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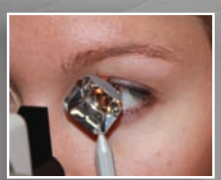

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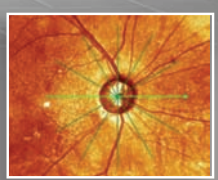

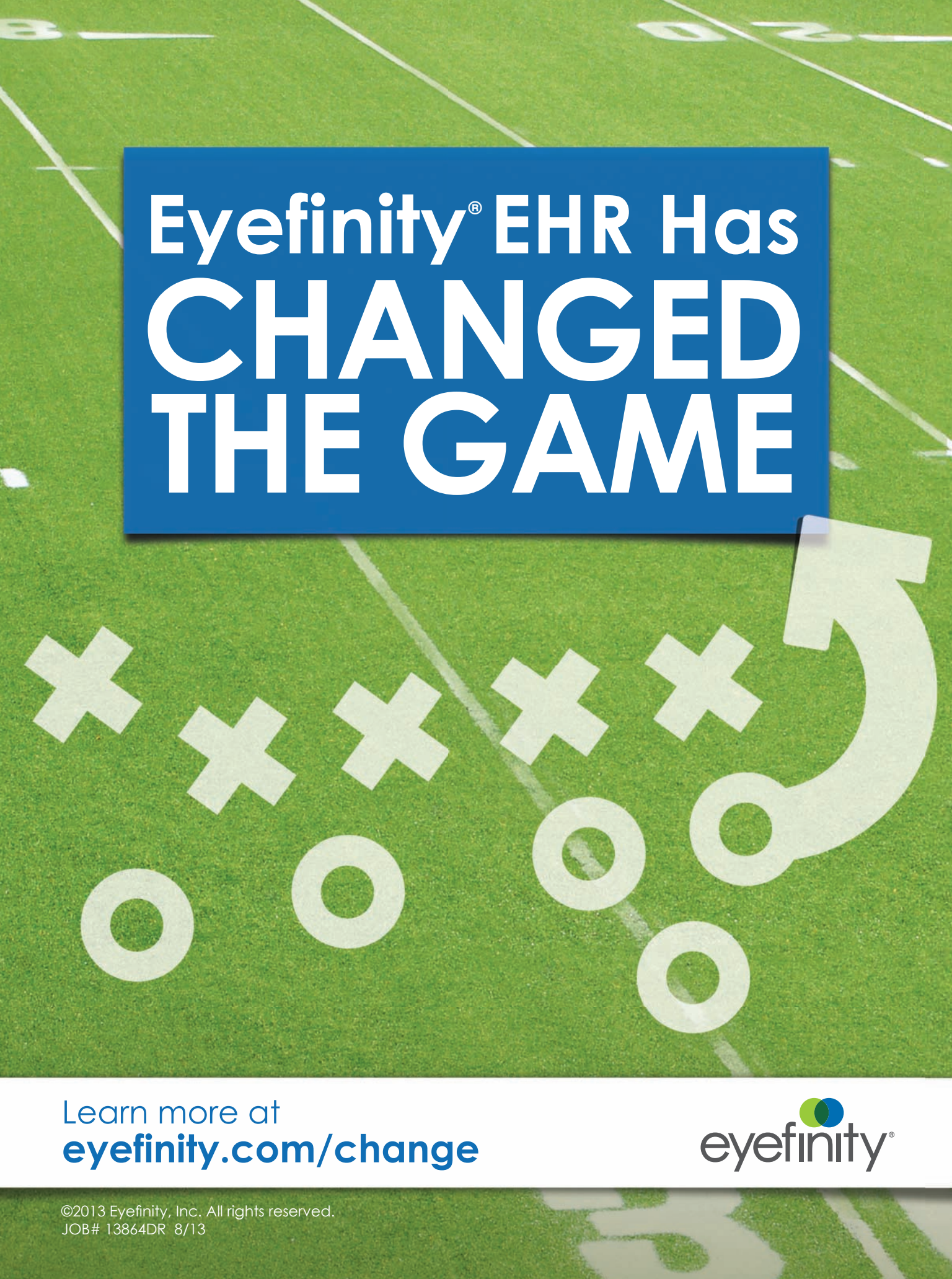

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VOL. 150 NO. 10 ■ OCTOBER 15, 2013

IN THE NEWS

Cold compress speeds recovery for **allergic conjunctivitis** when coupled with artificial tears or epinastine hydrochloride drops, a clinical study showed. Eighteen participants were exposed to grass pollen in an environment chamber to trigger an allergic reaction. They were treated with various methods—including cold compress and epinastine separately—but the best results came when cold compress and EH were used together. The results appeared in the online edition in *Ophthalmology*.

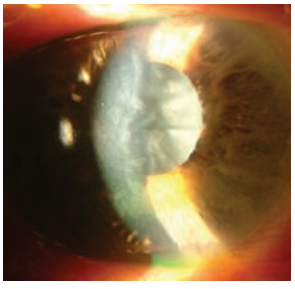
Increased patching could help young patients with **stubborn amblyopia**, according to a report by the **Pediatric Eye Disease Investigators Group**. Doctors have typically recommended that patients cover the better-seeing eye for **two hours** daily to improve vision in the weaker eye, and increase those intervals if improvement slows. This study provides tangible evidence that increasing patching from two to **six hours** a day can be effective at treating a persistent condition, the researchers concluded.

Alcon has created new website, **www.MyGlaucomaSupport.com**, to help **at-risk and newly diagnosed glaucoma patients** better understand their condition. To be used by patients, families and caregivers alike, the user-friendly website aims to help patients comply with treatments and prepare for the "twists and turns" that may accompany their treatment. Among its content, the site offers a prescription refill reminder, an "IOP tracker" to record IOP measurements after follow-up visits, tips on eyedrop dosing technique and other information.

Do Statins Cause or Prevent Cataracts?

Two recent studies draw conflicting conclusions between statins and cataracts. **By Michael Hoster, Managing Editor**

Statin use may increase patients' risk of cataract development, according to a study in the September 19 online version of *JAMA Ophthalmology*.[1] But these findings contradict the results of a similar study presented in early September at the European Society of Cardiology Congress in Amsterdam, Netherlands, which indicated that statin therapy significantly reduces patients' overall likelihood of cataract development.[2]



Studies disagree whether statins contribute to cataract.

In the *JAMA Ophthalmology* study, the researchers analyzed the incidence of cataractogenesis in 13,626 statin users and 32,623 nonusers over a seven-year period. After adjusting for age, sex and pre-existing medical conditions, they found that patients who used statins were approximately 27% more likely to develop cataracts than those who didn't.[1]

Yet, in the European study, which included nearly 2.4 million subjects, patients who remained on statin therapy for an average of 54 months were approximately 20% *less likely* to develop cataracts than those with no history of statin use.[2]

So, why such disparity between study conclusions?

The devil's in the details, says Stuart P. Richer, OD, PhD, director of ocular preventive medicine at the James A. Lovell Federal Health Care Center in North Chicago.

"If statin use yielded a large biological effect [on overall cataract incidence], it would be obvious to the patient or doctor within a matter of months," Dr. Richer said. "In this case, however, you need 2,000,000 patients to tease out clinically significant absolute risk reduction and risk elevation numbers."

From a larger public health standpoint, Dr. Richer suggests that such confusion regarding cataract risk and statin use easily could be avoided altogether. "If physicians encouraged patients merely to increase their vegetable and fruit consumption, while lowering their carbohydrate intake, there would be a dramatic overall decrease in cataracts and cholesterol—and therefore less of a need to use statins in the first place," he says.

1. Leuschen J, Mortensen EM, Frei CR, et al. Association of statin use with cataracts: A propensity score-matched analysis. JAMA Ophthalmol. 2013 Sep 19. [Epub ahead of print]
2. Kostis JB, Dobrzynski JM. Statins prevent cataracts: a meta-analysis. Presented at the European Society of Cardiology Congress 2013. Aug 31-Sept 4; Amsterdam, Netherlands.

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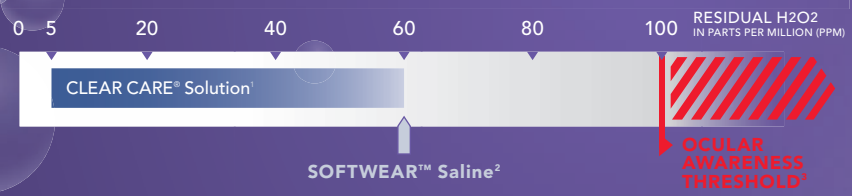

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1. Alcon data on file. 2. SOFTWEAR™ Saline package insert. 3. Paugh J, Brennan N, Efron N. Ocular response to hydrogen peroxide. *Am J of Opt & Physical Optics*: 1988; 65:2,91-98.

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Report: Antibiotic Resistance is Rising

Each year, at least two million people in the US become infected with bacteria that are resistant to antibiotics—of those, at least 23,000 die, according a new report from the Centers for Disease Control and Prevention (CDC).

In its first-ever snapshot of the burden and threats posed by antibiotic-resistant germs, the CDC identifies antimicrobial resistance as one of the country's most serious health threats. The report states that the single most important action needed to reverse the trend is to improve antibiotic stewardship.

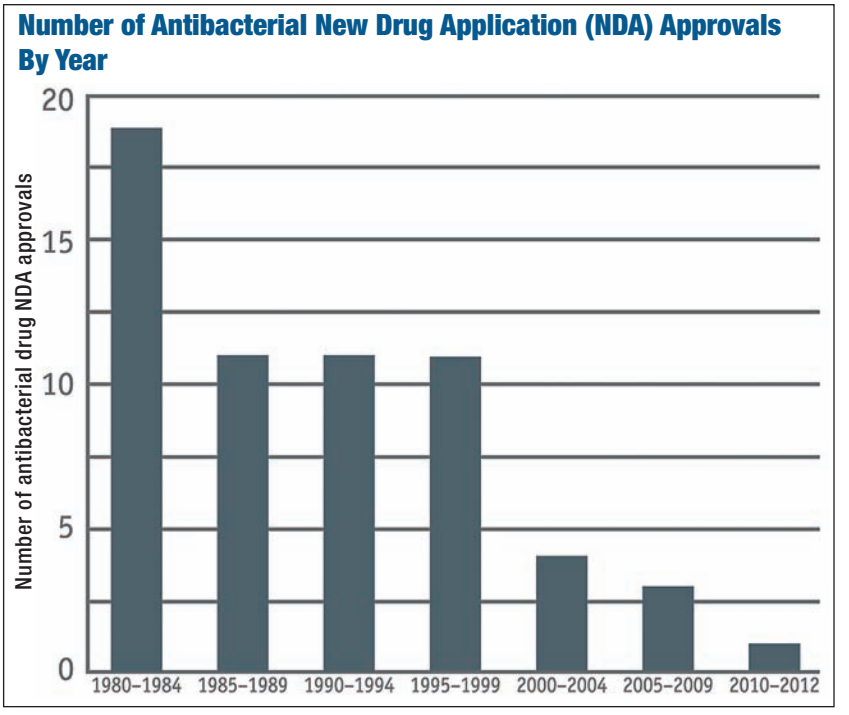
Up to 50% of all prescribed antibiotics are unnecessary or minimally effective, yet antibiotics remain the most commonly prescribed drug in human medicine, the report says.

Loss of antibiotic efficacy puts vulnerable patients at greatest risk, including those undergoing chemotherapy, complex surgery, dialysis for end-stage renal disease, or organ and bone marrow transplants. People with certain types of arthritis are also at increased risk.

For optometrists, bacterial resistance to topically-applied ophthalmic antibiotics is miniscule in comparison to the large quantities of oral and IV antibiotics—but it's still important that ophthalmic practitioners use antibiotics with a measure of caution, says Jimmy Bartlett, OD, ScD, chairman and CEO of Pharmakon Consulting.

"The availability of antibiotic-steroid combinations makes the indiscriminate use of antibiotics tempting for many practitioners," he says. "However, by and large, it is my opinion that our patients have greatly benefited from our primary care treatment of eye infections and inflammatory diseases, and only at the tertiary level does the looming bacterial resistance problem seem to pose a major concern."

Download the full report here: www.cdc.gov/drugresistance/threat-report-2013/pdf/ar-threats-2013-508.pdf.

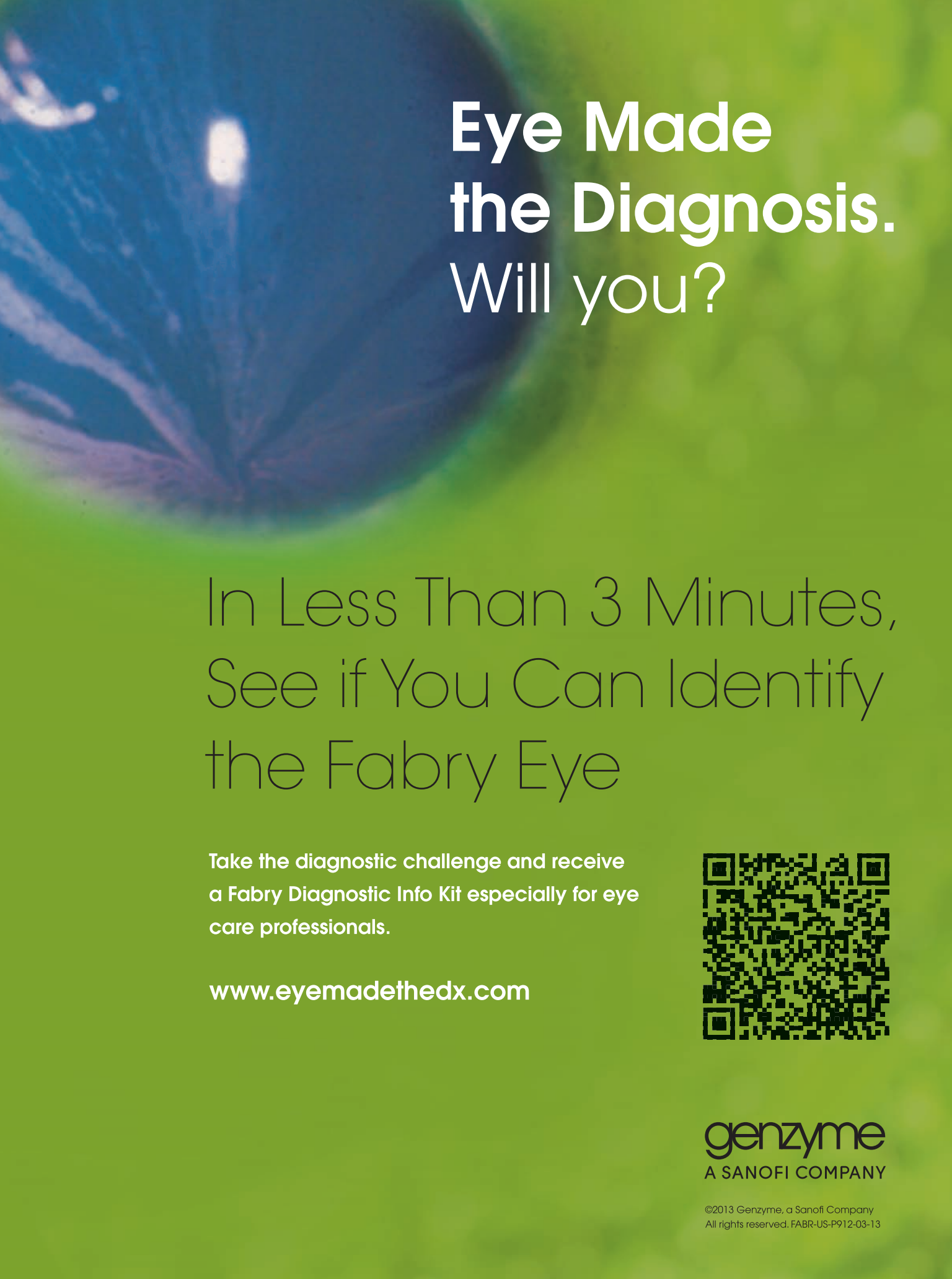


The number of new antibiotics developed and approved has steadily declined in the past three decades, leaving fewer options to treat resistant bacteria.

New Organization Seeks to Improve Optometric Practice

A new, independent, non-profit, optometric organization—the American Association of Doctors of Optometry (AADO)—is being developed to "convey the exceptional clinical skills and abilities of doctors of optometry and the full scope of optometric practice to the public, regulators, third-party payers, the government, and others, and ensure recognition of those skills and abilities," according to the group's mission, stated on its website (www.theaado.org).

Spearheaded by Craig Steinberg, OD, JD, the AADO aims to change the public perception of optometrists from "glasses and contact lens providers" to doctors that provide care and treatment of all eye problems. In addition, the organization seeks to promote access of optometrists to—and fair and equal treatment of optometrists by—third-party payer plans. The AADO aims to work with third-party payers to negotiate and enforce fair provider agreements for optometrists.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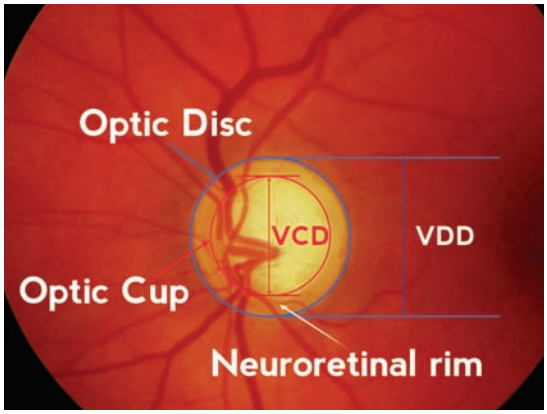
Computerized Glaucoma Test More Accurate Than IOP or Visual Fields?

Researchers in Singapore have developed a novel, automated technique that measures cup-to-disc ratio for glaucoma, according to a study in the June issue of *IEEE Transactions in Medical Imaging*. Used as a screening test, it could allow earlier detection and treatment, the researchers suggest.

The computerized analysis measures vertical elongation of the optic cup based on two-dimensional disc images. The program applies an algorithm that divides these images into hundreds of superpixel segments, which are then used to calculate the patient's cup-to-disc ratio.



A new screening tool automates measuring cup-to-disc ratios to provide earlier intervention and treatment.

"This technique is ready to be used widely, and can be used for screening so that glaucoma can be detected early," says lead author Jun Cheng, PhD, of the Agency for Science, Technology and Research in Singapore. Early detection allows eye doctors to intervene more promptly and slow disease progression, he adds.

From 2,326 test images, the researchers determined that their automated technique is more accurate than other glaucoma screening methods, such as IOP assessment and visual fields testing.

Going forward, Dr. Cheng suggests that integrating other diagnostic information, such as optic cup depth, could further enhance the accuracy of this approach.

Cheng J, Liu J, Xu Y, et al. Superpixel classification based optic disc and optic cup segmentation for glaucoma screening. IEEE Trans Med Imaging. 2013 Jun;32(6):1019-32.

Cataract Surgery and Mortality Risk

Patients who undergo surgical removal of visually significant cataracts live longer than those who choose not to have the procedure, according to a study in the September issue of *Ophthalmology*.

In this cohort from the Blue Mountains Eye Study, researchers evaluated 354 patients age 49 and older with cataract-related vision impairment between 1992 and 2007. Some of the patients elected to have cataract surgery, while others did not.

After comparing long-term follow-up data, the researchers determined that patients who underwent cataract removal had a 40% lower overall mortality risk than those who did not have surgery.

"Our finding complements the previously documented associations between visual impairment and increased mortality among older persons," said lead author Jie Jin Wang, PhD, senior research fellow and professor of clinical ophthalmology and eye health at the Westmead Millennium Institute for Medical Research in Sydney, Australia. "It suggests to ophthalmologists that correcting cataract patients' visual impairment in their daily practice results in improved outcomes beyond that of the eye and vision, and has important impacts on general health."

While the association between visually significant cataract removal and reduced mortality risk still is not well understood, Dr. Wang believes that improvements in physical and emotional well-being, increased optimism, enhanced confidence associated with independent living after visual improvement, and better compliance with prescription medication dosing are the most likely contributory factors.

Fong CS, Mitchell P, Rochtchina E, et al. Correction of visual impairment by cataract surgery and improved survival in older persons: The Blue Mountains Eye Study cohort. Ophthalmology. 2013 Sep;120(9):1720-7.

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Diabetes Tests Not Used Adequately

More than a third of diabetic patients whose glycated hemoglobin (HbA1c) tests indicate lack of glycemic control are not prescribed adequate treatment changes, according to an Emory University study.

The researchers also found an equal distribution of patients who were tested too often or not enough.

Researchers reviewed data of more than 26,000 patients who underwent HbA1c testing over a one-year period, and found that only 4,380 received more than one test. The American Diabetes Association recommends HbA1c testing every six months if patients' plasma glucose levels are within target range, and every three months otherwise. Researchers also found that endocrinologists recommended a change in medication or lifestyle in only 63% of cases where serial testing revealed significant increases.

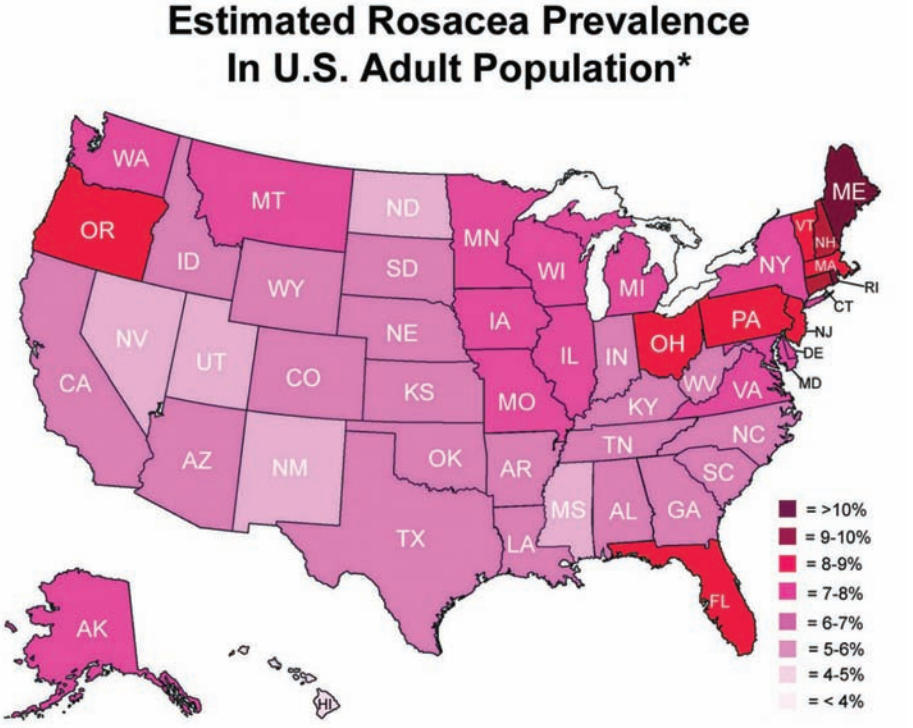
HbA1c testing shows the average level of glucose over a three-month period. Abnormal results are possible in patients with diseases affecting hemoglobin, such as anemia, as well as patients with kidney or liver disease.

The study was presented at the 2013 American Society for Clinical Pathology Annual Meeting in September. Researchers recommended better communication between labs and clinicians, and noted that physicians are unclear about what constitutes a statistically significant reference change value. Currently, there is no universal algorithm standard to determine whether an increase in HbA1c is statistically significant.

Where is Rosacea the Worst?

Residents of New England appear to suffer the highest incidence of rosacea in the United States, while those in Hawaii may be affected the least, according to a geographic analysis of National Rosacea Society membership data.

In the new state-by-state estimates, Maine, Rhode Island, New Hampshire and Connecticut are shown to have the greatest prevalence of rosacea, each registering more than 10% of their adult populations. Meanwhile, Hawaii scored the lowest incidence at 2.7%, and the prevalence rate was under 5% in New Mexico, Mississippi and North Dakota.



While some ethnic groups may be more prone to rosacea than others, this is only a relative increase and not absolute. "No racial or ethnic group is spared from this facial dermatosis and ocular condition," says Jonathan Wilkin, MD, a rosacea researcher and former director of Dermatologic and Dental Drug Products at the US Food and Drug Administration.

Rosacea is now estimated to affect more than 16 million Americans, according to the National Rosacea Society.

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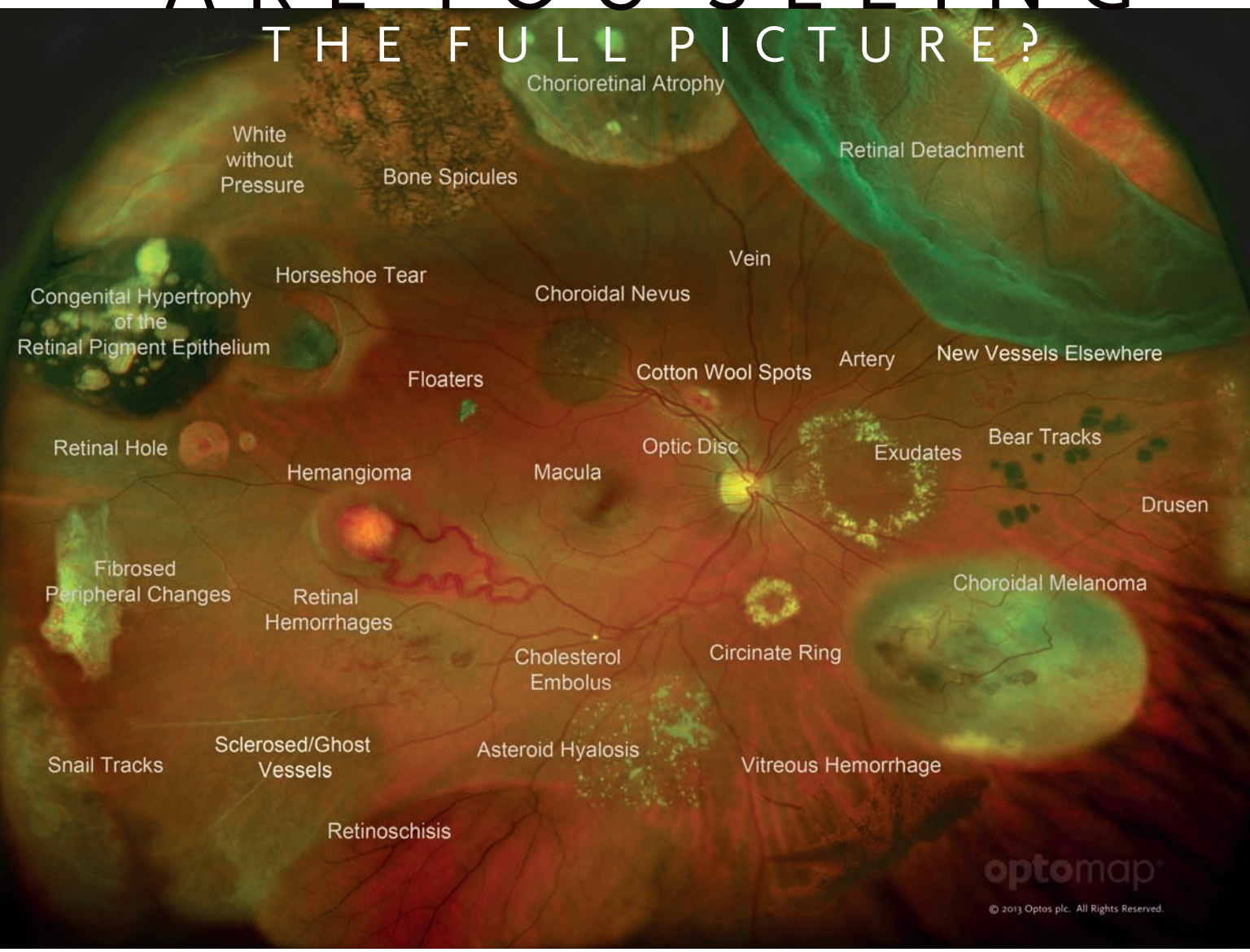

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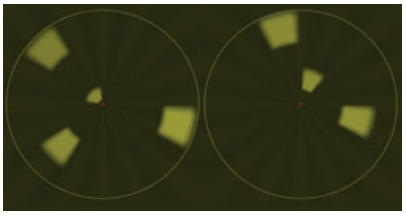
New Device Detects Early Stages of AMD

A newly available eye test can help warn of the presence of AMD in its earliest stages. The test uses multifocal pupillographic objective perimetry (mfPOP)—a non-contact, bilateral, visual field test that measures pupillary responses to multifocal visual stimuli—as a means to diagnose sight-threatening diseases.



New objective visual field test measures pupillary response to detect AMD.

A group of researchers in Australia used the TrueField Analyzer (Seeing Machines), a device that takes advantage of mfPOP, and found significant differences in the pupil responses of 19 patients with early AMD vs. 29 age-matched control subjects.

The device examined the subjects' pupil responses to various images displayed on LCD screens. A luminance-balanced stimulus ensemble and two unbalanced stimulus variants were conducted on 44 locations on each patient's visual field, and the responses were then recorded by two video cameras that use infrared lighting.

The researchers found that the pupils of patients with early AMD displayed significant abnormalities in their responses to the stimuli vs. the control subjects. Subjects with early AMD showed significant differences in both mean constriction amplitudes and delays when compared to the control subjects.

Patients with early AMD are still capable of seeing objects in fine detail, making the early signs of the disease difficult to detect. Most tests only examine the central vision, but mfPOP examines other areas of the retina affected by drusen buildup, the researchers concluded.

Sabeti F, James AC, Essex RW, Maddess T. Multifocal pupillography identifies retinal dysfunction in early age-related macular degeneration. Graefes Arch Clin Exp Ophthalmol. 2013 Jul;251(7):1707-16.

MDM2 Inhibitors to Possibly Treat AMD

New research published in the September online issue of the *Journal of Clinical Investigation* demonstrated that MDM2 inhibitors proved effective at regressing abnormal blood vessels that are responsible for vision loss associated with AMD.

Researchers at the University of North Carolina School of Medicine tested the effects of the MDM2 inhibitors on a mouse model of macular degeneration and in a cell culture.

The research team found that the MDM2 inhibitors eliminated the neovascular blood vessels that cause problems commonly related to wet AMD. The MDM2 inhibitors did not affect established, mature blood vessels in the adult mouse retina, suggesting that only proliferating retinal vessels are sensitive to the drug.

The inhibitors work by activating the protein p53. When this protein is activated, the abnormal blood cells that lead to wet AMD are killed. Potentially, this drug would provide clinicians with a new antiangiogenic treatment option for AMD. ■

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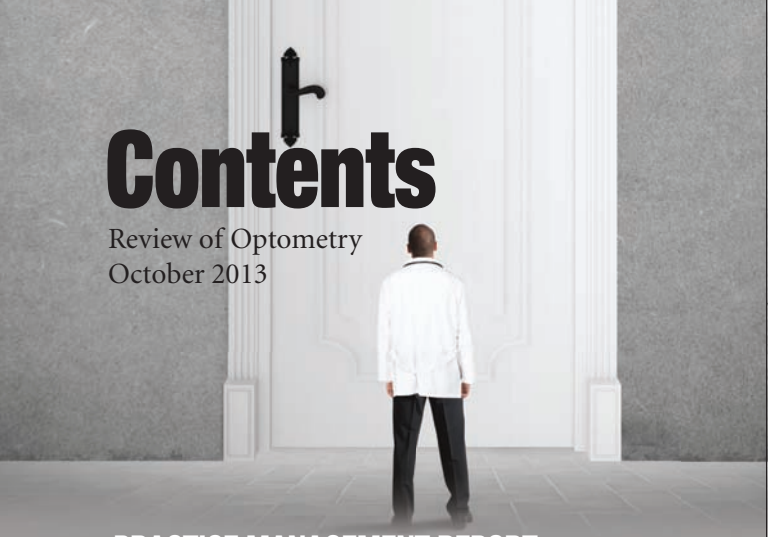

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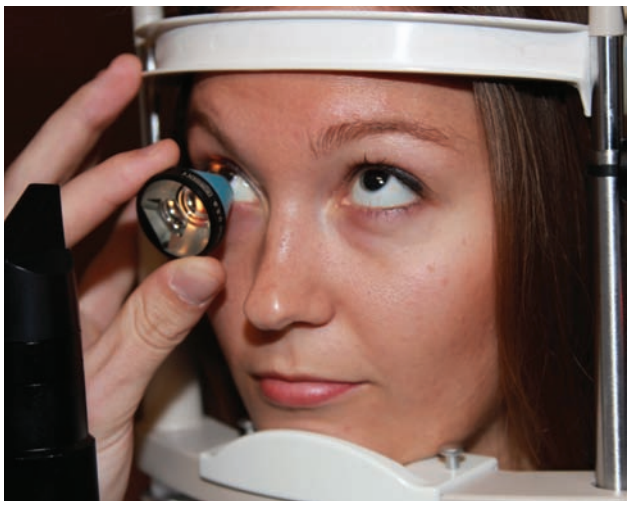

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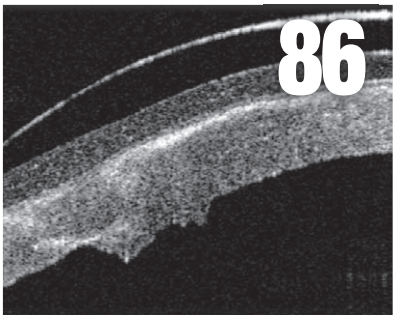

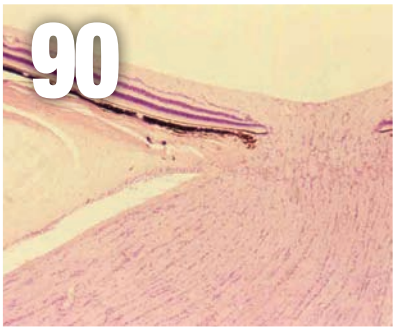

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a Novartis company

Dear Eye Care Professional:

During the last several months, Alcon has been developing an exciting national campaign for patients about the importance of eye health and the availability of proven advanced cataract surgery technologies. As a valued partner, we want to let you know how you can get involved and continue to be a resource for your patients who have been diagnosed with cataracts.

We are excited to announce our new **Cataract Patient Education Resources for Optometrists** that you can begin using in your practice today.

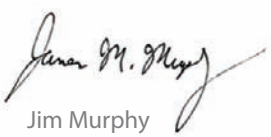
Designed to help enhance the cataract surgery conversations you are already having with your patients, these materials will provide patient-friendly, take-home information they can reference outside of your office.

Visit us online at MyAlcon.com/cataract-patient-education to preview these materials, download copies to your computer, and order printed resources to be shipped directly to your practice.

For a patient whose cataract journey may be just beginning in your office, your guidance will instill confidence in the process and ultimately provide them with an informed decision about their advanced technology options.

Thank you for partnering with us as we continue to educate patients on the proven advancements in cataract surgery technologies.

Seba Leoni
VP & General Manager, Alcon US Surgical



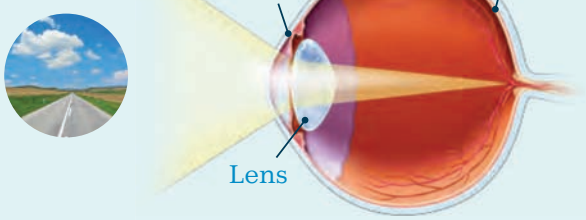
Jim Murphy
VP & General Manager, Alcon US Vision Care

PATIENT EDUCATION AT THE CLICK OF A BUTTON

Alcon's Cataract Education Resource Materials will help with your meaningful patient conversations and provide them with confidence before cataract surgery. Select the resources that are right for you, depending on your patient and practice needs.

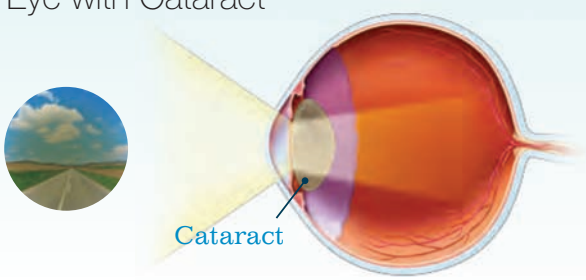
Cataract Surgery
At A Glance

Healthy Eye



Light enters the eye through the cornea, passes through the natural crystalline lens and is accurately focused onto the retina, providing a crisp, clear image.

Eye with Cataract

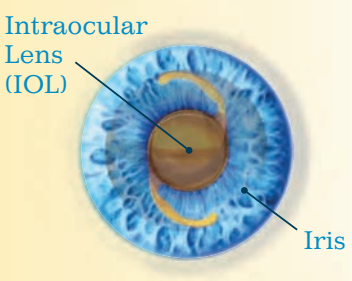


As the eye ages, the lens becomes cloudier, allowing less light to pass through. The light that does make it to the retina is diffused or scattered, leaving vision blurry.

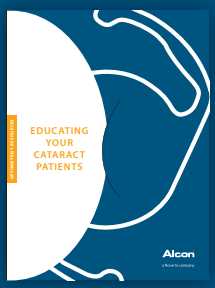
Common Cataract Symptoms

- Blurred vision
- Faded or dull colors
- Poor night vision
- Sensitivity to light

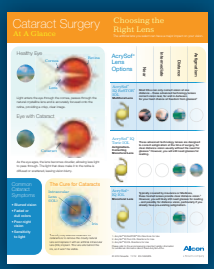
The Cure for Cataracts



The only truly effective treatment for cataracts is to remove the cloudy natural lens and replace it with an artificial intraocular lens (IOL) implant. This lens sits behind the iris, so it won't be visible.



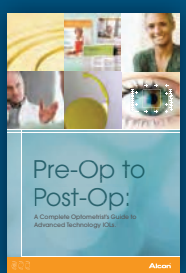
Educating Your Cataract Patients—Optometrist Resources Kit: A packet for optometrists that includes the flashcard, brochure and Focus™ Magazine for patients and one copy of the Pre-op to Post-op Guide for Optometrists.



Cataract Surgery Flashcard for Patients: (See attached insert) A quick guide for patients on cataracts and intraocular lens options.

Cataract Surgery General Brochure for Patients: This brochure provides patients with a comprehensive overview of cataracts, what to expect during a procedure and differences in intraocular lenses.

Focus™ Magazine for Patients: A magazine that provides an introduction to cataract surgery through patient stories, advanced technology options and informative health articles in an easy-to-read magazine for patients.



Pre-op to Post-op Guide for Optometrists: Informative guide for optometrists to facilitate conversations with patients about advanced technology lenses—from pre-op to post-op stage. Please note this is not patient education take-away material.

Order online at myalcon.com

Pump Up the Volume

Optometric patient volume hasn't budged since the 1990s. It's time to move forward.

By Jack Persico, Editor-in-Chief

Think back to 1997 for a minute. In Washington, we had peace, prosperity and a (somewhat) functional Congress. The cutting-edge gadget of the day, a Palm Pilot, allowed users to take notes and manage appointments on a low-res black-and-white screen. Amazon sold only books (a new British novel about a boy wizard was getting buzz but hadn't yet reached these shores) and Google had just launched in September. The only Kardashian anyone had heard of was family patriarch Robert. Apple had just rehired its old cofounder—some guy named Steve Jobs. He had lots of crazy ideas about new technology that seemed fanciful at the time.

While the era's peace, prosperity and far fewer Kardashians looks enviable today, in most other ways we've advanced radically since then. But not, apparently, in the productivity of a typical optometric practice. The average number of exams performed per OD per hour hasn't budged since then: it was 1.1 patients per hour in 1997 and exactly the same in 2012. Since 1997 the US population has grown, and grown older. Eye care professionals haven't kept pace with the increased demand for their services.

That's just one of the many sobering statistics John Rumpakis, OD, MBA, points to this month in his call to arms for optometrists to defeat the "economics of apathy" (see page 65). Dr. Rumpakis offers a wealth of data to detail many new opportunities to improve your practice.

Next, imagine a patient is in your exam chair, with vague complaints of subpar vision—and none of your instruments are working. No photopter to measure visual acuity, no tonometry to record the intraocular pressure, no slit lamp to examine the anterior segment, no ophthalmoscope or OCT to evaluate the retina. Could you make an accurate diagnosis? Not likely.

And yet, when you make business decisions without measuring the practice's vital signs, that's what you're doing. To bring some rigor to the process, Gary Gerber, OD, offers his insights on critical metrics of practice performance in this month's Optometric Study Center exam on page 74. As someone who has seen many practices struggle, Dr. Gerber explains 15 key stats that you should be measuring and acting upon.

Might these two notions be connected? If practice owners lack the tools to evaluate business decisions systematically, they won't make the right ones, or any at all. That sounds like a recipe for stagnation.

This issue has lots of terrific ideas to boost practice performance. But if you do nothing else except improve on that patients-per-hour figure, it'll have a ripple effect throughout the practice, allowing you to take on new opportunities. You'll feel like you've traded a Palm Pilot for an iPhone. ■

The Best is Yet to Come

This is an excellent time to be an optometrist. There, I said it. Not many people do these days. Too often, doom and gloom talk dominates the conversation. Yes, the field of optometry currently faces loads of challenges. Can you name a profession that doesn't? Especially in health care, which is currently roiling with uncertainty about the impact of the Affordable Care Act, enacted this month despite the Shakespearean drama in Washington that accompanied its birth. No matter what happens on that front, optometry is sitting pretty. The emphasis on preventive and routine care will bring more patients in to optometric practices, and will raise your clout in the delivery of health care.

Recognizing the importance of optometrists in the conversation about surgical options, well-known industry players are beginning to educate ODs about their surgical products. Would you have expected that even just a few years ago? Ophthalmology (as a whole and on the individual level) has been making overtures to optometry. Expect more—a lot more. We're approaching a tipping point at which ODs will begin to drive the discussion.

Surgical comanagement isn't for you? No problem. How about a greater emphasis on optometric specialty services, like VT, pediatrics, low vision or dry eye? Respondents to our income survey (see page 46) related successes in those pursuits—and, encouragingly, 66% reported satisfaction with their income, a slight increase from last year.

From retail dispensing to essential vision care services to medical and surgical comanagement, the options are yours for the taking. Hopefully, this month's special issue on practice management can help you to open the door when opportunity knocks.

Finally, I'm Deemed Meaningful

I've spent years feeling useless and incompetent—but now the government has redeemed me! **By Montgomery Vickers, OD**

It's about time my office becomes "meaningful" in its "use" after all these years wandering aimlessly through patient care as my so-called career lurched forward like a camel over shifting sands. I can't tell you how liberating it feels that someone has finally provided me "meaningful" direction and purpose.

It's not the first time our government has worked hard to deem me worthy. Before HIPAA, I spent a lot of time and money making my patients' records easily accessible to anyone who happened to be around. I usually just piled them up in the backyard at the end of each week. I never gave a thought about security. Wow! Thanks, HIPAA!

But that's nothing compared to becoming meaningful. My heart leaps with joy as I spend another 50 grand so my computer can tell me whether my patient speaks Spanish or English, if that ninth grader smokes, or how much that grandmother weighs after she's been seeing me for 35 years.

Oh, the sheer joy of spending 15 happy minutes eRx'ing instead of 30 boring seconds writing out a prescription—with an actual, labor-intensive pen! You know what I'm saying.

My cup runneth over. My patients now have the distinct privilege of staring at my backside while I carefully input their information into the computer. I'm thinking about sewing an iPad on the seat of my pants so they can see how the latest free-form progressives make life "meaningful" for them, too.

It's a Meaningful Life

Friends, we are on the brink of a wonderful era. In the old days, if a crook wanted to see my records, he would have to break into my office, find my files, steal them and have FBI decoders decipher my handwriting. Now they can just hack me from Nigeria. It's so much more efficient for the whole system.

I love that the HITECH (the Health Information Technology for Economic and Clinical Health!) Act lets me rest my tired old brain while the government tells me what to do, how to do it, and how to make it accessible—but, at the same time, not accessible to anyone. Seems like someone may want those records someday, though the records must never be accessed and the government would never-ever come between my patients and me. My "unique" patients, I mean. Patient "care" was hard. Patient "encounters" are so much more meaningful.

As meaningful as I now am, I don't think Obamacare takes my meaningfulness far enough. Wouldn't it be better if we had to counsel people on cheeseburger cessation? Maybe we should include in the chart whether their cheap glasses made their sideburns green? Plus, I think it's important to track their bathing days so we can schedule around their stinky BO. I also like to keep a flow chart on who brings me cookies.

I know what's coming and it's not right. It's just a hop, skip and jump away from reporting who has Tea Party bumper stickers or Save the Snail T-shirts. And what if they have both? Shouldn't that conflicted patient pay more for insurance?

For now, we'll just have to thank our lucky stars that we live in this meaningful time where we get to follow orders like good little lambs.

On that note, I gotta go. My computer's telling me to weigh someone. ■

A Contact Lens that Works with the Tear Film

In **DAILIES® AquaComfort Plus®** contact lenses, multiple wetting technologies work in tandem to maintain tear film integrity—and all-day comfort. — **Kristopher A. May, OD, FAAO**

Research over the last decade has expanded the traditional three-layer (mucin/aqueous/lipid) model of the tear film to a more complex continuum. We now see that mucins are both bound to the epithelial glycocalyx and dissolved in the aqueous tears; that proteins, electrolytes, growth factors, and antioxidants comingle in aqueous solution; and that a thin complex of phospholipids, fatty acids, and esters prevents evaporation.[1]

When functioning properly, the tear film reduces friction during blink, protects against infection, delivers nutrients and clears wastes; and, importantly, provides a smooth refracting surface for light entering the eye. Disruption of the tear film can set the stage for the signs and symptoms of dryness to develop.[1]

Add a Contact Lens

When placed on the eye, a contact lens splits the tears into a pre-lens tear film and a post-lens tear film. Dividing the tears in this way causes the layer on top of the lens to be thinner and break up more rapidly. This loss of volume and faster breakup, which happen irrespective of lens type, is believed to be due to thinning of the lipid layer.[2]

A shortened tear film breakup time (TFBUT) can leave parts of the lens' front surface exposed to air, and these dry spots can affect lens performance. Soft contact lenses are dynamic structures: When covered by tear fluid, the hydrophilic heads of the lens polymer chains are stable at the lens surface; but when the tears break up and expose areas of the lens surface to air (which is hydrophobic), the hydrophilic moieties within the lens are driven toward the moisture within the lens bulk, leaving hydrophobic (non-wettable) areas on the lens surface.[3]

Decreased lens surface wetting leads to greater friction and greater susceptibility to protein and lipid deposition—which can contribute to discomfort for wearers.

Engineered for Tear Film Stability

DAILIES® AquaComfort Plus® contact lenses take a multi-tiered approach to wettability. First, these lenses benefit from an innovative manufacturing process called Lightstream™ Technology, which uses ultraviolet light, rather than chemical processing, to polymerize the lens material. This efficient photo-lithographic process does not require the chemical byproduct-extraction step necessary for other contact lens manufacturing processes.[4]

The material, nelfilcon A plus, contains polyvinyl alcohol (PVA), a water-soluble polymer commonly used as a wetting agent in artificial tears. Most of the PVA in DAILIES® AquaComfort Plus® contact lenses is bound to the lens matrix, but the small amount of unbound PVA present in the lenses is gradually released from the lens matrix by normal blinking.[5]

The moisturizing agent polyethylene glycol, a medium-sized molecule that binds to PVA and further extends its release, is also embedded in the lens matrix and helps to support a stable pre-lens tear film. Hydroxypropyl methylcellulose (HPMC), a smaller molecule added to the packaging solution of DAILIES® AquaComfort Plus® contact lenses, enhances comfort on insertion. The optimized polyvinyl alcohol (PVA) is gradually released over a 20-hour period.[6,7] This staged combination of wetting strategies results in a stable tear film—and all-day comfort for wearers.[8]

Because they do not require care solutions or complex cleaning regimens, I like to think of daily disposable lenses as having "built-in" patient compliance. Prescribing DAILIES® AquaComfort Plus® contact lenses—daily disposables with "built-in" comfort and tear film stability—helps keep my contact lens patients happy and healthy.

PROVEN PERFORMANCE, BUILT-IN

Wolffsohn and coworkers examined the clinical performance of four daily disposable lens types, all of which had some form of comfort enhancement. Lenses were worn for 8, 12, and 16 hours; and clinical measurements (taken with the lens in place) included pre-lens non-invasive TFBUT, tear prism height, bulbar hyperemia, and ocular surface temperature.[5]

For all tested lenses, the tear prism height, pre-lens non-invasive TFBUT, and ocular surface temperature decreased after longer hours of wear. However, the tear film was found to be most stable on the surface of DAILIES® AquaComfort Plus® contact lenses, whose multi-tier wettability technology outperformed its rivals.[5]

Kristopher A. May, OD, FAAO, practices at Coldwater Vision Center in Coldwater and Ashland, MS.

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Hark! The ICD-10 is Coming!

The ICD-10 is coming! The ICD-10 is coming! (But hold your horses—there's still time to get ready.) **By John Rumpakis, OD, MBA, Clinical Coding Editor**

If Paul Revere was involved in health care today, right now he would be galloping down the streets and shouting warnings to all about the impending arrival of the ICD-10.

Yes, it's true. Just one short year away and it will be here. Don't say that you haven't been warned because there's been plenty of time to get prepared.

But, here's a secret—with just a little work and preparation, you and your practice can be ready to incorporate the new coding system smoothly into your day-to-day routine. Here's how to get started.

Know the Code

We all know that ICD-10 is much more specific, but let's break it down so you can understand the new format. The ICD-10 adopts a new configuration that is a complete departure from the familiar ICD-9. Currently, with the ICD-9 diagnosis codes, each code has three to five digits, with most having five because we're obliged to always code to the highest level of specificity.

The ICD-10 is a completely different system and has different conventions and foundational rules that we'll have to learn and get comfortable with. The basic structural composition of an ICD-10 code has three to seven digits/characters (alphabetic ones are not case sensitive):

- Digit one is alpha (i.e., A to Z)
- Digit two is numeric
- Digit three is alpha or numeric and is followed by a period
- Digits four to seven are alpha or numeric

The box below gives two examples:

ICD-9 vs. ICD-10: Optometric Examples

ICD-9	ICD-10
367.1 Myopia	H52.11 Myopia, right eye
	H52.12 Myopia, left eye
	H52.13 Myopia, bilateral
	H52.10 Myopia, unspecified eye
365.11 Primary open angle glaucoma	H40.11X0 POAG, stage unspecified
	H40.11X1 POAG, mild stage
	H40.11X2 POAG, moderate stage
	H40.11X3 POAG, severe stage
	H40.11X4 POAG, indeterminate stage

Another one of the key issues sure to surface will be having to maintain both systems in practice for at least a year during this transition. A brand new CMS-1500 form has been published (www.nucc.org/images/stories/PDF/1500_claim_form_2012_02.pdf) and will be in effect starting January 1, 2014. It will allow up to 12 ICD-10 codes in the diagnosis section vs. the four ICD-9s that can currently be listed.

Keep in mind that health care claims can generally be filed with a third-party insurer up to *one year after* the date of service. Theoretically, all patients for whom you provide care between October 1, 2013 and September 30, 2014 could be filed or re-filed up to September 30, 2014—but you'd have to use the ICD-9 diagnostic codes for these claims because the ICD-10 won't be in force yet. (So, if the resubmission date occurs after ICD-10 goes into effect, you'll need to resubmit the older claim with the then-current ICD-9 code that was appropriate at the time of service.)

Take Action Now

Although the new ICD-10 code sets won't be here for another year, there's several things you can do right now. You should become familiar with the timeframe of implementation, set goals and target dates of education, work with your software manufacturers to find out how they're in incorporating the ICD-10 into their products and, most importantly, stay up-to-date by learning where the resources for the ICD-10 can be found. (*See below.*)

Stay tuned—*Coding Abstract* will help smooth out the bumpy road ahead. ■

Get More Info on ICD-10

Want to learn more? The Centers for Medicare & Medicaid Services' website has all sorts of information about the ICD-10: www.cms.gov/ICD10.

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The Lost Arts of Optometry, Part Three

Going Back to Gonio

Some practitioners believe that gonioscopy is far too burdensome to be part of a routine eye exam. On the contrary, it's pretty easy—and can help improve patient care significantly. **By Amy Dinardo, OD, MBA, and Philip Walling, OD**

Gonioscopy, a diagnostic technique used to view the anterior chamber angle, is an extremely helpful tool that can provide a wealth of clinical information. It's a quick and painless procedure that's relatively easy to perform.

Alarmingly, however, multiple studies of contemporary practice patterns reveal that eye care practitioners perform gonioscopy on less than 50% of glaucoma suspects.[1,2] Don't be part of that statistic! Use these valuable tips to refresh your memory and remind yourself how gonioscopy can enhance the quality of your patient care.

1. To apply the Goldmann three-mirror lens, first anesthetize the ocular surface and then ask the patient to look up. Retract the lower lid. Tip the lens with the coupling solution toward you, and begin to place the bottom edge of the lens on the eye.

Which is Better... Three or Four?

Either a three- or four-mirror gonioscopy lens can be used to view the angle. Each lens has particular benefits and disadvantages. With a Goldmann three-mirror lens, only one semicircular mirror is used to view the angle (*figures 1 and 2*). So, in order to view the entire angle, extra skill is

For the reduction of IOP in patients with POAG or OHTN

When it's important to consider ocular and systemic side effects...

An alternate route to IOP reduction

- Effective at lowering IOP throughout the day and over the long term[1-3]
- Excellent systemic safety profile including no deleterious effects on CV or pulmonary function in clinical studies[1]
- Established ocular side effects profile: In clinical trials comparing RESCULA and timolol,* both were generally well tolerated regarding ocular adverse events, with similar incidence of hyperemia and similar changes to eyelash length and density[1,4,5]
  - The only events seen significantly more often with RESCULA than with timolol were burning and stinging and burning/stinging upon instillation; these events were generally mild and transient[2,4]
- No labeled drug-drug interactions[1,4]

Indication

RESCULA (unoprostone isopropyl ophthalmic solution) 0.15% is indicated for the lowering of intraocular pressure in patients with open-angle glaucoma or ocular hypertension.

Important Safety Information

RESCULA is contraindicated in patients with hypersensitivity to unoprostone isopropyl or any other ingredient in this product.

RESCULA has been reported to increase pigmentation of the iris, periorbital tissues, and eyelashes. Patients should be advised about the potential for increased brown iris pigmentation which is likely to be permanent.

RESCULA should be used with caution in patients with active intraocular inflammation (e.g., uveitis) because the inflammation may be exacerbated.

Macular edema, including cystoid macular edema, has been reported. RESCULA should be used with caution in aphakic patients, in pseudophakic patients with a torn posterior lens capsule, or in patients with known risk factors for macular edema.

*In pooled safety analyses of pivotal trials comparing RESCULA with timolol maleate 0.5%.[4]

Please see Brief Summary on reverse and full Prescribing Information, available from your Sucampo representative.

Rescula®
(Unoprostone isopropyl
ophthalmic solution) 0.15%

Brief Summary of Prescribing Information for RESCULA.

INDICATIONS AND USAGE
Rescula (unoprostone isopropyl ophthalmic solution) 0.15% is indicated for the lowering of intraocular pressure in patients with open-angle glaucoma or ocular hypertension.

DOSAGE AND ADMINISTRATION
The recommended dosage is one drop in the affected eye(s) twice daily.

Rescula may be used concomitantly with other topical ophthalmic drug products to lower intraocular pressure. If two drugs are used, they should be administered at least five (5) minutes apart.

CONTRAINDICATIONS
Rescula is contraindicated in patients with hypersensitivity to unoprostone isopropyl or any other ingredient in this product.

WARNINGS AND PRECAUTIONS
Iris Pigmentation
Unoprostone isopropyl ophthalmic solution may gradually increase the pigmentation of the iris. The pigmentation change is believed to be due to increased melanin content in the melanocytes rather than to an increase in the number of melanocytes. The long term effects of increased pigmentation are not known. Iris color changes seen with administration of unoprostone isopropyl ophthalmic solution may not be noticeable for several months to years. Typically, the brown pigmentation around the pupil spreads concentrically towards the periphery of the iris and the entire iris or parts of the iris become more brownish. Neither nevi nor freckles of the iris appear to be affected by treatment. Treatment with Rescula solution can be continued in patients who develop noticeably increased iris pigmentation. Patients who receive treatment with Rescula should be informed of the possibility of increased pigmentation.

Lid Pigmentation
Unoprostone isopropyl has been reported to cause pigment changes (darkening) to periorbital pigmented tissues and eyelashes. The pigmentation is expected to increase as long as unoprostone isopropyl is administered, but has been reported to be reversible upon discontinuation of unoprostone isopropyl ophthalmic solution in most patients.

Intraocular Inflammation
Rescula should be used with caution in patients with active intraocular inflammation (e.g., uveitis) because the inflammation may be exacerbated.

Macular Edema
Macular edema, including cystoid macular edema, has been reported. Rescula should be used with caution in aphakic patients, in pseudophakic patients with a torn posterior lens capsule, or in patients with known risk factors for macular edema.

Contamination of Tip and Solution
To minimize contaminating the dropper tip and solution, care should be taken not to touch the eyelids or surrounding areas with the dropper tip of the bottle. Keep bottle tightly closed when not in use. There have been reports of bacterial keratitis associated with the use of multiple-dose containers of topical ophthalmic products.

Use with Contact Lenses
Rescula contains benzalkonium chloride, which may be absorbed by soft contact lenses. Contact lenses should be removed prior to application of solution and may be reinserted 15 minutes following its administration.

ADVERSE REACTIONS
Clinical Studies Experience
Because clinical studies are conducted under widely varying conditions, adverse reaction rates observed in the clinical studies of a drug cannot be directly compared to rates in the clinical studies of another drug and may not reflect the rates observed in practice.

In clinical studies, the most common ocular adverse reactions with use of Rescula were burning/stinging, burning/stinging upon drug instillation, dry eyes, itching, increased length of eyelashes, and injection. These were reported in approximately 10–25% of patients. Approximately 10–14% of patients were observed to have an increase in the length of eyelashes (≥ 1 mm) at 12 months, while 7% of patients were observed to have a decrease in the length of eyelashes.

Ocular adverse reactions occurring in approximately 5–10% of patients were abnormal vision, eyelid disorder, foreign body sensation, and lacrimation disorder.

Ocular adverse reactions occurring in approximately 1–5% of patients were blepharitis, cataract, conjunctivitis, corneal lesion, discharge from the eye, eye hemorrhage, eye pain, keratitis, irritation, photophobia, and vitreous disorder.

The most frequently reported nonocular adverse reaction associated with the use of Rescula in the clinical trials was flu-like syndrome that was observed in approximately 6% of patients. Nonocular adverse reactions reported in the 1–5% of patients were accidental injury, allergic reaction, back pain, bronchitis, increased cough, diabetes mellitus, dizziness, headache, hypertension, insomnia, pharyngitis, pain, rhinitis, and sinusitis.

Postmarketing Experience
The following adverse reactions have been identified during post-approval use of Rescula. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish causal relationship to drug exposure.

Voluntary reports of adverse reactions occurring with the use of Rescula include corneal erosion.

There have been rare spontaneous reports with a different formulation of unoprostone isopropyl (0.12%) of chemosis, dry mouth, nausea, vomiting and palpitations.

USE IN SPECIFIC POPULATIONS
Pregnancy Category C - There are no adequate and well-controlled studies in pregnant women. Because animal studies are not always predictive of human response, RESCULA should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Pediatric Use - the safety and efficacy of RESCULA in pediatric patients have not been established.

It is not known whether RESCULA is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when RESCULA is administered to a nursing woman.

No overall differences in safety or effectiveness of RESCULA have been observed between elderly and other adult populations.

CLINICAL PHARMACOLOGY
Mechanism of Action
Rescula is believed to reduce elevated intraocular pressure (IOP) by increasing the outflow of aqueous humor through the trabecular meshwork. Unoprostone isopropyl (UI) may have a local effect on BK (Big Potassium) channels and CIC-2 chloride channels, but the exact mechanism is unknown at this time.

STORAGE AND HANDLING
Store between 2°–25°C (36°–77°F).

For more detailed information please read the Prescribing Information.

Marketed by:

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References: **1.** RESCULA [package insert]. Bethesda, MD: Sucampo Pharmaceuticals, Inc; 2012. **2.** Data on file. CSR C97-UIOS-004. Sucampo Pharmaceuticals, Inc. **3.** Data on file. CSR C97-UIOS-005. Sucampo Pharmaceuticals, Inc. **4.** Data on file. Integrated summary of clinical safety. Sucampo Pharmaceuticals, Inc. **5.** McCarey BE, Kapik BM, Kane FE; Unoprostone Monotherapy Study Group. Low incidence of iris pigmentation and eyelash changes in 2 randomized clinical trials with unoprostone isopropyl 0.15%. *Ophthalmology.* 2004;111(8):1480-1488.

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required to physically manipulate and rotate the lens throughout the exam. By comparison, the four-mirror lens allows the examiner to view all quadrants simultaneously.

Some lenses designs, such as the Goldmann-style three-mirror, feature a single, "thumb-shaped" mirror with an angle of 62°; larger corneal contact diameters (12mm); and a steep radius of curvature (typically 7.38mm). Most often, these lenses require the use of a coupling solution to prevent large bubble formation in the lens concavity.

The coupling solution provides the examiner with crisp, clear views, but the solution will likely drip down the patient's face. Thus, it is advisable to fill the concave portion of the lens only half way, as well as instruct the patient to minimize movement during the procedure.

The coupling solution enhances adhesion between the goniolens and the patient's cornea, which makes it easier to maintain contact against the eye. If the additional adherence makes the lens difficult to remove, ask the patient to squeeze his or her lids firmly. Then, gently push on the globe through the eyelid to release the lens.

Smaller corneal contact diameter lenses, such as a Sussman four-mirror, do not require coupling solution; however, it's more difficult to maintain contact with the cornea. Further, unwanted bubble formation is common.

2. When using the three-mirror lens, ask the patient to look straight ahead. Then, tilt the lens forward so the entire lens is in contact with the eye.

Do You Have a Handle on It?

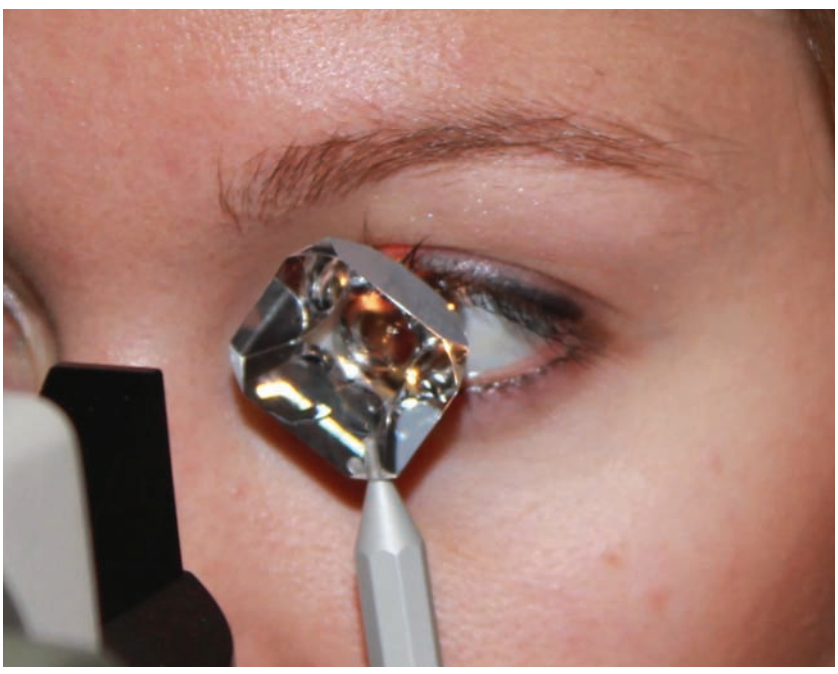
Four-mirror gonioscopy lenses are available either with or without a handle. Some examiners believe that the use of a handle provides extra stability. Tall examiners with long arms, for example, may find a lens without a handle to be more user-friendly, while practitioners with shorter arms may benefit from using the handle.

When performing four-mirror gonioscopy, hold the lens squarely against the patient's eye instead of in a diamond configuration (*figure 3*). Otherwise, the lens' sharp corners can cause significant discomfort around the patient's eyelids (*figure 4*).

Not Just for Traditional Glaucoma Suspects

A Van Herick estimation alone is insufficiently accurate to evaluate the anterior chamber angle. When a patient's intraocular pressure is elevated, the next logical step is to take a closer look at the anatomical location where much of the aqueous fluid is drained. Glaucoma suspects may exhibit narrow angles or material (e.g., pigment or pseudoexfoliative debris) in the posterior portion of the trabeculum. While performing gonioscopy on traditional glaucoma suspects is arguably standard of care, remember that gonioscopy is necessary in other circumstances as well.

• ***Ischemic conditions.*** Perform gonioscopy on patients with a history of an ischemic eye disease—such as diabetes, central retinal artery occlusion, branch retinal vein occlusion or central retinal vein occlusion—to check for



3, 4. An example of a Posner four-mirror goniolens with a handle. Holding the lens in a square configuration against the eye with the correct amount of pressure can provide clear views of all four quadrants of the anterior chamber angle (top). Or, you can hold the four-mirror lens against the eye in a diamond configuration. However, the sharp corners of the lens may be uncomfortable against the patient's eyelid (bottom).

neovascularization of the angle.

Normal blood vessels in the angle are oriented radially, whereas fibrovascular membranes with neovascular blood vessels appear thin, fine and irregularly positioned. Further, the new vessels tend to grow from the iris surface into the angle. When the vessels constrict, they pull the iris up into the angle. Consequently, this process causes acute angle closure and a severe intraocular pressure spike.

• ***Trauma.*** Patients with a history of recent blunt force trauma should be examined for angle recession or iris tears after the eye has stabilized. However, gonioscopy is contraindicated when a patient has a fresh hyphema or perforated globe.

Any patient with a history of iritis should be evaluated for the presence of peripheral anterior synechiae. Additionally, foreign bodies or tumors that develop in the anterior chamber angle can be identified through a gonioscopic examination. Many congenital anomalies, such as iridocorneal endothelial or Axenfeld-Rieger syndromes, can be further evaluated via gonioscopy.

• ***Retinal examination.*** Many practitioners forget that a Goldmann three-mirror goniolens can be used to provide a magnified, detailed view of any retinal or vitreal anomaly identified during ophthalmoscopy. Using the three mirrors (positioned at various angles) and the central lens, the examiner can stereoscopically evaluate any area of the posterior segment—from the macula to the ora serrata and pars plana.

Push It

Indentation (or compression) gonioscopy with a small-diameter, four-mirror lens is useful to differentiate peripheral anterior synechiae (when the iris is physically stuck to the angle) from an appositional angle closure (when the iris rests against the angle).

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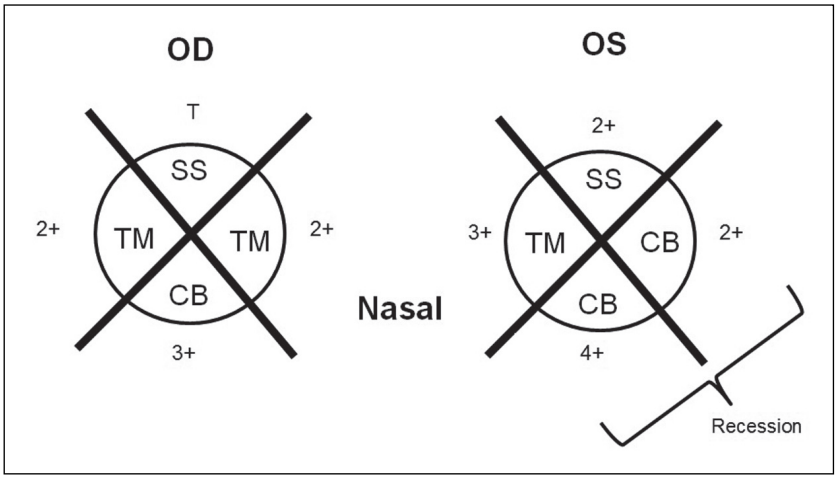

5. Here is an example of how gonioscopy can be documented. The most posterior structure is recorded inside the circle. Outside the circle, the level of observable pigment is noted along with any other relevant findings.

To perform dynamic indentation gonioscopy, simply use the small surface area of the four-mirror lens to gently push against the center of the cornea. This temporary pressure increase will cause the base of the iris to move away from the angle. If the angle closure is due to a peripheral anterior synechiae, the iris will remain attached and its structures will not be viewable.

Indentation gonioscopy also is helpful in diagnosing plateau iris, or for temporarily increasing trabecular outflow when a patient has an angle closure attack.

Be Real

Extra pressure applied to the eye when performing gonioscopy can lead to a temporary IOP reduction. So, always perform tonometry before gonioscopy.

When evaluating narrow angle suspects, be sure to decrease the room illumination as much as possible. In patients with narrow angles, it is most effective to view the iris insertion and subsequent angle structures when the pupil is large. Initially, a brighter beam may be helpful in obtaining a comprehensive view of the structures. Subsequently, however, be certain to reduce the illumination and use a relatively thin slit beam. Otherwise, additional illumination may constrict the pupils, widen the angles and possibly lead to a misdiagnosis.

Applying excessive pressure on the sclera, which often occurs when using a large-diameter goniolens, can artificially narrow the angle. On the other hand, applying too much pressure to the central cornea with a small-diameter lens can inadvertently open the angle and lead you to mistake the angle's natural appearance.

If you see corneal folds or blood in Schlemm's canal, it means you're pressing too hard. (Be aware that blood in Schlemm's canal also happens in cases of elevated episcleral venous pressure, e.g., ocular hypotony, Sturge-Weber syndrome or carotid-cavernous fistulas.)

'X' Marks the Spot

Most examiners document gonioscopy in the examination record by using two crossed lines in the shape of an "X" to denote all four quadrants of the anterior chamber (*figure 5*). Be sure to record the most posterior structure observed.

Also, if you use a grading scale, note which one you used to avoid any confusion. For example, the Scheie classification system defines grade I as open and a grade IV as closed, whereas the Shaffer classification system defines grade IV as open and grade I as nearly closed.

Generally, the inferior quadrant is the widest. So, most practitioners begin the gonioscopy examination by using the mirror in the 12 o'clock position to view the inferior angle.

The most posterior structure is the ciliary body band, which may appear gray or brown. Myopes tend to have a wider ciliary body, while hyperopes may exhibit a narrow or absent ciliary body band.

The bright white scleral spur is located just anterior to the ciliary body, and is usually a prominent landmark for the identification of angle structures. Because the scleral spur can be obscured by iris processes, it may not be easily observed in all patients. However, if it is visible, the chance of angle closure is rare.

The trabecular meshwork is the next structure seen. It appears tan to dark brown, and is where the majority of aqueous fluid drains from the anterior chamber. Pigment is most likely to accumulate in the posterior portion of the trabecular meshwork. If pigment is seen, it should be recorded in each quadrant on a scale from 0 (no pigment) to 4+ (dense pigment accumulation).

The most anterior structure is

Schwalbe's line. This thin band marks the termination of Descemet's membrane. Schwalbe's line protrudes into the anterior chamber, and creates a ridge that may accumulate pigment.

A significant pigment deposit in this location is termed Sampaolesi's line, which often is prominent in patients with pigment dispersion syndrome, pigmentary glaucoma, pseudoexfoliative syndrome or pseudoexfoliative glaucoma.

Last but not least, document the iris configuration as convex (steep), regular (flat) or concave. Keep in mind that the iris normally appears slightly convex. Hyperopic patients may exhibit an even more convex insertion, whereas myopes or patients with pigment dispersion syndrome may have a concave structure. If you have difficulty getting a view of the angle due to its structure, ask the patient to look in the direction of the mirror being used or tilt the gonioscopy lens away from the mirror being used.

Although gonioscopy can be a valuable tool, it has become a lost art for some practitioners. Statistics show that many practitioners neglect to use it.[1,2] So, go back to gonio! It is a critical diagnostic tool that can be part of your routine examination. ■

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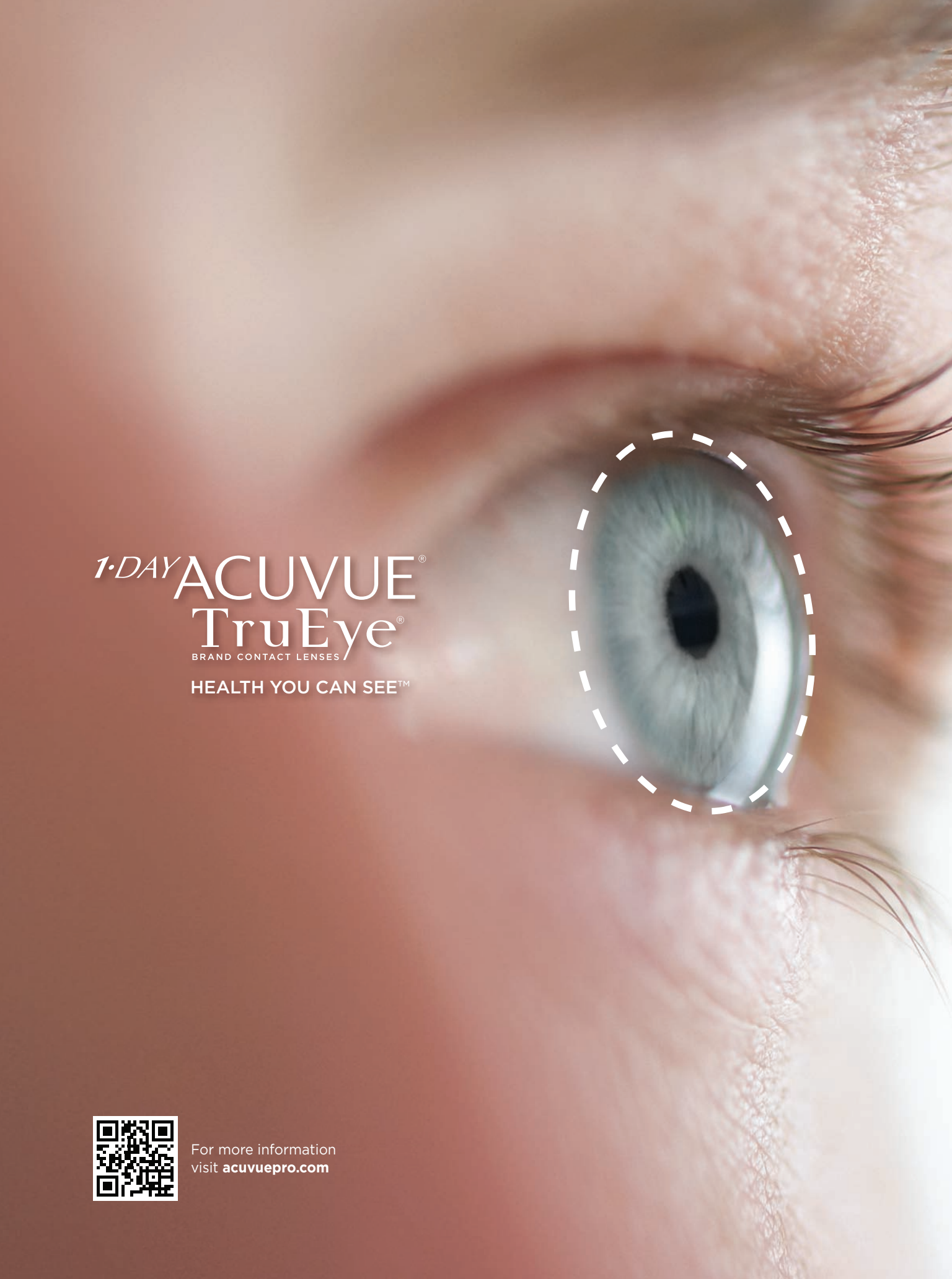
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Case Report

Learn to Provide Comfort and Care to CBS Patients

Fortunately, our patient with Charles Bonnet syndrome was comfortable discussing his hallucinations. Others might not be. Asking the right questions and offering reassurance is the responsibility of every optometrist.

By Katherine Dunatov, OD, Paul Gruosso, OD, Joseph Miller, OD, and Jenette Cantrell, OD

Visual hallucinations can be a disturbing experience, particularly in patients who already have a vision problem. Visually impaired individuals, who are otherwise psychologically normal, may experience vivid hallucinations yet fail to report them to their primary care physician or eye care professional for fear of being labeled "insane."

When an individual consciously recognizes the fictitious nature of the hallucination, and when other senses are not involved and there is no other etiology for the event, the condition is termed Charles Bonnet syndrome (CBS).

Here, we review the case of an 88-year-old psychologically normal male who experienced visual hallucinations in his left eye for two years. We include a discussion of possible pathophysiologies and potential treatment options for Charles Bonnet syndrome, as well as introduce a useful screening tool to help identify visually impaired patients who may be experiencing visual hallucinations.

What is CBS?

In 1769, Charles Bonnet—a Swiss biologist, naturalist and philosopher—first described symptoms of hallucination in his elderly, cognitively intact and visually impaired grandfather, Charles Lullin.[1-12] Mr. Lullin reported vivid visions of men, women, birds, buildings, carriages and other images that he knew were not real.[1-8,11,12]

Charles Bonnet suffered from vision loss when he was very young. By age 40, he was severely visually impaired. Following retirement, he experienced visual hallucinations similar to those reported by his grandfather.[1,4,6,11,13-16]

Visual hallucinations are subjective experiences that occur "without external stimulation of the relevant sensory organ."[1-5,7,8,17,18] CBS has been termed a "pseudohallucination," because the individual is aware that the sensory experience is unreal.[2,3,5,18] The exact cause of the visual hallucinations is unknown, and not entirely understood by researchers and health care providers.[1,2,4,7,8,18]

An awareness and basic understanding of CBS is important to properly screen patients who may be suffering in silence from the condition, and reassure them that their anxiety and distress is unnecessary.

Case Report

History

An 88-year-old white male presented with a chief complaint of intermittent hallucinations in his left eye that had persisted for two years. He reported seeing visions of a red brick wall with mortar. At other times, he saw pineapples. Both of these visions appeared at random times throughout the day. He did not notice any significant changes in the hallucinations during the past two years.

The patient reported that the images appeared more vivid when he covered his right eye, faded binocularly and disappeared completely when the left eye was covered. He was well aware that the wall and the pineapples were not real.

His ocular history was remarkable for a blast injury to the left

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eye during military service in 1945. This caused impaired vision, flash burns and abrasions, as well as necessitated muscle repair performed in 1947. Slit-lamp findings were significant for bilateral pseudoexfoliation and cataracts (OS > OD).

His medical history was significant for benign hypertension, hypothyroidism, cardiomyopathy, hyperlipidemia and a mitral valve disorder. He previously suffered a near-syncopal episode and bradycardia, for which he underwent a CT scan and MRI.

His current medications included levothyroxine sodium, low-dose (81mg) aspirin, simvastatin, chondroitin/glucosamine, metoprolol and a multivitamin.

CT scans and MRIs/MRAs of his brain and Circle of Willis were performed during the timeframe of the hallucinations and were remarkable only for mild, microvascular white matter ischemic changes, but no acute infarct. Blood work during the same time frame was remarkable for a slightly reduced epidermal growth factor receptor and elevated triglycerides. In addition, a prior neurology consult revealed no evidence of a neurological event.

Diagnostic Data

On examination, best-corrected visual acuity measured 20/30 OD and 20/400 OS, which was stable since his ocular injury over 60 years earlier. He was alert and well oriented, scoring a 10 on the Hodkinson Abbreviated Mental Test. Pupils, ocular motility and finger-counting fields were normal.

Intraocular pressure measured 14mm Hg OD and 12mm Hg OS. Slit-lamp examination showed mild nuclear sclerotic and cortical cataracts in the right eye, with a trace central and inferior nasal posterior subcapsular cataract. Significant nuclear sclerotic and cortical cataracts were observed in the left eye, with a grade 4 posterior subcapsular cataract. Pseudoexfoliative material was noted on both lenses.

Dilated examination revealed a cup-to-disc (C/D) ratio of 0.30 x 0.35 (horizontal by vertical) in the right eye, with a trace epiretinal membrane overlying the macula. No hypertensive changes were noted, and the peripheral retinal examination was unremarkable. Due to dense cataracts in the left eye, the posterior pole could not be visualized. The periphery appeared normal and intact. Previous dilated examinations of the left eye showed a C/D ratio of 0.40 round. A cross-sectional B-scan obtained via optical coherence tomography revealed a hazy vitreous and intact retina OS.

Treatment

At subsequent visits over a six-month period, the patient's central and peripheral vision continued to decline in his left eye secondary to cataracts. The visual hallucinations, however, remained the same. He was referred for a surgical consultation.

At his cataract evaluation, the patient's vision was 20/30 OD and counting fingers at two feet OS. The surgeon performed cataract extraction in his left eye.

Several weeks after the procedure, the patient sent a letter reporting that he was extremely satisfied with the outcome of his surgery. His peripheral vision was much improved; it was much brighter, colors were more vivid.

He also stated he was able to read the wall clock with his left eye, and his visions of the brick wall and pineapples had completely disappeared.

Diagnosis

Based on the ocular and medical exams, as well as the postoperative outcome, we diagnosed the patient with CBS.

Discussion

Charles Bonnet syndrome has been regarded as a diagnosis of exclusion. Typically, it presents as an occurrence or recurrence of persistent, vivid, complex images in an individual with impaired vision but normal psychological and neurological status. The images tend to be only visual in nature and most often consist of geometric patterns or people.[1-3,5,6,8,15,17-21] In some cases, the images appear to blend into the surrounding environment—making it difficult for the patient to determine if the visions are genuine or pseudo-hallucinations. According to several published reports, approximately 20% of patients initially believe that the hallucinations are real.[3,6,8,19]

Visual hallucinations may be either simple or complex. Simple images include flashes of light and geometric patterns, such as circles and squares.

However, in our clinical population, patients have described significantly more complex images, including brick walls, pineapples, butterflies, trains moving through the landscape, bulls-eyes, windows with flowing curtains, miniature people in row boats, and children wearing checkered shirts and dungarees.

Despite poor vision, patients tend to describe these visions as vivid and clear—as though no visual impairment exists.[1,3,8] Further, such hallucinations are more often described by individuals who have experienced sudden, profound vision loss or bilateral visual impairment.[1,3,8]

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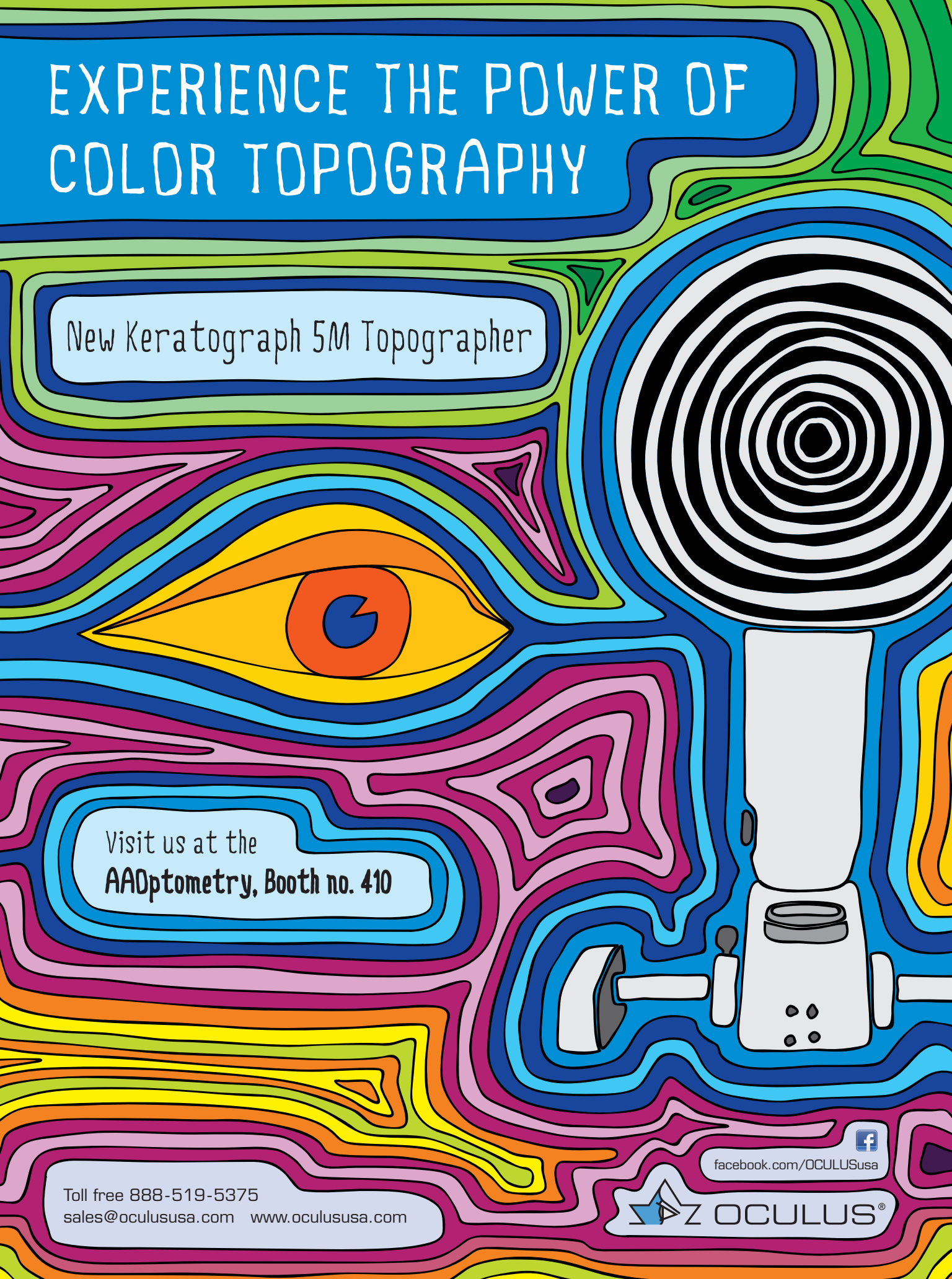

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The hallucinations may persist for seconds to hours, days, months or even years. At a meeting of the visually impaired support group at our VA hospital, when asked, almost all patients claimed to have experienced hallucinations that they knew weren't real. However, the majority also stated that their hallucinations disappeared over time, and they no longer saw anything "interesting" in their vision.

Approximately 71% of patients report neutrality toward their hallucinations.[17] This is because patients often have no emotional connection with the images in question, and they are not necessarily associated with any of the individual's past history. Our patient was previously a brick layer and when asked what he thought about his hallucinations, he reported being fascinated by the detail in the brick wall, and could even describe the shape, color and positioning of various bricks.

The prevalence of complex visual hallucinations in patients with visual impairment ranges between 10% and 40%.[1-3,5,6,8-10,17,19,20] Multiple reports indicate that CBS typically occurs in patients with best-corrected vision between 20/40 and 20/1600, with a higher overall incidence in patients who exhibit an acuity worse than 20/300.[8,19]

CBS is more common in elderly patients, with a typical age of onset between 75 and 80 years (likely because of a higher incidence of visual loss with increased age). However, there have been reports of visually impaired children (secondary to retinopathy of prematurity) experiencing symptoms of CBS.[3] Take note that there is no correlation between hallucination complexity and vision loss severity.[8,9,20] Thus, a patient suffering from moderate visual impairment may experience a more complex hallucination, whereas a patient with profound vision loss may only see simple shapes.

Pathophysiology

Macular degeneration is the most commonly associated ocular pathology, likely due to its increased prevalence among the elderly. However, CBS has been associated with ocular pathologies located anywhere along the visual pathway. In our eye clinic, CBS-style hallucinations have been reported by patients who are blind from cataracts, bilateral macula-off retinal detachments, ischemic optic neuropathy, glaucoma and—in our patient's case—ocular trauma. Other ocular pathologies include macular holes, optic neuritis, central retinal artery occlusion, corneal scarring and occipital lobe infarctions.[1,3,8,10] In the case of glaucoma and infarction, which may result in peripheral field loss, hallucinations may occur in the area of the scotoma.[8] This would explain why hallucinations tend to appear straight ahead in CBS patients with macular degeneration.

The true pathophysiology of CBS is not completely understood, and there are several hypotheses regarding the underlying cause of the syndrome. But, two primary explanations largely stand apart from others: sensory deprivation and release.[1,3,5-9]

- ***Sensory deprivation*** implies that the visual sensory cortex—when deprived of normal afferent input—exhibits spontaneous independent activity, resulting in conscious images.
- ***Release*** refers to the idea that when neurons transmit electrochemical impulses from the retina, defective impulses are released along with normal impulses. A defect in impulse processing is what causes visual hallucinations.

Hallucinations correlate with the area of the brain that is being stimulated. Functional MRI studies have shown that particular parts of the brain are activated while hallucinations are occurring. For example, colored hallucinations are associated with activity localized to the posterior fusiform gyrus in the area corresponding to the color center, whereas gray-scale hallucinations are associated with activity located both behind and above the region.[13,15] Additionally, faces are associated with activity in the middle left fusiform gyrus, while other shapes and objects are linked to the middle right fusiform gyrus.[13,15] In our patient, the textured brick walls would correlate to an increased signal in the collateral sulcus, the area of the brain that responds to visual textures.

Examination and Testing

New-onset visual hallucinations in any patient generally require a complete physical examination, including blood work, a review of medications and a baseline neurological evaluation.[1] Although an ocular pathology could be the cause of immediate visual impairment, you must rule out the presence of an underlying ocular or systemic etiology that could be responsible for the hallucination.

In general, a baseline psychological examination should be performed. In this case, we evaluated our patient with the Hodkinson Abbreviated Mental Test Score (AMTS) to screen for dementia.[16] The Hodkinson AMTS is useful to quickly assess the cognitive function of elderly patients. A score greater than 6 suggests that the patient's mental faculties are normal; a score of 3 to 6 indicates moderate impairment;

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CBS Screening Questionnaire[2]

1. Have you ever had any unusual visual experiences?

(If no response is elicited, proceed to question 2. If the patient reports hallucinations, proceed to question 3.)

2. Have you ever seen objects or things in your vision that are you know are not real?
3. What objects/images do you see?
4. How long have they been present?
5. How often do they occur, and how long do they last?
6. Do they move? How so?
7. Are they colored or black and white?
8. Do they make any noises or sounds?
9. Were you aware that they are not real?
10. Is there anything that you can do to make the visions appear?
11. Have you tried anything to make them disappear? If so, what?
12. Do the images/visions upset you?
13. Have you told anyone about these images/visions?

and a score of less than 3 signifies severe impairment. However, remember that this test only screens for the presence or absence of dementia and not other causes of hallucinations. Any patient who exhibits moderate or severe cognitive impairment should be referred to their primary care physician immediately to rule out medication-induced hallucinations and/or psychiatric conditions.

Should an individual achieve a normal cognitive function score on the Hodkinson AMTS and exhibit pathognomonic symptoms of CBS, be sure to alert the patient's PCP. Depending upon the complexity of the patient's medical history—including previous systemic work-ups, lab tests and CT scans—further investigation might not be warranted.

Our patient underwent CT scans, laboratory tests and neurological work-ups during the time that he was experiencing the hallucinations. So, no further investigation was necessary. Many conditions and circumstances can cause visual hallucinations, which is why it's important to rule out other, more serious pathologies. Common causes of visual hallucinations include metabolic or toxic disorders secondary to vitamin deficiency, endocrine disease, uremia, and infectious or inflammatory diseases.[1] Drug and alcohol withdrawal, as well as the use of LSD, also may cause visual hallucinations. Further, the use of antidepressants, analgesics, anticonvulsants and NSAIDs may produce medication-induced hallucinations.[1,3,5,6,8,18,22]

Common neurological causes of visual hallucinations include Parkinson's disease, migraine, Lewy body dementia, epilepsy and tumors.[1] Additionally, psychiatric disorders that frequently cause visual hallucinations include schizophrenia, delirium, acute psychoses and post-traumatic stress disorder.[1,3,5,6,8,18,22]

The fundamental difference between hallucinations caused by the aforementioned disorders and those that result from CBS is the lack of other sensory involvement in Charles Bonnet syndrome. For example, CBS patients typically do not interact with their hallucinations whereas schizophrenia patients may report that a person or object in their hallucination may talk to or interact with them.[3,22] Therefore, be sure to ask these patients about the specific nature of their hallucinations (*see "CBS Screening Questionnaire," left*). Important questions to ask include: What do the hallucinations look like? Are you aware that they are not real? Does the image talk or interact with you? Does the vision bother or threaten you?

In suspected cases of visual hallucination, it is essential to uncover any potential visual problems. Initially, these individuals may be reluctant to inform you or their PCPs about the hallucinations. If they do not claim to see any unusual images, then you may wish to educate them about CBS, reassure them that it is common in patients with vision loss, and potentially readdress the question about seeing hallucinations. Should the patient subsequently mention their hallucination (or unusual visual experience), the remainder of the questionnaire can be completed. Of significant importance is question eight, which is intended to determine involvement of any other senses. Sensory involvement is uncharacteristic of CBS—so, if a patient answers "yes," other causes of visual hallucination should be explored.

Ending the Visions

There are numerous triggers and inhibitors of visual hallucinations; however, in CBS patients, the hallucinations may begin and end without any trigger at all. Hallucinations may be precipitated by fatigue, stress, dim lighting conditions, general sensory reduction, increased visual impairment level, rate of vision loss and social isolation. Hallucination inhibitors include repeatedly closing or open-

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ing the eyes, increased illumination, talking to or shouting at the hallucinations, and increased social interaction.[1,3,4,5,8,9,17]

In one case at our clinic, a patient who experienced detailed hallucinations of children stated that, in the privacy of his home, he would swat at the images with his cane to make them disappear because he knew they were not real. But in public places, he dared not swat at these visions for fear they might be real children playing.

Our patient determined that he simply had to cover or close his left eye to eliminate the appearance of visions.

Currently, there is no accepted treatment modality for CBS. Patient education and reassurance is the mainstay therapy. The goal of most treatments is to improve visual function. Thus, CBS patients require a careful refraction, increased peripheral vision, decreased glare, and increased illumination and contrast.[1,3,4,5,7-9,14,18]

In CBS patients with visual impairment secondary to cataracts, surgical intervention may eliminate visual hallucinations.[1,3,8,9,20] In our eye clinic, an older man who was legally blind secondary to cataracts complained of seeing cockroaches, bulls-eyes, and blue and yellow butterflies in his vision for years. Due to his cardiovascular history, he was not considered a good surgical candidate. Eventually, however, he underwent cataract extraction and achieved a postoperative acuity of 20/20 OU. Six weeks after surgery, he reported not experiencing any visions since the procedure.

CBS also has been reported to improve in some macular degeneration patients following successful management.[12,23] On the other hand, progression to complete vision loss can also halt hallucinations, as does a longer duration of visual impairment.[1]

Several isolated reports have indicated that off-label treatment with certain pharmacologic agents effectively eliminates visual hallucinations in some patients. These include haloperidol and olanzapine (antipsychotic agents), carbamazepine (an anti-seizure medication) and donepezil (a cholinesterase inhibitor).[1,4,8,9,24]

One study published in 2007 described the case of a 78-year-old woman with CBS who was treated successfully with venlafaxine, a selective serotonin and norepinephrine reuptake inhibitor.[24] Due to systemic complications, she was switched to citalopram and continued to be symptom free. The authors suggested that, in CBS patients, these medications somehow "change neuronal excitability in the occipital areas responsible for hallucinations."[24] Keep in mind that these medications may not work for all patients with CBS.

Charles Bonnet syndrome remains an under-reported, underdiagnosed and poorly understood condition. This can be explained, in part, by some patients' fear of being labeled "insane" by a health care professional.

Eye care clinicians interact with the blind and visually impaired on a daily basis. So, we're in a unique position to openly discuss the troubling—and even frightening—nature of CBS symptoms. No matter the case, our primary goal is to reassure affected patients that they are indeed sane, provide them relief from the distress associated with the hallucinations, and help them live with the condition. ■

Drs. Dunatov, Gruosso and Miller are staff optometrists at the Bay Pines VA Health Care System in Florida. Dr. Cantrell is chief of optometry at the Bay Pines VA.

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Advertorial

Your Peroxide Patients Are Not Telling You the Whole Truth

By Chris Snyder, OD, MS, FAAO
Director, Professional Relations, Bausch + Lomb Incorporated

While there have been several innovations within the multi-purpose segment in the last 3 years, the same cannot be said for the hydrogen peroxide product category. There has been a lack of innovation in peroxides for almost a decade. This leads us to ask: is there a similar opportunity for improvement in peroxide-based lens care?

Hydrogen peroxide-based lens care products are a significant part of the US soft lens care market, used by approximately 12% of contact lens wearers (13 years of age or older).[1] Current peroxide products are often prescribed to help solve lens wear-related issues of discomfort (particularly dryness symptoms) or to avoid suspected sensitivities to some multi-purpose solution (MPS) formulations. Today's peroxide lens care solutions are justifiably regarded highly for their cleaning, disinfection and comfort characteristics. Therefore, when a struggling patient is prescribed a peroxide lens care system, their lens wearing experience often improves. But, is it possible that current peroxide users still suffer from unstated issues?

A recent study, administered outside of Eye Care Professionals' (ECPs') offices, was designed to evaluate whether peroxide users still face challenges in their lens wearing experience.[2] One hundred fifty soft contact lens wearers who regularly use peroxide solution completed an online survey to identify any issues and symptoms they experience. Those patients also described how they deal with their lens wearing challenges.

The results show that more than half of patients using hydrogen peroxide solutions with their soft contact lenses still experience issues or symptoms. Fifty two percent (52%) of respondents reported difficulty while wearing contact lenses during activities such as long hours at a computer screen, in air conditioned or smoky environments, or while watching TV or a movie *(Figure 1)*. The main issue reported was discomfort. In fact, 43% of peroxide patients reported still experiencing discomfort, with 31% feeling the need to use eye drops regularly to address this discomfort.[3]

These findings may surprise many ECPs. However, peroxide patients may not be telling their ECPs about continuing issues they may have. The reason why these patients do not share their lens wearing challenges is not really known. One hypothesis is that since so many peroxide patients have previously been experiencing problems and found some relief when trying

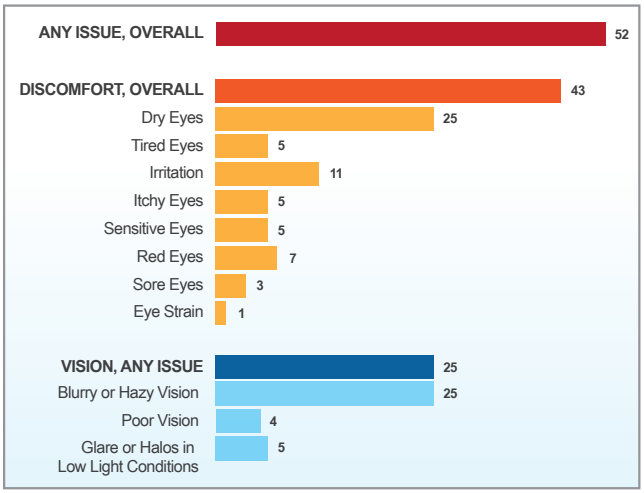

Figure 1: Percentage of patients reporting issues as a result of contact lens wear (modified from Reference 4)

peroxide, their expectation for further improvement is limited. Another possibility is that since ECPs often switch patients to peroxides as a last ditch effort to keep them in frequent replacement lenses, a patient would rather suffer in silence than risk being taken out of contact lenses.

So how can ECPs know if patients are truly having issues with their contact lenses? Is it worth discussing with patients, if patients will not raise their issues proactively? If a patient seems happy, why switch their lens care solution? The answer is simple: even though a patient seems happy, an innovative lens care solution may make their lens wearing experience even better. Biotrue® multi-purpose solution provides a great recent example. While many patients seemed quite happy with their previous MPS solutions before trying Biotrue® MPS, 9 out of 10 patients reported that Biotrue makes wearing contact lenses easier on their eyes than their usual solution.[4] This suggests that there is room for improving the lens wearing experience of even seemingly satisfied and happy patients.

Since eye care professionals tend to recommend peroxide solutions to patients who are experiencing issues of discomfort, dryness or irritation while wearing lenses, it is important to recognize that over 50% of those patients who use peroxide continue to experience such problems.[3] ECPs should expect manufacturers to continue to introduce new solutions that make lenses even more comfortable for today's, and even tomorrow's, peroxide patients.

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8 Smart Ways to Increase Your Income

ODs are working harder just to keep up their current income. Here are some ideas to help you work—and earn—smarter.

By John Murphy, Executive Editor

Optometric salaries haven't increased in the past year. Most ODs are simply trying to make the best of it. They're tightening their belts and stepping up the pace just to maintain the same bottom line.

"It's enough, but we're having to work harder and smarter to keep up," says solo practice optometrist Frank Houser, of Jacksonville, Fla.

ODs are keeping up—barely. Annual net income for all optometrists (including both employed and self-employed ODs) averaged $134,002 in 2012, according to our latest income survey. That number is actually down from last year's survey—the average OD's net income was $137,806 in 2011, which equals a decrease of 2.8%.

"I work a whole lot harder to make the same amount of net," says Clark Weeks, OD, of Winfield, Ala.

Bear in mind that very high or very low individual salaries may skew the results. Median income—the midpoint of all responses—may provide a better snapshot of the typical OD's income. In 2012, median income for all optometrists was $115,000—which was the exact same number in our 2011 survey. So, that's good news.

"Considering that I opened cold just three years ago, I am pleased that I am able to pay myself that [level of] salary for having a brand new practice," says Tina R. Thomas, OD, of Washington, Ill.

For self-employed ODs, annual net income (i.e., income minus taxes) averaged $153,490 in 2012, and median income was $130,000. For employed ODs, annual net income averaged $110,809 and median income was $105,000. (*For average incomes in specific optometric settings, see "Highlights of* Review of Optometry*'s 2012 Income Survey," page 48.*) Those are almost the exact same numbers as in last year's survey.

These are some highlights of *Review of Optometry*'s annual Income Survey. The survey was emailed to more than 30,000 of our readers; about 14,000 opened the email and more than 700 optometrists responded.

We received many insightful answers to one key question—What one thing do you plan to do to increase your income in the coming year? The answers we received can be categorized into eight great ideas.

1. Try Something New

If the same old streams of income are not flowing well or are simply drying up, try tapping a new revenue stream.

"We decreased occupancy costs by bringing in audiology," says LeRoy Popowski, OD, of Colorado Springs, Colo. "I paid off my practice loan."

"We're offering more small side items to help patients and revenue, like Bruder moist heat eye pads, nutrients like omega-3s and macular vitamins, OCT wellness exams and TearLab osmolarity testing," says Jeanette Jezick, OD, of Gales Ferry, Conn.

2. See More Patients

ODs are taking different approaches to increasing productivity.

"I may work more hours," says Tammy Warmouth, OD, of Luzerne, Pa.

"I'm bringing in an associate," says Eric White, OD, of San Diego. Similarly, "I'll hire a new, young doctor to help increase production," says Thomas Tucker, OD, of Greenville, SC.

"We're increasing patient load from the Affordable Care Act," says Curt Gottlieb, OD, of Doylestown, Pa.

3. Expand Your Services

In addition to mining existing routes for more patients, ODs are broadening their assortment of services.

"We're adding ortho-K and scleral lenses," says Keith Kajioka, OD, of Modesto, Calif. Likewise, Sophia Asaria, OD, of Houston, plans to "have more specialty contact lens fittings."

"I am opening a VT practice," says Angela Howell, OD, PA, of Paragould, Ark.

Jonathan Shaver, OD, of Fayetteville, Ark., identified two new ventures for his practice: "We began a dry eye clinic, and we're beginning to work at a school-based clinic."

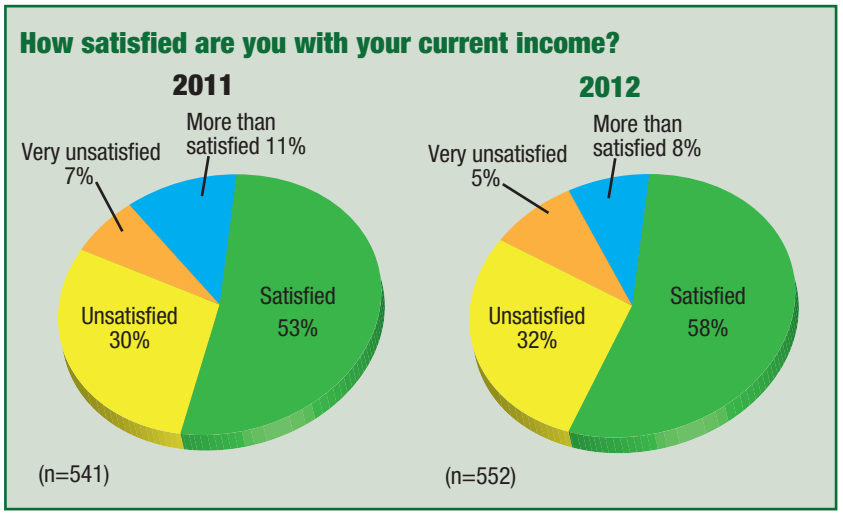
4. Increase Medical Eye Care

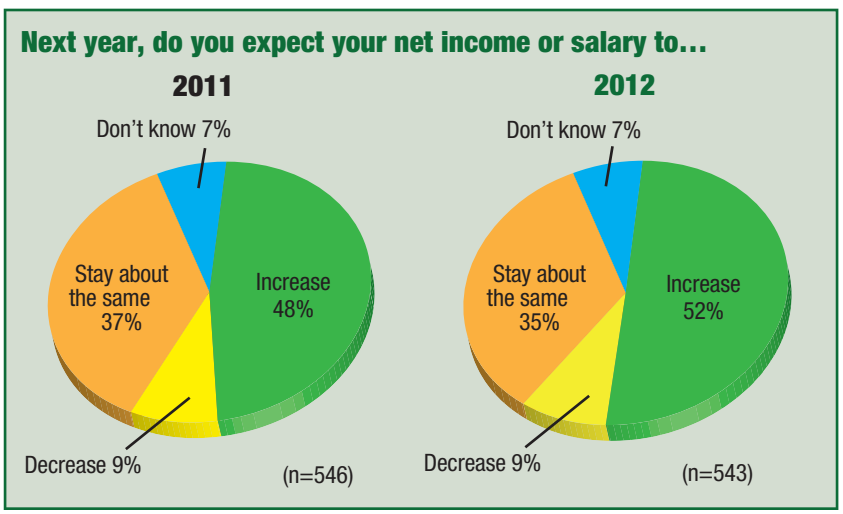
Optometrists' latest "goose that lays golden eggs" is medical eye care. This notion is apparently not an elusive fairy tale, but a reality for many ODs.

"We're doing more medical eye care," says David Zehnder, OD, of Delaware, Ohio. "We started an AMD center and a dry eye center."

Other ODs are taking a similar approach:

- "I'm doing more medical testing, such as for glaucoma visits," says Jean S. Heisman, OD, of Mullica Hill, NJ.
- "I'm adding retinal imaging to my practice," reports Krystal Long, OD, of Minneapolis.
- "I just bought an OCT to increase medical revenue," says Meyer Izaac, OD, of Encino, Calif.





5. Go High End

"While our competition continues to race to the bottom in buy-one/get-one deals, discounts and sales, we have gone to higher-end and exclusive lines," says Mario Barrera, OD, of Laredo, Texas.

Other ODs also report that high end equals higher revenue. "We are continually trying to set ourselves apart from others by unique things that we do in our office," says Dr. Thomas. "As a result of these things that we've been doing, we are continually growing."

Optometrist Barry Basden, of Florence, Ala., added a personal touch. "We've recently

Highlights of *Review of Optometry*'s 2012 Income Survey

Average Net Income	$134,002	(n = 551)
Median Net Income	$115,000	(n = 551)
Average Net Income by Years in Practice		
Less than 10 years	$103,537	(n = 181)
11 to 20 years	$136,292	(n = 126)
21 to 30 years	$150,897	(n = 112)
More than 30 years	$159,382	(n = 108)
Self-employed ODs Average Net Income		
All self-employed ODs	$153,490	(n = 307)
Solo practitioner	$146,049	(n = 168)
Partner/group practice	$191,448	(n = 89)
Franchisee	$145,700	(n = 5)
Independent contractor	$100,824	(n = 37)
Lessee	$158,333	(n = 3)
Employed ODs Average Net Income		
All employed ODs	$110,809	(n = 233)
Other OD or MD	$108,638	(n = 152)
Commercial firm	$112,142	(n = 36)
HMO/PPO	$118,482	(n = 11)
Hospital/VA center	$126,410	(n = 10)
Other	$120,412	(n = 17)
Average Gross Revenue – All ODs	$720,492	(n = 326)
Median Gross Revenue – All ODs	$570,000	(n = 326)
Self-employed ODs Average Gross Revenue	$648,063	(n = 246)
Self-employed ODs Median Gross Revenue	$550,000	(n = 246)
Employed ODs Average Gross Revenue	$1,006,274	(n = 73)
Employed ODs Median Gross Revenue	$645,000	(n = 73)

implemented a technician/scribe/optician program that dramatically improves rapport with our patients. Our techs function as the patient's advocate through the entire examination process as well as the selection of eyewear. We're seeing significant improvement in throughput and optical sales."

Steven N. Sugar, OD, of Sugar Land, Texas, takes an assertive approach to sales. "We train our staff to sell, sell, sell—to upgrade lenses and offer add-ons," he says. "We keep our schedules full all the time. We are very selective in the vision plans that we accept, because they are all changing and not in our (the doctors') best interest."

6. Raise Prices

Increasing fees and raising prices can be a tricky endeavor, but it's one that every practice owner has to address from time to time.

"We may increase the price of retail products and professional fees by five percent," says Husam Tarrabain, OD, of Edmonton, Alberta, Canada.

7. Keep an Eye on Costs

One problem practice owners continually face is the ever-increasing cost of retail goods. So, it's important for all business owners to keep a lid on those expenses. Here are some specifics:

Brian Beattie, OD, of Bismarck, ND, plans on "better collection practices and using a buying group to control costs."

Matt Stanley, OD, of Manhattan, Kansas, hopes to "decrease the cost I spend on maintaining my hardware/network/computers by possibly switching to a new cloud-based EHR."

"We restructured our insurance billing and accounts receivable departments to improve our cash flow," says Dr. Basden. "We also made changes in the processes we use to purchase products."

Several respondents say that they aim to raise revenue by combining cost-cutting measures with ones to increase income. For instance, Evelyn Segovia, OD, of Humble, Texas, says that she's "ensuring that all insurance is filed, and that I made an attempt to upgrade or get additional pairs of glasses sold."

Likewise, "we're collecting copays consistently while achieving a higher percentage of lens treatments, such as AR and photochromatic coatings," says Linda Nguyen, OD, of Kahului, Hawaii.

8. Improve Marketing

The old advertising advice still holds true: If you don't tell, you won't sell. That's why it's important for many practices to make sure the people in their community know they're there. But you need a plan.

"We are going to create a detailed marketing calendar for next year," says Alexander Jennings, OD, of Cudahy, Wisc.

Besides a solid plan, you need good ad placement—the old phone book ad doesn't work so well any more. You need new ideas that show that you're a part of your community. Jon Montoya, OD, of Albuquerque, NM, says, "More people will know about us through self-advertising, flyers, charity works and sponsorships we are doing this year."

More Info from Our Income Survey

In addition to these ideas, our latest income survey yielded some other interesting information.

• *Fewer hours*. Over the past several years of this survey, we've seen a very gradual decrease in hours worked per week. However, 2011 was an exception to that trend; the average OD put in 39.4 hours per week. (These numbers reflect a total of patient hours plus administrative time.) But 2012 resumed that downward trend, with an average work-week of 38.2 hours. Perhaps this exemplifies optometrists' new outlook of working smarter, not harder.

"I feel that I am making a very good income; but more importantly, I enjoy what I do."

Self-employed optometrists put in more hours than employed ODs—38.7 hours vs. 37.4 hours.

• *Projected future earnings*. Optometrists are optimistic about a profitable 2013. More than half (52%) expect their income to increase in 2013, which is higher than what we've seen since the beginning of the economic downturn. Meanwhile, 35% hope their income will at least remain the same. Only 9% foresee a decrease in their income in 2013.

• *Job satisfaction is up*. Unfortunately, money can't buy you happiness. But, on a brighter note, optometrists report that they're a bit more satisfied—and not as unsatisfied—with their current income. Specifically, 66% of respondents reported satisfaction with their 2012 income compared to 64% in 2011. At the same time, only 5% of ODs reported they were "very unsatisfied" in 2012, compared to 7% who were "very unsatisfied" in 2011.

Summing it up, Dr. Heisman says, "I feel that I am making a very good income; but more importantly, I enjoy what I do." ■

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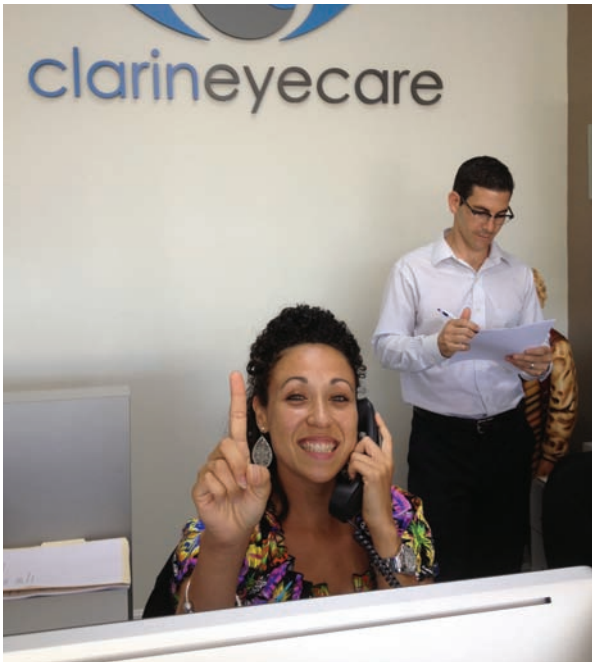
7 Blunders of Front Desk Staff (and How to Fix Them)

Lousy phone etiquette. Badmouthing patients. Too much time on Facebook. Sound familiar? Here's what you can do about it. **By Cheryl G. Murphy, OD, Contributing Editor**

The first impression a patient has of your practice is not of you, but of your front desk staff. If the patient gets a negative impression from the person behind the desk, it impacts the patient's overall opinion of your office and can even affect your business. Knowing some of the most common mistakes that staff can make and how to remedy them can help ensure that your practice is seen in the best possible light.

"These mistakes consist of those incorrect, impolite or improper actions that make us all cringe," says Brett Paepke, OD, of FirstView Eye Care in Plattsburgh, NY. "Reciting credit card numbers out loud for all to hear, telephone rudeness and gossiping about patients" are just a few examples of behavior that's unprofessional and unacceptable, he adds.



Who's more important—the patient on the phone or the one at the front desk? Adam Clarin, OD (background), asks Candace Rodriguez at the front desk to be attentive to each.

Here are the seven deadly sins of front desk staff, and what can be done to change them.

1. Telephone Rudeness

• *Problem.* Opinions vary on phone etiquette. Some say that a business should always answer the phone by the third ring. Others say that patients who are standing at the front desk in person should take precedence over patients who are calling on the phone.

No matter how a business owner chooses to have their staff prioritize and balance patients in person and on the phone, each patient should receive the staff's polite, undivided attention whenever possible. Adam Clarin, OD, of Clarin Eye Care in Palmetto Bay, Fla., says that one thing that always irks him is when "the phone rings while the front desk is having a conversation with each other or another patient as they pick up the phone and they finish their last sentence before saying hi to the person calling so that person [on the phone] gets to hear the end of a conversation before they are greeted." Dr. Clarin says that he thinks that this is "totally unprofessional and doesn't

show the caller that we're attentive or interested in them, and that might be their first impression of the office."

• ***Solution.*** Train your staff on how you prefer phone calls to be handled and have them "stick to the script" whenever possible. Create guidelines for answering the phone, the greeting each patient should be given, and a format for how you think patients on the phone and in person should be juggled.

Obviously, there are times when exceptions will be made, but having steps will help to steer phone conversation behavior in the direction that you think is correct and best for your business.

2. Personal Cell Phone Use

• ***Problem.*** Since cell phones have evolved into smart phones with enhanced perks such as mobile email, web, social media and texting, their popularity and the frequency with which people use them has increased tremendously. It seems that the new social norm is for people to check their cell phones repeatedly throughout the day; however, should this include the workday? Distractions from cell phones and smartphones could lead to errors in data entry, incorrect recording of information, inattentive customer care and an overall air of impoliteness. If the wrong thing is said or data is entered incorrectly, it puts the practice at risk for certain liability issues.

• ***Solution.*** Consider limiting or banning the use of cell phones at the front desk, and recommend that employees check their phones only during lunch or while on break. Reassure employees that the office phone number may be given as an emergency contact number to schools, relatives and the workplaces of relatives so that if someone urgently needed to speak with them, they would be able to reach them via the office's landline. If you do choose to allow the discreet use of cell phones at the front desk, make sure your employees have them silenced so that the gadget does not beep, ring or vibrate when calls and messages are received.

Cover up any patient health information or paperwork that might be mistakenly seen by other patients waiting at the front desk, Pamela Miller, OD, JD, tells her staff.

3. Using Work Computers for Leisure

• ***Problem.*** Using work computers for personal use not only causes a distraction and takes time away from other job responsibilities that need tending, it could pose a risk if a virus is mistakenly downloaded or if indecent material is associated with the computer's IP address. It also may look unprofessional to patients who happen to see or hear someone using the computer for leisure, and suggests that the employee is not attentive to their job and is indifferent to patients.

• ***Solution.*** Establish your own office policy about computer use for personal reasons. If you decide to allow employees to use work computers for leisure, make sure they are not abusing that privilege by using it when patients are present or when there is other work that needs to be done.

So, instead of viewing the latest YouTube video that has gone viral, employees should be focused on the to-do list of secondary responsibilities that will help the office run more efficiently. Examples: purging old files, calling patients who haven't picked up materials, cleaning/dusting the office or rearranging the optical frame boards.

4. HIPAA Violation

• ***Problem.*** The definition of a HIPAA violation is "the disclosure of personal or identifiable patient information to a non-privileged or non-authorized source—regardless of whether it is intentional, accidental or otherwise," according to Pamela Miller, OD, JD, an attorney and private practice owner in Highland, Calif.

The consequences are serious. Significant fines can be incurred "as well as potential litigation by the patient if the patient suffers injury

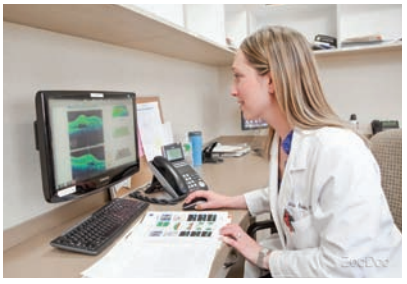
or harm as a result of negligence by the doctor or staff under the theory of *respondeat superior*," Dr. Miller says. *Respondeat superior* is a legal doctrine that means an employer can be held accountable for the actions of their employees during the course of their employment.

"Potentially, the patient could also sue for defamation if the case could be made, loss of employment or punitive damages depending on what information was released," Dr. Miller says. She also adds that the reputation of the practice and the doctor can be harmed if the patient posts about the privacy-violating incident on social media, shares it with the newspaper or verbally with third parties.

• ***Solution.*** If fines are incurred due to a HIPAA violation, "the doctor might be able to come to an agreement because the fines are per violation. Generally, fines are not based on an innocent error but rather on the severity and the frequency of the violations," Dr. Miller says. Also, "if the doctor has changed the policy prior to the issuance of the fine, it can be presented as evidence of correction," she adds.

As with many blunders, the best solution is to prevent the mistake from even happening in the first place. Take steps to make sure that your staff is taking HIPAA seriously. Dr. Miller says that practice owners "need to make certain that the staff is appropriately educated [on the HIPAA law], that the policy manual is current and that the doctor is running an ongoing spot check throughout the office" to ensure HIPAA compliance.

"Staying on top of privacy is a never-ending task," says Dr. Miller, "and if and when anything is amiss, the doctor or the manager needs to rectify it immediately, note it, follow up and then reassess [to make sure] that the corrections or changes are ongoing, effective and reinforced constantly."



Have the front desk staff explain the patient's copay, out-of-pocket expenses and any materials costs before seeing the doctor, says Carrie Kislin, OD.

5. Gossip/Negative Words

• ***Problem.*** A patient comes into the office and does or says something that is impolite, inappropriate or downright rude. A stone has been cast into the calm of your staff's workday. Will they let that the incident cause a flustering ripple effect, or will they stay cool and keep everything copacetic? It can be tough to remain firm yet polite when a patient is giving staff a hard time for whatever reason. However, staff members need to know how to recognize a disruptive situation, to remain calm and respectful, and to choose the best way to defuse it.

• ***Solution.*** Patients are people. They have bad days and, for all you know, they may be having the worst day ever. Try to give patients the benefit of the doubt. Remain calm, don't raise your voice and keep your tone professional. Maintain good eye contact and listen to what the person is saying. If a patient feels like she or he is not being heard during a complaint, the situation can escalate or continue on and on.

If there's no reasonable way to resolve the problem immediately, tell the patient you'd like to give the problem further consideration and time, which you're unable to do at the moment, and then take down their contact information. A resolution to the situation may be more obtainable once both parties have had a chance to cool down and think more rationally. If the person refuses to "let it go" and a staff member feels attacked or threatened, it is best for the staff member to calmly walk away from the situation and have another staff person take over, again suggesting that the person be contacted at a later time by the office manager or the owner of the practice.

Obviously, front desk staff should know to not engage in hostile exchanges with patients, but it is equally important for staff to understand that they should not talk about the situation at the front desk after the person has left. Other patients in the waiting room or the optical up front may be within earshot—even if the patient was inappropriate and rude, you don't want any patients thinking that they might also be talked about when they leave the office. If something needs to be discussed about a patient and the staff member needs to report it to the office manager, it should be discussed and documented behind closed doors in another room and away from the front desk.

6. Improper Insurance Charging/Billing

• ***Problem.*** In an ideal world, patients would walk into an optometric office with a working understanding of their insurance coverage and the staff would be proficient in matching chief complaints and diagnosis codes to determine whether it was appropriate to bill under the patient's vision or medical insurance.

However, this doesn't always

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Hire the Right People, Then Lead by Example

By Stuart M. Rothman, OD

The solutions to front desk problems start in the hiring process. A candidate who dresses inappropriately for their interview, who has jumped from job to job, who has inaccurate information on their resume or who can't identify what they can do to help the practice is telling you something right up front.

It's easier to train skills than to change someone's personality, so hire the person with the right personality. A front desk employee needs strong customer service skills and the abilities to prioritize multiple jobs and handle several tasks simultaneously (multitasking).

Once you hire the right person, be sure to have a clearly defined job description, training process and employee manual to simplify things for the employee and to document what the doctor/practice expects of them. Regular reviews, staff meetings and personal oversight help to keep good employees on the right track.

The doctor(s) set the tone for how the practice is to be run. A doctor who shows a lack of caring to their staff or patients will get the same thing back from their staff. Coming in late, taking personal calls while seeing patients, badmouthing or gossiping about patients all set the tone for the staff.

Dr. Rothman is the author of the textbook "Business Aspects of Optometry," as well as a private practice owner and an associate clinical professor at SUNY College of Optometry, where he teaches practice management.

happen. "In many optometric offices, the front desk staff themselves don't understand the difference between these plans, and therefore can't help a patient to understand how to apply them to their visit, which results in a frustrated patient, a frustrated front desk and in turn, a frustrated doctor," says Carrie Kislin, OD, of Associates in Eyecare in Springfield, NJ.

• ***Solution.*** To avoid errors in billing, at least one person in the office—whether it be the office manager, head of the front desk staff or the doctor—should understand all of the different insurance plans that the office accepts and how they work, Dr. Kislin says. "Once this person is established and trained via Internet research and calling the individual companies to verify their level of understanding, they can then train the staff."

She also suggests having a binder at the front desk that contains information on each insurance plan, including the office's login and password needed to access each plan's website. Front desk staff should be reminded that in order to bill medical insurances, a chief complaint and diagnosis must be provided.

It is also best to avoid surprises in billing whenever possible, so some doctors prefer to give patients a rough estimate of charges they might incur and have to pay out-of-pocket after looking at their insurance allowance at check in. "It is helpful to have the front desk staff explain the patient's copay for an exam, the out-of-pocket for a contact lens exam, and then how much their allowance may cover toward that exam and any materials they may order before they see the doctor," Dr. Kislin says. This will help the examination and the front desk check-out to flow more smoothly, and the patient will feel like the office staff is knowledgeable, making their experience more enjoyable.

7. Front Desk Presentation

• ***Problem.*** Although optometric offices are not hospitals, patients have certain expectations for the environment in which they see their health care provider. For example, a messy or cluttered front desk may give the impression that the office is run inefficiently. Also, some patients have allergies or chemical sensitivities to dust, pets, smoke or perfume. Strong smells on the clothes of the employees or at the front desk such as fast food might be offensive to a small segment of the population. Some patients may also see food and drink consumption at the front desk as out of place, unsanitary or impolite.

• ***Solution.*** Desks should be well organized and clutter should be kept to a minimum. Staff should be dressed appropriately and professionally and ideally they should be as "scent-free" as possible. Eating at the front desk should also be discouraged, unless the staff member is unable to leave the front desk to take a break or eat elsewhere. Drinks should have lids or caps on them and should be kept in an area where they won't get bumped or spilled.

By keeping the front desk and its staff as clean and neat as possible, the patients and staff members will see the office environment as more pleasant and professional.

Take the first step in successfully building a loyal patient base by making a good first impression with a stellar front desk staff. By giving staff explicit guidelines and clearly stating expectations for front desk staff behavior, you can keep your office running smooth and help to ensure that patients and staff alike will enjoy the time they spend there and look forward to coming back. ■

JAMIE KUHN, OD

Dr. Kuhn graduated from the Southern California College of Optometry and currently practices in Tucson, Ariz.

Getting Emerging Presbyopes into Contact Lenses

Offer this growing population all-day comfort AND clear vision.

Discussing age-related vision correction with emerging presbyopes can be a challenging task for eye care practitioners. There are hurdles to overcome, especially when recommending prescription contact lenses to emmetropic presbyopic patients who are new to vision correction. In the past, these patients were typically fit into a monovision modality, which often resulted in distance or near blur, difficulties with depth perception, and eyestrain. Now, eye care practitioners can offer multifocal contact lenses to their patients to effectively correct near, intermediate, and distance vision while providing comfort and clarity. It's important to understand the benefits of proactively fitting this growing population with multifocal lenses.

Multifocals Over Monovision

In most cases, patients see better, not to mention more naturally, when both eyes work together at all distances. Multifocal contact lenses are the only lens modality that offer this spectacle-free ability, with some brands providing binocularity at all ranges of vision. Unlike some other multifocal contact lens options that rely on modified monovision, AIR OPTIX® AQUA Multifocal contact lenses are true multifocals, delivering clear, comfortable binocular vision at a wide range of distances.

LO ADD Satisfies High Expectations

AIR OPTIX® AQUA Multifocal contact lenses offer a LO ADD that can reduce near strain while allowing patients to see clearly at near, intermediate, and distance. And, they are ideal for emerging presbyopes, even if patients are emmetropic at distance.

Patients fit with AIR OPTIX® AQUA Multifocal contact lenses also experience overall comfort that lasts all day long[1] and a decrease in visual symptoms related to emerging presbyopia.[2]

Finally, an Answer

Emerging presbyopes who are dissatisfied with limitations of their single vision contacts may be reluctant to share their concerns because they want freedom from glasses.

Practitioners can address these patients' concerns by proactively discussing AIR OPTIX® AQUA Multifocal contact lenses—which will ease the transition into higher multifocal add powers in the future.

With AIR OPTIX® AQUA Multifocal contact lenses, your patients' near vision complaints can be resolved, allowing them to enjoy overall comfort,[1*] which will keep them happy in their lenses.

MULTIFOCALS: CASE IN POINT

Karen, a 42-year-old female, presented with vision that was worsening for near tasks. She reported clear distance vision with her single-vision contact lenses, but complained that her ability to read print up close was slightly impaired. She also noted the need to remove her contact lenses earlier each day, due to discomfort and fatigue.

After performing a refraction, Karen was found to be an emerging presbyope, with need for a low +1.00DS add for near tasks. After the normal age-related changes associated with presbyopia were discussed, she asked if this change in prescription meant she would have to give up wearing contact lenses. Because of her high demand for stereo vision and excellent distance acuity, monovision contact lenses were not ideal.

Fortunately, AIR OPTIX® AQUA Multifocal contact lenses have a variety of ADD ranges to accommodate emerging presbyopes. Karen was fit into the AIR OPTIX® AQUA Multifocal contact lenses with a LO ADD on each eye. Immediately, she began to notice the comfort of the lenses, and after two weeks, she noted vast improvement in her ability to read small print. Additionally, her eyestrain and fatigue had improved and her new lenses remained comfortable throughout the day.

*Compared to ACUVUE^ OASYS^, PureVision^ and Biofinity^ contact lenses. ^Trademarks are the property of their respective owners.

Important information for AIR OPTIX® AQUA Multifocal (lotrafilcon B) contact lenses: For daily wear or extended wear up to 6 nights for near/far-sightedness and/or presbyopia. Risk of serious eye problems (i.e., corneal ulcer) is greater for extended wear. In rare cases, loss of vision may result. Side effects like discomfort, mild burning or stinging may occur.

References: 1. Rappon J. Center-near multifocal innovation: Optical and materials enhancements lead to more satisfied presbyopic patients. Optom Vis Science. 2009;86:E-abstract 095557. **2.** In a clinical study at 26 sites with 87 patients; Alcon data on file, 2011.

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10 Lessons I've Learned from Corporate Optometry

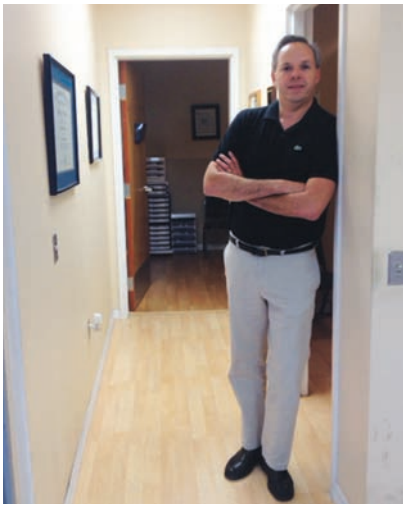
Optometry school will teach you how to be an eye doctor, but experience in retail optometry can teach you how to be a successful business owner.

By Steven J. Lowinger, OD

Optometrists are smart people. We work tirelessly to get through optometry school, passing examinations on optics, anatomy and pharmacology. Next, we learn and master a variety of clinical skills, diagnostic techniques and treatment protocols. Then, with tremendous effort and diligence, we somehow manage to pass our boards and can officially refer to ourselves as eye doctors. Life is good.

But wait… We didn't learn anything about how to actually get started in practice, establish a patient base or even balance the books!

Following the completion of our formal schooling, learning the business side of our profession becomes one lifelong continuing education program. Unlike the cozy and familiar classroom setting, most of us acquire this knowledge via enrollment in the School of Hard Knocks. In this curriculum setting, daily successes and failures over the course of an entire career eventually help us determine how to run our practices most effectively.



After 18 years in corporate optometry, Dr. Lowinger has learned *a thing or ten* about optimizing an eye care practice.

After working in corporate optometry for the past 18 years, I've learned quite a bit by watching how my corporate partner interacts with its customers, employees and vendors. This ongoing experience has helped me become a successful optometrist as a leaseholder in a retail setting. And, during that time, I've developed a list of 10 fundamental lessons that—in one way or another—effectively translate into all modes of practice and can be applied during any phase of an optometrist's career.

1 *Not all corporations are created equal, and your fit with each type may vary.*

This is not necessarily the first lesson I learned, but it may be the most important. In health care, not every patient will gel with every doctor, and not every doctor will gel with every corporation.

The long-term goals and day-to-day business activities of corporate practices range dramatically. Some are considered "high-end" locations that see a smaller, select patient population per day. Doctors at these practices often place tremendous value on the medical care aspect of their eye examinations, and/or strictly market upscale lines of prescription frames and sunwear.

On the other hand, there are many "low-end" corporate practices that see a high volume of patients each day and offer budget-price frame lines.

The bottom line: If your skill set

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Restricted working space is fairly common in most corporate optometry offices. But don't let this consideration limit the way you provide patient care. Instead, flex your creative muscle to squeeze the most out of every square inch of your facility.

is inappropriate for the specific corporate setup you are considering, you may be very unhappy with the results. So, be honest with yourself. Take the time to envision what type of "feel" you'd like from your practice, and then decide if a corporate location suitably matches these preferences.

It's advisable to take a similar approach when ultimately deciding upon your intended mode of practice, or even your first private location. What do you want it to look like? Sometimes, kicking the tires on a corporate setting can help you determine what type of optometrist you'd like to be when you open your own office.

2 *A smaller office footprint means more innovation.*

Most retail locations tend to be smaller than private offices—especially because, in many cases, the corporate parent generates its revenue on everything other than eye examinations. Because of this, if you are considering a corporate practice setting, be prepared to make some concessions secondary to limited space.

During the first year in my office, we quickly filled multiple file cabinets with patient records. So, I ordered a custom cabinet installation and raced to implement electronic medical records—way back in 2005. In fact, insufficient physical space was the single greatest motivation to become an early adopter of EMR.

Similarly, retinal cameras and visual fields machines not only have to pass the "need" test, but also the "fit" test in confined office environments. When I started, I had no experience in office design. Now, I am a Tetris Master when it comes to making the necessary pieces fit.

3 *You have to spend money to make money.*

Turnkey operations are nice if you simply want to manage a practice and make a nice living. But, if you want to build a practice, you need to show patients that you genuinely care. That means spending money to make the office look nice, purchasing the right equipment, and providing patients with a level of professional expertise that will keep them coming back to you.

Over the years, our office added EMR software; a retinal camera; new flooring and paint; better staff training; and enhanced recall systems. Such prudent upgrades often reassure patients that they have selected the right practitioner to meet their eye care needs. If the comprehensive examination experience at your practice is both comfortable and pleasant, your patient base will expand rapidly.

4 *Sometimes, it makes sense to think about a change before actually enacting it.*

Corporations are like cruise ships—it takes a long time for them to change direction. In some instances, this absolute certainty can cause you to bang your head against the wall. Other times, however, pausing to think ahead and plan accordingly is necessary.

The same is true in our practices. We can wave our magic wands and change how we do things very quickly. Sometimes, this is a smart move. Other times, such unbridled haste leads to gross oversight.

For example, I used to impulsively purchase the latest and greatest equipment as it came out—only to watch it collect dust as I figured out how to employ it in my practice. Now—well before I buy, change or move anything—I make certain that I have just cause, as well as a reasonable expectation of how it will benefit the practice.

5 *The customer is not always right. But, it is better to kill them with kindness than be a brick wall.*

There are plenty of reasons why patients have preconceived notions walking into an eye exam. These days, everyone has an expectation of service that is "100% satisfaction guaranteed." Educating a patient when they are mistaken is the most difficult part of the job, and in corporate practice, you have to tread lightly during those explanations.

I've found that apologizing for the misunderstanding and then educating the patient goes a long way

It's not always this obvious

47% of lens sleepers aren't telling you how often they sleep in their lenses[1]

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References: 1. In a survey of 284 daily and extended wear contact lens patients. Alcon data on file, 2012. **2.** In a survey of 311 optometrists in the U.S.; Alcon data on file, 2012.

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toward helping them feel satisfied, even when they are frustrated. Also, I've learned that being right in these situations does not mean that I will win the disagreement, and that winning this battle can actually mean losing the war in terms of patient goodwill. Even when things remain unresolved, being pleasant in a bad situation always pays dividends over the long term.

"Refund" is not a dirty word.

Continuing the conversation from Lesson #5… There will be the patient who receives an eye exam from you, goes to his ophthalmologist, and comes back to your office to report: "The eyeglasses you gave me are wrong." (In most instances, this is because the patient simply doesn't understand the difference between plus and minus cylinder. But, I digress.)

You can spend countless hours simplifying optics lessons from your second year of optometry school while being as pleasant as possible. At the end of the day, however, patients will still want their money back because "you screwed up" and they are done with you.

A refund ends all of that nonsense. I may or may not ever see that patient again—but the truth is that offering a refund gets them out of my life and my practice. Interestingly, of the dozen or so patients I've provided refunds to during my career, about half of them have returned to seek care at some point.

The fundamental importance of proper staff training cannot be overstated.

In every facet of a retail or corporate setting, some form of education is always occurring. Whether it is customer service instruction, food safety, inventory tracking, management orientation, loss prevention or general safety monitoring, employees complete hours of on-the-job training to help their corporations remain efficient and profitable.

Likewise, in an optometric setting, your staff must be amply trained to provide superior eye care and customer service. In general, I've found that my staff members enjoy learning more about what they do on a day-to-day basis. In doing this, your job becomes easier because they are able to address a greater volume of patients' questions and concerns.

Many large private practices also provide similar training for their staff members. Further, it is worth noting that paraoptometric training is available at most major conferences and regional meetings, and that multiple periodicals and contact lens companies offer software modules to facilitate the education process.

Embrace the medical billing model.

More and more retail chains are adding pharmacies, walk-up clinics and even flu shots to increase their revenue. Optometry should be no different. Many corporate practices are starting to partner with eye care insurance to offer one-stop shopping. Take note that such opportunities do not simply begin and end with the optical.

Adhering to the medical billing model is the best way to help our patients without giving away free care or referring them out of our practices. Keeping those patients in house enhances the patient experience, increases your office's bottom line and expands your corporate partner's earnings. It's quite literally a win-win-win for every party involved.

One of my favorite examples is what I call the "Saturday foreign body patient." At least once a month, I have a patient who is working around his house on the weekend and gets something in his eye. Now, this person can go to the emergency room, spend a lot of money and waste a lot of time waiting around—or, he can come in to see me, pay less and return home much sooner.

Patients love that service and are happy to pay for my time and the convenience of not having to go to the ER. And, without question, I am more than happy to take care of that individual and generate some additional revenue.

Get involved in your community.

There are many different forms of advertising, but most business owners agree that the best advertising is word of mouth. No matter its size, being an active part of the community fosters a sense of goodwill that often drives patients to your location. Many larger corporations have a marketing budget that can be applied toward local community sponsorships and outreach programs. Such a philanthropic approach helps establish a partnership between the retail location and the community it serves. This goes beyond the scope of conventional advertising budgets, and is more of a grass roots approach to building a client base.

As eye care practitioners—retail, private or otherwise—being both visible and active in your community will dramatically increase patient traffic. Shortly after word gets around, you will become the community eye care doctor that patients want to see.

At some point, most everyone will work in a retail setting.

During the past 18 years here,

I've hired new grads, old doctors and everyone in between to work for me.

Sometimes corporate optometry is a starting point for the new graduate who wants to buy his or her own practice in the future. In other cases, it is supplemental income for ODs who are actively building their practice or those moonlighting during their residency. And in other instances, it is a place for an older OD to keep working a few more years after he or she has sold their practice.

For me, it began as a five-year plan to pay off my student loan debt. Over time, however, I developed a long-term interest in building my own practice in a retail setting.

Most of us will work in a retail location at some point, and some of us will remain in that setting because it's the right fit. There is no wrong way to practice optometry—as long as you remain cognizant of what's best for your patients.

There is no limit to what you can do when you work hard in any mode of practice. My office has created several professional opportunities, including speaking on behalf of contact lens manufacturers at major CE meetings and publishing in trade journals. I have also contributed research to a few clinical studies because of the size of my practice and its patient base. Bottom line—whichever mode of practice you choose, you'll always have the opportunity to do much more than simply prescribe glasses and contact lenses.

Many corporate optical chains have national or regional leadership groups. Getting involved with these organizations can help you understand your corporation's position on a host of issues. Such involvement also will help you get noticed as an opinion leader in the field.

Making our practices succeed requires a lot of information that we did not learn in the classroom. Fortunately, experience is the best teacher. I hope that my experiences in corporate optometry can help you improve the quality and profitability of your practice. ■

Dr. Lowinger is a graduate of Nova Southeastern University and former chair of the Florida Optometric Association's Leased Tenant Committee. He has been a Costco leaseholder in its North Miami store for 18 years, and has recently acquired a second lease at the Costco located in Miami Lakes.

NONCOMPLIANT PATIENT? RE-ASSESS WEARING HABITS

BY BRITT E. GUSTAFSON, OD
Dr. Gustafson practices at Wal-Mart Vision Center in Eden Prairie, Minn.

When it comes to compliance, sometimes a change in wearing schedule will do wonders.

Poor contact lens compliance is something we all encounter in our exam rooms every day. It can be difficult to elicit an accurate report of contact lens habits from a patient and even more challenging to motivate a patient to change their habits. Oftentimes, patients feel that their contact lens-wearing experience is acceptable, and question the need to make changes to their behavior.

When approaching a noncompliant patient, let's think about the tools we have to improve their wearing habits.

The Road to Improvement

One option is keeping the patient in the contact lens that they are currently wearing and are "happy" with and discussing the risks of noncompliance. This strategy may impact a few patients, but I think it routinely falls short in improving compliance. Patients who have been noncompliant for quite some time may feel that what they're doing works for their eyes and they may be hesitant to change their wearing schedule. Only about 10% of verbal information is retained, so a discussion on noncompliance is unlikely to have a lasting impact.

Another, more proactive approach to noncompliance is to change the patient's contact lens modality. In my practice within a Wal-Mart Vision Center, I find that the vast majority of patients wearing bi-weekly lenses are noncompliant. Think of the last 10 patients who presented to your office wearing a bi-weekly lens. How many of them reported disposing their contact lenses as directed?

Noncompliance can be a two-fold risk to the patient's ocular health. They risk corneal complications due to contact lens overwear and they return to your practice for comprehensive exams less frequently by extending their contact lens wear cycle.[1] I have observed that these patients typically wear each pair of their bi-weekly contact lenses for three to four weeks.

This is the perfect opportunity to transition such a patient to a monthly replacement contact lens. I tell them that it seems like it's easier for them to remember to throw their lenses away on a monthly schedule, so I'm going to have them try a lens that's approved for monthly use (30 consecutive days of daily wear).

"By refitting patients into a lens that accommodates their current routine, you can increase the likelihood that they will dispose of their contact lenses properly."

From Two-Week to Monthly

Asking anyone to permanently change their daily routine is a challenge. Think of the last time you set out to floss every night after a visit with the dentist and forgot after the first few days. By refitting patients into a lens that accommodates their current routine, you can increase the likelihood that they will dispose of their contact lenses properly. Research shows that 72% of patients in monthly replacement silicone hydrogel lenses are compliant with manufacturers' replacement schedules, compared with only 48% of patients in biweekly silicone hydrogel lenses.[2]

I introduce my noncompliant patients to AIR OPTIX® AQUA contact lenses. The monthly modality of this lens promotes compliance without changing their current contact lens-wearing habits. By aligning the patient's lens modality with their current wearing behavior, I eliminate the hurdle of changing a patient's routine and consequently greatly increase the likelihood that they will be compliant.

Another thing I have noticed in my years of practice is that noncompliant patients tend to experience some level of discomfort or dissatisfaction with their lenses. This issue is definitely worth addressing, and again, AIR OPTIX® AQUA contact lenses rises to the occasion with its unique, permanent plasma surface, which promotes moisture retention and minimal deposit buildup. This smooth, protective surface enables consistent comfort from Day 1 to Day 30.[3]

Keep Them Coming Back

The vast majority of my contact lens patients return for an eye exam once they've exhausted their current contact lens supply. Compliant patients should run out of their lenses at about the same time they receive an annual appointment reminder from your office. Of course, if a patient has been extending the wearing cycle of their lenses, they won't run out of lenses on schedule and are more likely to delay coming in for an exam. Fitting patients in monthly lenses such as AIR OPTIX® AQUA contact lenses acts as a second appointment reminder and has helped me bring patients back in for their examinations closer to the recommended recall time.

The next time a patient admits to wearing his bi-weekly contact lenses for longer than two weeks, don't sweat it—simplify his contact lens schedule and refit him with AIR OPTIX® AQUA contact lenses. Just think of the chair time you'll save by lecturing to fewer patients about noncompliance!

References: 1. Dumbleton K, Woods C, Jones L, Fonn D. The relationship between compliance with lens replacement and contact lens-related problems in silicone hydrogel wearers. Cont Lens Anterior Eye. 2011;34(5):216-222. **2.** Dumbleton K, Woods C, Jones L, et al. Patient and practitioner compliance with silicone hydrogel and daily disposable lens replacement in the United States. Eye Contact Lens. 2009;35(4):164–71. **3.** Davis R, Eiden B. Changes in comfort and vision during weeks 3 and 4 of monthly replacement silicone hydrogel contact lenses. American Academy of Optometry 2012;E-abstract 125401.

Economics of Apathy:

Doing Nothing is Easy, But Expensive

Want to elevate your practice, please your patients and boost your bottom line? Seize these three missed opportunities. **By John Rumpakis, OD, MBA**

We have a great profession and, in my opinion, optometrists are some of the most compassionate caregivers in the health community. By many standards, ODs make a great living and enjoy a commensurate lifestyle. Yet, one of the most frequent comments I hear from colleagues is how they wish they could make more money and improve the cash flow in their practices. Fingers point at everyone else at fault—staff, insurance carriers, the health care system, Internet competition, even patients. Yet we ignore daily opportunities that could quiet our complaints—if only we take would advantage of what's right in front of us. Perhaps, it's complacency created by making a good living that is blinding us from opportunities that present themselves every day.

Below are some statistics from the American Optometric Association's recently published *State of the Optometric Profession: 2013*. They may shock, upset or perhaps motivate you. Or you may simply surrender to the greater market forces at work and consign yourself to the depths of hell of our chosen profession—unless you choose to do something about it!

Optometrists are at the forefront of primary eye care for the 314 million people in the US today. We outnumber ophthalmologists by more than two to one and provide the vast preponderance of annual comprehensive eye exams.

Estimated Number of US Eye Care Professionals (ECPs) 2012[1]

Optometrists	40,000
Ophthalmologists	18,000

ECPs' Share of Comprehensive Eye Exams 2012[1]

OD	85%	88 million comprehensive exams
MD	15%	16 million comprehensive exams

Number of Eye Exams Performed Per Hour by an OD[1]

1997	1.1
2012	1.1

However, our productivity hasn't improved. We haven't created additional opportunities for increasing patient volume, productivity or profitability, as seen in the number of eye care encounters performed per hour (*see table above*). To see that this statistic has remained static for 15 years blows me away. What have we been doing for the last decade and a half? If it doesn't change, that's one statistic that will put the nail in the coffin of optometric eye care in the current era of health care reform.

As if that's not bad enough, we're not even close to performing up to our potential in other areas, either.

I'm making an economic call to action. When are we going to realize that *we are* the primary eye care providers and have the numbers,

What We're Leaving on the Table[1]

	Actual	Potential	Actual % of potential	Left on the table
Average revenue per complete exam	$306	$400	77%	23%
Average eyewear sale	$227	$300	76%	24%
Average annual contact lens sale per contact lens exam	$152	$240	63%	37%
Average months elapsed between eye exams	25	18	72%	28%
Average % of potential left due to inaction				28%

talent, legislative scope and technology to control this marketplace? I have a theory based on the "economics of apathy": Procrastination and inaction costs you money. A lot of it. But by simply doing a few basic things, you can reverse your fortunes. I'll show you how.

The Six Million Dollar OD

Let's say the average OD works 45 years in practice and makes a net income of $134,000 per year. (*See income survey, page 38.*) That puts the average OD's lifetime earnings at $6,030,000. While many of us never consider that we will have earned more than $6 million in our lifetime, numbers don't lie. It may seem like a lot, but think about how much money that inaction in our practices costs us. When we look at it in the aggregate, our inaction, procrastination and apathy ends up costing us more than what our daily practices provide.

Let's look at some statistics regarding the size of the primary eye care market (refractive exams, vision correction device sales, but not plano sunglasses, cataract or refractive surgery or medical eye care).

Size of Primary Eye Care Market 2012[1]

US vision correction population	202 million
Primary eye care revenue	$31.4 billion

Eyeglass Sales by Channel 2012[1]

Corporate providers	54%
Independent Practice ODs	32%
Ophthalmologists	10%
Independent opticians	4%

Eyewear Capture vs. Walkout Rates[1]

Eyewear capture rate in independent OD offices	73%
Eyewear Rx walkout rate in independent OD offices	27%

Yes, it's true that material sales have declined. The increased number of purchase channels available to the consumer and new sources of competition have steadily eroded this once-consistent source of profitability, with now 27% of patients walking with their spectacle Rx. It's my opinion that many ODs use their professional services as loss leaders simply to capture the optical sale. Unless professional fees are set properly, and productivity increases to at least five to six patient encounters per hour (e.g., three full exams, two to three E/M encounters), ODs are never going to recognize proper ratios of income distribution between professional services and material sales.

Contact Lens Usage by US Adults[1]

2001	13.10%
2006	15.40%
2012	16.10%
Average overall growth rate in lens wearers per year	0.27%

Contact Lens Capture vs. Walkout Rates[1]

Overall % of contact lens Rx's written by ODs	90%
Contact lens capture rate	80%
Contact lens Rx walkout rate	20%

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Now let's talk about contact lenses. Optometrists largely control the contact lens market, but we haven't done enough to grow it. Contact lens usage has remained flat over the last decade. Even with accelerating technological developments in the contact lens area, many consumers aren't aware of the new technology because too often they don't ask—and if they don't ask, we don't tell.

It's bad enough that we capture only 80% of our own contact lens Rx's, but now we have to concede that the "returning contact lens patient" market is also shrinking. Nearly four years ago, I wrote an article on contact lens dropout rates around the world.[2] My data showed that the average practice has a nearly 16% dropout rate—low by some measures, as published in subsequent studies. Nonetheless, that 16% dropout rate represented a significant opportunity to provide our patients with great care and increase our income. The mean annual value of a single contact lens patient was found to be $275.[2]

Since that time, there have been additional studies on contact lens dropout rates and much innovation in the contact lens industry to address this problem. A dropout rate of 16% means that one out of every six of your contact lens patients stops wearing their lenses. While many of you are still in denial and telling yourself that this doesn't happen with your patients, there are others who think, "Hmm, I wonder what that's really costing me?" A timely question, particularly because dropout can be prevented simply by recommending and prescribing lenses and lens care products that are designed to provide better comfort and health.

For those who think this doesn't affect you, let's take a look at how costly denial and inaction can be. Remember that contact lens patient who generates $275 per year? Let's look at what that means over your 45 years in practice (*see table above*).

Economic Potential of Eliminating CL Dropouts in the Average OD Practice

Number of annual patients	3,100
Percentage of patients who wear contact lenses	34%
Number of contact lens patients	1,054
Average annual value of a contact lens patient	$275
Average contact lens dropout rate	16%
Average number of contact lens dropouts	169
Annual economic value of your contact lens patients	$46,376
Lifetime economic potential of eliminating your contact lens dropouts	$2,086,920

So, if you want to add another cool $2+ million to your lifetime earnings, stop denying that contact lens dropouts aren't happening in your practice and turn that inaction into something that you can deposit in your bank account.

Also, consider that losing a contact lens patient not only costs you that revenue stream, you also incur the "replacement cost" of bringing in a new patient.

Primary Care Carelessness

Medical eye care is another critical area of potential revenue loss. How so? We don't recognize medical disease opportunities, aren't billing for them, or are simply referring these patients out of our offices. With medical eye care at only 17% of total revenue, we are clearly not capitalizing on our role as primary and secondary eye care providers.

Let's consider just one of these opportunities: ocular allergy. Patients rarely seek help for ocular allergy, even though it's one of the most common ocular afflictions. Because of its prevalence, you don't have to market externally or spend one thin dime to attract these patients. They walk into your practice every day.

Most of us think that a reasonable person would tell us if they suffer from ocular allergies. But our average patient generally doesn't know the breadth of our clinical knowledge. Consumers typically associate us with prescribing glasses and contact lenses. Why not with ocular allergy? Because we don't tell them! We wait for them to complain to us about their eyes.

Medical Eye Care Visits by the Numbers[1]

Number of patient visits to ODs in 2012	96.9 million
% who had comprehensive eye examination	79.30%
Medical eye care visits	17.60%
Percentage of revenue from medical eye care	17%

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Important information for AIR OPTIX® NIGHT & DAY® AQUA (lotrafilcon A) contact lenses: Indicated for vision correction for daily wear (worn only while awake) or extended wear (worn while awake and asleep) for up to 30 nights. **Relevant Warnings:** A corneal ulcer may develop rapidly and cause eye pain, redness or blurry vision as it progresses. If left untreated, a scar, and in rare cases loss of vision, may result. The risk of serious problems is greater for extended wear vs. daily wear and smoking increases this risk. A one-year post-market study found 0.18% (18 out of 10,000) of wearers developed a severe corneal infection, with 0.04% (4 out of 10,000) of wearers experiencing a permanent reduction in vision by two or more rows of letters on an eye chart. **Relevant Precautions:** Not everyone can wear for 30 nights. Approximately 80% of wearers can wear the lenses for extended wear. About two-thirds of wearers achieve the full 30 nights continuous wear. **Side Effects:** In clinical trials, approximately 3-5% of wearers experience at least one episode of infiltrative keratitis, a localized inflammation of the cornea which may be accompanied by mild to severe pain and may require the use of antibiotic eye drops for up to one week. Other less serious side effects were conjunctivitis, lid irritation or lens discomfort including dryness, mild burning or stinging. **Contraindications:** Contact lenses should not be worn if you have: eye infection or inflammation (redness and/or swelling); eye disease, injury or dryness that interferes with contact lens wear; systemic disease that may be affected by or impact lens wear; certain allergic conditions or using certain medications (ex. some eye medications). **Additional Information:** Lenses should be replaced every month. If removed before then, lenses should be cleaned and disinfected before wearing again. Always follow the eye care professional's recommended lens wear, care and replacement schedule. Consult package insert for complete information, available without charge by calling **(800) 241-5999** or go to **myalcon.com**.

References: 1. In vitro measurement of contact angles on unworn lenses; significance demonstrated at the 0.05 level; Alcon data on file, 2009. **2.** Nash W, Gabriel M, Mowrey-McKee M. A comparison of various silicone hydrogel lenses; lipid and protein deposition as a result of daily wear. *Optom Vis Sci.* 2010;87: E-abstract 105110. **3.** Ex vivo measurement of lipid deposits (total cholesterol) on lenses worn daily wear through manufacturer recommended replacement period; CLEAR CARE® Cleaning & Disinfecting Solution used for cleaning an disinfection; significance demonstrated at the 0.05 level; Alcon data on file, 2008.

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Economic Potential of Ocular Allergy in the Average OD Practice	
Number of Americans with allergies	157,000,000
Incidence of ocular allergies	83% of all allergy sufferers
Number of Americans with ocular allergies	130,310,000
Median patient volume in an optometric practice per year	3,100
Allergy patients in an optometric practice per year	1,550
Ocular allergy patients in an optometric practice per year	1,287
Typical number of office visits for an ocular allergy patient per year	2
Total number of office visits related to ocular allergy per year	2,573
Average reimbursement for allergy-related office visit	$73
Allergy-related revenue per patient per year	$146
Total potential revenue due to ocular allergy per year	$187,597
Lifetime economic potential of diagnosing and treating ocular allergy	$8,441,884

Why would they mention ocular allergies (for which they are probably self-treating, by the way) to us if they don't know it's part of our clinical profile? We should ask every patient on every encounter about ocular allergies. I know what you're thinking: that takes too much time, my staff just won't do it, or I don't do medical eye care—all typical behaviors of inaction.

Now take a look at what it's costing you: A potential $8+ million, just by being clinically proactive and taking proper and appropriate care of our patients. (*See table at left.*) Are you getting the picture?

Let's add one more simple, common condition that we

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Economic Potential of Dry Eye in the Average OD Practice	
Number of Americans with dry eye	78,500,000
Median patient volume in an optometric practice per year	3,100
Overall incidence of combined dry eye	25%
Dry eye patients in an optometric practice per year	775
Average reimbursement for dry eye-related office visit	$73
Typical number of office visits for a dry eye patient per year (non-punctal occlusion)	3
Potential revenue from dry eye office visits per year (non-punctal occlusion)	$164,633.25
Typical revenue from a Medicare punctal occlusion patient	$756.88
Typical revenue from a non-Medicare punctal occlusion patient	$1,336.60
Percentage of patients undergoing punctal occlusion	3%
Potential punctal occlusion revenue from Medicare patients per year (assuming half of the practice's volume is Medicare patients)	$8,798.73
Potential punctal occlusion revenue from non-Medicare patients (assuming the other half of the practice's volume is non-Medicare patients)	$15,537.96
Potential revenue due to dry eye per year	$188,969.94
Lifetime economic potential of diagnosing and treating dry eye	$8,503,647

deal with every day—ocular surface disease. More specifically, dry eye.

Optometrists basically wrote the book on dry eye. Whether it's aqueous deficient dry eye, mucin deficient dry eye, meibomian gland dysfunction, or contact lens-related dry eye, it's a daily occurrence in our patients' lives and therefore within optometric practices. About 25% to 30% of Americans have clinically recognized dry eye, and a far greater percentage of the population has the associated symptoms. This makes it another area where we can better serve patients and benefit economically. Let's look at the numbers (*see table above*). Another $8.5 million of potential lifetime economic benefit not captured or recognized to its full potential.

"I was seldom able to see an opportunity until it had ceased to be one."—Mark Twain

I realize that some may question these numbers; in fact, I hope that this article motivates you to examine what's happening in your practice in these three areas. Even if your final calculations don't match mine, I'll bet that by going through the process of individual analysis, you've found additional opportunities within your practice that are just waiting for you to take action. (I didn't add in the revenue potential for glaucoma or the fast-emerging clinical need for detecting and managing macular degeneration, but I look forward to sharing those opportunities with you in a future article.)

The new year is just around the corner, which means it's almost time to make resolutions. How about concentrating on three simple things, which don't require any additional investment, to overcome the economics of your inactions?

1. Prevent contact lens dropouts.
2. Diagnose and treat ocular allergy.
3. Diagnose and treat dry eye.

Make these three simple changes and 2014 will be a good year.

Got your attention? Good. There's more to come. ■

Dr. Rumpakis is the founder of Practice Resource Management, a management and consulting firm. He lectures nationally and internationally on practice management topics, as well as on managed care, contact lenses and refractive surgical procedures. He is also Clinical Coding Editor for Review's *"Coding Abstract" column.*

1. American Optometric Association. State of the Optometric Profession: 2013. June 2013. Available at: www.aoa.org/Documents/news/state_of_optometry.pdf.
2. Rumpakis J. New data on contact lens dropouts: An international perspective. Rev Optom. 2010 Jan;147(1):37-42 Available at: www.revoptom.com/content/d/contact_lenses_and_solutions/c/18929.

Here's the final breakdown:

Baseline lifetime economic earnings	$6,030,000
Additional lifetime earnings from preventing contact lens dropouts	$2,086,920
Additional lifetime earnings from treating ocular allergies	$8,441,884
Additional lifetime earnings from treating OSD	$8,503,647
Total potential lifetime earnings	$25,062,451
New potential annual earnings	$556,943

RETINAL IMAGING:
New technology to address unmet needs

Retinal imaging can help ensure accurate screening, diagnosis, and monitoring of vision-threatening diseases. However, conventional retinal cameras are expensive and require significant training to produce images of consistent quality and clinical utility. A camera that produces superior, high-definition images, allowing us to detect the earliest signs of retinal disease while remaining simple and affordable to use, could enable advanced retinal imaging to be widely available for screening of persons at high risk and even the general population.

Quality of images, access, and cost are all barriers to care in retinal imaging. Conventional cameras use complicated and expensive optics to capture individual images with 45- to 60-degree fields of view, with less-than-optimal focus because of variations in retinal curvature. They may be difficult to use, do not produce images amenable to magnification, and cannot reliably track changes over time. Today's cameras are also priced out of reach for many practitioners.

The limited reach of retinal imaging technology compounds the broader worldwide gap in access to vision care. In some regions of the world, there may be only one eye care practitioner for every 500,000 people, and there are no widely available or comprehensive telemedicine programs to fill this gap.

To address these and other critical global eye care challenges, The **Brien Holden Vision Institute** has recently acquired a majority ownership in **Brien Holden Vision Diagnostics,** a commercial enterprise focused on the design, manufacture, and sale of affordable, easy to use, high-quality devices to detect and measure the progression of eye diseases and other chronic conditions. Profits from the sale of these products will contribute to the broader mission of the Brien Holden Vision Institute.

Brien Holden Vision Diagnostics is developing a fully automated retinal imager that will take high-resolution, multispectral, stereoscopic images of the retina. The camera is being designed with the goal of producing images rivaling those of the best retinal cameras on the market. It is anticipated that users will be able to learn to take quality photos in just a few hours, compared with the weeks to months of experience required for achieving consistent results with conventional cameras.

The camera is also being designed to provide fixed-baseline stereoscopic images, which would allow clinicians to see the shape and depth of features within the eye and monitor changes in those features over time. These images will be acquired in three wavelength-bands, green (which enhances the visibility of retinal surface features), infrared (which enhances features below the retinal surface), and red, in combination with green, (which allows creation of images in color).

Combining simplified optics, advanced software, and automated operation, the camera will capture stereo images with a 20-degree field of view that is purposely being designed for high magnification. Up to seven of these narrow-field images will be able to be acquired in one sitting and then automatically stitched together to build a 55-degree high-resolution mosaic of the retina.

The retinal imager will also allow fully automated operation that should allow support staff to master with minimal training. Auto-focus and tablet software will allow for automatic aiming of camera, auto-capture of images, and 2D and 3D image creation.

From the savings on optical hardware reflected in the planned price, to the ease of use and minimal training required, the retinal imager under development by Brien Holden Vision Diagnostics may help enable expanded screening efforts to detect and monitor eye diseases, with the potential for incorporation into every eye care practice around the world. The ultimate goal is universal availability of intelligent retinal imaging in optometric practices and effective screening programs throughout the world.

For more information on Brien Holden Vision, please go to www.brienholdenvision.org, contact us at info@brienholdenvision.org, or join us at the American Academy of Optometry meeting in the exhibit hall or at the Brien Holden Vision EXPERIENCE on Thursday, October 24th from 7:15 to 9:30pm at the Sheraton Seattle in the Metropolitan Ballroom B.

Brien Holden Vision Institute

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Essential Elements of Tracking Practice Performance

These key metrics can reveal areas of concern—and opportunity—to assist in strategic planning. **By Gary Gerber, OD**

"What's measured improves," said renowned business consultant Peter Drucker. It sounds so simple and, at first blush, that simplicity makes it appear self-evidently true. However, enacting improvement is far more complex than that. If improvement derived solely from the act of measuring, losing weight would be no more difficult than standing on a scale.

The plain truth is that measuring does not change anything. Does measuring how many patients you see each day cause you to see more? Does measuring how many days it customarily takes your lab to deliver a pair of glasses get them to you any faster? Certainly not. What we measure doesn't improve, but it's an essential first step that empowers us to enact the improvements we seek.

Measuring provides a point of focus: it directs your attention and supports the decision-making process. What, then, should you be measuring? While any number of variables could conceivably be recorded, one should only measure those things that matter and are changeable.

Consider the notion of "revenue generated per square foot of optical sales." It's an alluring number to banter about with optometric colleagues. But whether the figure is $1 or $1,000, are you prepared to change the size of your optical as a consequence? Yes, you could certainly make it a priority to increase the practice's total optical sales, which would of course affect this ratio, but you're hopefully concentrating on that anyway. Dollars per square foot is important to major retailers like Target—less so for most optometric practices.

Release Date: October 2013
Expiration Date: October 1, 2016
Goal Statement: This course teaches fundamental skills in business operations and strategic planning through the use of practice performance metrics. Key productivity and financial measures are explained and their impact on business decision-making is analyzed.
Faculty/Editorial Board: Gary Gerber, OD

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Measure what matters to you, and only to you, based on your practice mission, values and goals. If your practice is very reliant on its dispensary, measure things related to sales. If the focus is more medical, perhaps measure how many OCTs you perform each month or how many active dry eye cases are currently in your patient base. If customer service is a challenge that you wish to improve, measure those things that enhance patient satisfaction and loyalty scores on surveys.

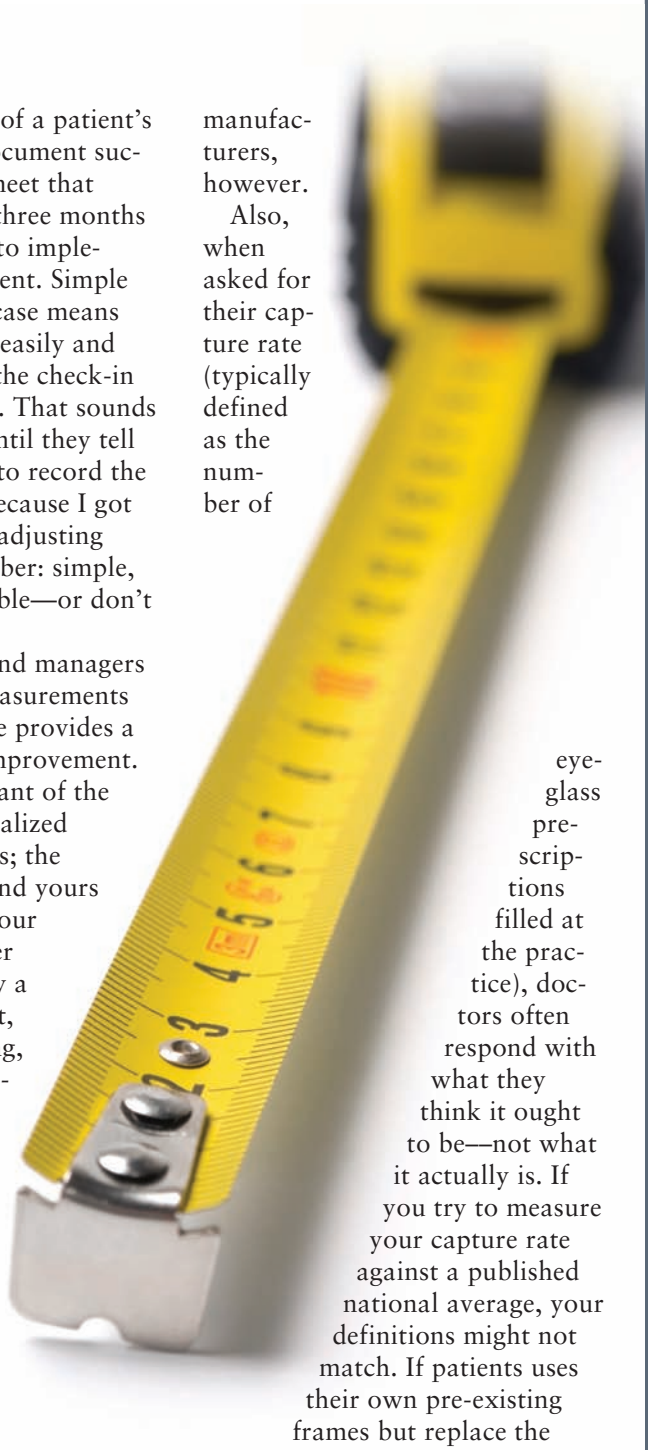
What if you believe all of those examples apply to you? Consider tracking each, but keep in mind that the more you attempt to focus on, the less you will accomplish. The goal of measuring is to make changes in those things that reveal a need for your attention as the practice owner/manager. How many things can you realistically change and work on at once, while still maintaining your practice? For that reason alone, once you have prioritized what matters most, avoid attemptingm to focus on more than three things to measure at any given time. Be sure they are amenable to change.

The measurement technique itself should be repeatable, simple and reliable. Repeatability is crucial—any changes you make will happen over time, and measurements will have to be repeated so that you can gauge the success or failure of your efforts to enact the desired change. If the methodology by which you measure something his highly variable (e.g., on-time performance of appointed patients) and you change its definition mid-measurement, it will be difficult to arrive at conclusions and an action plan for remediation.

For example, if an acceptable on-time performance is "within 10 minutes of a patient's appointed time," document success and failure to meet that standard for about three months before you attempt to implement any improvement. Simple and reliable in this case means your staff is able to easily and consistently record the check-in time of each patient. That sounds effortless enough, until they tell you, "I wasn't able to record the last three patients because I got stuck in the optical adjusting eyeglasses." Remember: simple, repeatable and reliable—or don't bother.

Practice owners and managers willing to act on measurements will find the exercise provides a road map toward improvement. However, be cognizant of the unique and individualized nature of the process; the road map is yours and yours alone. Comparing your performance to other practices may satisfy a competitive urge but, for strategic planning, is fraught with problems.

National data is often self-reported by individual practitioners and, as such, is unaudited and often unreliable. Other practices may use different definitions than yours, for instance, or might be influenced by misperceptions more so than rigorously recorded data. Ask an audience of optometrists for the percentage of their spectacle lens dispensing that includes AR coating and the reply may be in the range of 60% to 80%; this is not borne out by industry data from manufacturers, however.



Also, when asked for their capture rate (typically defined as the number of eyeglass prescriptions filled at the practice), doctors often respond with what they think it ought to be—not what it actually is. If you try to measure your capture rate against a published national average, your definitions might not match. If patients uses their own pre-existing frames but replace the lenses, how should that be counted?

Additionally, national averages cannot account for local or regional differences like payroll and occupancy costs. You might consider a payroll expense at 31% of gross revenue to be inordinately high—but that level is quite reasonable for a high-end practice

in midtown Manhattan, as would paying $98/square foot for rent.

You should measure for the sake of self-improvement—your own practice's, not someone else's. So, document your own metrics over time and look for patterns to emerge. With the above perspective in mind, let's dive deeper into the variables most worth your while, both to measure and act upon.

The "Big Three"

Let's start with the big three practice performance statistics that should be measured by every practice; these lay the foundation for all other measurements.

1. Gross receipts. For the practice owner, personal net income milestones tend to be the impetus for goal setting. To achieve those, first begin with gross income. While most practicing doctors have a good sense of trends here, make sure it is clearly defined month to month and year to year.

Gross receipts is most meaningful when defined as how much revenue ultimately transfers to the cash line on the balance sheet. Consider the following example: If a patient's charges are $417, the individual provides a $20 copay and the insurance company reimburses the practice $150 for the services rendered. The gross receipts would be $170, not $417. This measure is variously called *production*, *collections*, *deposits* or *receipts*. Whatever the nomenclature used, make sure that revenue deposited is the figure you actually measure.

2. Personal net. As stated above, more often than not, this is the driving force in strategic efforts, although of course the intangible rewards of optometric practice are many. The net represents the culmination of all your education, hard work, ingenuity, expertise and risk. In a purely monetary sense, a high net income is considered a vital sign indicating that the practice is operating successfully; the challenge is how to define it. The simplest approach is to consider personal net the remaining cash balance entitled to the practice owner(s) before applying personal income taxes.

3. Hours worked. Perhaps the simplest measurement a practice can take is also the one most often neglected when evaluating performance: how many hours the practice owner(s) spend working on practice-related activities. The culture of private-practice settings tends to assume that long hours are the norm and should be expected, rather than seeing your hours as a scarce resource no different than other practice assets. When measuring, be sure to include time focused on work tasks that happen outside your practice.

Each of the metrics above should be measured and recorded weekly, monthly, quarterly and yearly. With these protocols in place, you can next start to subdivide the top three and measure the elements that affect them and better learn how they interact with each other.

For example, increasing capture rate will increase gross and net, but may also increase the hours worked. What happens when your last patient of the night takes 45 minutes to choose a frame and you have to make sure the seg height is dead on? You put in the additional time to complete the encounter.

In another example, seeing a higher percentage of contact lens patients may allow for less time in the office—with a great staff, that should be the case—but your capture rate might suffer as patients opt for contact lenses over spectacles. Carefully orchestrated, it should actually improve; contact lens patients are more loyal than eyeglass patients and eventually will purchase glasses, hopefully from your practice.

With the top three global performance indices (gross, net and hours) defined and consistently measured, the subcategories below can be tackled next.

Practice-specific Metrics

Despite the great diversity in modes of optometric practice found throughout the United States today, several key metrics should be illuminating for most offices. Wherever applicable, preferred values and/or ranges will be described, although these statistics are most useful when applied to an individual practice over time rather than a quest to meet industry norms.

1. Percentage of new patients vs. established patients. Someone who has had at least one comprehensive visit to your practice is a reasonable way to define "new patient" for these purposes.

Compare this figure to the age of your practice. For those more than five years old, a good goal to strive for is 80% established and 20% new, with an acceptable variance of about 5% in either direction.

This ratio would indicate you have a viable recall system that motivates patients to respond. Practices less than five years old will have very variable numbers, especially in transient markets like a college town, downtown prac-

tices in major cities or those near military bases.

2. Net Promoter Score (NPS) is a global patient satisfaction index. While much has been written about NPS, in essence it seeks to measure the response to the question, "How likely is it that you would refer a friend or family member to our practice?" Ask this of patients via a survey and grade responses from 0 (highly unlikely) to 10 (extremely likely); also include an open-ended question that asks patients to explain their rationale for the score.

Next, subtract the percentage of scores in the 0-6 range from the number of 9s and 10s in the survey. Practices that are patient-centric/customer service focused should strive to have a score within the range of 70 to 80. Of course, the open-ended responses are qualitatively meaningful, as this feedback relates to all scores received—good or bad.

Consider the NPS and the new/established patients breakdown and see if you can elicit a relationship. Unhappy patients won't return, no matter which recall system you have in place. If so, your percentage of new patients will be inordinately high.

3. Recall percentage. Another valuable index to track is your recall rate. If you send out 100 notifications (e.g., postcards, texts, emails), what percentage of patients contacted come back for care? With concerted effort and focus, having 70% of patients return during the same month as their previous year's visit is attainable—not easy, but attainable. This statistic assumes that you believe in the clinical efficacy of yearly eye care. If your recall protocol differs, determine your own metrics and goals. For instance, the practice's recall percentage should be higher than 70% if you recall patients at greater than one-year intervals.

4. Capture rate. As defined and discussed above, this is a valuable indicator of practice performance. What percentage of the corrective lens prescriptions written stay in the practice? That is its capture rate. You have worked diligently to pinpoint the corrective lens prescription that gives your patient the best visual performance possible, so it's understandably deflating—both to your ego and bottom line—when they have it filled elsewhere. An ideal range to strive for on this measure is difficult to categorically define, as it is highly dependent upon geographic region, practice setting (i.e., urban vs. rural) and practice model.

With concerted effort and focus, having 70% of patients return during the same month as their previous year's visit is attainable.

For example, a practice with a substantial focus on medical care, for which the dispensary is little more than an afterthought, will likely not top 50%. Preferably, you should be making up any lost eyeglass revenue with a higher volume of medical billing. In a high-end, "destination" optical boutique practice, the capture rate can approach 100% with the proper effort and focus, pricing model, location and staff. Generally, however, consider any result below 40% to be problematic.

5. Patients per day. This measure also depends heavily, if not entirely, on the specifics of your practice model. Nevertheless, patient volume is a key contributor to personal net income and thus should be measured and tracked.

A pediatric or geriatric practice with a small staff probably can't do a thorough job clinically seeing more than one or two patients per hour. By contrast, an optometric practice with a young, healthy, active population of busy working professionals, especially in which the practice staff is delegated much responsibility, can easily see four examinations per doctor per hour and do a great job. Further, multi-doctor practices naturally will do even better in patient volume.

While there is no profession-wide benchmark to aim for in patients seen per day, measure this over large time spans (multiple quarters or years) to ensure it does not fall below what you personally deem to be an acceptable level.

6. Patients per doctor. This is an important metric for practice-owning doctors who employ associate ODs. While every doctor within a practice will work at different speeds and may offer different patients highly customized treatment protocols, there should still be some degree of parity among all clinicians at the practice.

For example, Dr. A. and Dr. B. might disagree on the first-line glaucoma drug for a particular patient. However, if one doctor completes the glaucoma follow-up visit and medication prescription in 10 minutes while the other takes 50 minutes, something is amiss.

Practice owners often lament that their associate optometrists take longer in the exam room and fail to match their own productivity. This may indeed be true, for a multitude of reasons (e.g., varying expertise/clinical experience between junior and senior staff being one possible contributor). Measuring exactly how much longer and how much less is produced is the first step towards changing behavior and improving performance.

Despite its value to the planning process, the "patients per doctor" measurement is frequently overlooked, because owners view it as potentially overstepping clinical care guidelines, which can be a valid concern if handled indiscriminately. However, this deference needs to be balanced against the common fallacy of those who contend that more time necessarily equals better care, explaining it thusly: "My patients say I gave them the best eye exam they ever had because I spent a lot of time with them." What patients are really saying is that the doctor spent the *right* amount of time with them. And that amount of time needs to be measured.

Performing such an analysis in conjunction with particular disease states is also helpful in enabling the development of procedures that will allow for more efficient scheduling. For example, if you know that historically a dry eye work-up will take 45 minutes and a spherical contact lens follow-up just five minutes, block the appropriate amounts of time in your scheduling templates accordingly for those patient encounters.

7. Accounts receivable (AR). The single biggest impediment to a healthy cash flow is letting your accounts receivable lapse. It's widely known that the longer your AR ages, the less likely the practice is to collect the full amount due. Make it a priority and goal to keep the bulk of AR (i.e., 90%) less than 30 days old. That means that about 8% of total yearly collections (one-twelfth or one month) should be your preferred limit. There can be considerable variance, however, in AR collection patterns depending on each practice's mix of third-party payers and their varying policies.

The longer AR ages, the less likely the practice is to collect the full amount. Make it a goal to keep the bulk of AR (i.e., 90%) less than 30 days old.

Additionally, remember that buying inventory such as frames and lenses with 30-day billing, which is customary, may create a potential cash flow conundrum, depending on the date of purchase. So, be mindful of when you buy larger inventory purchases and try to do so right at the beginning of a vendor's statement date.

For example, if the vendor closes out its monthly statements on the 30th of the month and you buy inventory on the 1st, you have an additional 30 days to pay. If you make the purchase on the 29th, however, you'll only have a few days' grace. In the first case (buying on the 1st), you have 30 days to sell (and collect) what you bought, making it less likely that the upcoming bill will hamper the practice's cash position. You have improved your cash flow simply by changing the date of inventory purchase.

8. Percentage of multiple pairs sold. In most practices, there is real opportunity for improvement on this metric. Industry sources estimate that only about 5% to 7% of patients own a second (or third) pair of glasses with the correct prescription.

Given the negligible level, one can assume these are patient-driven sales, occurring passively, rather than a consequence of the practice's approach to presenting eyewear. With careful attention and focus, some practices have successfully elevated this number to 30% of patients ordering a second pair of glasses at the same time as the first—with no discount offered. It's not easy, but it's attainable.

9. Percentage of contact lens patients in the practice. There is broad consensus that contact lens patients are more profitable and refer more new patients than eyeglass patients over their lifetime of experience with a practice. With the wide variety of newer lenses available, more patients are able to wear lenses than ever before, and can continue to do so even after the advent of presbyopia. Contact lens wearers also typically desire spectacles for occasional use, increasing their purchasing potential at the practice.

With that knowledge, it is advisable to measure your current percentage of contact lens wearers and target an attainable goal of 50% of all active patients being contact lens wearers, at least part time. Of course, as with all these metrics, this might be less likely for some practices with atypi-

cal demographics. But for most general optometric practices in conventional settings, it's certainly achievable.

10. Inventory size. Rarely do high inventory levels correlate with high sales. The goal is to stock the smallest amount of product for the shortest time. Most practices carry an inordinately high amount of eyeglass frames relative to demand, and those extra frames represent idle inventory that ties up thousands of dollars. The downside to maintaining a high inventory level is twofold: the opportunity cost of foregoing other possible uses of practice capital, and the risk of eventual loss on unsold products. Maintaining inventory is also time consuming and constrains usable space in the practice.

As the ideal amount of optical inventory to stock varies greatly among practices, it's impossible to give a target figure. As a general goal, strive to raise the capture rate as high as possible while stocking the fewest number of frames. Theoretically, a capture rate of 100% with one frame line would be ideal. Success in doing so stems less from product diversity and more from presentation and merchandising skills.

It sounds counterintuitive, but has been observed time after time: practices with well-designed, well-merchandised, well-inventoried opticals and talented staff can outsell others while stocking just 25% of the inventory of otherwise-comparable practices. An optical with 300 frames can indeed readily outsell one with 1,200 frames. The other benefits above (decrease shrinkage, faster sales, less buyer's remorse) are all added benefits to the smaller inventory.

11. Effects of merchandise price increases. Pricing can be thought of as either "kinetic" or "static." Volume discounts, special offers and other incentives represent kinetic pricing; static pricing avoids deviation from the list.

If you have a pricing formula in place, ask yourself if the rationale for it is sound, and challenge yourself to experiment with fine-tuning it. What would happen if you increased the prices in your optical, or those for contact lenses dispensed at the practice? Conventional wisdom arguing that increasing prices will lead to declining sales is often wrong.

In some scenarios a fee increase adds to the perceived value of a product, and that alone increases sales. So, increase price on one or more product lines and measure the effect on sales. If they increase, keep raising the prices until sales stop increasing. If the first price increase leads to a decrease in sales, try decreasing the price and repeat the same process as above.

The downside to maintaining a high inventory level is twofold: the opportunity cost of foregoing other possible uses of capital, and the risk of eventual loss.

12. Patient wait times for services. There are two sides to the notion of patient wait times. On the one hand, it's in keeping with a customer-first philosophy to ensure that wait times are kept to a minimum. But, shorter waits aren't always ideal.

If, for example, you walked into a restaurant and were immediately seated, you might perceive it to be less in demand and less worthy of referring a friend than if you had a brief, five-minute wait. A small and reasonable wait also allows the patient to peruse the dispensary's offerings or read patient education brochures that might expedite the doctor/patient discussion of clinical findings.

The patient encounter at your practice is comprised of many smaller, discrete events that should be timed. Measure how long patients have to wait to make an appointment, how long they wait once they enter the office, the wait time to see the doctor once they're in the exam room, the wait time to choose glasses or learn to use their contact lenses, how long they wait to check out, the wait time for eyeglass delivery, etc. As these are measured and excessive delays addressed, compare this against your net promoter score; longer waiting times are often a major deterrent to higher NPS.

Constantly measuring the right variables at the right time with the right goals in mind can help to reveal opportunities for increased practice efficiency and profitability.

Measuring solely for the sake of measuring is counterproductive and often leads to a defeatist attitude if the practice comes up short on industry "norms."

With that in mind, choose those items listed here that are most important to you, and start charting a path towards a better quality of practice life. ■

Dr. Gerber is the founder of the Power Practice, a practice building and consulting company whose mission is to help doctors power their professional and personal dreams.

OSC QUIZ

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1. Measuring something in your office:
a. Ensures it will improve.
b. Ensure it will decline.
c. Ensures it will remain the same.
d. Does not directly influence it.

2. For practice improvement, the best things to measure are:
a. those things that are most meaningful to your particular practice.
b. those things that are able to be changed.
c. those things that can't be changed.
d. Both a and b.

3. It is important that the measurement technique you use is:
a. Repeatable.
b. Complex.
c. Variable.
d. Done electronically.

4. The reason to measure things in the practice is to:
a. Keep your staff busy.
b. Give you a point of focus for improvement.
c. Remain HIPAA compliant.
d. Allow you to work more hours.

5. When measuring something, national averages are:
a. The only thing you should be measuring against.
b. To be treated as the gold standard.
c. Not as useful as your own ongoing data.
d. both a and c.

6. Which of the following is not in the top three most important measurements?
a. Gross receipts.
b. Hours worked.
c. Staff productivity.
d. Personal net.

7. For practice measurement purposes, personal net income should be defined
a. After personal income taxes.
b. Before personal income taxes.
c. By the IRS.
d. In comparison to national averages.

8. A healthy percentage of established patients in a nine-year-old practice is:
a. 25%.
b. 40% to 50%.
c. 60%.
d. 75% to 85%.

9. NPS refers to:
a. Aged accounts receivable.
b. A metric to help quantify patient/customer satisfaction.
c. National performance scales.
d. Ratio of co-pays to deductibles.

10. An NPS of 83 is considered:
a. Very poor.
b. Below average.
c. Average.
d. Very good.

11. The ratio of new to established patients is:
a. Affected by a good recall system.
b. A reflection of a practice's emphasis on NPS.
c. Important to every practice, regardless of age of the practice.
d. All of the above.

12. A recall percentage rate of 14% would, for most practices, be considered:
a. Very poor.
b. Below average.
c. Average.
d. Very good.

13. A recall rate of 70% is:
a. Impossible.
b. Unlikely.
c. Attainable with effort.
d. Average.

14. Capture rate refers to:
a. The percentage of optical prescriptions written and filled at the practice.
b. How frequently you replace your staff.
c. How many phone shoppers book appointments.
d. Ratio of new to established patients.

15. A practice typically sees 38 patients per day. This means:
a. The practice is underperforming.
b. The practice is overstaffed.
c. The question can't be answer with the limited information given.
d. The practice is highly likely to be very profitable.

16. A reasonable goal for accounts receivable for most practices is:
a. 2% of typical yearly receipts.
b. 8% of typical yearly receipts.
c. 18% of typical yearly receipts.
d. 41% of typical yearly receipts.

17. Multiple-pair sales, without discounting:
a. Will never work and should be discouraged.
b. Only works in highly affluent areas.
c. Is against the guidelines of the Federal Trade Commission.
d. Can be as high as 30%, with a concerted effort.

18. A larger eyeglass frame inventory:
a. Can lead to increase shrinkage.
b. Always results in more sales.
c. Always results in a higher capture rate.

OSC QUIZ

d. Requires less time to manage.

19. Optical pricing should be:
a. A fixed formula that is never changed.
b. Viewed as kinetic vs. static.
c. 2.5 times the wholesale cost, plus shipping.
d. 2.5 times the wholesale cost, plus $50.

20. Measuring patient wait times for things like appointments and eyeglass delivery is:
a. Useful.
b. Useless.
c. Futile, as it cannot be changed.
d. Meaningless because it does not affect financial performance.

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1 = Excellent 2 = Very Good 3 = Good 4 = Fair 5 = Poor

Rate the effectiveness of how well the activity:

21. Met the goal statement: ① ② ③ ④ ⑤
22. Related to your practice needs: ① ② ③ ④ ⑤
23. Will help you improve patient care: ① ② ③ ④ ⑤
24. Avoided commercial bias/influence: ① ② ③ ④ ⑤
25. How would you rate the overall quality of the material presented? ① ② ③ ④ ⑤
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Use it or Lose it!

You know your patients' visual and lifestyle needs better than anyone. So why are you letting someone else handle your patients' post-op care? **Edited by Paul C. Ajamian, OD**

Q I keep losing my cataract patients to the ophthalmologist's practice. I thought I was on good terms with this cataract surgeon. What should I do?

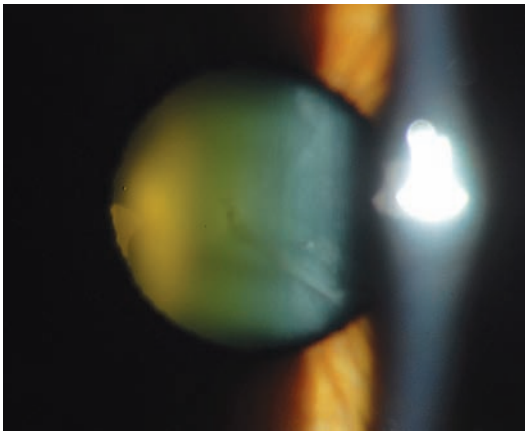
A Don't abdicate the post-op care! You need to take it on and perform as much of it as you can. That's the best way to retain your patients. And, busy and skilled modern day surgeons embrace this. A lot of them are "drowning" in post-ops!

Unfortunately, some optometrists are not participating to the fullest extent in the post-op comanagement of their cataract and glaucoma patients. This not only impacts the optometrist's practice—it can mean inconvenience for your patients as well, with multiple trips to an unfamiliar office that often is further away than your own.

It wasn't always this way, and getting here wasn't easy. Optometrists have worked diligently for decades to be able to legally and properly provide post-op comanagement. During the past 35 years, we've gained not only the necessary therapeutic privileges but also the mechanism to be paid for this care.

But I wonder if we're losing ground on comanagement. If the patient goes to the surgeon's practice not only for the cataract evaluation and the procedure, but also for the one-day, the one-week and the one-month post-op visits, then the patient may begin to wonder why they even need to come back to see the optometrist.

Plus, someone at the ophthalmologist's practice is likely going to offer the patient an additional service or two, perhaps an Rx for a new pair of glasses. Then other family members could schedule a visit at that practice. And before you know it, years of patient loyalty are down the drain.



Nurse practitioners and physician assistants are already taking on post-op care (such as cataract care) in some larger medical practices.

Not only that, but that surgeon probably won't even be the one who provides the post-op care. More than likely, it'll be another optometrist. If an optometrist is going to provide the post-op care, that optometrist might as well be you.

But an even more worrisome concern is on the horizon. Some ophthalmology practices are hiring physician assistants and nurse practitioners on staff who are more than willing to perform the postoperative care of these patients.[1] At the same time, the ranks of ophthalmologists aren't growing, yet we are about to see an influx of aging patients as the Baby Boomers become senior citizens. *Someone*'s going to need to care for these patients. If optometrists don't, these ancillary health professionals likely will.

Face it, we know our patients better than anyone. So, not only should we provide the post-op care but, because we know their refractive needs and lifestyle requirements better than anyone else, we should be advising the patient *and* the surgeon as to what type of surgery and IOL they need to best meet those goals. Surgeons really welcome and appreciate this advice—they'd rather get it from us than have to draw it out of the patient from scratch.

Likewise, no one else is better attuned to providing the post-op care and reassurance after surgery than the doctor of optometry. Simply put, it's the type of care and convenience that we should be offering.

We're in an era when we're worried about patient volume and retention. But the best way to keep patients is to do as much as you can for each one of them—and that certainly includes post-op care. ■

1. Helzner J. PAs and NPs can help your practice. Ophthalmol Management. Sept 2012. Available at: www.ophthalmologymanagement.com/articleviewer.aspx?articleID=107396.

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References: (1) Richer S, Stiles W, Statkute L, et al. Double-masked, placebo-controlled, randomized trial of lutein and antioxidant supplementation in the intervention of atrophic age-related macular degeneration: the Veterans LAST study (Lutein Antioxidant Supplementation Trial). Optometry. 2004;75:3-15. (2) SanGiovanni JP, Chew EY, Clemons TE, et al. The relationship of dietary lipid intake and age-related macular degeneration in a case-control study. AREDS Report No. 20. Arch Ophthalmol. 2007;125:671-679. (3) Chiu CJ, Taylor A. Nutritional antioxidants and age-related cataract and maculopathy. Experimental Eye Research. 2007;84:229-245.

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One Size Doesn't Fit All

For patients with keratoconus, it is necessary to take all anatomic factors into account before selecting a scleral lens diameter. **Edited by Joseph P. Shovlin, OD**

Q I am just beginning to fit scleral lenses on difficult cases, such as keratoconus and grafts where corneal lenses don't center well. Can you recommend a lens diameter as a starting point based on anatomical features or do you automatically start with a certain lens size?

A There is no "one size fits all" solution for scleral lenses. Each fitting must be handled on a case-by-case basis, taking every possible factor into account before selecting a lens diameter.

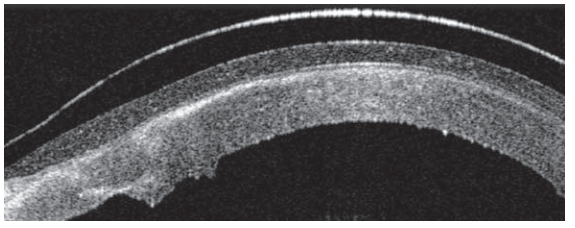
"In my opinion, one size never fits all, including fitting scleral lenses," says Shelley Cutler, OD, who practices at Matossian Eye Associates in Doylestown, Pa. "I prefer to use smaller diameter mini-sclerals (15.0-18.0mm), if I can make the fit work. This does not always happen."

Patients with keratoconus and other corneal irregularities pose a challenge to clinicians when fitting contact lenses. Special attention must be paid to a variety of patient-specific anatomical factors before settling on a lens.

"I begin by looking at the lid anatomy. If the patient has small lid apertures, with tight lids, I know inserting a large scleral will be difficult," explains Dr. Cutler. "If a patient has looser, flaccid lids which are easy to manipulate, inserting a larger lens will be less of an issue."

A patient's corneal diameter and desired tear reservoir size are also factors to consider when selecting a scleral lens diameter.

"I think that the diameter you choose is dictated somewhat by the amount of tear reservoir you are seeking, the size of the cornea and lid aperture and the location of the greatest irregularity," says Jason Jedlicka, OD, who practices at the Cornea and Contact Lens Institute of Minnesota in Edina, Minn. "Smaller lenses can work better in those that do not require a large tear reservoir, those with smaller apertures or those where the irregularities that need to be vaulted over are nearer to the center of the cornea. In cases of pathologic ocular surface disease where a larger tear reservoir is desired, larger anatomical corneas, or where the irregularity is nearer to the limbus, a larger lens is usually a better bet."



OCT image of a scleral lens vaulting the corneal surface.

The severity of the corneal irregularity should also be considered when selecting a lens diameter.

"Larger diameters are generally needed to successfully vault corneas as irregularity becomes more severe," says Greg DeNaeyer, OD, clinical director of Arena Eye Surgeons in Columbus, Ohio. "This principle is based upon the fact that vault or sagittal depth of the lens increases with increasing diameter. Additionally, increasing diameter allows a broader area of landing to reduce compression or impingement. Use mini-scleral lenses (15.0-18.0mm) to manage mild/moderate irregularity and full scleral lenses (18.1-24.0+mm) to manage moderate/severe irregularity."

A variety of factors can contribute to lens decentration, such as the lens size, incorrect corneal vault or the constant, everyday movement of the eye by the patient.

"Scleral lenses can decenter slightly down and out on the eye (1-2mm) and this is more commonly seen with large scleral lenses," says Dr. DeNaeyer. Issues with decentration inferiorly can arise with keratoconus patients, especially if the patient has tight lids. "The lens will position over the steepest part of the cornea," Dr. Cutler says. "In the area of the highest corneal elevation (as noted by topographical data), lack of clearance becomes evident. This can create pathology over time."

"Decentration, in my experience, is more common when there is more corneal vault than needed, as the lens is pushed down by the upper lid," says Dr. Jedlicka. "Decentration can be addressed by decreasing the corneal vault if the fit allows it, going to a slightly smaller diameter if that is possible or by considering toric scleral curves to better align the lens to the scleral shape." ■

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Same Cup, Different Ratios

Different providers determine different cup-to-disc ratios for the same patient. Will C/D ever be standardized? **By James L. Fanelli, OD**

A 68-year-old white female, who relocated to my area, was referred to my office for continuation of her glaucoma care.

According to her records, which her previous provider sent to me, she had been diagnosed about three years earlier with open-angle glaucoma in both eyes. Her records also reported that her pre-treatment IOP averaged 24mm Hg OD and 26mm Hg OS. Pachymetry readings were 531µm OD and 527µm OS. Visual fields with standard automated perimetry were clear OU with no discernible defects. Her cup-to-disc ratios were estimated to be 0.50 x 0.60 OD and 0.60 x 0.60 OS.

The previous provider prescribed Lumigan (bimatoprost 0.01%, Allergan) one drop OU HS. Subsequently, the patient's post-treatment IOP averaged 17mm Hg OU.

Diagnostic Data

When I first saw the patient in early July 2013, her best-corrected visual acuity was 20/20 OD and OS. Pupils were equal, round and reactive to light and accommodation with no afferent defect. Her other medications included Celexa (citalopram, Forest Laboratories) and lisinopril; she reported no allergies to medications.

Slit lamp examination of her anterior segments was unremarkable except for a mild to moderate amount of guttatae in both corneas, but no evidence of striate keratopathy. Pachymetry measured 530µm OD and 522µm OS.

Intraocular pressure measured 16mm Hg OD and 17mm Hg OS at 10:30 AM—consistent with her previous IOP measurements. Gonioscopy revealed 3+ open angles in both eyes, with ciliary body visible in several areas, and grade 1 trabecular pigmentation OU.

Upon dilation, both crystalline lenses were unremarkable, other than for age-consistent incipient nuclear sclerosis. There were complete posterior vitreous separations present OU. Cup-to-disc ratios appeared to be 0.70 x 0.75 OD and 0.70 x 0.80 OS through stereoscopic evaluation at the slit lamp. Her retinal vasculature was normal in both eyes. Both macular and peripheral retina evaluations were largely unremarkable. There were no holes, tears or tractional phenomenon in either eye.

At this visit, I obtained Heidelberg Retina Tomograph-3 (HRT-3, Heidelberg Engineering) baseline images, as well as stereo photos of both optic nerves. HRT-3 images correlated well with my subjective estimation of the cup-to-disc ratio in both eyes. The inferotemporal sector of the neuroretinal rim in each eye was outside of the statistical norms of the Moorfields Regression Analysis (MRA). This corroborated the appearance of the neuroretinal rims OU, as the inferotemporal aspects were slightly thinned and no frank notching was present. The clinical evaluation of the optic nerves showed that they did not follow the ISNT (inferior-superior-nasal-temporal) rule, and this too was confirmed by HRT-3 imaging.

In short, all of the measurements at this patient's initial visit with me were essentially the same as those from her previous provider—except for one surprising thing: her cup-to-disc ratios were markedly different. Could she have progressed in the eight months since her last visit with her other optometrist? Or, are we simply looking at inter-observer differences?

Follow-Up

I attributed the disparity in the cup-to-disc ratios to inter-observer differences. Accordingly, I asked the patient to continue her Lumigan HS OU, and to see me again in two months.

The patient returned as directed in early September 2013. IOP was 16mm Hg OU at 8:45 am. Threshold visual fields on Heidelberg Edge Perimeter (HEP) demonstrated an early superior arcuate defect in each eye. OCT imaging showed mild thinning in the inferotemporal retinal nerve fiber layer (RNFL) in both eyes—in the same sectors that were aberrant on the MRA obtained at the last visit. While the visual field defects were new findings, the testing strategies of her first field with me and the previous fields with her former provider were different (SAP vs. HEP). The HEP-identified defects were mild and, from a practical perspective, may simply have been

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IMPORTANT SAFETY INFORMATION

CONTRAINDICATIONS

Nonbacterial Etiology: TOBRADEX® ST, as with other ophthalmic corticosteroids, is contraindicated in most viral diseases of the cornea and conjunctiva including epithelial herpes simplex keratitis (dendritic keratitis), vaccinia, and varicella, and also in mycobacterial infection of the eye and fungal diseases of ocular structures.

Hypersensitivity: Hypersensitivity to a component of the medication.

WARNINGS AND PRECAUTIONS

IOP increase: Prolonged use of corticosteroids may result in glaucoma with damage to the optic nerve, defects in visual acuity and fields of vision. If this product is used for 10 days or longer, IOP should be monitored.

Aminoglycoside sensitivity: Sensitivity to topically applied aminoglycosides may occur.

ADVERSE REACTIONS

Most common adverse reactions to topical ocular tobramycin are hypersensitivity and localized ocular toxicity, including eye pain, eyelid pruritus, eyelid edema, and conjunctival hyperemia. The reactions due to the steroid component are increases in intraocular pressure with possible development of glaucoma.

For additional information about TOBRADEX® ST Suspension, please refer to the brief summary of prescribing information on adjacent page.

References: 1. Drugs@FDA entry for "Tobradex ST Suspension," available at http://www.accessdata.fda.gov/scripts/cder/drugsatfda/index.cfm. Accessed April 30, 2013. **2.** TOBRADEX® ST Suspension package insert. **3.** Scoper SV, Kabat AG, Owen GR, et al. Ocular distribution, bactericidal activity and settling characteristics of TobraDex® ST ophthalmic suspension compared with TobraDex® ophthalmic suspension. *Adv Ther.* 2008;25(2):77-88.

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BRIEF SUMMARY OF PRESCRIBING INFORMATION

INDICATIONS AND USAGE

TOBRADEX® ST ophthalmic suspension is indicated for steroid-responsive inflammatory ocular conditions for which a corticosteroid is indicated and where superficial bacterial ocular infection or a risk of bacterial ocular infection exists.

Ocular steroids are indicated in inflammatory conditions of the palpebral and bulbar conjunctiva, cornea and anterior segment of the globe where the inherent risk of steroid use in certain infective conjunctivitides is accepted to obtain a diminution in edema and inflammation. They are also indicated in chronic anterior uveitis and corneal injury from chemical, radiation or thermal burns, or penetration of foreign bodies.

The use of a combination drug with an anti-infective component is indicated where the risk of superficial ocular infection is high or where there is an expectation that potentially dangerous numbers of bacteria will be present in the eye.

The particular anti-infective drug in this product is active against the following common bacterial eye pathogens: Staphylococci, including *S. aureus* and
S. epidermidis (coagulase-positive and coagulase-negative), including penicillin-resistant isolates. Streptococci, including some Group A and other beta-hemolytic species, some nonhemolytic species, and some *Streptococcus pneumoniae*, *Pseudomonas aeruginosa*, *Escherichia coli, Klebsiella pneumoniae, Enterobacter aerogenes, Proteus mirabilis, Morganella morganii,* most *Proteus vulgaris isolates, Haemophilus influenzae, H. aegyptius, Moraxella lacunata, Acinetobacter calcoaceticus* and some *Neisseria* species.

DOSAGE AND ADMINISTRATION

Recommended Dosing: Instill one drop into the conjunctival sac(s) every four to six hours. During the initial 24 to 48 hours, the dosage may be increased to one drop every two hours. Frequency should be decreased gradually as warranted by improvement in clinical signs. Care should be taken not to discontinue therapy prematurely.
Prescription Guideline: Not more than 20 mL should be prescribed initially and the prescription should not be refilled without further evaluation as outlined in WARNINGS AND PRECAUTIONS.

CONTRAINDICATIONS

Nonbacterial Etiology: TOBRADEX® ST, as with other ophthalmic corticosteroids, is contraindicated in most viral diseases of the cornea and conjunctiva including epithelial herpes simplex keratitis (dendritic keratitis), vaccinia, and varicella, and also in mycobacterial infection of the eye and fungal diseases of ocular structures.
Hypersensitivity: Hypersensitivity to a component of the medication.

WARNINGS AND PRECAUTIONS

IOP increase: Prolonged use of corticosteroids may result in glaucoma with damage to the optic nerve, defects in visual acuity and fields of vision. If this product is used for 10 days or longer, IOP should be monitored.
Aminoglycoside sensitivity: Sensitivity to topically applied aminoglycosides may occur.
Cataracts: Use of corticosteroids may result in posterior subcapsular cataract formation.
Delayed Healing: The use of steroids after cataract surgery may delay healing and increase the incidence of bleb formation. In those diseases causing thinning of the cornea or sclera, perforations have been known to occur with the use of topical steroids. The initial prescription and renewal of the medication order should be made by a physician only after examination of the patient with the aid of magnification such as slit lamp biomicroscopy and, where appropriate, fluorescein staining.
Bacterial infections: Prolonged use of corticosteroids may suppress the host response and thus increase the hazard of secondary ocular infections. In acute purulent conditions, steroids may mask infection or enhance existing infection. If signs and symptoms fail to improve after 2 days, the patient should be re-evaluated.
Viral infections: Employment of a corticosteroid medication in the treatment of patients with a history of herpes simplex requires great caution. Use of ocular steroids may prolong the course and may exacerbate the severity of many viral infections of the eye (including herpes simplex).
Fungal infections: Fungal infections of the cornea are particularly prone to develop coincidentally with long-term local steroid application. Fungus invasion must be considered in any persistent corneal ulceration where a steroid has been used or is in use.
Use with systemic aminoglycosides: If product is used in combination with systemic aminoglycoside antibiotics the patient should be monitored for total serum concentration.

ADVERSE REACTIONS

Adverse reactions have occurred with steroid/anti-infective combination drugs which can be attributed to the steroid component, the anti-infective component, or the combination. Exact incidence figures are not available.

The most frequent adverse reactions to topical ocular tobramycin (TOBREX®) are hypersensitivity and localized ocular toxicity, including eye pain, eyelid pruritus, eyelid edema, and conjunctival hyperemia. These reactions occur in less than 4% of patients. Similar reactions may occur with the topical use of other aminoglycoside antibiotics.

The reactions due to the steroid component are: increased intraocular pressure (IOP) with possible development of glaucoma, and infrequent optic nerve disorder; subcapsular cataract; and impaired healing. The development of secondary infection has occurred after use of combinations containing steroids and antimicrobials. Fungal infections of the cornea are particularly prone to develop coincidentally with long-term applications of steroids. The possibility of fungal invasion must be considered in any persistent corneal ulceration where steroid treatment has been used. Secondary bacterial ocular infection following suppression of host responses also occurs. Non-ocular adverse events occurring at an incidence of 0.5% to 1% included headache and increased blood pressure.

USE IN SPECIFIC POPULATIONS

Pregnancy: Pregnancy Category C. Corticosteroids have been shown to be teratogenic in animal studies. Ocular administration of 0.1% dexamethasone resulted in 15.6% and 32.3% incidence of fetal anomalies in two groups of pregnant rabbits. Fetal growth retardation and increased mortality rates have been observed in rats with chronic dexamethasone therapy. Reproduction studies have been performed in rats and rabbits with tobramycin at doses up to 100 mg/kg/day (equivalent to human doses of 16 and 32 mg/kg/day, respectively) and have revealed no evidence of impaired fertility or harm to the fetus. There are no adequate and well controlled studies in pregnant women.

TOBRADEX® ST ophthalmic suspension should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.
Nursing Mothers: Systemically administered corticosteroids appear in human milk and could suppress growth, interfere with endogenous corticosteroid production, or cause other untoward effects. It is not known whether topical administration of corticosteroids could result in sufficient systemic absorption to produce detectable quantities in human milk. Because many drugs are excreted in human milk, caution should be exercised when TOBRADEX® ST is administered to a nursing woman.
Pediatric Use: Safety and effectiveness in pediatric patients below the age of 2 years have not been established.
Geriatric Use: No overall differences in safety or effectiveness have been observed between elderly and younger patients.

NONCLINICAL TOXICOLOGY

No studies have been conducted to evaluate the carcinogenic or mutagenic potential. No impairment of fertility was noted in studies of subcutaneous tobramycin in rats at doses of 50 and 100 mg/kg/day (equivalent to human doses of 8 and 16 mg/kg/day, at least 2 orders of magnitude greater than the
topical ocular dose).

PATIENT COUNSELING INFORMATION

Storage and Handling: Patients should be instructed to store the bottle upright and away from light. Shake well before using.
Avoid Contamination: Patients should be instructed not to touch dropper tip to any surface, as this may contaminate the contents.
Contact Lens Wear: Contact lenses should not be worn during the use of this product.

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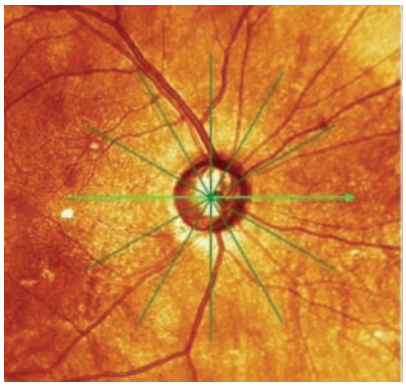
shallow enough not to be picked up on SAP. In other words, I did not consider these definable field defects as a worsening of her condition, but rather a finding from a different field instrument.

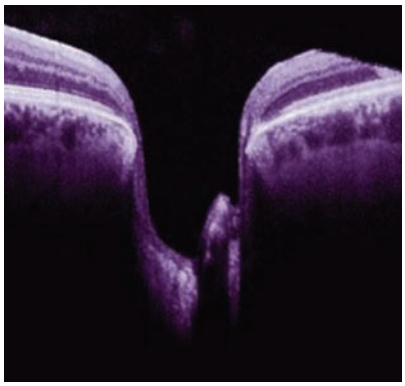
I looked closely at her optic nerves, and once again I thought that her cup-to-disc ratios appeared larger than her previous provider had reported.

Discussion

This case illustrates something we see quite regularly: the effects of inter-observer differences. In glaucoma, the one major subjective element supplied by the provider is the cup-to-disc ratio. Other findings—IOP, CCT, HRT, OCT, etc.—are more objectively generated and interpreted. Given the advent of objective imaging systems for evaluating the optic nerve, there's been a movement to standardize the parameters of the optic disc to better define the difference between the disc and the cup.

To help understand the issue, we need to take a closer look at the optic nerve. In looking at the image below, we can see clearly that after the retinal ganglion cells exit the eye through the lamina cribrosa, they become myelinated, and the overall diameter of the orbital portion of the optic nerve is much larger than the optic nerve head itself. All of the retinal ganglion cells exit the eye at the optic disc (about 1.5mm in diameter). Further, be aware that all ganglion cells, as they are heading posteriorly through the optic nerve head, do so *medially* to Bruch's membrane. In other words, no retinal ganglion cells travel lateral to the edge of Bruch's membrane. While Bruch's membrane is not visible at the slit lamp, it clearly *is* visible on OCT imaging. And because all retinal ganglion cells traverse the optic nerve through Bruch's membrane opening (BMO), several authors suggest that BMO should be the objectively definable lateral aspect of the optic disc.





Cross-sectional OCT scan of a different patient with advanced glaucomatous disease. Note the extremely thinned neuroretinal rim adjacent to Bruch's membrane.

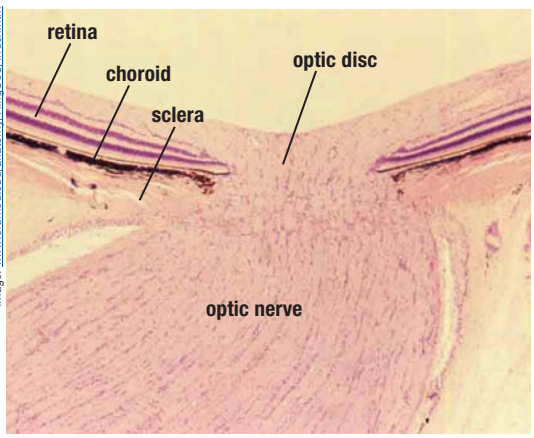


Image: www.siumed.edu/anatomy/KingCoS/index.htm

Histological section of the optic nerve. Note Bruch's membrane is very visible and all retinal ganglion cells pass through Bruch's membrane opening.

To that end, researchers are investigating the influence of OCT-visible optic disc margins on neuroretinal rim evaluations. They're finding that what we see clinically, and what we define at the slit lamp as the optic disc margin, is very different from that canal bordered by BMO as seen with OCT. In other words, what we call the "disc" is, in many respects, not what the anatomical disc appears to be. In the image below, we can see how the scleral opening is much wider than the Bruch's membrane opening; so depending on what we use to define the disc margin—BMO or scleral canal—has a dramatic effect on the cup-to-disc ratio.

In the OCT scan above (of a different patient), note the clearly defined medial edge of Bruch's membrane, and note how thin the neuroretinal rim is adjacent to Bruch's membrane. If we define the BMO as the lateral aspect of the optic disc on OCT, measurements can then be made of the adjacent neuroretinal rim tissue, and monitored over time.

What does this mean? Quite simply, uniformity—in how optic nerves are measured by an objective instrument such as an OCT. This uniformity would reduce inter-observer variances and, perhaps one day soon, permit us to define the optic nerve without using the term "cup-to-disc ratio." ■

1. Reis AS, O'Leary N, Yang H, et al. Influence of clinically invisible, but optical coherence tomography detected, optic disc margin anatomy on neuroretinal rim evaluation. Invest Ophthalmol Vis Sci. 2012 Apr 18;53(4):1852-60.

The Tax of Inheritance

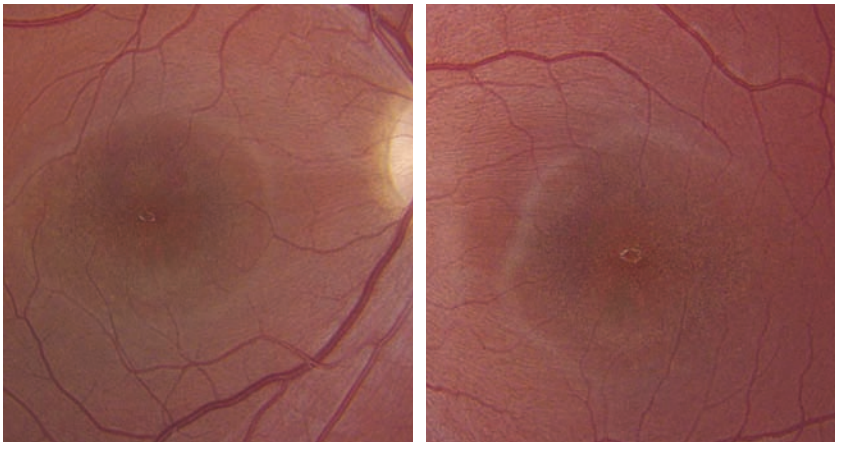
Our patient's siblings both have significantly reduced acuity levels. Now, she is experiencing vision loss, too. Is there a genetic connection? **By Mark T. Dunbar, OD**

An 18-year-old Hispanic female presented with a chief complaint of progressive, bilateral visual decline during the past year.

She reported trouble seeing clearly at distance, especially when attempting to read road signs while driving at night. Further, she said that her twin sister and older brother also have eye problems. Her medical history was unremarkable.

On examination, her best-corrected visual acuity measured 20/60 OD and 20/40 OS. Confrontation visual fields were full to finger counting OU. Her pupils were equally round and reactive to light, with no evidence of afferent defect. Extraocular motility testing was normal in both eyes. Her anterior segment examination was unremarkable OU.

The dilated fundus exam revealed small cups with good rim coloration and perfusion OU. She exhibited mild retinal pigment epithelium (RPE) mottling in both maculae. Foveal light reflex was visible OU. The vessels and peripheral retinae were normal in both eyes. The posterior pole can be viewed in figures 1 and 2. Additionally, we performed fluorescein angiography (*figures 3 and 4*) and fundus autofluoresence (*figures 5 and 6*).



1, 2. Fundus photographs of our patient's posterior poles (OD left, OS right).

Take the Retina Quiz

1. How would you describe the significant findings seen in the fluorescein angiogram?
   a. Unremarkable.
   b. Marked staining and hyperfluorescence.
   c. Blockage of the background choroidal fluorescence.
   d. Hyperfluorescence of the macula in a "bull's-eye" pattern.

2. What is the correct diagnosis?
   a. Occult retinal dystrophy.
   b. Stargardt disease.
   c. Cone dystrophy.
   d. Malingering.

3. Which gene has been linked to this condition?
   a. Complement factor H (CFH).
   b. Rhodopsin gene (RHO).
   c. ARMS2.
   d. ABCA4.

4. What is our patient's prognosis?
   a. Her vision should improve.
   b. Her vision will likely remain stable without further loss.
   c. Slow, progressive vision loss that will stabilize near 20/200.
   d. Slow, progressive vision loss that will lead to blindness.

For answers, turn to page 122.

Discussion

When you look at our patient's retinae, they appear fairly normal. There is mild RPE mottling in the maculae—but, beyond that, they seem healthy. Additionally, her posterior poles and peripheral retinae look pretty good. So, how do you explain the reduced acuity?

In this case, our patient's family history provides the clues. Remember—her twin sister also experienced significant visual acuity reduction. A further review of her sister's ocular history revealed the presence of bilateral, central atrophic scars that exhibited a "beaten metal" appearance.

Fortunately, our patient's maculae do not appear nearly as

MAINTAINING OCULAR HEALTH IN LENS WEAR

Featured Clinician: Bradford R. Ripps, OD

Dr Ripps, owner of Total Eyecare, with two locations in Northwest New Jersey, is a consultant for Johnson & Johnson Vision Care, Inc. and has been compensated for his contributions.

OCULAR HEALTH: The eye as the benchmark

When Brad Ripps, OD, talks to contact lens patients about what matters to them—comfort and vision—he's always alert to what matters most to him: Ocular health.

"As a doctor, I feel that it's my responsibility to make sure my patients' eyes are as healthy as they can be. That's why I look for clinical signs of inflammation or contact lens irritation, such as corneal staining, limbal or conjunctival hyperemia, corneal vascularization, and papillary conjunctivitis."

Dr Ripps takes a proactive approach, choosing the lens clinically shown to help maintain ocular health[1]—helping patients avoid problems before they start.

In an unprecedented, year-long clinical study, eyes wearing 1-DAY ACUVUE® TruEye® Brand Contact Lenses were comparable to eyes wearing glasses on 5 of 6 key measures of ocular health*‡[1]:

- Limbal hyperemia
- Corneal staining
- Corneal vascularization
- Bulbar conjunctival hyperemia
- Papillary conjunctivitis

The sixth measure was conjunctival staining which differed between the lens wearers and spectacle wearers; however, both measures were very low and of limited clinical relevance.

"That's impressive to me," says Dr Ripps, "I've seen a lot of studies showing a benefit of one lens over another, but I'm not aware of any other contact lens that has compared so favorably to the naked eye. This is a lens that provides a near no-lens experience."

THE CLINICALLY QUIET EYE: A correlation to comfort

In the same study, patients were asked to provide real-time comfort evaluations throughout the day via text message (Figure 1). Subjective comfort ratings did not decline later in the day, as they typically do for contact lens wearers. Plus the comfort of 1-DAY ACUVUE® TruEye® Brand wearers was statistically comparable to wearing no lens at all.*[1]

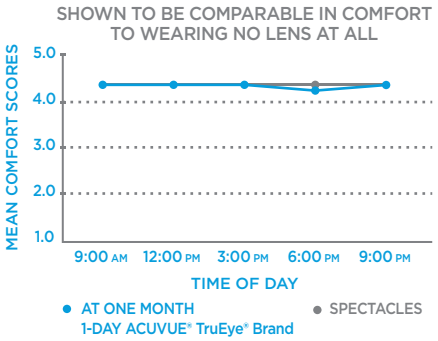


Figure 1: Subjective comfort scores captured via text message at one month.[1]

"It's easy to put a new lens on and have a patient say it 'feels better,'" says Dr Ripps, "But the perceived value is so much greater if that lens is still comfortable at the end of the day."

Prescribing 1-DAY ACUVUE® TruEye® does more than provide comfortable lens wear. It helps provide an experience that is true to the eye—helping patients avoid lens-related issues before they start.

EYE-INSPIRED™ DESIGN: Going beyond ocular comfort and helping to maintain ocular health

Shown to be clinically and statistically comparable to no lens in key measures

Eyes wearing 1-DAY ACUVUE® TruEye® were comparable to eyes wearing glasses on 5 of 6 key measures of ocular health.*‡[1]

HYDRACLEAR® 1 Technology

HYDRACLEAR® 1 Technology embeds the wetting agent within the lens, with the highest volume of the hydrophilic polymer (PVP) locked in the core, attracting moisture, for a low coefficient of friction and stable tear film.

Permits 100% corneal oxygen consumption

The silicone hydrogel lens material allows for 100% corneal oxygen consumption. At any point across the lens for all lens powers available, the cornea receives the oxygen it needs, for white, healthy-looking eyes.

Highest level of UV blocking†

1-DAY ACUVUE® TruEye® has the highest level of UV blocking in a contact lens: Class 1, blocking approximately 96.9% UVA and 99.9% UVB.†

Visit **acuvuepro.com** to learn more about 1-DAY ACUVUE® TruEye® Brand

1-DAY ACUVUE® TruEye® BRAND CONTACT LENSES

HEALTH YOU CAN SEE™

Reference: 1. Morgan P, Chamberlain P, Moody K, et al. Ocular physiology and comfort in neophyte subjects fitted with daily disposable silicone hydrogel contact lenses. *Cont Lens Anterior Eye.* 2013;36(3):118-125.

*A 1-year, randomized, investigator-masked, parallel-group study of 74 subjects (aged 18-51 years) who had never worn soft contact lenses previously. Subjects were randomized to 1-DAY ACUVUE® TruEye® Brand or spectacles. Ocular physiology was assessed at 2 weeks, 1 month, 3 months, 6 months, 9 months, and 1 year using the Efron Grading Scale (a 0- to 4-point scale, with findings recorded to the nearest 0.1). $P<0.05$ based on 2-sided 95% confidence intervals.

‡The sixth measure was conjunctival staining.

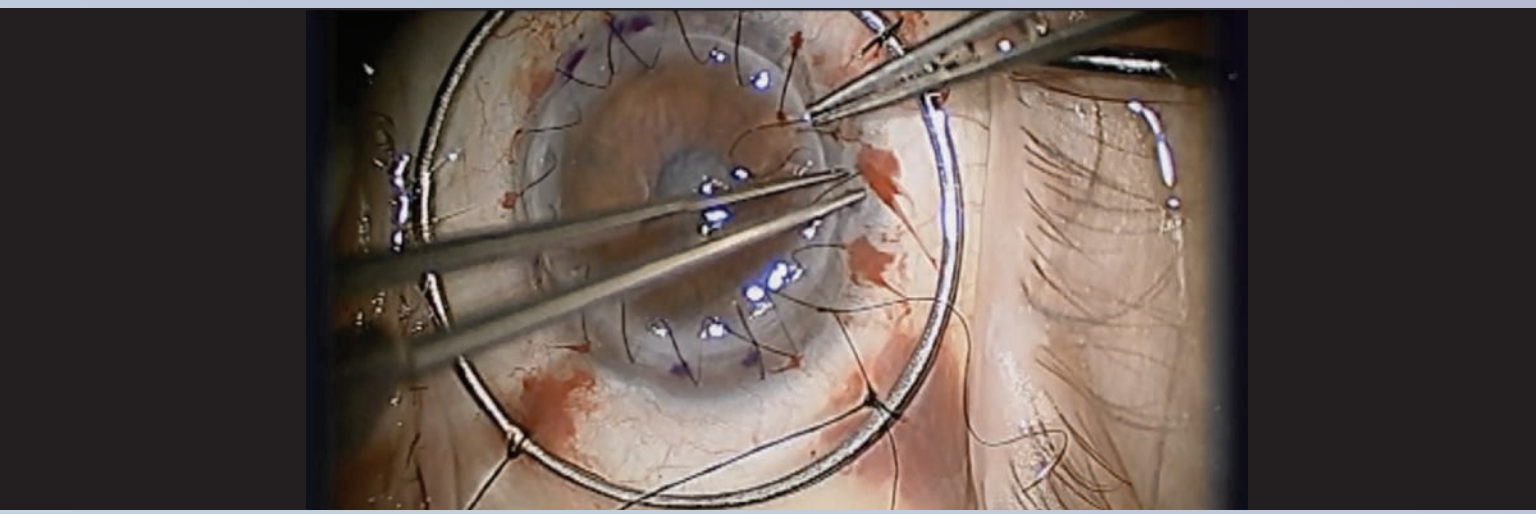
ACUVUE® Brand Contact Lenses are indicated for vision correction. As with any contact lens, eye problems, including corneal ulcers, can develop. Some wearers may experience mild irritation, itching or discomfort. Lenses should not be prescribed if patients have any eye infection, or experience eye discomfort, excessive tearing, vision changes, redness or other eye problems. Consult the package insert for complete information. Complete information is also available from VISTAKON® Division of Johnson & Johnson Vision Care, Inc., by calling 1-800-843-2020 or by visiting acuvueprofessional.com.

†Helps protect against transmission of harmful UV radiation to the cornea and into the eye.

WARNING: UV-absorbing contact lenses are NOT substitutes for protective UV-absorbing eyewear such as UV-absorbing goggles or sunglasses, because they do not completely cover the eye and surrounding area. You should continue to use UV-absorbing eyewear as directed. **NOTE:** Long-term exposure to UV radiation is one of the risk factors associated with cataracts. Exposure is based on a number of factors such as environmental conditions (altitude, geography, cloud cover) and personal factors (extent and nature of outdoor activities). UV-blocking contact lenses help provide protection against harmful UV radiation. However, clinical studies have not been done to demonstrate that wearing UV-blocking contact lenses reduces the risk of developing cataracts or other eye disorders. Consult your eye care practitioner for more information.

Surgical Minute

By Derek N. Cunningham, OD, and Walter O. Whitley, OD, MBA



See the view through the operating microscopes of some of the best eye surgeons in the US, with expert commentary from comanaging optometrists.

Surgical Minute

PK: Right on the Button

When all else fails, penetrating keratoplasty offers a chance for better acuity.

By Derek N. Cunningham, OD, and Walter O. Whitley, OD, MBA

On The Web >> View a narrated video of penetrating keratoplasty.

Penetrating keratoplasty (PK) is a full-thickness transplant in which the damaged central cornea (7mm to 9mm) is removed and replaced with donor tissue. Compared with other types of tissue transplants, it has a long and outstanding record of success; more than 46,000 corneal transplants were performed in 2011, according to Eye Bank Association of America.

The most common indications for penetrating keratoplasty are regrafting, keratoconus, Fuchs' endothelial dystrophy, pseudophakic bullous keratopathy, perforated corneas, traumatic scars and viral keratitis.

The advantages of penetrating keratoplasty include the full removal of damaged corneal tissue, improved optical clarity, restored corneal anatomy, ease of performance compared to other corneal transplant procedures, improved cosmetic appearance and the potential for good optical results.

Some disadvantages are a higher risk of graft rejection, post-op astigmatism, suture management, intraocular complications and traumatic corneal rupture.

Variations of the procedure include deep anterior lamellar keratoplasty (DALK), Descemet's stripping endothelial keratoplasty (DSEK) and Descemet's membrane endothelial keratoplasty (DMEK). The choice of procedure (PK or one of the above variations) depends on which corneal layers have been affected.

The procedure begins with the preparation of the donor tissue. A trephine (a circular cutting device) is used to cut the donor cornea, followed by trephination of a similar sized portion (7mm to 9mm) of the patient's cornea. Once the recipient's corneal button has been removed, the anterior chamber is filled with balanced salt solution or sodium hyaluronate and the donor button is placed into position.

Four cardinal sutures of 10-0 nylon are placed at 90° intervals in the donor graft, just above Descemet's membrane. The sutures are then passed into the recipient's cornea at the same level, at approximately 1.5mm into the host tissue. Once the needle is passed though, the suture is tied and buried. After the cardinal sutures are in place, suturing can be completed with a single running suture or interrupted sutures.

Postoperatively, patients are prescribed topical antibiotics for one to two weeks as well as topical steroids, which are tapered over several months. Many times, patients are kept on low-dose topical steroids to reduce the risk of graft rejection and failure. Sutures can be removed as soon as two to three months, if needed. Or, if a patient has little astigmatism and the sutures are not causing any problems, they can be left in place for many years.

As comanaging optometrists, our main concern is the long term management and visual function. Postoperatively, corneas may take anywhere from 18 to 24 months to fully stabilize, so be sure to continuously monitor patients for adequate visual acuity and functional vision. Communicate with your corneal specialist to decide when patients are sufficiently stable for contact lenses. A specialty contact lens (GP or hybrid) may be considered as soon as three months after surgery, but may need several changes and modifications once the sutures are removed. ■

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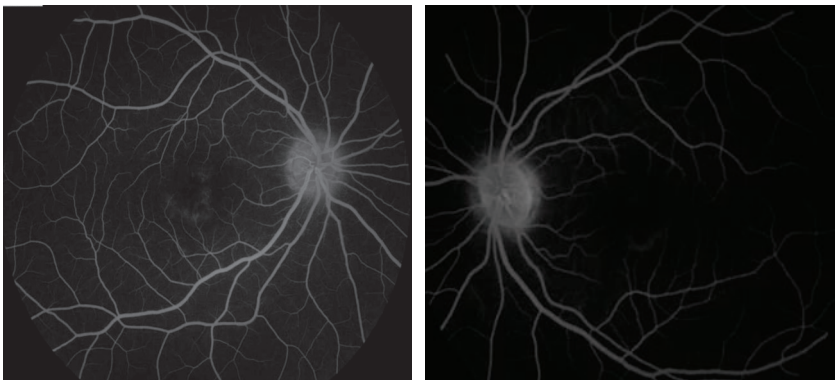

3, 4. What does the fluorescein angiogram confirm (OD left, OS right)?

damaged as those of her twin. Nevertheless, we must keep in mind that such a beaten metal appearance is highly indicative of a visually devastating genetic condition—Stargardt disease.

Stargardt disease is the most common hereditary macular dystrophy.[1,2] It is an autosomal recessive condition that presents in approximately one in 10,000 individuals worldwide.[1] Generally, it manifests during patients' teenage years and progresses throughout their early 20s. However, there have been reports of the condition developing in older adults as well.[1,2]

Stargardt disease is linked to a mutation in the ABCA4 gene, which codes an energy-dependent transmembrane protein localized in the discs of the rod and cone outer segments.[2] It is considered to be a lipofuscin storage disease.

Excess lipofuscin in the RPE makes the retina appear deep red or vermillion, as well as obscures some choroidal detail on clinical examination. Indeed, if you look carefully at the coloration of our patient's retinae, they appear to have a deep red appearance. Further, the choroidal vasculature that often can be seen through the RPE is absent. Given this information alone, however, it would be difficult to make a diagnosis.

The diagnosis of Stargardt disease is usually made based on both the clinical appearance and an index of suspicion. The difficulty in diagnosing the condition solely based upon clinical appearance is that it varies from patient to patient. The maculae can appear normal (as was the case in our patient), or they can exhibit atrophic RPE changes that are often described as beaten metal or "beaten bronze." Further, patients may have macular atrophy with or without scattered, yellow-white flecks in the posterior pole and periphery. Alternatively, they may present with flecks in the absence of macular atrophy.

Fluorescein angiography is considered the gold standard diagnostic test for Stargardt disease. Because of the increased levels of lipofuscin, the staining pattern will reveal blockage of the background fluorescence, resulting in a quiet choroidal appearance. This is the case in our patient.

More recently, fundus autofluorescence has emerged as a useful tool for evaluating the extent of Stargardt disease. This diagnostic technology enables the visualization of A2E, a critical component of lipofuscin.[3] Within our patient's maculae, we saw a circular area of hypofluorescence that may indicate early RPE atrophy and photoreceptor cell loss. In the relatively near future, our patient likely will develop visible atrophy, like her sister.

There is no treatment for Stargardt disease, beyond ensuring that the patient's optical needs are met. At present, our patient's visual acuity is still pretty good. This will not last very long, however, because the disease likely will continue to progress. ■

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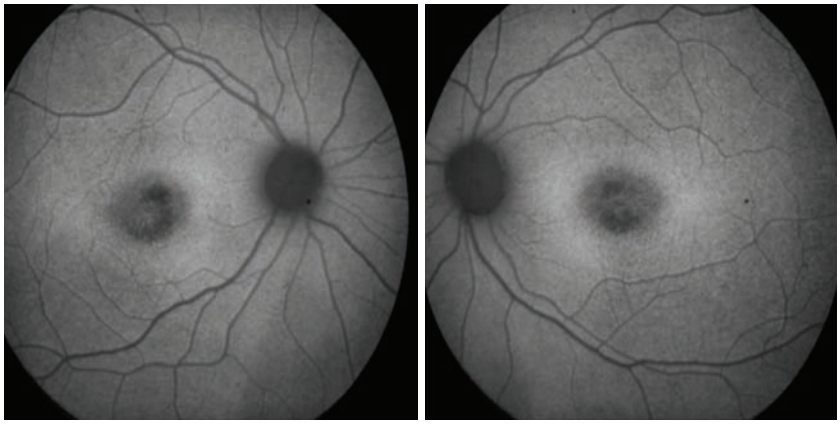
2. Deutman AF, Hoyng CB, van Lith-Verhoeven JJC. Macuar dystrophies. In: Ryan SJ (ed.). Retina. Vol. II, 4th ed. St. Louis: Mosby; 2006:1160-209.
3. Gomes NL, Greenstein VC, Carlson JN, et al. A comparison of fundus autofluorescence and retinal structure in patients with Stargardt disease. Invest Ophthalmol Vis Sci. 2009 Aug;50(8):3953-9.



5, 6. Fundus autofluoresence of our patient (OD left, OS right). What does this reveal?

A Whiter Shade of Pale

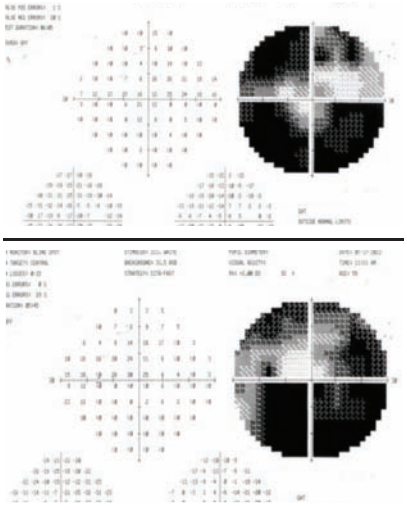
This man presented with bilateral optic nerve pallor. What is the most likely underlying cause? **By Alan G. Kabat, OD, and Joseph W. Sowka, OD**

A 59-year-old man presented for a comprehensive eye examination with a chief complaint of blurry vision in both eyes. His medical history was significant for hypertension and type 2 diabetes, which were both medically controlled. His blood pressure measured 140/84mm Hg, and his last HbA1c level was 7.5%.

A review of his eye care records revealed a history of bilateral optic nerve head pallor. At visits approximately one and two years earlier, we noted that the patient had pale optic discs in both eyes, as well as constricted visual fields and mildly reduced visual acuity OU. Although we recommended further evaluation on both occasions, the patient did not follow through with testing.

At this visit, his best-corrected visual acuity was 20/25 OU. His pupils were reactive (although sluggish) OU, with no evidence of afferent defect. Ocular motilities were unrestricted. Confrontation visual fields showed significant constriction OU, with severe limitations inferiorly. Threshold perimetry quantified the field loss (*figure 1*). Biomicroscopy was unremarkable OU. His intraocular pressure measured 19mm Hg OU.

Dilated fundus examination revealed pale optic discs in both eyes, with shallow cupping and slight arteriole attenuation that was consistent with prior diagnostic imagery (*figure 2*). Although the patient appeared to have a severe ocular pathology, he was an otherwise robust and active adult who worked fulltime as an athletic coach.



1. Central 30-2 visual fields results of our 59-year-old patient. Both the inferior and nasal aspects are severely depressed OU (OD top, OS bottom).

How would you proceed in this case? What testing is indicated, and how do you convince this otherwise asymptomatic patient of the need for further evaluation and eventual treatment?

Possible Causes of Pallor

There are numerous potential etiologies of optic nerve pallor, including infarction, infection, infiltration, inflammation, trauma, toxicity, metabolic dysfunction, or direct compression of the nerve or chiasm by a mass lesion.[1]

Ophthalmoscopically, optic atrophy may assume one of several clinical presentations:[2]

- ***Primary optic atrophy*** presents with uniform nerve fiber degeneration, resulting in glial replacement but no architectural alteration of the optic nerve head. The disc appears chalky-white, but the margins remain distinct and the retinal vessels appear normal. Trauma and compression (i.e., secondary to a tumor) typically result in primary optic atrophy.
- ***Secondary optic atrophy*** results from pathological disc edema, and may be seen in association with malignant hypertension, papilledema from conditions such as pseudotumor cerebri, or infiltrative diseases like leukemia or sarcoidosis. Further, there is marked degeneration of the neurons with excessive proliferation of glial tissue, indistinct margins and a loss of normal architecture. Typically, the disc appears dirty-gray with ragged edges.
- ***Consecutive optic atrophy*** may be seen in degenerative retinal conditions—most notably retinitis pigmentosa, pathological myopia and central retinal artery occlusion. The classic presentation is a pale/waxy disc, normal margins and marked attenuation of the arterioles.
- ***Glaucomatous optic atrophy*** presents with a phenomenon known as "cupping," a progressive excavation of the neuroretinal rim that causes alterations of the disc vasculature, including nasalization and "bayoneting." Unlike other forms of optic atrophy, however, the rim tissue remains pink and perfused in this condition.

For the treatment of elevated IOP

UNLOCK TREATMENT POSSIBILITIES

SIMBRINZA™ Suspension provided additional 1-3 mm Hg IOP lowering compared to the individual components[1]

- IOP measured at 8 AM, 10 AM, 3 PM, and 5 PM was reduced by **21-35%** at Month 3[2-4]
- Efficacy proven in two pivotal Phase 3 randomized, multicenter, double-masked, parallel-group, 3-month, 3-arm, contribution-of-elements studies[2,3]
- The most frequently reported adverse reactions (3-7%) in a six month clinical trial were eye irritation, eye allergy, conjunctivitis, blurred vision, dysgeusia (bad taste), conjunctivitis allergic, eye pruritus, and dry mouth[5]
- Only available beta-blocker-free fixed combination[2,3]

INDICATIONS AND USAGE

SIMBRINZA™ (brinzolamide/brimonidine tartrate ophthalmic suspension) 1%/0.2% is a fixed combination indicated in the reduction of elevated intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension.

Dosage and Administration

The recommended dose is one drop of SIMBRINZA™ Suspension in the affected eye(s) three times daily. Shake well before use. SIMBRINZA™ Suspension may be used concomitantly with other topical ophthalmic drug products to lower intraocular pressure. If more than one topical ophthalmic drug is being used, the drugs should be administered at least five (5) minutes apart.

IMPORTANT SAFETY INFORMATION

Contraindications

SIMBRINZA™ Suspension is contraindicated in patients who are hypersensitive to any component of this product and neonates and infants under the age of 2 years.

Warnings and Precautions

Sulfonamide Hypersensitivity Reactions—Brinzolamide is a sulfonamide, and although administered topically, is absorbed systemically. Sulfonamide attributable adverse reactions may occur. Fatalities have occurred due to severe reactions to sulfonamides. Sensitization may recur when a sulfonamide is readministered irrespective of the route of administration. If signs of serious reactions or hypersensitivity occur, discontinue the use of this preparation.

Corneal Endothelium—There is an increased potential for developing corneal edema in patients with low endothelial cell counts.

Severe Hepatic or Renal Impairment (CrCl <30 mL/min)—SIMBRINZA™ Suspension has not been specifically studied in these patients and is not recommended.

Adverse Reactions

In two clinical trials of 3 months' duration with SIMBRINZA™ Suspension, the most frequent reactions associated with its use occurring in approximately 3-5% of patients in descending order of incidence included: blurred vision, eye irritation, dysgeusia (bad taste), dry mouth, and eye allergy. Adverse reaction rates with SIMBRINZA™ Suspension were comparable to those of the individual components. Treatment discontinuation, mainly due to adverse reactions, was reported in 11% of SIMBRINZA™ Suspension patients.

Drug Interactions—Consider the following when prescribing SIMBRINZA™ Suspension:

Concomitant administration with oral carbonic anhydrase inhibitors is not recommended due to the potential additive effect. Use with high-dose salicylate may result in acid-base and electrolyte alterations. Use with CNS depressants may result in an additive or potentiating effect. Use with antihypertensives/cardiac glycosides may result in additive or potentiating effect on lowering blood pressure. Use with tricyclic antidepressants may blunt the hypotensive effect of systemic clonidine and it is unknown if use with this class of drugs interferes with IOP lowering. Use with monoamine oxidase inhibitors may result in increased hypotension.

For additional information about SIMBRINZA™ Suspension, please see Brief Summary of full Prescribing Information on adjacent page.

Learn more at myalcon.com/simbrinza

References: 1. SIMBRINZA™ Suspension Package Insert. **2.** Katz G, DuBiner H, Samples J, et al. Three-month randomized trial of fixed-combination brinzolamide, 1%, and brimonidine, 0.2% [published online ahead of print April 11, 2013]. *JAMA Ophthalmol.* doi:10.1001/jamaophthalmol.2013.188. **3.** Nguyen QH, McMenemy MG, Realini T, et al. Phase 3 randomized 3-month trial with an ongoing 3-month safety extension of fixed-combination brinzolamide 1%/brimonidine 0.2%. *J Ocul Pharmacol Ther.* 2013;29(3):
290-297. **4.** Data on file, 2013. **5.** Whitson JT, Realini T, Nguyen QH, McMenemy MG, Goode SM. Six-month results from a Phase III randomized trial of fixed-combination brinzolamide 1% + brimonidine 0.2% versus brinzolamide or brimonidine monotherapy in glaucoma or ocular hypertension. *Clin Ophthalmol.* 2013;7:1053-1060.

SIMBRINZA™
(brinzolamide/brimonidine
tartrate ophthalmic suspension)
1%/0.2%

ONE BOTTLE. MANY POSSIBILITIES.

Alcon®
a Novartis company

BRIEF SUMMARY OF PRESCRIBING INFORMATION
INDICATIONS AND USAGE

SIMBRINZA™ (brinzolamide/brimonidine tartrate ophthalmic suspension) 1%/0.2% is a fixed combination of a carbonic anhydrase inhibitor and an alpha 2 adrenergic receptor agonist indicated for the reduction of elevated intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension.

DOSAGE AND ADMINISTRATION

The recommended dose is one drop of SIMBRINZA™ Suspension in the affected eye(s) three times daily. Shake well before use. SIMBRINZA™ Suspension may be used concomitantly with other topical ophthalmic drug products to lower intraocular pressure. If more than one topical ophthalmic drug is being used, the drugs should be administered at least five (5) minutes apart.

DOSAGE FORMS AND STRENGTHS

Suspension containing 10 mg/mL brinzolamide and 2 mg/mL brimonidine tartrate.

CONTRAINDICATIONS

Hypersensitivity - SIMBRINZA™ Suspension is contraindicated in patients who are hypersensitive to any component of this product.

Neonates and Infants (under the age of 2 years) - SIMBRINZA™ Suspension is contraindicated in neonates and infants (under the age of 2 years*) see Use in Specific Populations*

WARNINGS AND PRECAUTIONS

Sulfonamide Hypersensitivity Reactions - SIMBRINZA™ Suspension contains brinzolamide, a sulfonamide, and although administered topically is absorbed systemically. Therefore, the same types of adverse reactions that are attributable to sulfonamides may occur with topical administration of SIMBRINZA™ Suspension. Fatalities have occurred due to severe reactions to sulfonamides including Stevens-Johnson syndrome, toxic epidermal necrolysis, fulminant hepatic necrosis, agranulocytosis, aplastic anemia, and other blood dyscrasias. Sensitization may recur when a sulfonamide is re-administered irrespective of the route of administration. If signs of serious reactions or hypersensitivity occur, discontinue the use of this preparation *[see Patient Counseling Information]*

Corneal Endothelium - Carbonic anhydrase activity has been observed in both the cytoplasm and around the plasma membranes of the corneal endothelium. There is an increased potential for developing corneal edema in patients with low endothelial cell counts. Caution should be used when prescribing SIMBRINZA™ Suspension to this group of patients.

Severe Renal Impairment - SIMBRINZA™ Suspension has not been specifically studied in patients with severe renal impairment (CrCl < 30 mL/min). Since brinzolamide and its metabolite are excreted predominantly by the kidney, SIMBRINZA™ Suspension is not recommended in such patients.

Acute Angle-Closure Glaucoma - The management of patients with acute angle-closure glaucoma requires therapeutic interventions in addition to ocular hypotensive agents. SIMBRINZA™ Suspension has not been studied in patients with acute angle-closure glaucoma.

Contact Lens Wear - The preservative in SIMBRINZA™, benzalkonium chloride, may be absorbed by soft contact lenses. Contact lenses should be removed during instillation of SIMBRINZA™ Suspension but may be reinserted 15 minutes after instillation *[see Patient Counseling Information]*.

Severe Cardiovascular Disease - Brimonidine tartrate, a component of SIMBRINZA™ Suspension, has a less than 5% mean decrease in blood pressure 2 hours after dosing in clinical studies; caution should be exercised in treating patients with severe cardiovascular disease.

Severe Hepatic Impairment - Because brimonidine tartrate, a component of SIMBRINZA™ Suspension, has not been studied in patients with hepatic impairment, caution should be exercised in such patients.

Potentiation of Vascular Insufficiency - Brimonidine tartrate, a component of SIMBRINZA™ Suspension, may potentiate syndromes associated with vascular insufficiency. SIMBRINZA™ Suspension should be used with caution in patients with depression, cerebral or coronary insufficiency, Raynaud's phenomenon, orthostatic hypotension, or thromboangitis obliterans.

Contamination of Topical Ophthalmic Products After Use - There have been reports of bacterial keratitis associated with the use of multiple-dose containers of topical ophthalmic products. These containers have been inadvertently contaminated by patients who, in most cases, had a concurrent corneal disease or a disruption of the ocular epithelial surface *[see Patient Counseling Information]*.

ADVERSE REACTIONS

Clinical Studies Experience - Because clinical studies are conducted under widely varying conditions, adverse reaction rates observed in the clinical studies of a drug cannot be directly compared to the rates in the clinical studies of another drug and may not reflect the rates observed in practice.

SIMBRINZA™ Suspension - In two clinical trials of 3 months duration 435 patients were treated with SIMBRINZA™ Suspension, and 915 were treated with the two individual components. The most frequently reported adverse reactions in patients treated with SIMBRINZA™ Suspension occurring in approximately 3 to 5% of patients in descending order of incidence were blurred vision, eye irritation, dysgeusia (bad taste), dry mouth, and eye allergy. Rates of adverse reactions reported with the individual components were comparable. Treatment discontinuation, mainly due to adverse reactions, was reported in 11% of SIMBRINZA™ Suspension patients.

Other adverse reactions that have been reported with the individual components during clinical trials are listed below.

Brinzolamide 1% - In clinical studies of brinzolamide ophthalmic suspension 1%, the most frequently reported adverse reactions reported in 5 to 10% of patients were blurred vision and bitter, sour or unusual taste. Adverse reactions occurring in 1 to 5% of patients were blepharitis, dermatitis, dry eye, foreign body sensation, headache, hyperemia, ocular discharge, ocular discomfort, ocular keratitis, ocular pain, ocular pruritus and rhinitis.

The following adverse reactions were reported at an incidence below 1%: allergic reactions, alopecia, chest pain, conjunctivitis, diarrhea, diplopia, dizziness, dry mouth, dyspnea, dyspepsia, eye fatigue, hypertonia, keratoconjunctivitis, keratopathy, kidney pain, lid margin crusting or sticky sensation, nausea, pharyngitis, tearing and urticaria.

Brimonidine Tartrate 0.2% - In clinical studies of brimonidine tartrate 0.2%, adverse reactions occurring in approximately 10 to 30% of the subjects, in descending order of incidence, included oral dryness, ocular hyperemia, burning and stinging, headache, blurring, foreign body sensation, fatigue/drowsiness, conjunctival follicles, ocular allergic reactions, and ocular pruritus.

Reactions occurring in approximately 3 to 9% of the subjects, in descending order included corneal staining/erosion, photophobia, eyelid erythema, ocular ache/pain, ocular dryness, tearing, upper respiratory symptoms, eyelid edema, conjunctival edema, dizziness, blepharitis, ocular irritation, gastrointestinal symptoms, asthenia, conjunctival blanching, abnormal vision and muscular pain.

The following adverse reactions were reported in less than 3% of the patients: lid crusting, conjunctival hemorrhage, abnormal taste, insomnia, conjunctival discharge, depression, hypertension, anxiety, palpitations/arrhythmias, nasal dryness and syncope.

Postmarketing Experience - The following reactions have been identified during postmarketing use of brimonidine tartrate ophthalmic solutions in clinical practice. Because they are reported voluntarily from a population of unknown size, estimates of frequency cannot be made. The reactions, which have been chosen for inclusion due to either their seriousness, frequency of reporting, possible causal connection to brimonidine tartrate ophthalmic solutions, or a combination of these factors, include: bradycardia, hypersensitivity, iritis, keratoconjunctivitis sicca, miosis, nausea, skin reactions (including erythema, eyelid pruritus, rash, and vasodilation), and tachycardia.

Apnea, bradycardia, coma, hypotension, hypothermia, hypotonia, lethargy, pallor, respiratory depression, and somnolence have been reported in infants receiving brimonidine tartrate ophthalmic solutions *[see Contraindications]*.

DRUG INTERACTIONS

Oral Carbonic Anhydrase Inhibitors - There is a potential for an additive effect on the known systemic effects of carbonic anhydrase inhibition in patients receiving an oral carbonic anhydrase inhibitor and brinzolamide ophthalmic suspension 1%, a component of SIMBRINZA™ Suspension. The concomitant administration of SIMBRINZA™ Suspension and oral carbonic anhydrase inhibitors is not recommended.

High-Dose Salicylate Therapy - Carbonic anhydrase inhibitors may produce acid-base and electrolyte alterations. These alterations were not reported in the clinical trials with brinzolamide ophthalmic suspension 1%. However, in patients treated with oral carbonic anhydrase inhibitors, rare instances of acid-base alterations have occurred with high-dose salicylate therapy. Therefore, the potential for such drug interactions should be considered in patients receiving SIMBRINZA™ Suspension.

CNS Depressants - Although specific drug interaction studies have not been conducted with SIMBRINZA™, the possibility of an additive or potentiating effect with CNS depressants (alcohol, opiates, barbiturates, sedatives, or anesthetics) should be considered.

Antihypertensives/Cardiac Glycosides - Because brimonidine tartrate, a component of SIMBRINZA™ Suspension, may reduce blood pressure, caution in using drugs such as antihypertensives and/or cardiac glycosides with SIMBRINZA™ Suspension is advised.

Tricyclic Antidepressants - Tricyclic antidepressants have been reported to blunt the hypotensive effect of systemic clonidine. It is not known whether the concurrent use of these agents with SIMBRINZA™ Suspension in humans can lead to resulting interference with the IOP lowering effect. Caution is advised in patients taking tricyclic antidepressants which can affect the metabolism and uptake of circulating amines.

Monoamine Oxidase Inhibitors - Monoamine oxidase (MAO) inhibitors may theoretically interfere with the metabolism of brimonidine tartrate and potentially result in an increased systemic side-effect such as hypotension. Caution is advised in patients taking MAO inhibitors which can affect the metabolism and uptake of circulating amines.

USE IN SPECIFIC POPULATIONS

Pregnancy - *Pregnancy Category C:* Developmental toxicity studies with brinzolamide in rabbits at oral doses of 1, 3, and 6 mg/kg/day (20, 60, and 120 times the recommended human ophthalmic dose) produced maternal toxicity at 6 mg/kg/day and a significant increase in the number of fetal variations, such as accessory skull bones, which was only slightly higher than the historic value at 1 and 6 mg/kg. In rats, statistically decreased body weights of fetuses from dams receiving oral doses of 18 mg/kg/day (180 times the recommended human ophthalmic dose) during gestation were proportional to the reduced maternal weight gain, with no statistically significant effects on organ or tissue development. Increases in unossified sternebrae, reduced ossification of the skull, and unossified hyoid that occurred at 6 and 18 mg/kg were not statistically significant. No treatment-related malformations were seen. Following oral administration of ^{14}C-brinzolamide to pregnant rats, radioactivity was found to cross the placenta and was present in the fetal tissues and blood.

Developmental toxicity studies performed in rats with oral doses of 0.66 mg brimonidine base/kg revealed no evidence of harm to the fetus. Dosing at this level resulted in a plasma drug concentration approximately 100 times higher than that seen in humans at the recommended human ophthalmic dose. In animal studies, brimonidine crossed the placenta and entered into the fetal circulation to a limited extent.

There are no adequate and well-controlled studies in pregnant women. SIMBRINZA™ Suspension should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers - In a study of brinzolamide in lactating rats, decreases in body weight gain in offspring at an oral dose of 15 mg/kg/day (150 times the recommended human ophthalmic dose) were observed during lactation. No other effects were observed. However, following oral administration of ^{14}C-brinzolamide to lactating rats, radioactivity was found in milk at concentrations below those in the blood and plasma. In animal studies, brimonidine was excreted in breast milk.

It is not known whether brinzolamide and brimonidine tartrate are excreted in human milk following topical ocular administration. Because many drugs are excreted in human milk and because of the potential for serious adverse reactions in nursing infants from SIMBRINZA™ (brinzolamide/brimonidine tartrate ophthalmic suspension) 1%/0.2%, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the importance of the drug to the mother.

Pediatric Use - The individual component, brinzolamide, has been studied in pediatric glaucoma patients 4 weeks to 5 years of age. The individual component, brimonidine tartrate, has been studied in pediatric patients 2 to 7 years old. Somnolence (50-83%) and decreased alertness was seen in patients 2 to 6 years old. SIMBRINZA™ Suspension is contraindicated in children under the age of 2 years *[see Contraindications]*.

Geriatric Use - No overall differences in safety or effectiveness have been observed between elderly and adult patients.

OVERDOSAGE

Although no human data are available, electrolyte imbalance, development of an acidotic state, and possible nervous system effects may occur following an oral overdose of brinzolamide. Serum electrolyte levels (particularly potassium) and blood pH levels should be monitored.

Very limited information exists on accidental ingestion of brimonidine in adults; the only adverse event reported to date has been hypotension. Symptoms of brimonidine overdose have been reported in neonates, infants, and children receiving brimonidine as part of medical treatment of congenital glaucoma or by accidental oral ingestion. Treatment of an oral overdose includes supportive and symptomatic therapy; a patent airway should be maintained.

PATIENT COUNSELING INFORMATION

Sulfonamide Reactions - Advise patients that if serious or unusual ocular or systemic reactions or signs of hypersensitivity occur, they should discontinue the use of the product and consult their physician.

Temporary Blurred Vision - Vision may be temporarily blurred following dosing with SIMBRINZA™ Suspension. Care should be exercised in operating machinery or driving a motor vehicle.

Effect on Ability to Drive and Use Machinery - As with other drugs in this class, SIMBRINZA™ Suspension may cause fatigue and/or drowsiness in some patients. Caution patients who engage in hazardous activities of the potential for a decrease in mental alertness.

Avoiding Contamination of the Product - Instruct patients that ocular solutions, if handled improperly or if the tip of the dispensing container contacts the eye or surrounding structures, can become contaminated by common bacteria known to cause ocular infections. Serious damage to the eye and subsequent loss of vision may result from using contaminated solutions *[see Warnings and Precautions]*. Always replace the cap after using. If solution changes color or becomes cloudy, do not use. Do not use the product after the expiration date marked on the bottle.

Intercurrent Ocular Conditions - Advise patients that if they have ocular surgery or develop an intercurrent ocular condition (e.g., trauma or infection), they should immediately seek their physician's advice concerning the continued use of the present multidose container.

Concomitant Topical Ocular Therapy - If more than one topical ophthalmic drug is being used, the drugs should be administered at least five minutes apart.

Contact Lens Wear - The preservative in SIMBRINZA™, benzalkonium chloride, may be absorbed by soft contact lenses. Contact lenses should be removed during instillation of SIMBRINZA™ Suspension, but may be reinserted 15 minutes after instillation.

U.S. Patent No:
6,316,441

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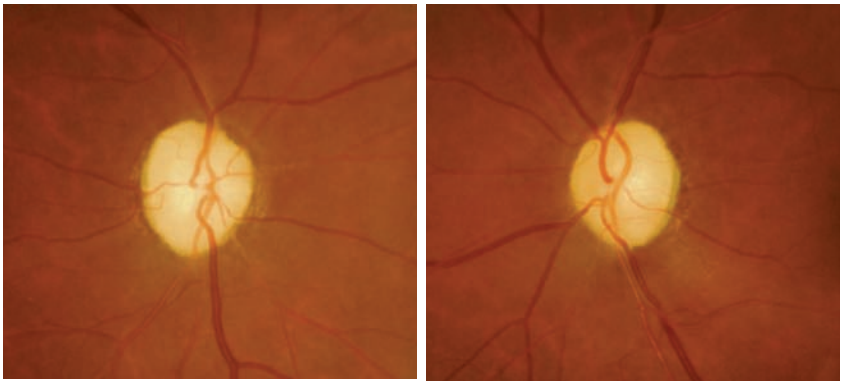
• *Temporal disc pallor* is the final disorder that must considered in the discussion of optic atrophy. In conditions such as nutritional or demyelinating optic neuropathy, the disc margins remain distinct with normal vasculature; however, the temporal aspect of the nerve acquires a distinctly pale coloration in contrast to the remaining rim tissue.

Based upon his clinical appearance, our patient was best described as having primary optic atrophy. But when accounting for his medical history, we considered an ischemic etiology (i.e., anterior ischemic optic neuropathy secondary to hypertension and/or diabetes) in the differential.[3]



2. Dilated funduscopy revealed bilateral optic nerve head pallor (OD left, OS right). What further testing should we consider?

Appropriate Testing

In cases such as this, the most crucial ancillary test is neuroimaging.[4] In many instances, visual field defects can help guide the direction of the scan.[5] For example, a bitemporal field loss is indicative of chiasmal lesions—while a highly congruous, right homonymous hemianopia typically localizes to the left, post-chiasmal visual pathways in the occipital lobe.

In our patient, however, the field loss was so extensive and atypical that it was difficult to predict where the lesion might be. It could be intraorbital, chiasmal or post-chiasmal. Moreover, the clinical presentation might actually be representative of multiple lesions. In these situations, magnetic resonance imaging (MRI) studies of the orbits, the optic chiasm and the brain should be obtained. Contrast dye (gadolinium) is beneficial in discerning malignant lesions.[6] MRI also can help identify demyelinating plaques within the white matter of the brain, which are indicative of multiple sclerosis.

If MRI fails to reveal any intraorbital or intracranial abnormalities, then systemic disorders must be investigated. Numerous conditions can present with visual field loss and optic nerve head pallor. A short list of these systemic disorders includes: sarcoidosis, tuberculosis (TB), Behçet's disease, lymphoma, leukemia, systemic lupus erythematosus, nutritional or metabolic disorder (e.g., pernicious anemia, folate deficiency), syphilis, Lyme disease and antiphospholipid antibody syndrome. Diabetes and hypertension are other obvious considerations for such a presentation.

Hematology, serology and blood chemistry should include a complete blood count (CBC) with white cell differential, erythrocyte sedimentation rate (ESR), angiotensin-converting enzyme (ACE), antinuclear antibody (ANA), serum cardiolipin, serum homocysteine, serum B_{12} and folate levels, and rapid plasma reagin (RPR) for syphilis. Additionally, chest X-rays could prove helpful in suspected cases of TB or sarcoidosis. A Mantoux test is confirmatory for TB.[7]

After discussing the findings with our patient and the need for a medical workup, he agreed to see his primary care provider (PCP) for the recommended battery of tests. We sent a summary letter to the PCP on the patient's behalf and scheduled an appointment for him, but he failed to keep it.

We left messages for him explaining the potential urgency of his situation. But, to date, he has neither called nor returned to our office for any medical treatment. It is an unfortunate truth in today's society, but some individuals simply refuse to accept the help that we offer, even when the potential for morbidity is high. There are many reasons for this—finances, fear and denial are but a few.

While we remain concerned and diligent, we tend to operate by a simple code that we have espoused for years: Unless your patient is too young or cognitively impaired to know better, you can't care more for him than he cares for himself. ■

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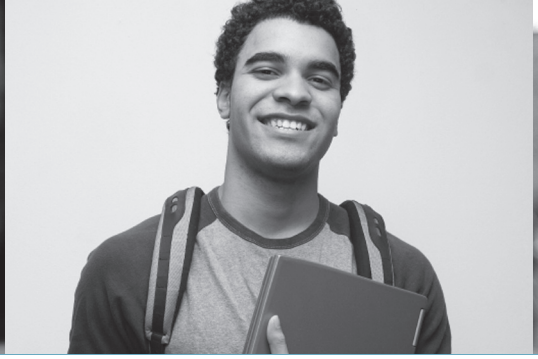


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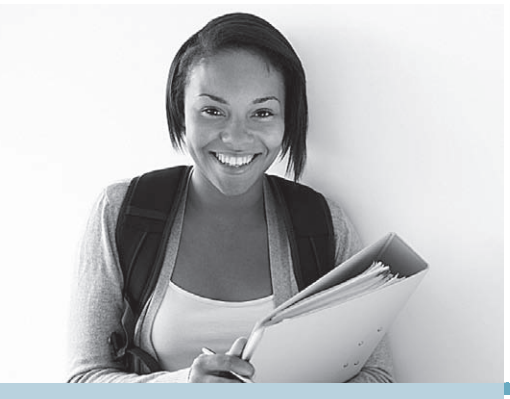

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Which Came First: OAG or RVO?

This glaucoma suspect presented with a history of retinal vein occlusion. Did one condition precipitate the other? **Edited by Diana L. Shechtman, OD, and Paul M. Karpecki, OD**

A 77-year-old Hispanic female presented for an evaluation of reduced vision in her left eye. Her ocular history was remarkable for a central retinal vein occlusion (CRVO) in her left eye, and possible glaucoma in both eyes. Her medical history was remarkable for hypertension.

Her best-corrected visual acuity measured 20/30 OD and light perception OS. Pupillary evaluation was significant for an afferent defect OS. Intraocular pressure measured 24mm Hg OD and 36mm Hg OS.

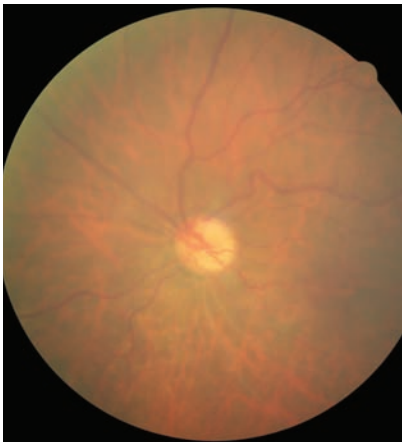
On gonioscopy, her angles were open OU. Slit-lamp evaluation revealed bilateral cataracts. Dilated fundus examination of the right eye revealed a cup-to-disc (C/D) ratio of 0.65 x 0.65, with a pink and distinct optic nerve. The left eye, however, exhibited a 1.0 x 1.0 C/D ratio and significant optic nerve cupping.

Dilated fundus evaluation revealed no retinal or vascular changes OD, and small retinal hemorrhages, sclerotic retinal veins emanating from the optic nerve, and macular mottling OS.

Could undiagnosed glaucoma contribute to the CRVO in her left eye? Given the borderline IOP and moderate cup-to-disc ratio in her right eye, should we try to lower the pressure in order to prevent another retinal vein occlusion?

Glaucoma and RVO

The association between primary open-angle glaucoma (POAG) and RVO has been known for 100 years.[1] POAG has been observed in more than 10% of patients who present with CRVO.[1-4] It's been stipulated that patients with a history of glaucoma may be up to five times more likely to develop RVO than those without glaucoma.[2]



Dilated fundus examination of our 77-year-old patient's left eye. Her ocular history was significant for a central retinal vein occlusion OS. Now, we also suspect she has glaucoma. How should we proceed?

A few major case-control studies have reported a relationship between both conditions. A history of glaucoma or ocular hypertension (OHT) in the fellow eye is significantly more common in patients who develop CRVO compared to ocular non-hypertensive controls.[5,6]

Without question, age seems to be a primary confounding factor in this association.[7-9] In the landmark Ocular Hypertension Treatment Study (OHTS), older patients who were diagnosed with OHT at baseline exhibited a statistically significant predictive risk for the development of RVO. While the average age of all OHTS participants was 55 years at the time of enrollment, those who developed RVO were more likely to be older than 65 years of age at baseline.[7] Additionally, RVO occurred at an average of six years from baseline.

It is important to note that data obtained from other trials, including the Beaver Dam Eye Study and the Blue Mountains Eye Study, further supported the relationship between glaucoma and RVO.[8,9]

Researchers have speculated that the relationship between POAG and RVO shares a similar pathogenesis to that observed between POAG and a disc hemorrhage.[10] In eyes with concomitant POAG and retinal vein occlusion, the site of the RVO frequently is localized to the optic disc or located adjacent to the optic disc rim.[10] There's also a tendency for the occlusion site to occur at the area of the optic nerve head disc in patients who present with significant glaucomatous damage.

Finally, there's been some debate as to whether POAG precedes or follows RVO development. One study indicated that, in most cases, the diagnosis of POAG took place prior to the presentation of the RVO.[10] In patients diagnosed with POAG following the RVO presentation, there were obvious signs of glaucomatous disc damage and/or visual field defects prior to RVO development. These findings suggest that glaucoma typically is the precipitating ocular event in patients who present with both RVO and POAG.[10]

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Research Review

How Does POAG Cause RVO?

Due to the structural alterations at the lamina cribrosa induced by elevated IOP, distinguished ophthalmic researcher Frederick H. Verfoeff, MD, postulated that increased IOP likely was the leading risk factor for RVO development.[1] He believed that increased IOP caused compression on the central retinal vein, which resulted in a CRVO.[1]

Additionally, retinal nerve fiber layer (RNFL) thinning has been regarded as a contributing factor to the development of a retinal vein occlusion. RNFL defects may cause a loss of structural support for a given retinal artery, causing it to collapse over the crossing vein, resulting in blood stasis. Blood stasis contributes to the development of thrombosis, which may cause RVO.[4,11]

One study published in 2011 indicated that patients with RVOs typically have thinner RNFLs in the contralateral eye.[12] This finding supports the possibility that glaucoma and RVO share a common vascular pathogenesis.[12]

Based on the literature, there seems to be a definitive causal relationship between POAG and RVO. Therefore, we decided to place our patient on Xalatan (latanoprost, Pfizer) QHS OD. Because she was monocular and reported no associated pain, we elected not to treat her left eye. Additionally, we advised her to return in four weeks to assess the efficacy of treatment. Unfortunately, however, the patient was lost to follow-up. ■

Thanks to Marlon J. Demeritt, OD, of Oakland Park, Fla., for contributing this article.

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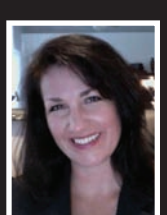

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Diagnostics

AcuTarget HD

Presbyopes in the US could soon have a new alternative to corrective lenses with the FDA's anticipated approval of the Kamra inlay, an intracorneal microscopic ring designed to create a small-aperture effect, allowing the eye to see near and intermediate objects more clearly. In addition to the opening in the center, the inlay features 8,400 high-precision, laser-etched micro-openings along the surface to maintain corneal health.

For practices outside the US, Kamra manufacturer AcuFocus has just released the AcuTarget HD, designed to guide surgeons in proper surgical placement of the inlay. Comprising five diagnostic tools in one instrument, the device provides objective assessment of visual quality, pseudo-accommodation measurement with visual demonstration of pre- and post-op depth of focus, inlay position guidance, and an assessment of targeted-vs.-achieved inlay placement. It can also provide the resulting visual impact of tear film quality over time.

The company's Kamra inlay—launched in Europe and Asia in 2010—was a finalist for the Medical Design Excellence Awards.

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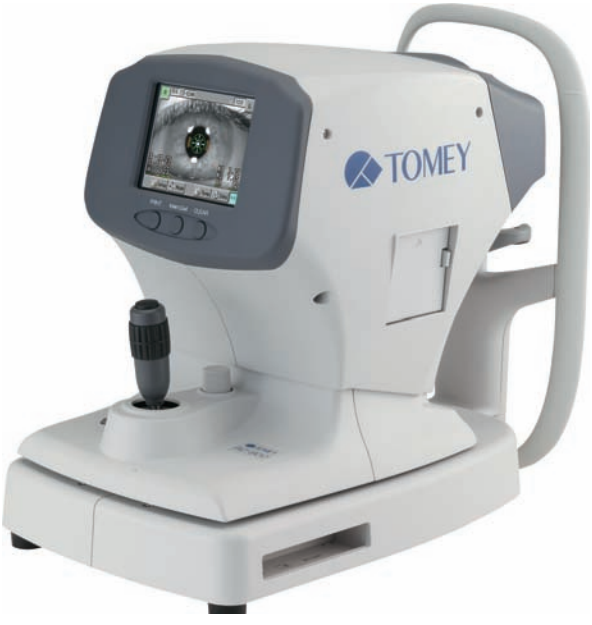

If you're in the market for a new autorefractor, consider the Tomey RC-800. According to Tomey USA, this autorefractor/keratometer is more affordable and accurate than competitive models. It's equipped with an intuitive color touchscreen with auto-shot function and a high-speed printer. You can measure refraction, keratometry, and cornea and pupil diameters. For refraction, fogging makes each measurement more accurate and keratometry measurements give you enough info for contact lens fittings, Tomey says.

Visit www.tomeyusa.com.

Refractor

PSF Integra

Reduce your exam lane by more than 30% with the PSF Integra, a complete 'refraction lane-in-a-box' that fits in a pre-test area and performs subjective refraction alongside other pre-tests, such as autorefraction, OCT or retinal cameras.

The PSF Integra adds extra efficacy to users of Vmax Vision's PSF Refractor by allowing for the highest level of precision and accuracy in one-third of the space, according to the company. Introduced in 2011, the PSF Refractor measures a patient's subjective visual response to a point source, enabling a highly precise refraction to 0.05D—five times more precise than the traditional phoropter, the company says. The company also notes that the unique PSF refraction enables the first true night-vision correction.

Visit www.VmaxVision.com.

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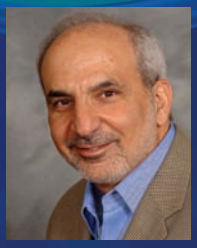

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I look forward to seeing you in Newport Beach!
Murray Fingeret, OD

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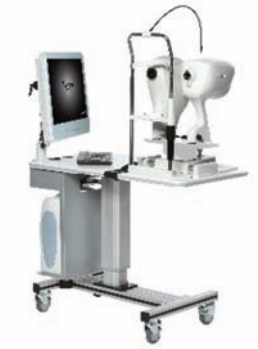

Retinal Imaging

iFusion

The iFusion takes the two most important imaging modalities in eye care—OCT and digital fundus photography—and offers them on a single platform designed to streamline your workflow. This product, recently approved by the FDA, unifies Optovue's iVue spectral-domain OCT capabilities and its high-quality iCam non-mydriatic fundus camera. You'll have access to various upgrade pathways as your needs evolve so you can offer the latest in OCT and fundus imaging to your patients, the company says.

Visit www.optovue.com/ifusion.

Glaucoma Care

Octopus 600

The new Octopus 600 perimeter allows you to detect and monitor glaucoma with more convenience and gusto. The newest ergonomic member of Haag-Streit USA's Octopus family is equipped with standard white-on-white perimetry and Pulsar, a flicker stimulus designed for early glaucoma detection. Large trial lenses, built-in presbyopia correction and a newly reconfigured response button make for a more comfortable patient experience, the company says. The compact Octopus 600 operates via touchscreen, keyboard or mouse, functions alone or as part of a network, and doesn't take up much space.

Visit www.haag-streit-usa.com.

Contact Lenses

Astera Multifocal Toric

Alden Optical has expanded the parameter range of the Astera multifocal toric with the addition of a third add profile design. This new profile allows Alden to refine its fitting recommendation for all three Astera add profiles for improved precision with near vision correction. Specifically, Profile 1 is now recommended to +1.50D, Profile 2 from +1.75D to 2.25D and Profile 3 for add requirements of +2.50D or greater.

Visit www.aldenoptical.com.

MoistureSeal

Bausch + Lomb has received marketing clearance for its MoistureSeal technology, which it describes as an innovative breakthrough material. This novel technology, combined with new manufacturing processes, will offer superior comfort and vision, the company says.

The FDA approval came sooner than expected for MoistureSeal. Last year Bausch + Lomb launched Biotrue OneDay contact lenses and Biotrue Multi-Purpose Solution.

Visit www.bausch.com.

Eye Designs Lab Kits

There's a place for everything and everything's in its place with Eye Designs' Lab Kits. These wall-mounted panels and their various accessories, including aluminum shelves, open bins and multi-tool holders, are designed to create a more efficient and convenient workspace. Tuck tools and orders inside the specialized accessory compartments of Lab Kits' marine-grade plastic and stay organized and productive, the company says. The Lab Kits have a neutral gray finish and anodized aluminum black compartments to work with your décor—and maybe even enhance it. Each individual kit includes two wall panels and associated accessories, measuring 24x48 inches.

Visit www.eyedesignsshop.com.

Sunglasses

Maui Jim

Serve the mystique of Hollywood romance and retro fashion with Maui Jim's Maile and Nalani sunglasses. The oversized, upturned and rounded aesthetic hints at elegance and sophistication, according to Maui Jim.

October 22, 2013 • Seattle, Washington

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ocrt

The Meeting of the Year for ODs involved in advanced ocular disease management, refractive surgery, cataract surgery and innovative technologies

8 CE Credits*
(in two 4-hour sessions)

SCHEDULE

7:30am - 8:00am	Breakfast
8:00am - 5:30pm	**CE Program** (Lunch Included)

The OCRT will sponsor its 10th Annual Refractive Technology Symposium, bringing together some of the brightest minds in the refractive arena to discuss complication management, evolving technologies, management of dry eye and a new feature – an open forum to discuss cases submitted by you and other meeting attendees. The meeting, being held the day before the American Academy of Optometry meeting in Seattle, WA., presents a unique forum to share your ideas, thoughts, and experiences with your colleagues. Eight hours of COPE-approved CE will be awarded to attendees. The registration fee includes a continental breakfast and lunch.

www.ocrt.org/Symposium

For more information, contact Josh Johnston at drj@gaeyepartners.com or Bill Tullo OD, at bill.tullo@tlcvision.com

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TearLab

Maile's slightly elongated top and bottom makes it ideal for medium or narrow face shapes. Available in a variety of colors, Maile provides an oversized look for an eye size of 60, DBL or 14, temple 135 and a six-base curvature. Nalani's trimmer eye shape and wider temples complement a more oval look with an eye size of 61, DBL of 16, temple of 126 and a six-base curvature. Both are available in a variety of colors, including Gloss Black and Tokyo Tortoise.

The company outfitted these shades with their exclusive MauiPure lenses, which they have deemed the clearest non-glass lens material in the world. UV rays are cut by 100% and glare by 99.9%, the company says.

Visit www.MauiJim.com.

EHR Systems

AMD iManager Add-On

Build a more comprehensive disease management process for patients at-risk for AMD with the newest software integration by RevolutionEHR. According to the company, the system's AMD iManager add-on software improves workflow and reduces redundancy. This fully automated patient management suite allows for patient data extraction, identification and education for maximum efficiency, the company says.

Visit www.revolutionehr.com.

Mobile Apps

ToriCalc

The ever-expanding world of mobile apps now includes ToriCalc, an application that quickly calculates cross cylinder contact lens prescriptions. This private-label entry into mobile application marketing and customer support was launched by Innovative Insights and Abacus International and is based on proven sphero-cylinder over-refraction formulas, the company says. Their intention is to provide a cost-effective system to build brand awareness and increase exposure in the mobile marketplace.

ToriCalc has been engineered to increase speed and accuracy. Prescription information may be entered from baseline spectacle refraction or from lens-on-eye information. ToriCalc is available initially as an iOS application, with Android following later this year. It's available immediately in the iTunes App store, as well as through the company website.

Visit www.ToriCalc.com.

Online Training

Topcon Medical Systems

An online training system is now available for users of Topcon Medical Systems' CV-5000S Automated Refraction System. The system provides training through a combination of narrated video, graphics and step-by-step instructions, and it's all available 24/7 on the Topcon website for registered users. Users are also shown how to create customized refraction programs with the CV-5000S.

Visit www.topconmedical.com/products. ■

Meetings + Conferences

October 2013

■ **18-20.** *Pioneers in Optometry Regional Conference.* Renaissance Hotel & Convention Center, Tulsa, Okla. Hosted by: Oklahoma Association of Optometric Physicians. CE hours: 18. Contact Heatherlyn Burton at heatherlyn@oaop.org or call (405) 524-1075. Visit www.pioneersinoptometry.org.

■ **19-20.** *VOA Fall Conference.* Great Wolf Lodge, Williamsburg, Va. Hosted by: Virginia Optometric Association. Contact Bo Keeney at (804) 643-0309. Visit www.thevoa.org.

■ **19-21, 23-25.** *CE in Italy: Florence and/or Castiglion Fiorentino, Tuscany.* To register for one or both of these programs, contact James Fanelli, OD, at jamesfanelli@ceinitaly.com or call (910) 452-7225. Visit www.ceinitaly.com.

■ **22.** *ONS Fall 2013 Educational Symposium.* Sheraton Seattle, Seattle. Hosted by: Ocular Nutrition Society. For more information, contact info@ocularnutritionsociety.org or visit www.aaopt.org/meetings/academy2013.

■ **23-26.** *Academy 2013 Seattle.* Washington State Convention Center, Seattle. Hosted by: American Academy of Optometry. Visit www.aaopt.org/meetings/academy2013.

■ **27.** *17th Continuing Education Event.* Carlyle on the Green, Farmingdale, NY. Hosted by: Ophthalmic Consultants of Long Island. Visit www.oclipartner.com.

■ **29-30.** *Fall Seminar.* Lansing Center, Lansing, Mich. Hosted by: Michigan Optometric Association. Call (517) 482-0616. Visit www.themoa.com.

■ **30.** *Glaucoma: Pharmacology.* West Los Angeles VA, Los Angeles. Hosted by: Marshall B. Ketchum University/Southern California College of Optometry. Contact ce@ketchum.edu or call (714) 449-7495. Visit www.ketchum.edu/ce.

November 2013

■ **1.** *Low Vision/TBI.* Las Vegas VA, Las Vegas. Hosted by: Marshall B. Ketchum University/Southern California College of Optometry. Contact ce@ketchum.edu or call (714) 449-7495. Visit www.ketchum.edu/ce.

■ **2.** *Fall CE Conference.* Baton Rouge Marriott Hotel, Baton Rouge, La. Hosted by: Optometry Association of Louisiana. Contact James Sandefur at optla@bellsouth.net or call (888) 388-0675. Visit www.optla.org.

■ **2-3.** *2013 Annual Convention and CE Forum.* Hyatt Regency Baltimore, Baltimore, Md. Hosted by: Maryland Optometric Association. Contact Jennifer Levy at jlevy@marylandoptometry.org. Visit www.marylandoptometry.org.

■ **2-3.** *Essentials in Eyecare: Board Certification Preparatory & Optometric CE Program.* Marriott Pittsburgh North, Pittsburgh, Pa. Hosted by: Pennsylvania Optometric Association. CE hours: 16. Email ilene@poaeyes.org or visit http://pennsylvania.aoa.org.

■ **2-3.** *Glaucoma Grand Rounds Program with Live Patients.* Western University College of Optometry, Pomona, Calif. CE hours: 16. Email ceoptometry@westernu.edu or call (909) 706-3493. Visit www.westernu.edu/optometry-continuing-education.

■ **7-10.** *VOA Voyages in Vision Conference.* Frenchman's Reef & Morning Star Resort, St. Thomas, US Virgin Islands. Hosted by: Virginia Optometric Association. Featured speakers: Andrew Holzman, MD, Jeffrey Michaels, OD, and Kurt Steele, OD. CE hours: 8. For more information, call Bo Keeney at (804) 643-0309. Visit www.thevoa.org.

■ **8-9.** *WOA Primary Care Symposium.* Madison Marriott West Hotel, Middleton, Wis. Hosted by: Wisconsin Optometric Association. Contact Joleen Breunig at joleen@woa-eyes.org or (608) 824-2200. Visit www.woa-eyes.org.

■ **8-9.** *2013 CE Charleston.* Doubletree Suites, Charleston, SC. Hosted by: Pacific University College of Optometry. Contact Jeanne Oliver at jeanne@pacificu.edu or (503) 352-2740. Visit www.pacificu.edu/optometry/ce.

■ **8-10.** *ALOA Annual Convention.* The Wynfrey Hotel, Birmingham, Ala. Hosted by: Alabama Optometric Association. Contact Jo Beth Wicks at jobeth@alaopt.com or (334) 273-7895. Visit www.alaopt.org.

■ **10.** *Virginia Academy of Optometry Annual Educational Conference.* The Inn at Fredricksburg Square, Fredricksburg, Va. Hosted by: Virginia Academy of Optometry. CE hours: 4. Featured speaker: Bruce Onofrey, OD, RPh. For more information, email vaacadoptom@yahoo.com.

■ **22-24.** *New Technology & Treatments East Coast.* Westin, Alexandria, Va. Hosted by: *Review of Optometry*. CE hours: 15. Program chair: Paul Karpecki, OD. Faculty: Derek Cunningham, OD; Douglas Devries, OD; Joseph Sowka, OD. Contact Lois DiDomenico at ReviewMeetings@Jobson.com or (866) 658-1772. Visit www.revoptom.com/conferences.

December 2013

■ **2-6.** *World Diabetes Congress.* Melbourne Convention and Exhibition Centre, Melbourne, Australia. Hosted by: International Diabetes Federation. For more information, email cmenet@jhmi.edu or call (305) 326-6110. Visit www.hopkinscme.edu.

■ **5-7.** *Johns Hopkins 26th Current Concepts in Ophthalmology.* Turner Auditorium, Johns Hopkins University School of Medicine, Baltimore, Md. CE hours: 20. Hosted by: Johns Hopkins University School of Medicine. For more information, email wdc@idf.org. Visit www.worlddiabetescongress.org.

■ **7.** *Ophthalmic Imaging 2014: Optical Coherence Tomography Applications and Future Technology.* Westin The Breakers, Palm Beach, Fla. Hosted by: Bascom Palmer Eye Institute. For more information, email bpeicme@med.miami.edu or call (305) 326-6110. Visit www.bascompalmer.org.

■ **7-8.** *30th Annual Cornea, Contact Lens & Contemporary Vision Care Symposium.* Westin Memorial City, Houston, Texas. Hosted by: University of Houston College of Optometry. CE hours: 16. For more information, email optce@uh.edu or visit http://ce.opt.uh.edu.

January 2014

■ **11.** *2014 Glaucoma Symposium.* Willows Lodge, Woodinville, Wash. Hosted by: Pacific University College of Optometry. CE hours: 7. Contact Marti Fredericks at frederim@pacificu.edu or (503) 352-2929. Visit www.pacificu.edu/optometry/ce..

■ **11-12.** *Eye Care Associates Annual Meeting and Continuing Education Program.* Williamsburg Hotel, Williamsburg, Va. Hosted by: Eye Care Associates. Presenter: Scott Morris, OD. CE hours: 12. Contact Linda Cavasos at ECA_linda@hotmail.com or (804) 356-5165. Non-members are welcome.

■ **18-20.** *25th Annual Berkeley Practicum.* DoubleTree Hotel, Berkeley Marina, Berkeley, Calif. Hosted by: University of California, Berkeley, School of Optometry. CE hours: 20. For more information, email optoCE@berkeley.edu. Visit http://optometry.berkeley.edu/ce/berkeley-practicum.

■ **19-25.** *2014 Island Eyes Conference.* Grand Wailea, Maui, Hawaii. Hosted by: Pacific University College of Optometry. For more information, contact Jeanne Oliver at jeanne@pacificu.edu or (503) 352-2740. Visit www.pacificu.edu/optometry/ce.

■ **24.** *2014 Winter CE.* PCLI, Pearl District, Portland, Ore. Hosted by: Oregon Optometric Physicians Association. CE hours: 8. For more information, email lynne@oregonoptometry.org. Visit www.oregonoptometry.org.

March 2014

■ **12-16.** *SECO International 2014.* Building A, Georgia World Congress Center, Atlanta. CE hours: 400+. Contact cweems@secostaff.com. Visit www.seco2014.com.

May 2014

■ **2-3.** *Educational Meeting 2014.* Mission Inn, Howey-in-the-Hills, Fla. Hosted by: Florida Chapter of the American Academy of Optometry. Featured speakers: Leo Semes, OD, Albert Woods, OD, and Tim Underhill, OD. CE hours: 10. Contact Arthur T. Young, OD, at eyeguy4123@msn.com.

August 2014

■ **1-3.** *Annual Educational Retreat 2014.* South Seas Island Resort, Sanibel Island, Fla. Hosted by: South West Florida Optometric Association. Featured speakers: Ben Gaddie, OD, Carlo Pelino, OD, April Jasper, OD, and Ron Foreman, OD. CE hours: 18. Contact Brad Middaugh, OD, at swfoa@att.net or (239) 481-7799. Visit www.swfoa.com.

To list your meeting, please send the details to:

Erin Kelly
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Smooth Operator

Surgeons expect us to deliver a patient with a pristine ocular surface. Here's how superficial keratectomy can help. **By Derek N. Cunningham, OD, and Walter O. Whitley, OD, MBA**

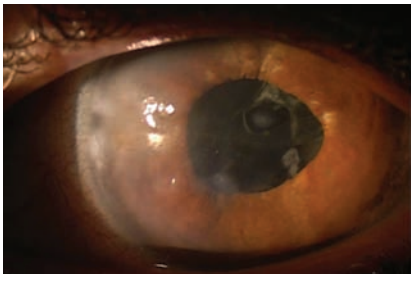
Referring ODs play a key role in cataract surgery—ensuring preoperative ocular surface health and integrity falls to us. This is particularly important now that a good refractive outcome has become an essential part of the patient's expectations.

Anterior blepharitis, meibomian gland dysfunction and dry eye disease are all common conditions that, if left untreated, can thwart postoperative success. Optometrists actively manage these prior to surgery. But what about other corneal conditions that can affect refractive outcomes, such as pterygia, corneal guttata, Fuchs' dystrophy, epithelial basement membrane dystrophy and superficial corneal opacities? These can also undermine surgical outcomes due to poor tear distribution.

When determining IOL calculations, surgeons base lens selection on keratometry, corneal topography, axial length, various IOL formulas and other factors. Without a smooth corneal surface, measurements become more variable, reducing surgical precision.

Many surgeons commonly perform superficial keratectomy prior to cataract surgery to prevent adverse outcomes. Referring ODs should be attuned to the scenarios in which this is warranted and make the appropriate recommendation. Three of note are as follows:

• *Salzmann's nodular degeneration* presents with bluish-white peripheral nodules raised above the corneal surface. It is slowly progressive, more prevalent in females and often occurs in tandem with long-standing scars and chronic uveitis. The raised surface may be associated with tear film abnormalities, irregular astigmatism and difficulties in contact lens fitting.[1]



Salzmann's nodular dystrophy.

Anterior basement membrane dystrophy.

• *Band keratopathy* is characterized by the appearance of a band across the central cornea, formed by the precipitation of calcium salts on the corneal surface (directly under the epithelium).[2] Its etiology is typically previous infection or inflammation. Depending on depth of corneal penetration, superficial opacities can be removed. Visual acuity can be impaired depending on the density of the corneal salts.

• *Anterior basement membrane dystrophy* is the most common anterior corneal dystrophy seen in practice. Clinical findings include bilateral presentations, map-like patterns, fingerprint lines, fine dots (microcysts) or comma-shaped opacities that may be variable over time. It can lead to recurrent corneal erosion and blurred or double vision due to the poor adhesion to the corneal basement membrane.

Depending on surgeon preference, superficial keratectomy can be performed in the operating room or at the slit lamp. Topical proparacaine or tetracaine is used for anesthesia. Prior to removal of the opacity, sodium fluorescein is used to identify surface irregularities and "sick" epithelium. Using a dry cellulose sponge or a scarifier blade, the treatment is limited to the corneal epithelium, which is removed down to Bowman's layer. After removal, the clear corneal surface is polished with a cellulose sponge, topical antibiotics are administered, and a bandage lens is placed to promote healing and patient comfort.[1]

Post-op care is similar to photorefractive keratectomy, with visits at one day, one week and one month. Patients are prescribed topical antibiotics and NSAIDs QID for one week, and topical steroids over several weeks to minimize corneal haze and scarring. Complications include a recurrence of corneal condition, infection, HSV reactivation and delayed epithelial healing. When the cornea is healed in one to two months, patients can be reappointed for cataract evaluation. ■

1. Available at: http://oculist.net/downaton502/prof/ebook/duanes/pages/v6/v6c028.html.
2. Available at: http://emedicine.medscape.com/article/1194813-overview.

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Diagnostic **Quiz**

Connect the Dots

By Andrew S. Gurwood, OD

History

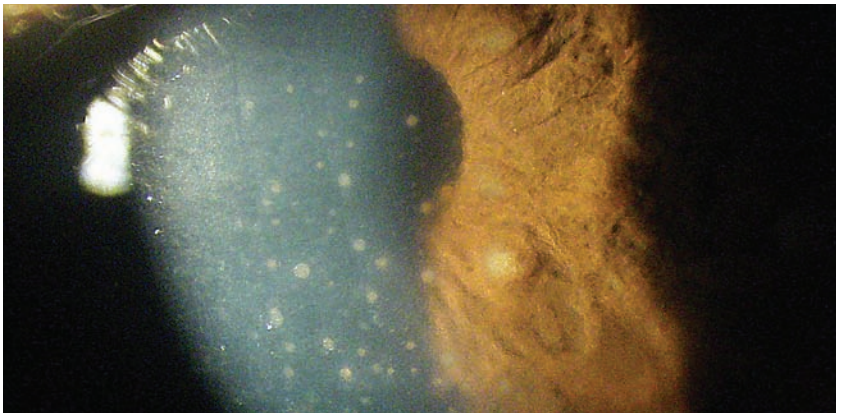
A 57-year-old black female presented emergently with a chief complaint of painful vision loss in her right eye.

The patient explained that she had previously experienced similar episodes in both eyes, but never this severe. She said that, in the past, the episodes always resolved without any treatment.

The patient had no documented history of ocular injury or glaucoma. Her systemic history was significant for hypertension, which was properly controlled with hydrochlorothiazide. She reported no known allergies, but mentioned recently undergoing laboratory work for suspected autoimmune disease.

Diagnostic Data

Her best-corrected visual acuity measured 20/50 OD and 20/20 OS. External examination was normal, with no evidence of afferent pupillary defect. Refraction uncovered mild hyperopia with negligible changes to her habitual spectacle prescription. Intraocular pressure measured 16mm Hg OU.



Our patient complained of painful vision loss in her right eye. What's the diagnosis?

Biomicroscopy revealed normal lids and lashes OU. Dilated funduscopic examination found quiet grounds and normal posterior poles OU. The pertinent anterior segment findings from the patient's right eye are illustrated in the photograph. The left anterior segment appeared normal.

Your Diagnosis

How would you approach this case? Does the patient require any additional tests? What is your diagnosis? What is the likely prognosis?

To find out, please visit www.revoptom.com. Click on the cover icon for this month's issue, and then click "Diagnostic Quiz" under the table of contents. ■

Thanks to Monica Ma, OD, of Burlington, NC, for her contributions to this case.

Retina Quiz Answers *(from page 94):* 1) c; 2) b; 3) d; 4) c.

Next Month in the Mag

Our November issue features the 19th Annual Surgery Report. Topics include:

- *How Do We Care for Refractive Surgery's Early Adopters?*
- *Current Trends in Surgical Comanagement*
- *Will CXL Expand the Refractive Surgery Market?*

Also in November:

- *Optometric Study Center: An Overview of Uveitis Management* (earn 2 CE credits)
- *Learn to Safely Use Steroids in Glaucoma Patients*
- *Pediatric Vision Therapy: Big Accomplishments for Little Kids*

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