay wound healing.¹⁸ Hypochlorous acid disrupts biofilms in solution.¹⁹ This agent also reduces bacterial loads in animal model studies²⁰ and is associated with a low toxicity profile in solution.¹⁶ Hypochlorous acid has been used successfully in other medical applications such as nasal irrigation¹⁷ and wound therapy.^{14,16,20}

Clinical experience with i-Lid Cleanser

Christine Sindt, OD, FAAO, associate professor of clinical ophthalmology at the University of Iowa Hospitals and Clinics, manages patients with blepharitis. She has been

Consider use for conditions in which enhanced lid hygiene is needed

- Blepharitis for better management of signs and symptoms
- Dry eye (MGD) to decrease irritation associated with dry eye
- Preoperative/perioperative care for cataract, refractive, glaucoma surgery, and retinal surgery
- After contact lens wear
- Other ocular irritation

using the hypochlorous acid cleanser with her patients for several months and seen positive results.

"We are constantly looking for better treatments for their eyelid disease," she said. "We shouldn't just be thinking of blepharitis as a benign condition. It can actually be viewed as very devastating, both visually and in terms of comfort for the patient."

She also points out that it is important to reduce the bacterial bioload on the eyelid. She said this refers back to Loretta Szczotka-Flynn's work²¹ which shows people who have had marginal infiltrative events have higher lid flora than those who haven't. Dr. Sindt believes that the hypochlorous acid cleanser should be given to every contact lens wearer who has had a contact lens peripheral ulcer. She also feels the product has

a benefit for any patient who has rosacea.

"My patients have come back and said that they have found this to be very effective in making their eyes more comfortable and increasing their contact lens wear time," said Dr. Sindt. Others have even resumed contact lens wear. She also pointed out that her patients are experiencing reductions in both itching and dry eye symptoms.

Art Epstein, OD, FAAO, who practices in Phoenix, has had success with i-Lid cleanser and now keeps the product in stock so that his patients have immediate access to it. Previously, his patients were using baby shampoos that were stripping a lot of the oils from the skin, which was a significant concern

with MGD and blepharitis. "In some cases of lid disease," he said, "the *Staph* bacteria produce lipases, which lead to saponification, and you end up with only 'soaps' on the lids, which is why patients have burning eyes."

Dr. Epstein said the hypochlorous acid cleanser works effectively without the detergent action and also counteracts some of the toxins that are produced by bacteria. Therefore, his patients get a lot of relief using the product.

He noted that treatments for eyelid disease have not changed for a number of years and that the hypochlorous acid cleanser is an ideal solution for a very prevalent problem. The development of bacterial resistance with the cleanser is not a concern. His patients appreciate the i-Lid cleanser's results, not only in terms of the efficacy and gentleness of the product, but also in their overall cosmetic appearance.

Use in therapeutic regimens

The 0.01 percent hypochlorous acid eyelid cleanser has a useful place in the therapeutic armamentarium for any instance where enhanced lid hygiene is needed:

- Blepharitis for better management of signs and symptoms
- Dry eye (MGD) to decrease irritation associated with dry eye
- Preoperative/perioperative care for cataract, refractive, glaucoma surgery, and retinal surgery
- After contact lens wear
- Other ocular irritation

Recolonization of bacteria can be a chronic problem. For example, women routinely reuse eye makeup and inoculate themselves with bacteria during each application. Rubbing the eyes with the fingers can also be a source of bacterial and allergen contamination.

The cleanser can be used in place of baby shampoo and other commercially available lid scrubs. Data to be presented this fall demonstrates that the cleanser produces a faster bacterial kill than other agents that are currently available. The product can be used in conjunction with other products. It provides a complimentary mechanism of action to add to the treatment of *Demodex sp.* It helps to prevent secondary bacterial colonization and reduce the inflammatory response caused by exotoxins from the mites.

Dr. Epstein recommends the cleanser for lid hygiene as a stand-alone agent. He also has his patients use it in conjunction with other agents, such as antibiotics, for more severe cases of MGD and blepharitis. In some cases, patients were able to discontinue their antibiotic therapy after using

the cleanser. He also recommends it for patients who have undergone LipiFlow (TearScience) therapy.

Treatments for eyelid disease have not changed for a number of years

Dr. Sindt often recommends a natural oil product, such as coconut oil, to soften the tissue around the eye and help with cleaning the flaking debris. She then has her patients use i-Lid Cleanser to remove the bacterial bio burden effectively on the eyelid surface.

The cleanser formulation does not contain other buffers, preservatives, or surfactants and is therefore gentle enough for everyday use.

This contributes to one of the side-benefits of the product that patients feel more comfortable in their contact lenses or are often even able to resume wearing their lenses. ●

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Dr. Crider worked in the ophthalmic pharmaceutical industry for over 20 years as a research scientist, senior medical writer, editor, and publications manager. In 2010, she launched Collaborative Medical Writing, LLC, where she continues to work as a freelance medical writer.

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Laser cataract

Continued from page 1

Another study found statistically significant improvement in mean spherical equivalent after implantation of different monofocal IOLs with laser vs. conventional surgery.¹⁰ For this study, we compared a single surgeon's post-operative refractive outcomes of premium patients six months prior to the availability of laser-assisted surgery (August to December 2011) and six months after starting laser-assisted cataract surgery (August 2012 to January 2013).

Study method

This was a retrospective study that compared the visual outcomes of 32 eyes from 32 patients undergoing laser-assisted refractive cataract surgery with Alcon LenSx (laser group) vs. 30 eyes from 30 patients undergoing conventional refractive cataract surgery (conventional group), all with implantation of premium IOLs—e.g., Alcon AcrySof IQ Toric IOL (Toric), Alcon ReStor IOL (ReStor), and AMO Tecnis Multifocal IOL (TMF)—by the same surgeon, TJ. The primary outcomes were refractive measures mean spherical equivalent (MSE) and uncorrected logMAR acuity at one-month post-op.

Factors such as age, sex, axial length, pre-operative corneal keratometry, and IOL types were assessed to ensure similarity between the two groups. Statistical analysis was performed using the two-sample T-test and Mann-U test.

Inclusion criteria were only one eye per subject was eligible, only subjects who received a premium IOL were included, and their target distance correction had to be plano.

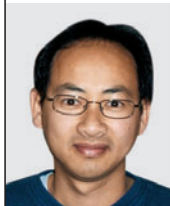
Exclusion criteria were the presence of any macular abnormality, corneal dystrophy or degeneration, pseudoexfoliation, or a



LORETTA T. NG, OD, FAAO is clinical director of Jenkins Eye Care in Honolulu



TYRIE L. JENKINS, MD, has been in private practice in Hawaii for more than 20 years



ANDREW L. NGUYEN, PHD, is a statistical consultant for Marshall B. Ketchum University

history of corneal surgery—LASIK, PRK, CK, or RK/AK.

Results of the study

No significant difference was found in age, sex, axial length, or corrected visual acuity prior to surgery (CDVA-pre) between the laser and conventional groups (p -value > 0.05) (Table 1).

One month after surgery the residual manifest refraction, as measured by MSE, was statistically significantly less in the laser group at $+0.02 \pm 0.33$ D as compared with the conventional group at -0.19 ± 0.43 D (p -value = 0.032). Similarly, the uncorrected visual acuity as measured with logMAR was overwhelmingly better in the laser group at 0.06 ± 0.06 (approximately 20/20-3 Snellen) vs. 0.17 ± 0.13 (approximately 20/30 Snellen) for the conventional group (p -value < 0.001).

More than twice as many patients achieved 20/25 and 20/20 uncorrected vision at one-month post-op in the laser group as compared to the conventional group (Figure 1). Ninety one percent of the laser group achieved 20/25 or better vision at one-month post-op as compared to only 40 percent in the conventional group (Figure 2).

Analysis by IOL type elucidated that the toric IOL subgroup drove the difference found in visual outcome (MSE) between the laser and con-

TAKE-HOME MESSAGE

A retrospective study compared the visual outcomes of 32 eyes from 32 patients undergoing laser-assisted refractive cataract surgery vs. 30 eyes from 30 patients undergoing conventional refractive cataract surgery, all with premium IOLs. Laser-assisted refractive cataract surgery provides significantly better visual outcomes than conventional refractive cataract surgery in premium IOL patients. The improvement in visual outcome in the laser group is possibly from the more precise laser capsulorhexis and limbal relaxing incisions, resulting in better effective lens positioning and correction of corneal cylinder.



Dr. Jenkins monitoring laser applications with LenSx during laser-assisted cataract removal.

ventional groups (Table 2). Pre-operative corneal astigmatism, K2-K1, was not significantly different between the two groups within the same IOL category (Table 3). Because only three patients in the conventional group chose TMF, the ReStor and TMF groups were combined for this analysis.

Discussion Evidence has been mounting since the introduction of femtosecond laser-assisted cataract surgery surrounding its superiority compared to conventional surgery in the creation of a more precise capsulotomy,^{2,4}

See **Laser cataract** on page 32

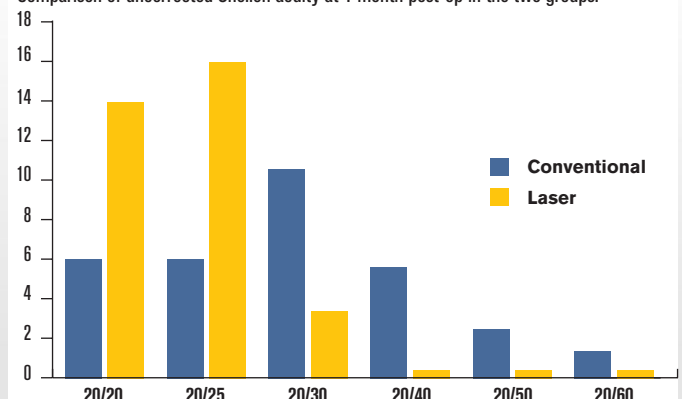
TABLE 1

Comparison of age, sex, pre-op corrected acuity and axial length for the two groups

Method	Age (yrs)	Sex	CDVA-pre IgMAR (Snellen)	Axial Length (mm)
Conventional (n=30)	69.6	33% male	0.52 (~20/65)	24.6
Laser (n=32)	68.0	34% male	0.52 (~20/65)	24.1
P-value	0.543	0.931	0.986	0.211

FIGURE 1 Uncorrected acuity 1-month post-op

Comparison of uncorrected Snellen acuity at 1 month post-op in the two groups.





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Laser cataract

Continued from page 30

reduced intraoperative ultrasound energy use (equivalent phacoemulsification time),^{2,5,6} reduced anterior chamber cells and flare post-operatively,⁷ and potentially lessened surgically-induced endothelial cell damage.⁸ However, there has been less consistent evidence regarding the visual outcomes of the femto-phaco procedure, with some studies citing little to no improvement in refractive outcomes with femto-phaco vs. conventional cataract surgery.^{9,10}

In our study, the visual and refractive impact of laser-assisted cataract surgery was evaluated only in patients who elected to have refractive cataract surgery as confirmed by their choice of a premium IOL. We did not want to accidentally compare non-refractive patients in the control group, who had a standard IOL, to those who had laser-assisted surgery with standard IOLs in the study group. By comparing only patients who elected for premium IOLs in both the control and laser groups, this eliminated a potential source of error.

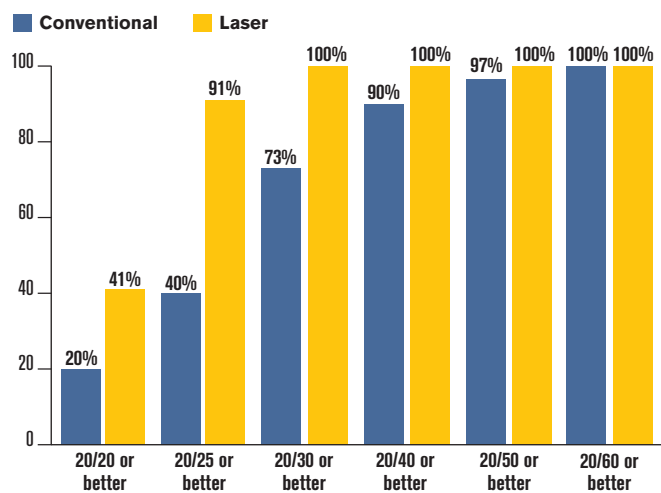
This finding of more predictable astigmatism correction with laser-assisted cataract surgery has changed our clinical guidelines when offering a multifocal IOL option for patients with higher corneal cylinder.

This study's design reflected the real-life application of laser-assisted technology in our clinic. This was in contrast to Filkorn et al's study that looked at refractive outcomes after laser-assisted (LenSx) vs. conventional cataract surgery in patients who had monofocal IOLs (and some toric IOLs).¹⁰ Their study was standardized so all patients had the same corneal incision size and place-

ment regardless of the patient's own corneal cylinder and axis. No astigmatic keratometry or limbal relaxing incisions were performed on any of their patients. Thus their refractive outcomes do not fully reflect the capabilities of laser-assisted cataract surgery because corneal cylinder correction was not even at-

FIGURE 2 Cumulative percentage of 1-month post-op uncorrected VA

Comparison of cumulative percentage of uncorrected Snellen acuity at 1 month post-op in the two groups.



neal incisions to minimize residual corneal cylinder in both control and study groups.

Because this was a retrospective study, the case and control groups were selected to minimize bias. Analysis of the two groups by age, sex, axial length, and corrected visual acuity prior to surgery (CDVA-pre) found them to be statistically identical. Only consecutive patients with the required inclusion criteria and none of the exclusion criteria were enrolled during the six months before and after the availability of the femtosecond laser. The first six months of laser-assisted patients were not included because they reflect data during the surgeon's learning curve while developing surgical technique, experience, and nomogram with the new technology. This was in contrast to

Lawless et al study that reported on the first 61 consecutive eyes treated with LenSx system as compared to a retrospective control group.⁹ They found no significant post-operative refractive difference between the two groups but did report, "a greater percentage of eyes achieved 20/25 or better UDVA in the laser cataract surgery group as compared to the manual phacoemulsification group." Our study improved on the design of Lawless et al's by comparing a single surgeon's results after the first 100 laser cases, well past her learning curve on the laser system.¹¹

This study confirmed that femtosecond laser technology significantly enhanced the visual outcomes of patients undergoing refractive cataract surgery with premium IOLs. As the improvement was mainly seen in the toric IOL group, it is likely that the increased precision associated with laser limbal relaxing incisions played a large role in the improved visual and refractive outcomes. It has been reported that femtosecond laser-created limbal relaxing incisions are more stable due to a more reproducible generation of squared incisions and multiplanar con-

TABLE 2

Mean spherical equivalent (MSE) by IOL types for the two groups

Method	ReStor IOL	Toric IOL	TMF IOL
Conventional	-0.264±0.564 D n=9	-0.201±0.386 D n=18	+0.083±0.144 D n=3
Laser	-0.000±0.459 D n=12	-0.063±0.265 D n=10	-0.031±0.199 D n=10
P-value	0.269	0.043*	0.535

TABLE 3

Pre-operative corneal astigmatism (K2-K1) by IOL types for the two groups

Method	ReStor/TMF IOL	Toric IOL
Conventional	0.747±0.373 D n=12	2.29±1.75 D n=18
Laser	0.666±0.536 D n=22	2.177±0.548 D n=10
P-value	0.609	0.798

figuration.¹² The documented improved IOL centration and less IOL tilt associated with femtosecond laser-created continuous curvilinear capsulorhexis vs. a manually made capsulorhexis may play a secondary role in the better visual outcome.^{2-4,13}

This finding of more predictable astigmatism correction with laser-assisted cataract surgery has changed our clinical guidelines when offering a multifocal IOL option for patients with higher corneal cylinder.●

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In Brief

Velvet launches geotargeting program for retailers

Las Vegas—Velvet Eyewear recently announced the launch of its new retailer campaign, which aims to increase foot traffic through geotargeting, an Internet marketing method which determines the geolocation of a website visitor and delivers different content based on that visitor's location.

The company says the campaign will increase its retailers' online ranking to put them in front of their local competition. Retailers will be featured in a co-branded ad on the Velvet Locator page, Velvet blog, Pinterest, Facebook, Twitter, LinkedIn, and Google pages.

The company says it is looking to build relationships between itself and its retailers through the program. It says the program will connect potential customers to each Velvet exclusive retailer with a direct link from its ads and locator page that sends customers to the retailer's website or Facebook page.

Babiatoms launches new children's Rx line

Atlanta—Babiatoms recently announced the launch of Babiatoms Rx, a new line of prescription spectacles for kids. Babiatoms Rx will provide children with flexible and fashionable frames to help them see the world a bit more clearly and come equipped with Babiatoms' "Lost & Found" guarantee, which ensures that the company will replace any lost or broken frames within one year of purchase.

Composed of malleable, lightweight TR-90 nylon material, the Babiatoms Rx spectacles are built to withstand the active lifestyles of energetic young kids. Soft rubber molding around the eyes and nose promises a cozy, comfortable fit, and each pair of Babiatoms Rx includes an extra set of temples that have a comfort fit around the ear to keep the glasses firmly on younger, more active kids. Babiatoms has crafted two different frame designs to best suit boys'

See **In Brief** on page 36

Bottega Veneta debuts Fall-Winter 2014/2015 collection



Milan, Italy—This season, Bottega Veneta debuts an eyewear collection with new sunglasses and optical frames that highlight the brand's unique aesthetic. The new styles feature the Intrecciato motif, interpreted through sculpted texture on the temples or lasered on leather and on the photoengraved studs. The introduction of flash mirror lenses offers additional options to select styles, complimenting the refined palette.

BV 290/F/S is a women's acetate sunglasses style that features a butterfly shape, embellished with metal temples sheathed in leather that continues on the front to frame the lenses. The leather features the Intrecciato motif. This style is available in dark grey and Havana honey with brown leather, as well as burgundy and dark violet with black leather.

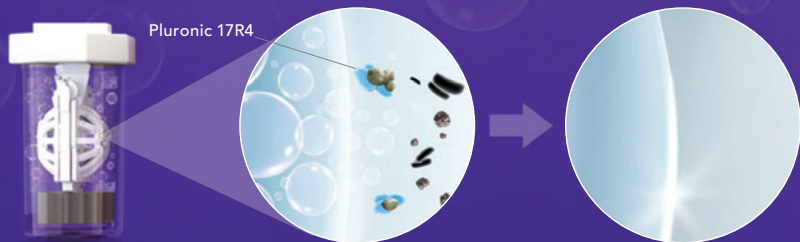
BV 283 is a cat-eye optical frame that features sculpted temples embellished with the Intrecciato motif. This style is available in red, opal grey, opal green, Havana, and black.

BV 281 is a women's acetate optical frame with a softly rounded shape, and is slim and lightweight in design. Subtle metal studs decorate the front, engraved with the Intrecciato motif. The signature woven pattern is also chiseled on the temples' metal core, appearing through the transparent hues of rust, green, cyclamen, and blue as well as in dark grey and Havana honey.

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In Brief

Continued from page 34

and girls' distinctive face shapes. The Buzz frame sports a modern rectangular design with a cool hipster feel, while the Sally frame's cat-eye silhouette generates a classic, retro vibe. Both frames come with a case and lens cloth.

The Buzz and Sally frames are each available in three vibrant shades. The Buzz frame is offered in the Princess Pink, Blue Angels Blue, and Galactic Gray colors, while the Sally frame comes in Popstar Pink, Blue Angels Blue, and Galactic Gray. Babiators Rx are made for children ages two and above and retail for \$110.

LensPen introduces Peeps eyeglasses cleaner

Vancouver—LensPen recently introduced Peeps, an all-in-one cleaner for eyeglasses and sunglasses that features the same carbon-cleaning technology LensPen products use to clean fine optics.

"Because a camera lens and an eyeglass lens are virtually identical in structure, it was logical for us to develop a new product for the optics market, which has not seen a cleaning innovation in over 50 years," said Peter Meurrens, vice president of operations for the LensPen Group.



To use Peeps, clean the lens with the retractable goat-hair brush to remove any loose dust or potentially abrasive particles on the lens surface, which helps protect the lens and the AR coatings. Second, slide the arms out from the holder and clean the lens with smooth circular motions of the cleaning tips. If some smudges remain, breathe gently on the surface and repeat.

Each time the arms slide back into the holder, the carbon on the cleaning tips is replenished and Peeps is ready for its next cleaning. The Peeps cleaning tips can be recharged up to 500 times.

Gucci launches the Diamantissima capsule collection



GG
3692S



GG
3695



GG
3693S

Gucci recently presented new sunglasses and optical frames for fall/winter 2014/2015: a capsule collection embellished with the Diamantissima pattern.

The season's new eyewear models feature temples with the Diamantissima crisscross motif in a gold-plated tridimensional version. The distinctive crisscross design features small, interconnected diamonds in dark brown on a tan background.

This exclusive detail stands out on the classic hues of the frames: black with shaded brown lenses, red with shaded grey lenses, Havana with shaded brown lenses and beige with shaded brown lenses. All models feature a metal interlocking GG logo on the insides of the end tips and a metal plaque carrying the gold-plated signature on the inside of all right temples. The Diamantissima collection includes two sunglasses and two optical frames.

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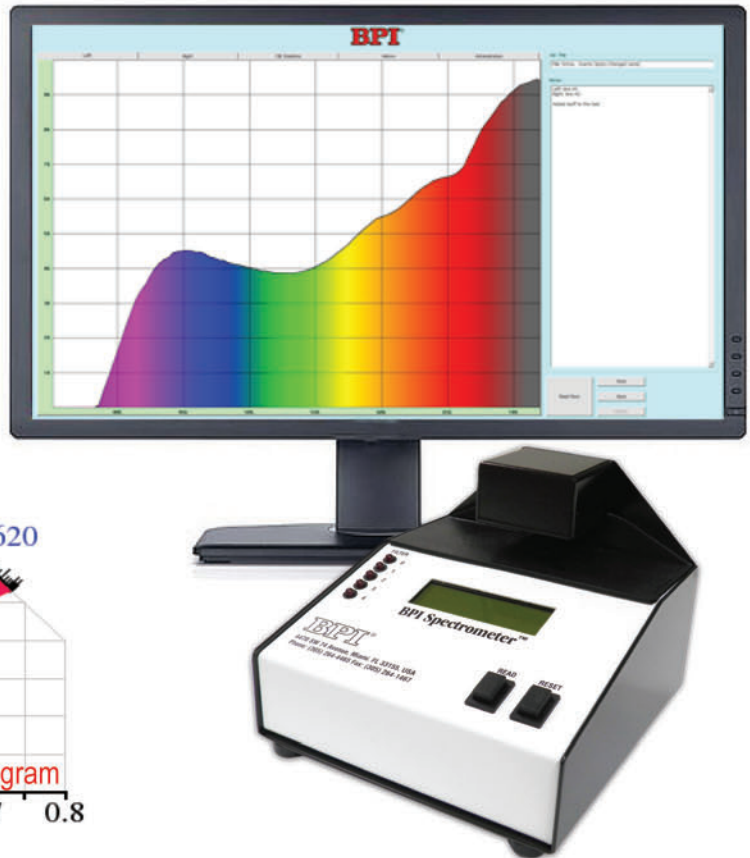
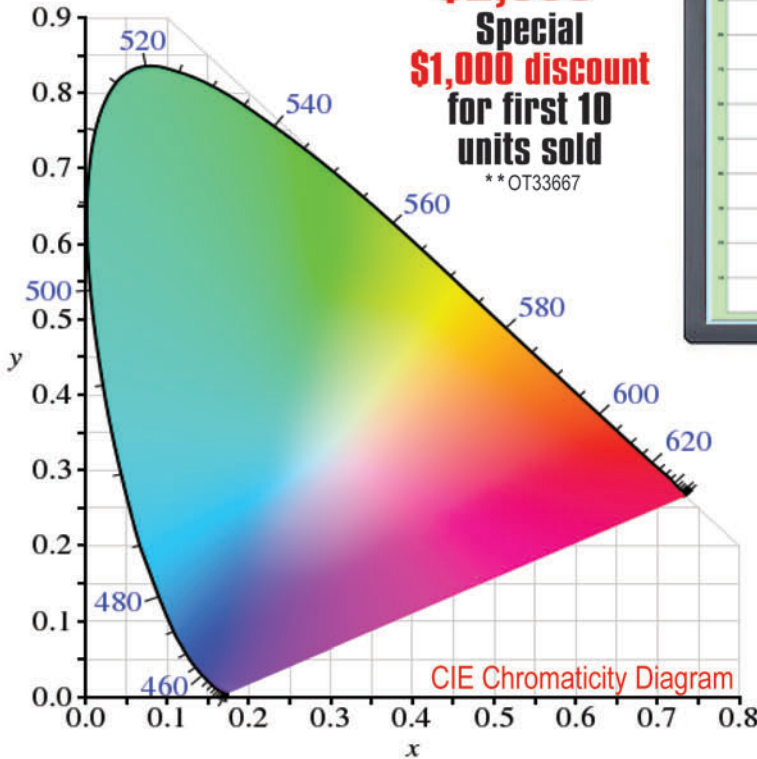
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Carrera releases Jimmy Choo sunglasses capsule collection for men



Black Croc

Mat Black

Sand Camouflage

London—Carrera and Jimmy Choo recently announced the launch of the exclusive capsule collection, Carrera by Jimmy Choo sunglasses for men, following the success of the Carrera by Jimmy Choo Women’s capsule collection of sunglasses launched last year. This marks Jimmy Choo’s first foray into the men’s eyewear category, expanding its existing offering of men’s shoes, bags, and small leather goods.

The Carrera 6000, with its distinctive shaped temples, will be presented in three finishes in Optyl material. The Carrera by Jimmy Choo sunglasses capsule collection will also be featured in the new Jimmy Choo Autumn Winter 2014 Men’s Campaign starring British actor Kit Harington.

Carrera 6000/JCM Black Croc combines a shiny croc pattern on a black mat front and temples. The inside of the temples feature the signature Jimmy Choo camouflage print with hidden burlesque silhouettes. The mirrored lenses feature a ghost effect on the right lens, visible only when misted up highlighting a hidden burlesque silhouette.

Carrera 6000/JCM Mat Black features a contrasting matte black front with the Jimmy Choo camouflage printed silk with hidden burlesque silhouettes on the temples. A silver logo and brown lenses complete the style.

Carrera 600/JCM Sand Camouflage features the Jimmy Choo camouflage print with hidden burlesque silhouettes in sand print silk on the front and the internal temples contrasted with brown matte external temples. A golden logo and grey lenses complete the style.

Joe Barr, OD, MS, FAAO Emeritus Professor at The Ohio State University College of Optometry

Corporate and academic life, contact lenses, and legacy

How has the academia/corporate transition been different this time around?

The difference between when I came from industry to the university, between now and 30 years ago when I came back to Ohio State from Dow Corning, is I am more experienced and more interested in continuing to be involved in innovation. Even early-stage innovation that's in a proof-of-concept stage. I love launching new products.

Why did you leave Bausch + Lomb, then go back into academia?

I still live in Dublin, OH, with my wife, who just retired from pharmacy a year ago, and our two daughters and four grandchildren live within seven miles of us. I had a condo in Rochester, so about 40 weeks out of the year, I drove back and forth every week to Rochester. I could have stayed at Valeant, but I needed to go home. It was the right time and the right place to do that. If you drive from Dublin to Rochester, it takes six hours with traffic without a blizzard.

What are you doing now at OSU?

I can say it in one word: innovation. I do not have teaching or administrative responsibilities. My job is to develop collaborations with industry, inventors, and faculty here or elsewhere, to help people innovate. That is everything from somebody who's got something in the marketplace or is about to launch a product, somebody who's developing a product and needs clinical trials, an inventor who

What's the biggest lesson you learned in corporate life?

It's the process of multifunctional collaboration. Working with different groups, whether that's chemistry, manufacturing, regulatory, clinical development, formulation, or marketing—and then the leadership—it's a multidisciplinary, multifunctional process. If you don't have that in place, it's not going to work, no matter how great an idea you have. Saying that is mundane, but I'm a big believer in it, especially with the way I saw that happen with turning around Bausch + Lomb from where it was seven or eight years ago to where it is now as a part of Valeant Pharmaceuticals.

has an idea, device, or pharmaceutical that he wants to go through the regulatory process. Everyone I know in the field, or comes to me, or I seek out, is a collaborator until proven otherwise. I have a very open mind about what I would like to do across the spectrum of eye health. Of course, everybody looks at me and says "Oh, so that's contact lenses." To me, it's a lot more than contact lenses.

What made you turn contact lenses into a lifelong passion?

[Laughs] I can't talk about my career without talking about my mentors. I've had some of the most incredible mentors: Neal Bailey, Gerald Lowther, John Schoessler, Richard Hill. Jerry Lowther invited me to work in his lab when I was a student, and I got hooked. I became a complete lab rat in his lab and the contact lens clinic. Ohio State is one of the meccas for contact lens research because of all those people I mentioned.

What should we look for in upcoming contact lens developments?

I would tell you, but then I'd have to kill you. [Laughs] This whole idea of contact lenses being used beyond the scope of correcting vision to diagnose eye disease or to obtain information from the cloud is fascinating. There's a lot of work between those concepts and making them safe, effective, and successful. The cost of entry is high. The market's not growing double-digit like the large companies need. There's great potential, and yet I'm interested in making sure that it works well, and it's got to be economically feasible for patient, doctor, corporation.

To hear the full interview with Dr. Joe Barr, listen online: <http://ow.ly/C50FN>

What legacy do you want to leave behind?

I think it's more important to someone else. I guess the people I've taught, mentored, encountered in the field, collaborated with, I hope the things we've done together really have meaning for people who need what we've done. Whether that's for a patient with keratoconus or a young myope like myself who got his first contact lenses. I want those people who I've worked with to really feel good about what they do. Not just because they have a great livelihood from what we've learned together but they really appreciate what it does for their fellow man.

—Vernon Trollinger

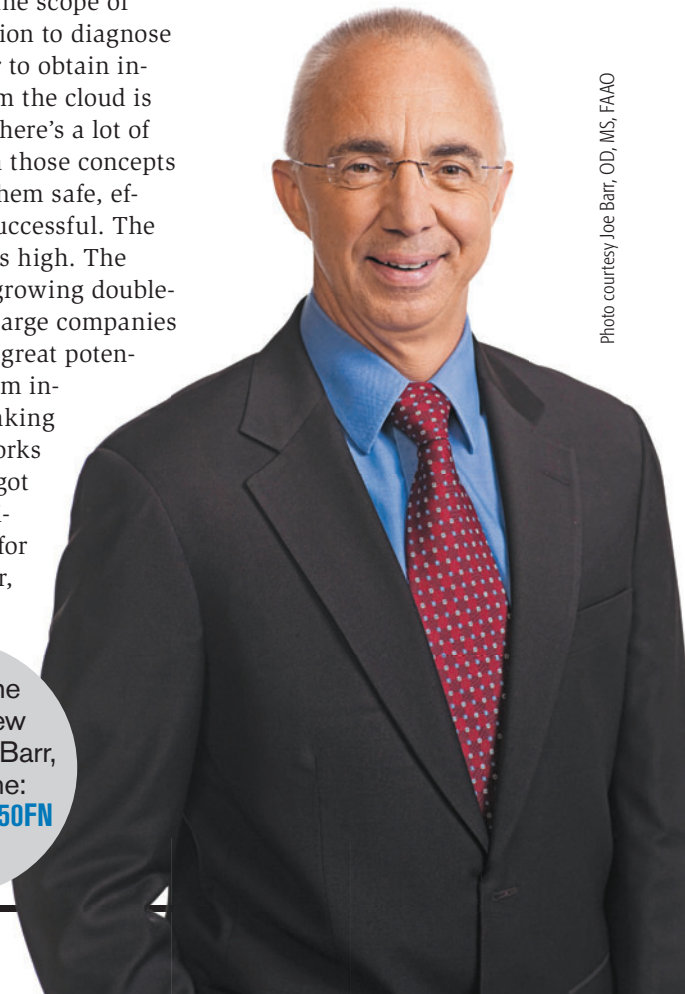


Photo courtesy Joe Barr, OD, MS, FAAO

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