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October 15, 2012

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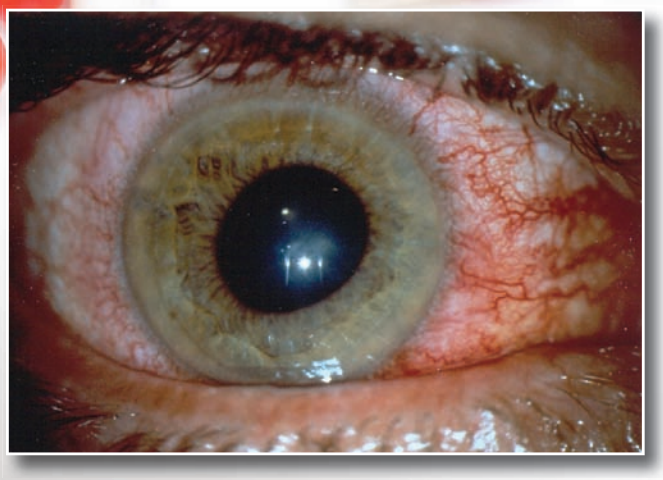

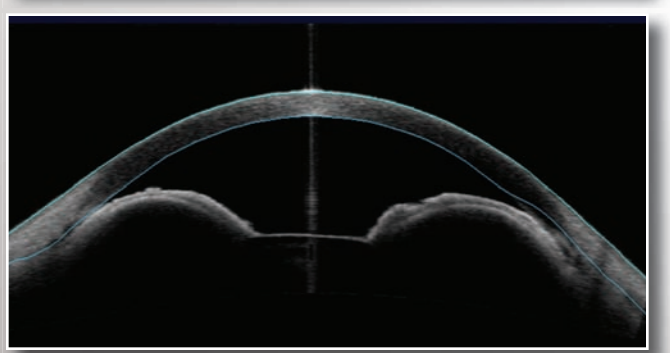

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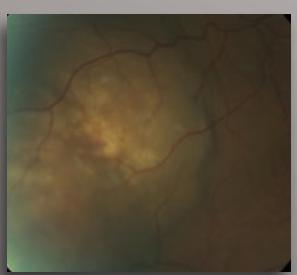

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An estimated 600 million people in the world are blind or vision impaired simply because they don't have access to an eye exam and glasses. World Sight Day is a global event that focuses on bringing attention to blindness and vision impairment. It is observed on the 2nd Thursday of October each year.

Marchon is inviting you to take part in the World Sight Day Challenge by participating in an upcoming event in your area. Not only will you be having fun, but you will be raising valuable funds for Optometry Giving Sight which transforms lives through the gift of vision.

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Not ready to be an athlete, you can still support World Sight Day. Simply click on this link https://givingsight.myetap.org/fundraiser/wsdc2012_usa/ and make a donation.

Visit marchon.com/cms/sightday to see a full list of suggested events in your area.

OPTOMETRYGIVINGSIGHT | MARCHON

VOL. 149 NO. 10 ■ OCTOBER 15, 2012

IN THE NEWS

Myopic, black, young adults have higher IOP and thinner corneas compared to other ethnic groups, according to new data from the **COMET study** published in August's *Optometry and Vision Science*. "Given the risk factors for POAG (i.e., higher IOP, thinner central corneal thickness [CCT], myopia and African descent), these findings suggest that examination of myopic blacks should begin at a young age [prior to adulthood] and include both IOP and CCT," says lead author **Karen Fern, O.D.**, of University of Houston College of Optometry.

The **FDA** granted **Bausch + Lomb** four additional labeling indications for **Besivance** (besifloxacin 0.6%). The eye drop now is now indicated to treat **bacterial conjunctivitis infections** caused by susceptible isolates of *Pseudomonas aeruginosa, Aerococcus viridans, Moraxella catarrhalis* and *Staphylococcus warneri*. In addition, the FDA has approved the company's New Drug Application for **Lotemax Gel** (loteprednol etabonate 0.5%) for treatment of post-op inflammation and pain following ocular surgery.

Of the 214 optometrists who took its **Board Certification Examination** in July, the **American Board of Optometry** announced that 198 of them (92.5%) passed, successfully becoming **ABO Diplomates**. Meanwhile, ABO has added **new testing dates** to its winter examination window, which will now begin on December 10, 2012 and run through January 20, 2013. Registration is open, and applications for active candidacy are accepted on a rolling admission.

Most Optometrists Skip Annual Eye Exams

Two-thirds of O.D.s don't get annual exams. About 12% haven't had one in a decade. **By John Murphy, Executive Editor**

When it comes to getting an annual eye exam, optometrists aren't much better than average Americans. Fewer than one-third (31.7%) of O.D.s say they've had a full eye exam in the past year, according to results from *Review of Optometry*'s recent Diagnostic Technology Survey.

About 12% of O.D.s haven't had an eye exam in a decade or longer.

Specifically, we asked optometrists, "How long has it been since you had a complete eye examination?" The good news is that about 66% of optometrists answered they had one in the last two years.

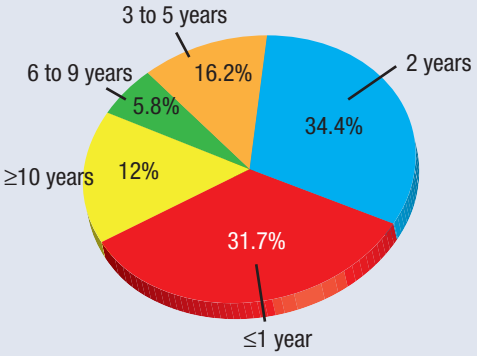
In comparison, 55% of adult Americans said they had a dilated exam within two years.[1]

But that means that about one-third of optometrists haven't had a complete eye exam in three years or more.

In fact, about 16% said it's been three to five years, 5.8% said it's been six to nine years, and nearly 12% of optometrists haven't had an eye exam in 10 years or more.

(*See also "Get Your Head Examined!" page 95.*)

Doctor, how long has it been since *you* had a complete eye examination?



n = 259

Source: *Review of Optometry*'s 2012 Diagnostic Technology Survey

1. Dilated eye examinations. National Eye Institute. Available at: www.nei.nih.gov/healthyvision/objective/examinations.asp. Accessed September 19, 2012.

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Small Number of Glaucoma Patients Account for the Largest Costs

A small number of open-angle glaucoma (OAG) patients make up a large amount of all glaucoma-related costs: The costliest 5% of patients receiving glaucoma-related care were responsible for a whopping $10,202,871—almost 25% of all costs, according to a study published in September's *American Journal of Ophthalmology*.

Researchers at the University of Michigan Kellogg Eye Center reviewed claims data from 19,927 newly diagnosed OAG patients enrolled in a large U.S. managed care network to identify glaucoma-related charges for all OAG patients from 2001 to 2009.

The researchers identified risk factors associated with the costliest patients, including:

- Younger age.
- Living in the northeastern United States.
- Undergoing cataract surgery.
- Having other eye conditions.

They also identified a "spike" in the mean costs. Within two years of diagnosis, 37.8% of all glaucoma-related charges were incurred in the first six months.

Identifying these patterns and patient characteristics is just the first step in finding ways to reduce the disease burden and costs associated with the care of the patients, the study authors concluded.

In the meantime, "the importance of continuing education cannot be overemphasized," says co-author David Musch, Ph.D., M.P.H. "Keeping current on results from key clinical trials by reading the peer-reviewed literature and not just relying on advertisements is crucial. All eye care providers, whether ophthalmologists or optometrists, need to base their treatment decisions on evidence that treatment is necessary."

Stein JD, Niziol LM, Musch DC, et al. Longitudinal trends in resource use in an incident cohort of open-angle glaucoma patients: resource use in open-angle glaucoma. Am J Ophthalmol. Sep 2012;154(3):452-459.

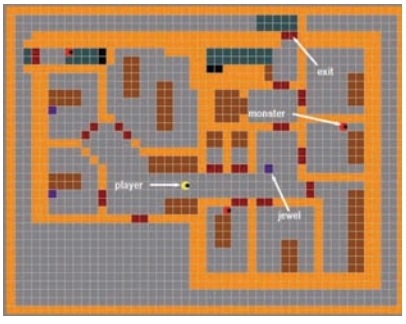
'Video' Game Helps Blind Learn to Navigate Through Real World

A new "video" game—actually, an audio game—has been successful in teaching blind players navigation skills using only audio cues.

Lotfi B. Merabet, O.D., Ph.D., M.P.H., and Jaime Sanchez, Ph.D., of Harvard's Massachusetts Eye and Ear Infirmary, led the research team that developed the Audio-based Environment Simulator. This virtual reality "soundscape" environment, with all the challenges of a video game, uses audio-based cues to teach blind users about the layout of a previously unfamiliar building.

Study participants weren't aware of the software's overall purpose. But, researchers say, they were able to acquire relevant information about the spatial layout and transfer those navigational skills to a large-scale, three-dimensional, real-world indoor navigation task.

Wearing headphones, a blind study participant (right) plays the game while an investigator follows her progress.



In gamer mode, the player uses auditory cues to move around, locate hidden gems and avoid being caught by monsters.

Merabet LB, Connors EC, Halko MA, Sánchez J. Teaching the blind to find their way by playing video games. PLoS One. 2012;7(9):e44958. Epub 2012 Sep 19.

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LV Researcher Lands $1.9M Grant to Help Seniors to Safely Cross the Street

Low vision specialist Shirin E. Hassan, B.App.Sc.(Optom.), Ph.D., assistant professor at Indiana University School of Optometry, has secured a $1.9 million grant from the National Institutes of Health to evaluate a street-crossing program for visually impaired pedestrians.

With this funding, Dr. Hassan will investigate the effectiveness of an established orientation and mobility street-crossing training program. Specifically, she intends to improve the overall safety of high-risk pedestrians, such as the elderly, visually impaired and/or blind.

"To support older adults and help them cope with the changes of aging—in particular with visual impairments and blindness—there needs to be increased effort to improve pedestrian safety that will maximize an individual's independence and quality of life," Dr. Hassan says. "Having successfully secured funding, I can now determine whether or not a street-crossing training program provides an older adult with low vision with enough scope and skill to cross a street confidently and safely."

Photo: Indiana University

Low-vision optometrist Shirin E. Hassan, far left, monitors the responses of elderly pedestrians during street-crossing decision-making experiments.

Dr. Hassan will also conduct a series of street-crossing experiments in realistic, outdoor traffic simulations during the next five years. "When making street-crossing decisions, if pedestrians do not take into account their reduced vision and slow walking speed, we might expect to see a corresponding decrease in their decision-making accuracy and/or reliability," Dr. Hassan says.

She anticipates that her evidence-based research and subsequent clinical recommendations will help low vision optometrists and visual rehabilitation specialists determine if and when they should refer their patients for orientation and street-crossing training.

Currently, Dr. Hassan is seeking study participants age 65 and older, irrespective of visual status. For more information, visit www.opt.indiana.edu/People/HassanStudy.aspx.

Hollywood optometrist Morton Greenspoon poses with Lou Ferrigno on the set of "The Incredible Hulk."

The History of Contact Lenses in the Movies

Oscar nominee Morton Greenspoon, O.D., who has fit more actors and actresses with cosmetic contact lenses than any other person, presents the "History of Contact Lenses in the Movie Industry" at this year's Optometric Historical Society event at the American Academy of Optometry meeting.

Dr. Greenspoon has been providing special effect contact lenses to the film industry for more than half a century. He changed Elvis Presley's eyes from blue to brown for "Flaming Star," and he provided Michael Jackson's werewolf eyes in the landmark video "Thriller." His more recent work can be seen in the "Twilight" saga. In addition to telling about his experiences with some of Hollywood's brightest stars, he will share the story of one of the first film moguls, who was an optometrist and a contemporary of Thomas Edison. The event takes place in room 229A of the Phoenix Convention Center on Friday, October 26, at 10 a.m.

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Color Markers Would Let You See Alzheimer's at the Slit Lamp

Imagine differentially diagnosing Alzheimer's and other neurodegenerative diseases with just an eye exam and simple eye drops or ointment.

That's the hope of scientists at the University of California, San Diego, who have devised several new fluorescent probes that identify different, though related, degenerative brain diseases, including Alzheimer's, Parkinson's and Creutzfeldt-Jakob.

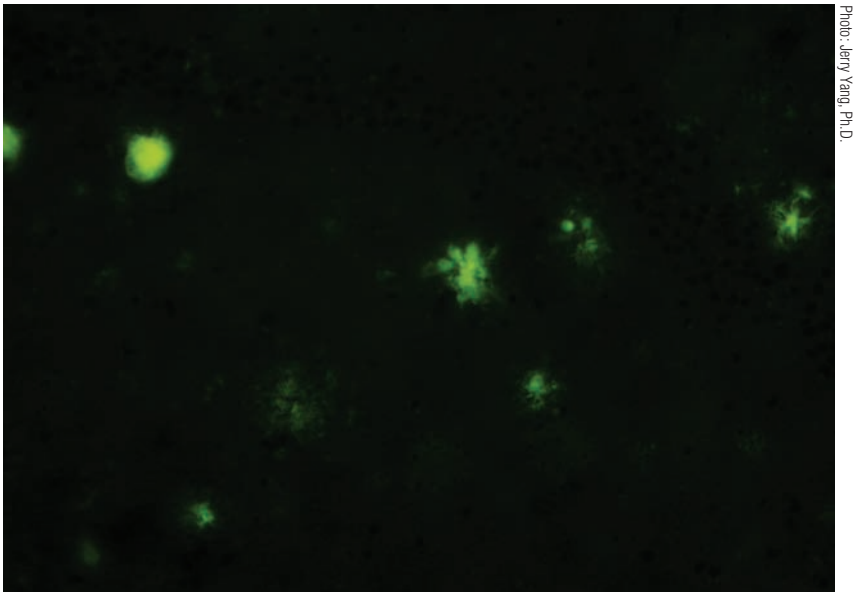

Photo: Jerry Yang, Ph.D.

Fluorescent probes, visible with ordinary ophthalmic equipment, glow different colors depending on the type of neuro disease. Here, the diagnostic probes glow green when bound to amyloid associated with Alzheimer's disease.

The symptoms of these disorders overlap, and methods to diagnose and monitor them are not very specific. But one property they have in common is the accumulation of amyloid plaques. So the researchers developed fluorescent probes that attach themselves to these amyloids.

The probe's color varies depending on the physical properties of the different amyloid proteins. The team demonstrated that one of their probes glows yellow when marking amyloid deposits associated with prion disease, but it glows green when it binds to amyloids associated with Alzheimer's disease.

"The key trick here is that the small differences in the proteins that make up different forms of amyloid interact differently with our fluorescent probes to result in measurably different colors of the emitted light," says Jerry Yang, Ph.D., one of the project's leaders and a professor of chemistry and biochemistry at UC San Diego. "The approach has the potential to help distinguish disease progression for a number of amyloidogenic neurological disorders."

Because amyloids accumulate in the eye as well as the brain, this discovery offers hope that neurodegenerative diseases could be differentially diagnosed using only eye drops and ordinary exam equipment.

"The molecules were designed to conform to standard ophthalmic instruments that are widely available," Dr. Yang says. "Although for our detailed studies we used a microscope that is commonly limited to research use due to cost, a key feature in the design of our probes is that they have the potential to light up in a window of light that can be viewed by common instruments available in hospitals, clinics and optometrists' offices."

Currently, there is no single test that diagnoses Alzheimer's. Doctors typically run a battery of neurophysiologic tests as well as brain scans to detect signs of the disease. Using the fluorescent markers offers a lower cost, more accessible and safer alternative to brain imaging, the researchers say.

"There are many other amyloidogenic disorders (most related to neurodegeneration but not all), and we are seeking to develop methods to distinguish as many of them as possible," Dr. Yang says. "The research is ongoing, and we hope to be able to report our finding soon."

Meanwhile, the technology has been licensed for commercial development of diagnostic tests for human neural disease.

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Bio-Chip to Measure Glucose Levels in Tears

With the development of new biosensor technology, diabetic patients may no longer have to put their blood, sweat and tears into glucose monitoring.

Instead, researchers in Germany have developed a nano-sized biosensor to continuously and noninvasively measure glucose levels using tissue fluids in just sweat *or* tears.

The 0.5mm by 2mm chip includes a nanopotentiostat as well as the diagnostic system. To measure glucose levels, an enzyme—glucose oxidase—is used to convert glucose into hydrogen peroxide and other chemicals, whose concentration can then be determined with the potentiostat. This measurement is used to calculate the glucose level.

The chip converts the electrochemical signals into digital data that can be transmitted wirelessly to a mobile device. The researchers, a team at the Fraunhofer Institute for Microelectronic Circuits and Systems, say that the sensor uses substantially less power than previous attempts—which increases the durability of the system and would allow the patient to wear the sensor for weeks or even months. Another benefit is that the sensor can be supplied with power through radio frequency.

The hope is that one day this system could be used to control an implanted miniature pump to inject the proper amount of insulin according to the measured glucose levels. ■

Photo: Fraunhofer Institute for Microelectronic Circuits and Systems IMS

The patient's finger points to the nano-sized biosensor, which combines glucose measurement and digital analysis, and can transmit data to a mobile device.

California Exchange Will Reconsider Stand-Alone Vision Plans

Stand-alone vision plans have been barred from California's Health Benefit Exchange, although such vision plans will be permitted to participate in a separate exchange being established for small businesses. VSP Global and Superior Vision Services, both based in Rancho Cordova, Calif., voiced their disagreement with the decision—and VSP even suggested that it might move out of state.

But in early October, California Insurance Commissioner Dave Jones sent a letter to the benefit exchange board urging it to reverse its decision. He reasoned that improved access to health care and consumer choice make it appropriate to allow stand-alone vision coverage to be offered directly through the individual insurance exchange.

So VSP may not have to move out just yet... At its next meeting on October 30, the benefit exchange board will reconsider whether stand-alone vision plans will be permitted to participate directly in the individual insurance exchange.

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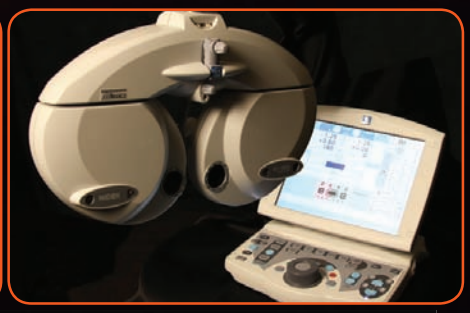
Graphic depiction of OPD-Scan III light transmission of 2520 real data points across a 9.5mm pupil



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HOA [µm]: @4.00mm / Order = 4 — L

	T.Sph	T.Coma	T.Tre	HO
Total:	0.020	0.040	0.025	0.059
Cornea:	0.061	0.108	0.073	0.155
Internal:	0.041	0.085	0.091	0.156

Refraction: VD = 13.75mm

	Sph	Cyl	Axis	RMS
WF@4.00	+1.00	-0.50	105	0.07D
WF@5.42	+0.75	-0.50	111	0.19D
Diff	-0.25	0.00	6	

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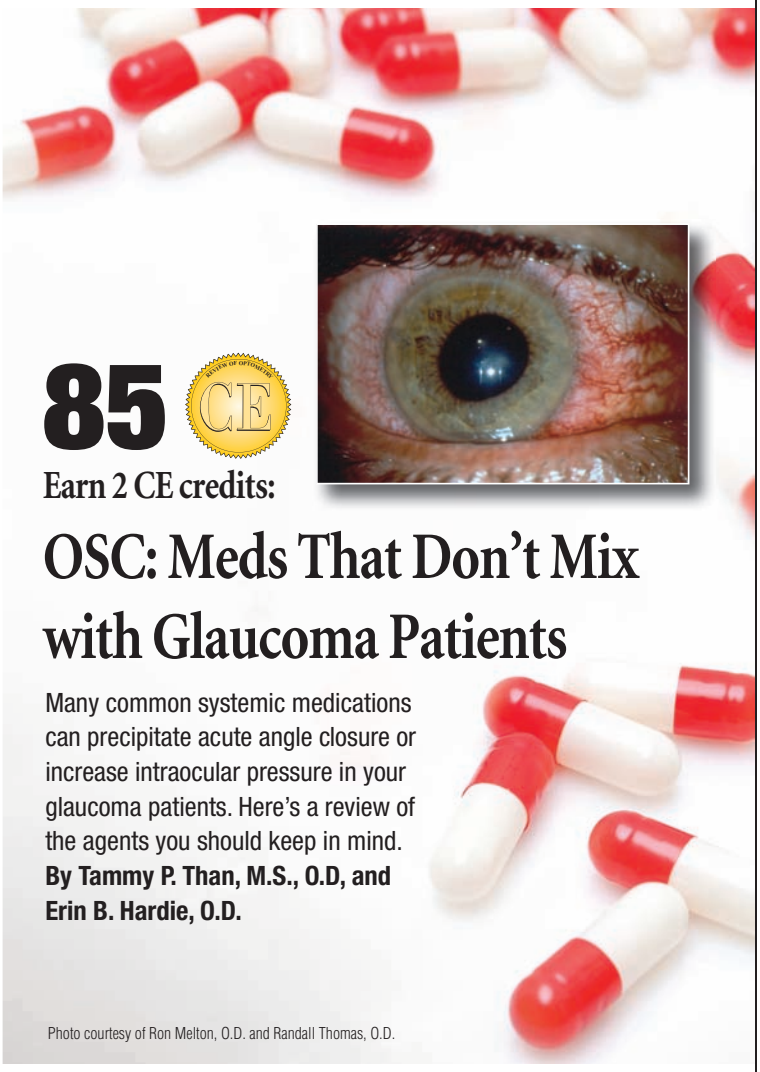

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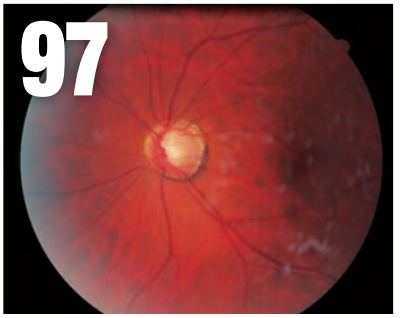

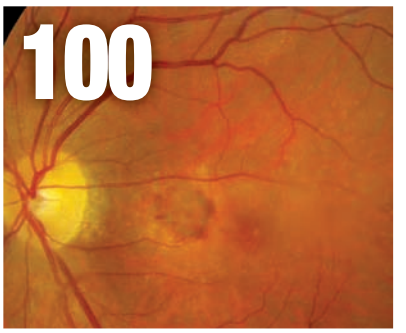

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Letters to the **Editor**

'Enough is Enough'

Thank you for the coverage *Review of Optometry* has done over the years of the Puerto Rico TPA issue.

As you know, I dedicated most of my career to enhance the profession of optometry in Puerto Rico. [*Editor's note: Dr. Negrón began a nationwide petition that called for therapeutic privileges for optometrists in Puerto Rico. The petition has garnered more than 1,400 electronic signatures.*]

But you may not be familiar with the story of Dr. Rafael Toro Landron, who has been on the front lines of the fight as well. Dr. Toro Landron was elected president-elect of the Colegio de Optometras de Puerto Rico. But as an Army Reserve optometrist, he is now obligated to seek a TPA license from another U.S. jurisdiction to keep his commission. [*Editor's note: The U.S. military now requires all optometrists who work in military treatment facilities to have therapeutic prescriptive authority.*] In other words, after 15 years as an optometrist in Puerto Rico, Dr. Toro Landron is obligated by an archaic Puerto Rico practice law to seek a practice license outside of Puerto Rico to continue his military career. Dr. Toro Landron's unit is in Puerto Rico and is now scheduled to deploy to Afghanistan this December. If he were able to stay in Puerto Rico after his deployment, he would become the president of our association in 2014.

After 15 years as an optometrist in Puerto Rico, Dr. Toro Landron is obligated by an archaic Puerto Rico practice law to seek a practice license outside of Puerto Rico to continue his military career.

For my part, after 18 years of practice in Puerto Rico, I decided to relocate to Maryland in a quest to practice perhaps the last years of my career under a system that appreciates and recognizes our preparation and clinical skills as doctors of optometry.

As I'm now close to Washington, D.C., I am committed to continue the fight for TPAs for Puerto Rico. At this time, Dr. Toro Landron is considering relocating also to the mainland after his Afghanistan tour. Both of us love our profession and have dedicated many years trying to enhance the practice of it in Puerto Rico. But in the end, we decided that "enough is enough" and that we need to continue the fight outside of Puerto Rico.

—Osvaldo A. Negrón, O.D.
Baltimore

Osvaldo A. Negrón, O.D., and Rafael Toro Landron, O.D., are each relocating outside of Puerto Rico in order to practice with TPA privileges.

Give Patients Respect

Having respect for people is paramount in forming relationships, and this includes the bond between health care providers and their patients. Our patients treat us with utmost courtesy and hold us in high regard. After all, we hold the keys to diagnosing and treating their problems.

One of the ways we show respect is how we address each other. Patients being treated in examination rooms typically address their health care provider by calling them "Dr. Smith," and the doctor will do what is comfortable for both when in private with the patient.

In many offices' greeting and waiting areas, patients are called

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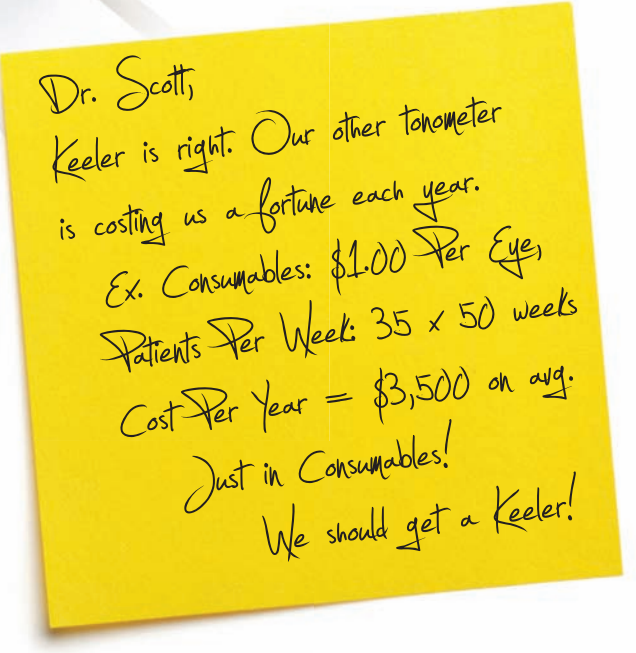

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Letters to the **Editor**

by their first names, many times at a first visit. Typically, a patient will sign in, or be greeted and told to have a seat. After that, a staff member will enter the waiting area and call a patient by his/her first name to escort them to an examination room. The same thing happens in laboratory testing offices.

> *When asked why they call patients by their first names, staff members usually respond that it's because of "privacy issues" or "HIPAA." Nothing could be further from the truth.*

When asked why they call patients by their first names, staff members usually respond that it's because of "privacy issues" or "HIPAA," thinking that the Health Insurance Portability and Accountability Act's Privacy Rule requires that patients be addressed by their first names. *Nothing could be further from the truth*. HIPAA requires that we implement reasonable safeguards and the minimum necessary standard to prevent *medical information* from being communicated and does not prevent us from addressing patients in a polite and respectful manner.

This is from the U.S. Department of Health and Human Services website:

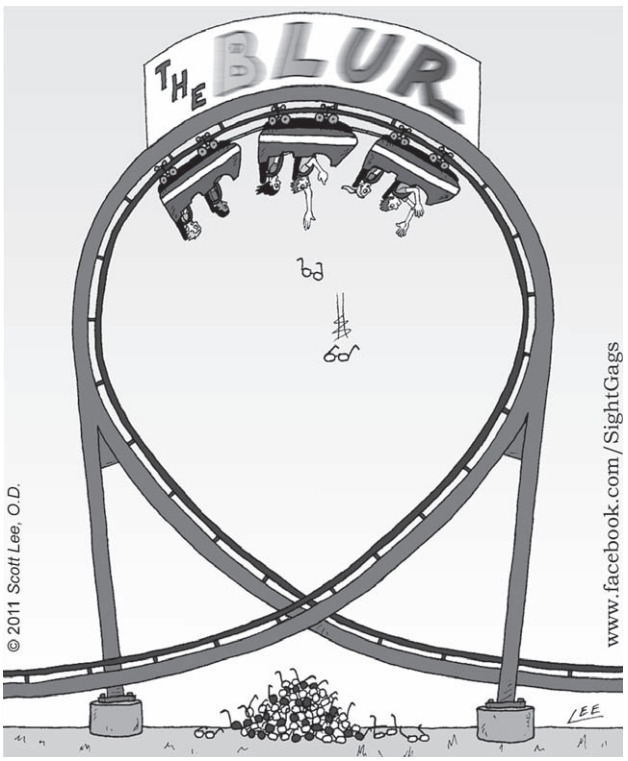
"*May physicians' offices use patient sign-in sheets or call out the names of their patients in their waiting rooms?* Yes. Covered entities, such as physicians' offices, may use patient sign-in sheets or call out patient names in waiting rooms, so long as the information disclosed is appropriately limited. The HIPAA Privacy Rule explicitly permits the incidental disclosures that may result from this practice; for example, when other patients in a waiting room hear the identity of the person whose name is called, or see other patient names on a sign-in sheet. However, these incidental disclosures are permitted only when the covered entity has implemented reasonable safeguards and the minimum necessary standard, where appropriate. For example, the sign-in sheet may not display medical information that is not necessary for the purpose of signing in (e.g., the medical problem for which the patient is seeing the physician)."

Our patients choose us as their health care providers because they trust and respect us. They are often anxious when visiting us. We owe them the excellent customer service they deserve by addressing them in a *respectful* and courteous manner.

—Errol Daniels, O.D.
Buffalo, N.Y.

Sight **Gags**

By Scott Lee, O.D.



For the Record

In September's article, "Lawsuit Ends: Judge Rules Against 'Falsity' of Board Certification," Dr. Art Epstein's affiliation with the American Optometric Society was incorrectly stated. Although Dr. Epstein resigned from the AOS board (to avoid possible conflicts with his role with the American Board of Clinical Optometry), he continues to be an AOS member. *Review* regrets the error.

Save the Date

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7:15pm - 9:00pm	Dinner and CE Seminar
9:00pm	Meet and Greet the Anterior Segment Special Interest Group of the American Academy of Optometry

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Strength in Numbers

Trends indicate that optometrists would be well advised to band together rather than go it alone. **By Jack Persico, Editor-in-Chief**

No man is an island, the poet John Donne said nearly 400 years ago. Are optometrists finally starting to see the wisdom in that? Let's hope so. It's going to be vital to your future.

Solo private practice remains the goal of the vast majority of optometrists. The notion of being your own boss is compelling. But a number of trends today are converging to make solo practice increasingly difficult to sustain, at least without accepting a number of trade-offs and sacrifices.

As we report in this month's annual income survey, the earnings gap between solo practitioners and those in group practice continues to widen. On page 78, Executive Editor John Murphy lays it out in black and white: Optometrists in group settings earned one-third more than solo practitioners.

Group practices can spread out the cost of expensive equipment or major investments like an EMR system across multiple doctors, and each optometrist added to the practice obviously brings in another revenue stream. With its higher gross revenue and better return on investment, group practice wins hands down. Financially, at least.

Taking on a partner also gives you some much-needed breathing room in the schedule. You've got someone to pick up the slack when you're away—and the cash flow doesn't dry up when you take a vacation or reduce your hours.

Those willing to bring in an associate (also covered this month; *see Dr. Cheryl Murphy's article on page 68*) will have their pick of the litter, given that there seems to be a glut of O.D.s entering the market—at least judging from the online commentary one sees among disillusioned optometry students and recent grads. They'll go work for corporate optometry if they must, but they'd rather work for you. And if you don't hire them, the local ophthalmologist just might, leaving you suddenly at a competitive disadvantage. Set the terms of the buy-in to suit your priorities—you're still calling the shots while lightening your workload and laying the groundwork for your practice's future.

Collaboration can take many other forms, and need not always include an equity split. While taking care to avoid any appearance of collusion, there are a number of smart ways for a group of like-minded optometric colleagues to share costs and pool their collective expertise.

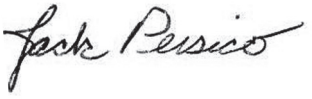
Lots of O.D.s are already part of a buying group, and these seem to be offering ever more than just a great deal on your optical inventory—pooled marketing strategies, web commerce solutions, search engine optimization, billing/coding expertise and other overhead chores can be less of a burden, financially and otherwise, through shared efforts.

For the truly ambitious, the outright merging of optometric practices is being discussed more frequently. If there's another solo O.D. in your neck of the woods with whom you have a good rapport and mutual respect, it might be worth a conversation. In fact, in some areas of the country, a dozen or more optometric practices have merged into a regional powerhouse, gaining enviable buying power with vendors—and name recognition in the community. Just imagine what the other O.D.s in the area who didn't join up (or weren't asked to) must think of that!

Not interested in optometric partnerships? Ophthalmology practices need a constant supply of patients to keep their surgical suite booked, so you could partner with an M.D. group, bringing your practice under their umbrella. Or consider the inverse and bring a part-time ophthalmologist in to *your* shop. For instance, an oculoplastics specialist might come in one day a week to perform in-office procedures. Your patients get the convenience of "one-stop shopping" and you set your practice apart from others nearby.

Lastly, although the impact of healthcare reform on optometry is anyone's guess—let's wait until after the election to see if Obamacare will even survive long enough to be implemented—it's undeniable that insurers are looking to contract with large, efficiently run groups.

You may ultimately decide that "island living" is indeed what you prefer. Just know what you're sacrificing: competitiveness, extra income, work/life balance, an heir apparent for your practice and the ability to practice full-scope optometry at the peak of your skills. That's a pretty steep price to live on Bali Ha'i. ■



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The Toilet Whisperer

Let's talk about the most valuable and important piece of equipment in your entire office. No, it's not that snazzy new OCT. It's your potty. **By Montgomery Vickers, O.D.**

I apologize for writing so much about toilets. But any doctor who's been in practice for more than a month understands that a properly functioning toilet (or three) is as crucial to success in optometry as a slit lamp. Don't believe me? Just stay in practice a while longer and, *behold the power of your toilet!*

I've learned a few things along the way that can be of help. Please read on and you'll continue to have a career in optometry. Throw this away and you take your chances.

1. Every time you go to any store, buy toilet paper. I learned this when I was raising my two (or what seemed like 20) kids. Have at least two paper dispensers in every bathroom in your office.

2. Have a minimum of one bathroom for every three employees. You cannot have too many, even if patients must sit on a toilet for pretesting.

3. Realize that, no matter how many bathrooms you have, at least one will be out of service at any given time. Perhaps this would be the best one for pretesting.

4. Know a plumber. Love a plumber. Marry him if you must. My plumber did 45 minutes of work and then handed me a bill for $376. I told him I was a doctor and I didn't make $376 for 45 minutes. He said, "When I was a doctor, neither did I." (*Cue rim shot.*)

5. Learn how to fix things yourself. At least 99% of the world's problems can be solved by a new flapper. Why can't our elected officials see that?

6. Have a bowl brush in every bathroom. Patients do not like to see you carrying a dripping brush up the hallway just prior to inserting their contact lenses.

7. Buy the good stuff. Patients will forgive you for misdiagnosing glaucoma long before they'll forgive you for stocking your bathroom with cheap toilet paper.

8. No blue water. I will state that again: NO BLUE WATER! It reminds patients of their upcoming trip to the Bahamas and why they cannot afford to update their glasses. (This actually happened in my office.)

9. If a little boy has to go and wants to go by himself, use your time wisely while he is in there: Order a new floor and toilet, and plan to repaint.

10. I don't know what to tell you about this, so I'll ask this question for your wisdom: How does doodoo get on a ceiling fan? I await your reply.

11. When you figure out your quarterly overhead costs, be sure to include the total quarterly cost of air freshener. This should not be less than 15%.

12. If a staff member takes more than five minutes in the loo, confiscate his or her cell phone.

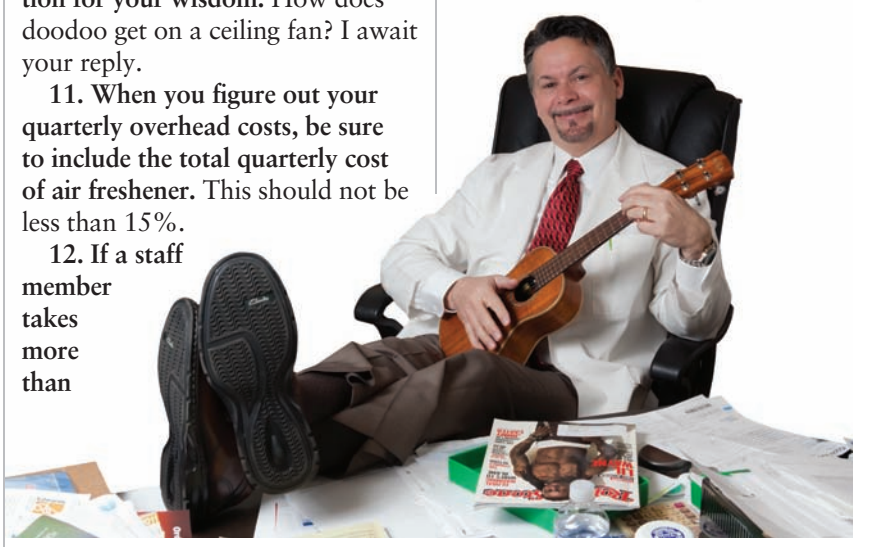
13. Put a sign in the washroom that says, "If you do not wash your hands, our security cameras will forward this room's recordings to Facebook."

14. Consider pay toilets for patients who buy their contacts online. No? OK, what about a one-sheet limit?

15. Before you leave the office, go to the bathroom so your kids don't have to see you run up the stairs every time you walk in the front door.

16. Not following the advice of #15 (above) can cause a little fender bender on the way home, which will become a very major story that someone will someday tell at your funeral.

So, doctors, are you in? Do you have a handle on this? If so, you're now flush with information! ■



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OMG! It's MGD!

Meibomian gland dysfunction is a hot topic—but coding it incorrectly can get you in hot water. Here's how to do it right. **By John Rumpakis, O.D., M.B.A., Clinical Coding Editor**

Since March 2011, when the Tear Film & Ocular Surface Society announced that it had released its conclusions and recommendations from the International Workshop on Meibomian Gland Dysfunction, MGD has been on optometrists' lips perhaps as much as on their patients' lids.

While MGD may be the current darling of the optometric media and of CE lectures on ocular surface disorders, the coding front still lags behind. That's one of the pitfalls of being on the "bleeding edge" of clinical care—the ICD-9 and CPT machinery haven't quite caught up yet.

We're already used to hearing terms like anterior blepharitis, posterior blepharitis and MGD on a daily basis in clinical discourse with our patients and peers, yet none of those terms actually exist in ICD-9 terminology. This means that the very first mistake that most clinicians make is in the diagnostic labeling of MGD. Because MGD doesn't have its own ICD-9 code, a number of other ICD-9 codes are being used instead, with 373.12 (*Internal Hordeolum*) as the most common; however, it's not the most appropriate!

The most appropriate code to use is 373.00 (*Unspecified Blepharitis*).

Why not 373.0 (*Blepharitis*)? Because 373.00 (*Unspecified Blepharitis*) is more appropriate, as it codes to the fifth digit of specificity, which most carriers usually require.

Both of these issues are common mistakes, but ones that are easily rectified in practice.

Treatment Code

On the procedural side, there is really nothing to code other than the office visit itself, using either the 920X2 or the 992XX codes. There is no specific code that describes probing or evacuation of the meibomian glands. I have seen some doctors try to use an inappropriate surgical code to get a higher reimbursement, but then they have to give the money back after an audit.

Plain and simple: For MGD, there is nothing to code but an office visit encounter.

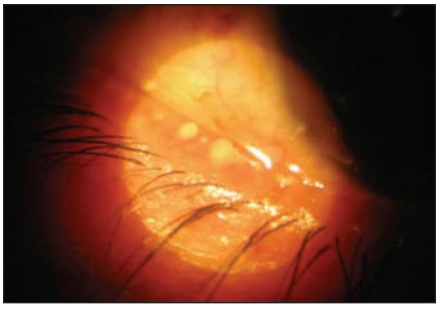
The only exception to this is if you own a LipiFlow Thermal Pulsation System (TearScience), which is an automated device that uses heat and pressure to evacuate the meibomian glands. This technology is described by the level III HCPCS code—0207T—which is specifically assigned to this procedure. As with most level III codes, this one requires that you submit the code to the medical carrier, but the patient is always financially responsible for the balance.

Also, bear in mind that 0207T is a unilateral code, so be sure to either bill it twice or use the modifier -50 on the code to denote the bilateral application of it, change your units to two, and double your fee when filling out the claim form.

MGD is a fast-growing segment of optometric practice, so diagnosing and treating it can be a rewarding way to provide cutting-edge care to your patients and build your practice. But don't let the temptations of poorly kept medical records and "enhanced" claim submissions cause you to say "OMG!" for a different reason. ■

Please send your coding questions and comments to CodingAbstract@gmail.com.

The mistake that most clinicians make is in the diagnostic labeling of MGD—because MGD doesn't have its own specific ICD-9 code.



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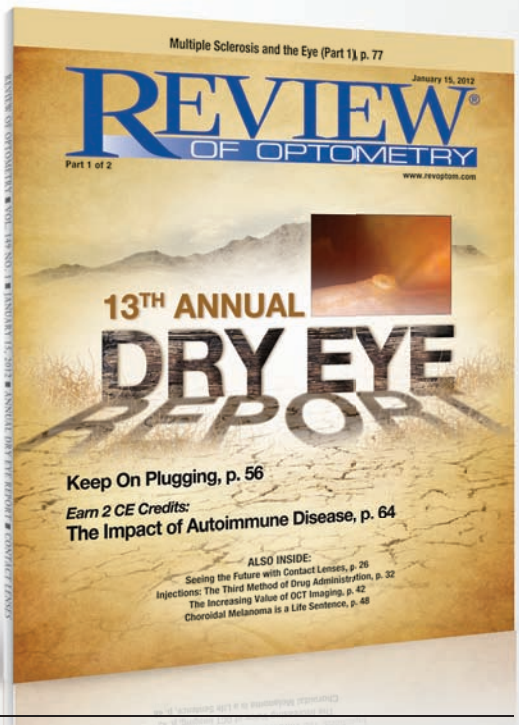

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You've already laid the groundwork for your in-office finishing laboratory—running the numbers, deciding which services you'll offer and choosing your equipment—now you're ready to start laying out the lab.

Don't rush to throw things together. Take the time to map out your floor plan, making certain to consider safety issues, traffic flow, optimal use of space and efficiency. Trust me, it will be the best investment you make.

The Lay of the Lab

The "ideal" spot for a finishing lab *would* be an area situated away from the reception desk, sales floor and exam rooms. With that said, usually only new offices designed from the ground up have that luxury. Work with what you have—I wouldn't discourage anyone from doing in-office finishing just because of location.

Our edger is in a fairly large room located directly off of our main hall, reception area, sales floor and preliminary exam room.

Lens processing times are now so short and the noise is so brief that we're generally able to run a job any time. Often, one of us may even be on the phone in the lab while the edger is running. There's no real dust or other fumes to worry about. We try to cut high-index lenses when we don't have any patients in the building, though, because there is a very strong odor. But of course, there are air handlers that can eliminate the smell.

You will need to find an area that's going to give you enough space to work in comfortably. You could, in theory, run a "lab" in an area just large enough for an edger and a workbench—believe me, it's been done!

However, I would recommend a room at least six feet by six feet so that you have a two-foot deep work area for the edger, a two-foot walking space and a two-foot workbench with benches that could be up to six feet long.

An area of 100 square feet (or 10 feet by 10 feet) would be even better, giving you ample room for storage, piping, plumbing, equipment and space to move.

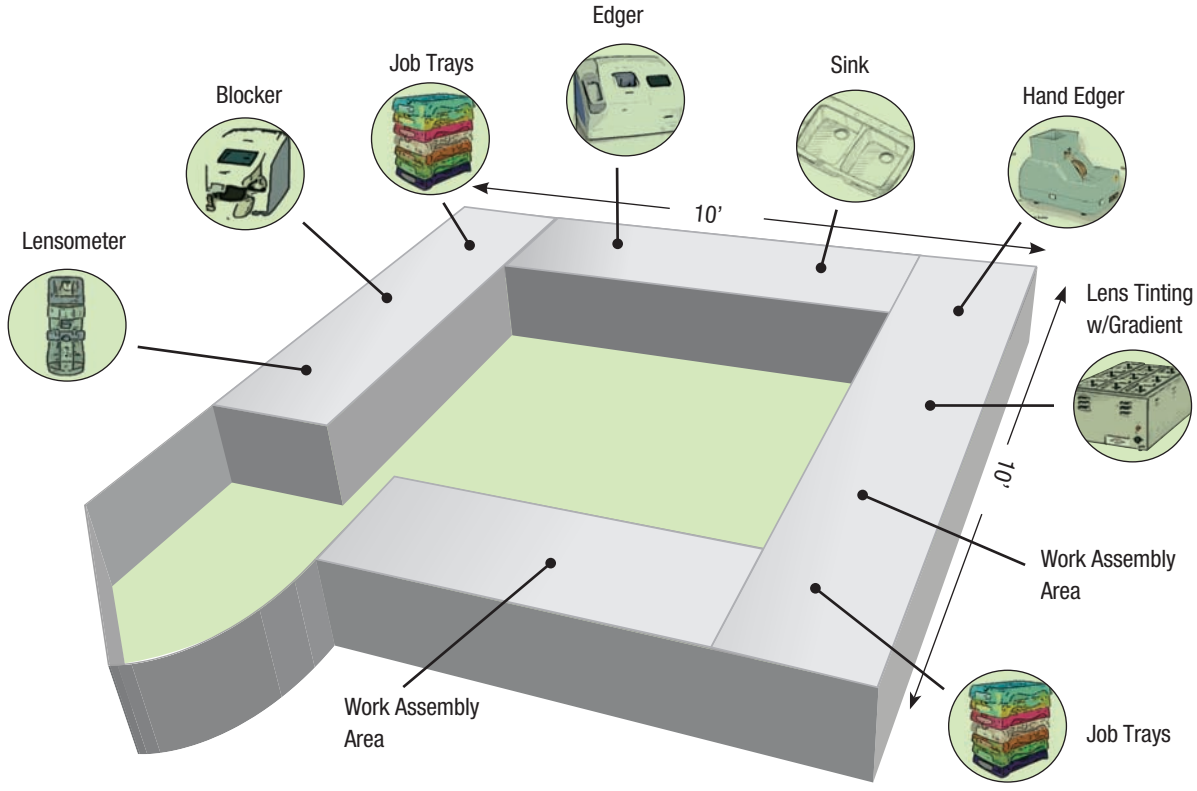
Give Yourself Some Space

No matter how high-end your lab equipment is, if you have it crammed into a space where it really doesn't fit or you don't have an adequate power supply, you're not going to get the job done. In-house finishing is potentially a huge profit maker, so don't risk compromising its success by not planning ahead a little.

Here are a few considerations to think about when you're coming up with the blueprint for your lab.

Counter Space

- You'll want at least five to 20 linear feet of counter space, depending on the equipment you choose—you don't want to have machines stacked on top of each other or crowded beside each other. Give your employees and the equipment enough room to breathe.
- Counter space must be



An area of 100 square feet for your in-office finishing lab gives you ample room for storage, piping, plumbing, equipment and space to move. This schematic gives you an idea of how you might arrange your equipment for optimal efficiency.

able to support 80lb. to 180lb., depending on the type of equipment you have.

• Lesson learned the hard way—be sure you have room to set a work tray alongside the edger! Even better, give yourself enough room to set a work tray along both sides of the edger. This helps with job flow and reduces the chance of mixing up frames and lenses. You want the tray for the job being run next to the edger!

Cabinet Space

• Be generous—when it comes to cabinet space for lens storage, plan for more than you think you'll need. Changes to lens inventory and lens materials can double your space requirements overnight.

• The base cabinet supporting the edger should be a 24-inch sink cabinet, and I recommend using a blind drawer because you'll have the pipelines and drain hose running through the counter directly under the edger.

• Wall cabinets or shelves for storage should not be mounted above the edger because it increases the chances of dropping things on or into the edger, and you are likely to hit your head on them.

• Keep the dimensions of your equipment in mind when selecting your cabinets. Make sure there's enough space between the top of your equipment and the bottom of your cabinets.

Water Supply

• In my experience, for wet edger systems, it's best to have a direct water supply because you'll have lower maintenance costs, better processing results and no overflow concerns. You'll need to get a plumber to run both water and drain lines, and you'll need two solenoid valves to control the water flow.

• If you can't go the plumbing route, you can use recirculating water with a tank and pump system, but I wouldn't recommend it. (The term "edger vomit" is used for a reason—the water that collects in recirculating systems gets quite vile.)

Recirculating water, regardless of filtration level, will always mean running water with some particulates, which at worst can cause premature wear and at best will just make the machine dirty quicker. While a tank and pump system is easier and cheaper to

Workbench equipment is placed in order of use for convenience and efficiency. From right to left, you'll see the lensometer, a blocker, a drawer with leap blocks and roll of leap pads just above the lensometer, a work tray next to the edger, the edger, a hand-stone, the groover and the frame warmer. Notice the drain setup under the edger.

install because you won't need a plumber, it has higher ongoing maintenance costs.

Electrical Supply

• Check all the current/power demands for each piece of equipment and make sure your outlets can handle it. Some devices may require grounded 120V power outlets, while others may need 240V or even a special receptacle. Check with the equipment manufacturer before getting the electrician.

• Chances are you'll need an electrician to come in and provide a dedicated 20 amp circuit for the edger and for a tint tank, if you're using one. Compared to the cost of the edger, having the proper circuitry installed really is quite small, and running a machine on a circuit that is not designed for it or running a machine on an extension cord can damage the motor(s) and sensitive electronics.

• It's best to calculate your electrical requirements after you've decided on a definite layout, because then you can have the electrician install new outlets or move existing ones to accommodate your equipment. You want to be able to keep the electrical cords out of the way so they're not creating any safety hazards.

Writing Your Shopping List

Once you've figured out the lay of the lab, it's time to move on to stocking it. It's crucial for your success to have all the supplies you need before you get started. If you are unable to perform routine services in a timely, professional manner, the customer will go where someone can!

If you already have an established eye care practice, you might have a lot less ordering to do than you think. Here are the must-haves you'll need to run your lab:

• ***Lenses.*** You can't sell what you don't have. The draw of in-house finishing is two-fold: one is "same-day" service for a large majority of single-vision prescriptions, and the second is cutting surface work from the lab. You must stock a wide range of lens

NOW INDICATED FOR

Pseudomonas aeruginosa

Besivance®

besifloxacin ophthalmic suspension, 0.6%

Indication

BESIVANCE® is a quinolone antimicrobial indicated for the treatment of bacterial conjunctivitis caused by susceptible isolates of the following bacteria: *Aerococcus viridans*,* CDC coryneform group G, *Corynebacterium pseudodiphtheriticum*,* *Corynebacterium striatum*,* *Haemophilus influenzae*, *Moraxella catarrhalis*,* *Moraxella lacunata*,* *Pseudomonas aeruginosa*,* *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Staphylococcus hominis*,* *Staphylococcus lugdunensis*,* *Staphylococcus warneri*,* *Streptococcus mitis* group, *Streptococcus oralis*, *Streptococcus pneumoniae*, *Streptococcus salivarius**

*Efficacy for this organism was studied in fewer than 10 infections.

Important Risk Information about BESIVANCE®

- BESIVANCE® is for topical ophthalmic use only, and should not be injected subconjunctivally, nor should it be introduced directly into the anterior chamber of the eye.
- As with other anti-infectives, prolonged use of BESIVANCE® may result in overgrowth of non-susceptible organisms, including fungi. If super-infection occurs, discontinue use and institute alternative therapy.
- Patients should not wear contact lenses if they have signs or symptoms of bacterial conjunctivitis or during the course of therapy with BESIVANCE®.
- The most common adverse event reported in 2% of patients treated with BESIVANCE® was conjunctival redness. Other adverse events reported in patients receiving BESIVANCE® occurring in approximately 1-2% of patients included: blurred vision, eye pain, eye irritation, eye pruritus and headache.
- BESIVANCE® is not intended to be administered systemically. Quinolones administered systemically have been associated with hypersensitivity reactions, even following a single dose. Patients should be advised to discontinue use immediately and contact their physician at the first sign of a rash or allergic reaction.
- Safety and effectiveness in infants below one year of age have not been established.

Please see brief summary of the BESIVANCE® full prescribing information on the adjacent page.

For product-related questions and concerns, call **1-800-323-0000** or visit **www.besivance.com**.

BAUSCH + LOMB

Besivance®
besifloxacin ophthalmic suspension, 0.6%

BAUSCH + LOMB

Besivance®

besifloxacin ophthalmic suspension, 0.6%

Brief Summary: Based on full prescribing information revised September 2012.

To report SUSPECTED ADVERSE REACTIONS, contact Bausch & Lomb Incorporated at 1-800-323-0000 or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

INDICATIONS AND USAGE

Besivance® (besifloxacin ophthalmic suspension) 0.6%, is indicated for the treatment of bacterial conjunctivitis caused by susceptible isolates of the following bacteria:

- *Aerococcus viridans**
- CDC coryneform group G
- *Corynebacterium pseudodiphtheriticum**
- *Corynebacterium striatum**
- *Haemophilus influenzae*
- *Moraxella catarrhalis**
- *Moraxella lacunata**
- *Pseudomonas aeruginosa**
- *Staphylococcus aureus*
- *Staphylococcus epidermidis*
- *Staphylococcus hominis**
- *Staphylococcus lugdunensis**
- *Staphylococcus warneri**
- *Streptococcus mitis* group
- *Streptococcus oralis*
- *Streptococcus pneumoniae*
- *Streptococcus salivarius**

*Efficacy for this organism was studied in fewer than 10 infections.

DOSAGE AND ADMINISTRATION

Invert closed bottle and shake once before use.
Instill one drop in the affected eye(s) 3 times a day, four to twelve hours apart for 7 days.

CONTRAINDICATIONS

None

WARNINGS AND PRECAUTIONS

Topical Ophthalmic Use Only

NOT FOR INJECTION INTO THE EYE.
Besivance® is for topical ophthalmic use only, and should not be injected subconjunctivally, nor should it be introduced directly into the anterior chamber of the eye.

Growth of Resistant Organisms with Prolonged Use

As with other anti-infectives, prolonged use of Besivance® (besifloxacin ophthalmic suspension) 0.6% may result in overgrowth of non-susceptible organisms, including fungi. If super-infection occurs, discontinue use and institute alternative therapy. Whenever clinical judgment dictates, the patient should be examined with the aid of magnification, such as slit-lamp biomicroscopy, and, where appropriate, fluorescein staining.

Avoidance of Contact Lenses

Patients should not wear contact lenses if they have signs or symptoms of bacterial conjunctivitis or during the course of therapy with Besivance®.

ADVERSE REACTIONS

Because clinical trials are conducted under widely varying conditions, adverse reaction rates observed in one clinical trial of a drug cannot be directly compared with the rates in the clinical trials of the same or another drug and may not reflect the rates observed in practice.
The data described below reflect exposure to Besivance® in approximately 1,000 patients between 1 and 98 years old with clinical signs and symptoms of bacterial conjunctivitis.
The most frequently reported ocular adverse event was conjunctival redness, reported in approximately 2% of patients.
Other adverse events reported in patients receiving Besivance® occurring in approximately 1-2% of patients included: blurred vision, eye pain, eye irritation, eye pruritus and headache.

USE IN SPECIFIC POPULATIONS

Pregnancy

Pregnancy Category C. Oral doses of besifloxacin up to 1000 mg/kg/day were not associated with visceral or skeletal malformations in rat pups in a study of embryo-fetal development, although this dose was associated with maternal toxicity (reduced body weight gain and food consumption) and maternal mortality. Increased post-implantation loss, decreased fetal body weights, and decreased fetal ossification were also observed. At this dose, the mean C_{max} in the rat dams was approximately 20 mcg/mL, >45,000 times the mean plasma concentrations measured in humans. The No Observed Adverse Effect Level (NOAEL) for this embryo-fetal development study was 100 mg/kg/day (C_{max}, 5 mcg/mL, >11,000 times the mean plasma concentrations measured in humans).
In a prenatal and postnatal development study in rats, the NOAELs for both fetal and maternal toxicity were also 100 mg/kg/day. At 1000 mg/kg/day, the pups weighed significantly less than controls and had a reduced neonatal survival rate. Attainment of developmental landmarks and sexual maturation were delayed, although surviving pups from this dose group that were reared to maturity did not demonstrate deficits in behavior, including activity, learning and memory, and their reproductive capacity appeared normal.
Since there are no adequate and well-controlled studies in pregnant women, Besivance® should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers

Besifloxacin has not been measured in human milk, although it can be presumed to be excreted in human milk. Caution should be exercised when Besivance® is administered to a nursing mother.

Pediatric Use

The safety and effectiveness of Besivance® in infants below one year of age have not been established. The efficacy of Besivance® in treating bacterial conjunctivitis in pediatric patients one year or older has been demonstrated in controlled clinical trials *[see Clinical Studies (14) in the full Prescribing information]*.
There is no evidence that the ophthalmic administration of quinolones has any effect on weight bearing joints, even though systemic administration of some quinolones has been shown to cause arthropathy in immature animals.

Geriatric Use

No overall differences in safety and effectiveness have been observed between elderly and younger patients.

NONCLINICAL TOXICOLOGY

Carcinogenesis, Mutagenesis, Impairment Of Fertility

Long-term studies in animals to determine the carcinogenic potential of besifloxacin have not been performed.
No *in vitro* mutagenic activity of besifloxacin was observed in an Ames test (up to 3.33 mcg/plate) on bacterial tester strains *Salmonella typhimurium* TA98, TA100, TA1535, TA1537 and *Escherichia coli* WP2uvrA. However, it was mutagenic in *S. typhimurium* strain TA102 and *E. coli* strain WP2(pKM101). Positive responses in these strains have been observed with other quinolones and are likely related to topoisomerase inhibition.
Besifloxacin induced chromosomal aberrations in CHO cells *in vitro* and it was positive in an *in vivo* mouse micronucleus assay at oral doses $\geq$ 1500 mg/kg.
Besifloxacin did not induce unscheduled DNA synthesis in hepatocytes cultured from rats given the test compound up to 2,000 mg/kg by the oral route. In a fertility and early embryonic development study in rats, besifloxacin did not impair the fertility of male or female rats at oral doses of up to 500 mg/kg/day. This is over 10,000 times higher than the recommended total daily human ophthalmic dose.

PATIENT COUNSELING INFORMATION

Patients should be advised to avoid contaminating the applicator tip with material from the eye, fingers or other source.
Although Besivance® is not intended to be administered systemically, quinolones administered systemically have been associated with hypersensitivity reactions, even following a single dose. Patients should be advised to discontinue use immediately and contact their physician at the first sign of a rash or allergic reaction.
Patients should be told that although it is common to feel better early in the course of the therapy, the medication should be taken exactly as directed. Skipping doses or not completing the full course of therapy may (1) decrease the effectiveness of the immediate treatment and (2) increase the likelihood that bacteria will develop resistance and will not be treatable by Besivance® or other antibacterial drugs in the future.
Patients should be advised not to wear contact lenses if they have signs or symptoms of bacterial conjunctivitis or during the course of therapy with Besivance®.
Patients should be advised to thoroughly wash hands prior to using Besivance®.
Patients should be instructed to invert closed bottle (upside down) and shake once before each use. Remove cap with bottle still in the inverted position. Tilt head back, and with bottle inverted, gently squeeze bottle to instill one drop into the affected eye(s).

Manufactured by: Bausch & Lomb Incorporated
Tampa, Florida 33637

U.S. Patent No. 6,685,958
U.S. Patent No. 6,699,492
U.S. Patent No. 5,447,926

September 2012

9159601

powers to be able to fill "same-day" prescriptions.

Shop around and "test" the offerings of single-vision finished uncut lenses from a few different vendors. Remember that single-vision finished uncut lenses receive the single highest mark-up in your store!

• ***Blocker.*** This will usually be part of the edger "package," but you will need to decide on the type and sophistication of the blocker.

• ***De-blocking tool.*** This is usually included with the edger package as well. However, if you are buying used or refurbished equipment, you will need a way to remove the blocks without damaging the lens surface.

• ***Leap blocks.*** You will get some leap blocks with your edger, but you may want to stock a few extra and a few different sizes.

• ***Leap pads.*** Leap pads are consumable, so you'll want to shop around and find ones that work well for your edger and lenses. Keep in mind that there are AR-specific leap pads.

• ***AR pads.*** If slippage is a problem for you, then you'll want a leap pad that's designed to be non-slip. Just like lenses, shop around a little and insist on a guarantee.

• ***Protective film.*** These are "surface" tape adhesive tabs that you can use for a wide variety of applications to protect the lens surface. These are not necessary, but they are inexpensive and handy to have around.

• ***Hand stone.*** A hand stone isn't required if you're purchasing a new high-end edger with a safety bevel feature. But if things go wrong (and sooner or later they will), and the safety bevel is missed, then you have to have a way of putting one on.

Five Lessons Learned

1. ***Don't be shy about asking for discounts.*** If you're placing a large order, you deserve one. Ask for it!

2. ***Don't overlook used equipment!*** If you are just starting up or running on a tight budget, there are plenty of places that sell refurbished equipment. A five-year-old refurbished edger purchased directly from a reliable manufacturer may serve a practice for years.

3. ***Learn to say "no."*** If you feel pressured into buying something you didn't intend to, don't buy it. Say "no thanks" and shop around some more.

4. ***Don't buy "kits."*** Only buy the items that you'll need to run your lab.

5. ***Always ask about payment plans and financing.*** It's better to spread the payments out over time to keep money in the practice when starting up. ■

Mr. Seegers is a licensed optician at Ryan Vision Center in Henrico, Va, as well as an industry consultant. He also is the owner of www.opticianworks.com, *a free online training resource he created to help eye care providers, aspiring opticians and non-licensed optical dispensers.*

Lab Ergonomics 101

By Jennifer Long, B.Optom. (Hons), M.Safety.Sc.

In addition to all of the logistical issues, don't forget to address the ergonomic concerns—always consider your employees' health and comfort. Place equipment so that workers can easily see and operate the displays and controls. The counter/workspace should be at a height that allows employees to keep their elbows at approximately 90°. That way, they aren't stooping over a low desk or having to reach up to a high desk.

If you have multiple people working at a standing workstation and they are different heights, you have a couple options:

• Sit-stand workstations that they can adjust to their individual needs.

• Platforms (stools) that allow shorter workers to comfortably reach the bench height. These should be sturdy, stable and able to support the appropriate weight.

In addition to having enough room to stand and move around comfortably at their workstations, workers also need sufficient space to sit. It is common for workshop areas to be used for storage as well, but you must make sure workers can sit/stand in a comfortable posture without hitting their legs or feet on stored items.

The most commonly used items should be within easy reach. You can place less frequently used items further away, higher or lower while storing them, but you must have adequate space for the operator to use them properly when they are needed. If items are being stored, then it should be easy for workers to retrieve them. For example, a heavy item is best left in a fixed position so that workers are not likely to injure themselves when moving it.

When it comes to placing your equipment, the front of the machine should be parallel with the front of the workspace, not at an oblique angle. The operator shouldn't have to lean over other equipment. If you have a piece of equipment stored or placed behind another item, then there should be adequate space for the operator to move the front item out of the way in order to use the equipment comfortably.

Ms. Long is an optometrist and certified professional ergonomist from the School of Optometry and Vision Science at the University of New South Wales in Sydney.

Case Report

Winner of *Review*'s 2012 Kindle Fire Open Submission Contest

PEER • REVIEWED • PRA • ARTICLE

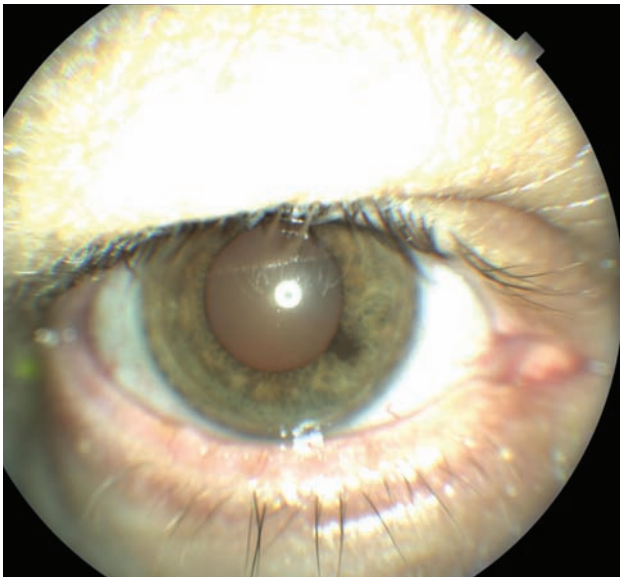
Routine Eye Check Reveals Deadly Cancer

In this rare case, esophageal adenocarcinoma presented initially on a routine ophthalmic exam—in the form of a surprising fundus finding. **By Stacy Schonberg, O.D.**

One of the fastest growing cancer diagnoses in the United States, esophageal adenocarcinoma is most commonly diagnosed in white males over age 65 with a history of obesity, gastroesophageal reflux disease, smoking and alcohol use.[1] Gastrointestinal tumors, such as esophageal adenocarcinoma, often metastasize to the liver, bone, lung, adrenal glands and brain—less commonly to the eye and orbit.[2]

A literature review revealed six published cases of choroidal metastasis from primary esophageal adenocarcinoma.[2-8] In the majority of these cases, the patient recently had been diagnosed with esophageal adenocarcinoma. Only one case involved the choroidal mass as the initial manifestation of the disease.

To the best of my knowledge, the case described in this report is the only published instance in which a choroidal metastasis was the presenting sign in a patient without ophthalmic or overt systemic symptoms at the time of detection.



1. Anterior surface of the patient's right eye.

History

A 63-year-old white male presented to the Wade Park Veterans Affairs Medical Center Optometry Clinic in Cleveland for a routine intraocular pressure check and dilated fundus exam (*figure 1*). He had no visual or asthenopic complaints and no known changes to his systemic health. His ocular history included plateau iris syndrome O.U., which was treated with laser iridoplasty 14 months earlier, and mild non-visually significant nuclear sclerosis.

His medical history was significant for morbid obesity, hypertension, hyperlipidemia, steatohepatitis, benign prostatic hypertrophy, post-traumatic stress disorder and chronic pain. This patient also had a history of bone cancer—he had a malignant fibrous histiocytoma (a soft-tissue sarcoma) in his right leg, which was resected in 1994, without any subsequent recurrence or need for additional treatment.

Although the patient had abstained from tobacco for 25 years and from alcohol for about 40 years, his records indicated that he had previously smoked two packs of cigarettes and drank a fifth of liquor (750ml)

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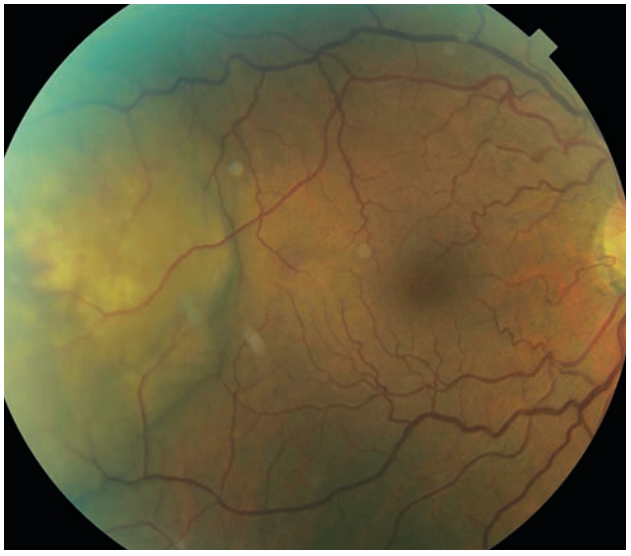
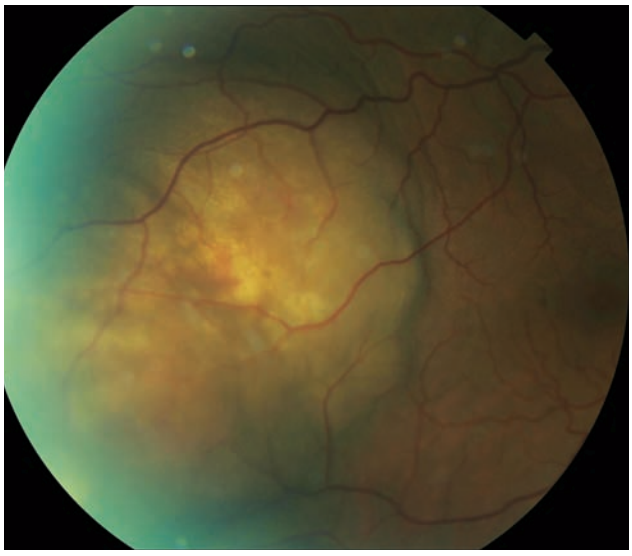




2, 3. Fundus images show the proximity of the choroidal lesion to the macula and its extent of involvement.

per day (the length of time was unable to be determined from the patient's chart).

The patient's last eye exam was six months prior—due to his diagnosis of plateau iris syndrome, he had routine dilated fundus exams every six to 12 months. There was no evidence of any choroidal or retinal abnormalities at his last dilated fundus examination.

Diagnostic Workup and Differential Diagnoses

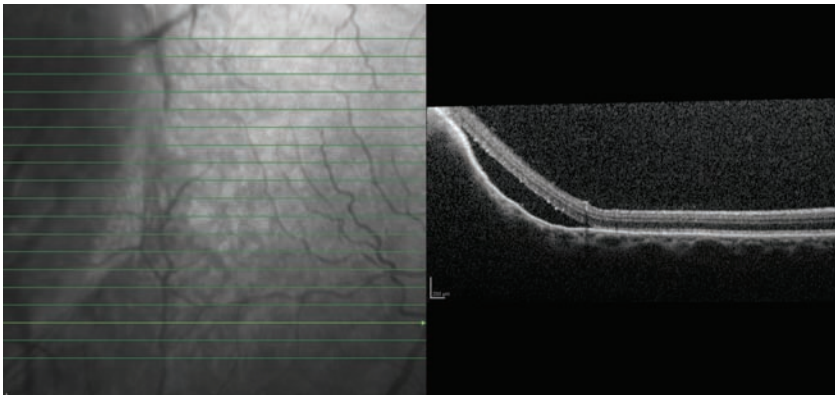
On examination, spectacle-corrected visual acuity was 20/20 O.U. Pupils, extraocular muscle testing and confrontation visual field testing were normal O.U. An automated Humphrey Matrix FDT (Carl Zeiss Meditec) 30-5 screening visual field test showed reliable and repeatable depression of one nasal edge point O.D., and a full-field O.S. Intraocular pressure was 16mm Hg O.U. The anterior segment biomicroscopy examination was remarkable for a patent laser peripheral iridotomy performed superiorly in each eye, and laser iridoplasty scars at the iris periphery 360° in each eye.

Dilated fundus exam of the left eye revealed 1+ nuclear sclerosis, a clear vitreous, a normal optic disc with a healthy neuroretinal rim, normal vasculature, and a normal macula and retinal periphery. The right eye revealed 1+ nuclear sclerosis, clear vitreous, normal vasculature and an optic disc with a healthy neuroretinal rim.

An elevated choroidal lesion, measuring approximately 6DD in size, was noted temporal to the macula (*figures 2 and 3*). The lesion appeared as two elevated focal nodes separated by a shallow valley. The lesion's surface had a mottled yellowish appearance, distinct borders and adjacent retinal folds.

Spectralis HRA SD-OCT (Heidelberg Engineering) showed a >1,500µm choroidal elevation with an adjacent serous retinal detachment (*figure 4*). A fundus autofluorescence (FAF) scan of the lesion indicated overall hyperautofluorescence, punctuated by smaller zones of hypoautofluorescence (*figure 5*). Intravenous fluorescein angiography showed a mottled appearance with early hyperfluorescence that became more prominent later in the angiogram (*figures 6 and 7*).

The differential diagnoses included primary choroidal melanoma and choroidal metastasis from a



4. An SD-OCT line scan through the choroidal lesion reveals the presence of adjacent subretinal fluid.

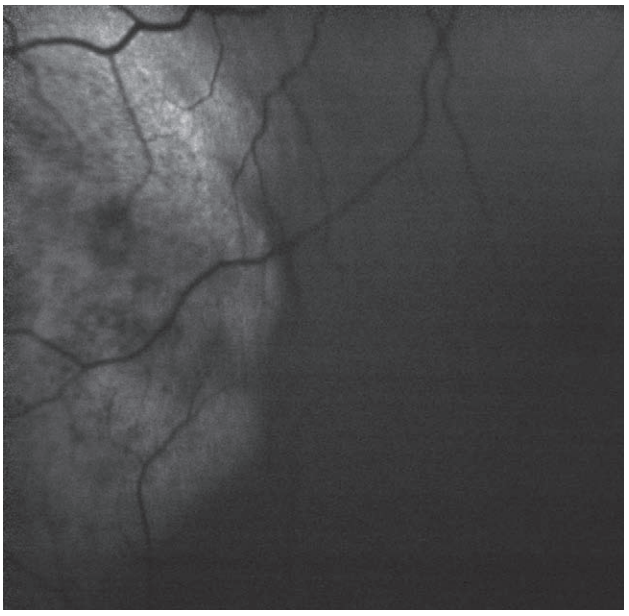
non-ocular primary tumor site. A thorough chart review of the patient's previous dilated fundus exams revealed no evidence of a pre-existing choroidal nevus. Clinical clues, such as the mottled yellowish coloration, serous retinal detachment and multiple foci, suggested that this lesion might be a choroidal metastasis from a non-ocular primary tumor site rather than a primary choroidal melanoma.

The retina specialist on staff reviewed the patient's SD-OCT scan, autofluorescence and fluorescein angiography images, and examined him the same day. After discussing the urgency of the case, he and I directly contacted a staff oncologist who helped determine the next steps for this patient's diagnosis. The oncologist suggested ordering a PET scan to determine if this was an isolated ocular lesion, or if it was a distant metastasis from another primary tumor site. The patient was scheduled for a PET scan 11 days later.

Unfortunately, 10 days later, one day prior to his scheduled testing, the patient presented to the emergency department with severe abdominal pain, diarrhea, dysphagia, night sweats without fever and an unintentional 10-pound weight loss over the past week. An abdominal CT scan revealed several concerns: thickening of the distal esophagus, an abnormal appearance of the liver suggestive of neoplasm, prominent adrenal glands suspicious for bilateral adrenal adenomas, and a possible focal mesenteric infarct. The patient was admitted for a malignancy workup.

An esophagogastroduodenoscopy was performed and was consistent with the CT scan results. The results were remarkable for Barrett's esophagus that extended from a spot that was located 27cm from the entry point to the gastroesophageal junction located 39cm from the entry point (*figure 8*). Within this segment of Barrett's esophagus (30cm from the entry point to the gastroesophageal junction), was a large, fungating, ulcerated mass (*figure 9*). A biopsy of the mass revealed invasive, moderately differentiated adenocarcinoma. Without any immediate need for surgical intervention, the patient was discharged and sent for an outpatient PET scan.

The outpatient PET scan showed that the distal portion of the esophagus had marked hypermetabolic activity. An abnormally intense signal was observed throughout the liver, indicating lesions too numerous to count. Other significant areas were observed in the left adrenal gland, sternum, L1 vertebral body, iliac bones, sacrum, acetabulum, femur and nodules within the paraspinal and gluteal musculature.



5. A fundus autofluorescence scan showed overall hyperautofluorescence, with scattered areas of hypoautofluorescence throughout the eye.

Diagnosis

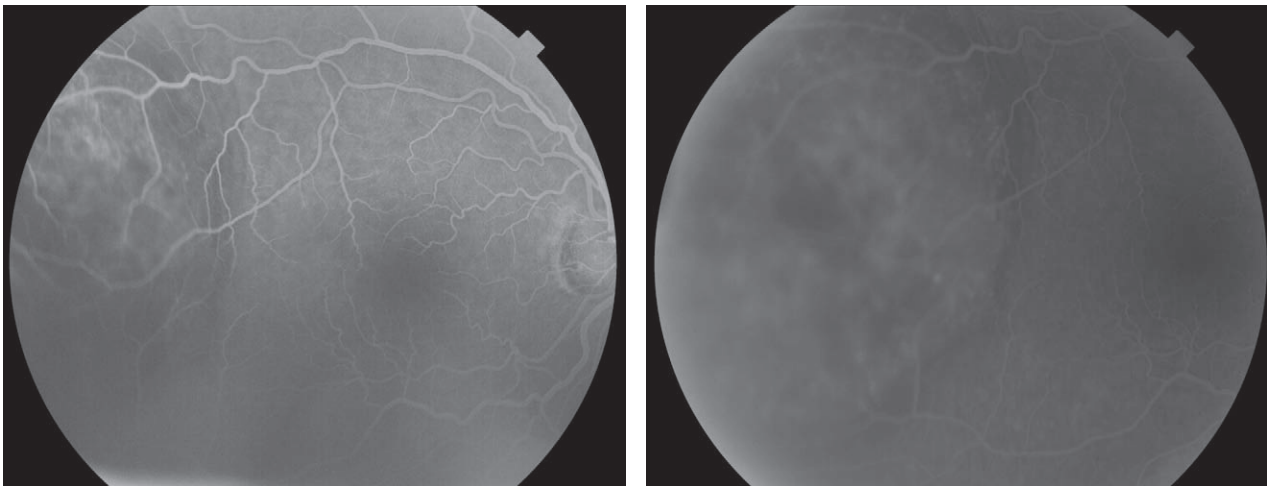
The radiologist's report suggested a primary malignancy of the distal esophagus with likely metastasis, which was confirmed with an ultrasound-guided liver biopsy. The patient was diagnosed with rapidly progressing stage IV esophageal adenocarcinoma with liver, bone and choroidal metastasis. A choroidal biopsy was not performed because it is assumed that the mass was a true choroidal metastasis secondary to the widespread systemic involvement that was confirmed with PET scan and liver biopsy.

Within the next two weeks, the patient began to suffer from jaundice, liver failure, a right lower extremity deep vein thrombosis and uncontrolled pain with constant nausea and anorexia. The oncologist determined that the patient was not a candidate for treatment due to poor functional status. He was admitted into hospice for end-of-life care and passed away the following day.

Discussion

The incidence of esophageal cancer has skyrocketed in just a few decades—some estimates suggest that it has increased by more than 350% in the United States over the past 40 years.[9] This rise has been attributed in part to the increased incidence of gastroesophageal reflux disease and Barrett's esophagus due to the additive effects of smoking, drinking alcohol, poor diet and obesity.[7,9] Esophageal cancer is most prevalent in white males over age 65, with risk factors that include obesity, gastroesophageal reflux disease and the subsequent development of Barrett's esophagus.[9]

Barrett's esophagus is defined by metaplasia of the normal stratified squamous epithelium that lines the distal portion of the esophagus with replacement tissue (growth of abnormal columnar epithelium).[9] These abnormal columnar cells are at risk for dysplasia, in which DNA mutations cause these cells to hyperproliferate. During this process, additional DNA mutations and changes in cell morphology lead to neoplastic cell growth.[10] Approximately 5% to 15% of individuals with gastroesophageal reflux disease have evidence



6, 7. Intravenous fluorescein angiogram images show localized RPE disruption, increased vascular permeability and subretinal fluid (venous phase, left) as well as small, well-defined, hyperfluorescent foci that likely correspond to hyperpermeable blood vessels within the tumor itself (late venous phase, right).

of Barrett's esophagus, and less than 1% of them develop cancer each year.[11]

Smoking and alcohol use also are well-documented risk factors for esophageal adenocarcinoma. In this case, the patient was morbidly obese, had a history of gastroesophageal reflux disease with presence of Barrett's esophagus, and reported a remote—but significant—history of tobacco and alcohol use.

Metastasis

While the diagnostic rate of esophageal cancer is increasing in the United States, it still remains a rare type of cancer. Metastasis of a primary gastrointestinal tumor to the eye is even more rare. It occurs through hematogenous dissemination. The choroid is very richly vascularized by posterior ciliary artery circulation, which makes it the most common site for intraocular metastases.[12] In fact, metastatic disease to the choroid is the most common ocular malignancy.[12]

Choroidal metastases are bilateral in 20% to 40% of cases, and about 20% are multifocal within one eye.[12] In a survey of more than 500 eyes with uveal metastases, 88% involved the choroid, while the remaining cases involved the iris and/or ciliary body.[13] These choroidal metastases are most often from primary breast cancer in women and from lung cancer in men.[13] Other primary tumors that may metastasize to the choroid include those of the prostate, kidney, thyroid, pancreas and gastrointestinal sites.[13,14] The presence of choroidal metastasis suggests a poor prognosis, as it indicates the likelihood of additional metastases.

Distinguishing Characteristics

The differential diagnosis of an acute presentation of an elevated choroidal mass should include life- and sight-threatening conditions first, such as primary ocular malignancy and ocular metastasis from a non-ocular primary tumor. These should be followed by more benign conditions, such as choroidal osteoma, choroidal detachment and choroidal hemangioma.

The differential diagnosis requires identification of the salient features of the lesion. Common characteristics of choroidal metastases include:

- Yellow coloration with retinal pigment epithelium (RPE) changes.
- Plateau shape of 3mm or greater in thickness.
- Associated subretinal fluid.

For this patient, we performed an SD-OCT scan, FAF and intravenous fluorescein angiography (IVFA) to distinguish these characteristics. B-scan ultrasound

might have been useful in this case, but it was not performed at the initial visit and the patient did not return for follow-up. An A-scan might be considered for size determination, and might also give additional information about the vascularity of the lesion.

Diagnostic Imaging

• ***SD-OCT.*** The SD-OCT scan helped to elicit information about the height and thickness of the mass and to identify any associated subretinal fluid. The presence of subretinal fluid is secondary to increased choroidal vascular permeability as well as damaged RPE cells that can no longer expel accumulating fluid. In cases where visual acuity is preserved, the subretinal fluid is too far from the macula to induce visually significant changes.

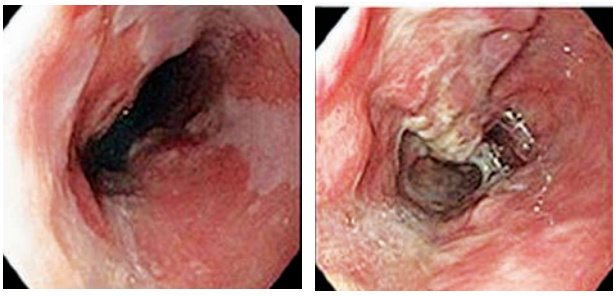
However, in these cases patients become symptomatic consistent with tumor growth and expansion of the subretinal fluid into the macula. Symptoms generally include blurred vision, metamorphopsia, increased IOP, pain from impingement of ciliary nerves, photopsia and/or floaters due to the retinal disruption.[2-8]

• ***FAF.*** FAF may be used as a marker for retinal disease due to the pathological accumulation of naturally occurring lipopigments.[15] One such lipopigment, lipofuscin, can autofluoresce and spontaneously emit radiance when illuminated with light of a different wavelength.

Lipofuscin accumulates in the RPE when the cells' metabolic machinery is functioning abnormally. The accumulation of lipofuscin is exhibited as hyperautofluorescence, which appears bright white on the scan, whereas photoreceptor or RPE loss is shown as hypoautofluorescence and appears dark on the scan. This pattern of autofluorescence suggests substantial damage to the RPE and photoreceptor layers in an area corresponding with a lesion.

• ***IVFA.*** Intravenous fluorescein angiography detects abnormalities in retinal circulation. In the literature—malignant lesions are marked by the mottled appearance of the lesion with increasing hyperfluorescence throughout the angiogram corresponding to localized RPE disruption, increased vascular permeability and subretinal fluid.[7] Late in the angiogram, the presence of small, well-defined, hyperfluorescent foci become evident within the lesion. These likely correspond to hyperpermeable blood vessels within the tumor itself.[7]

Without systemic symptoms or a recent history of a known malignant tumor, it was difficult to determine if this patient's lesion was a primary ocular tumor or a metastatic lesion caused by a distant non-ocular tumor. In the literature, five of the six documented cases that



8, 9. An esophagogastroduodenoscopy revealed Barrett's esophagus (left). A large, fungating, ulcerated mass also was found within this section of Barrett's esophagus. Biopsy revealed that it was invasive adenocarcinoma.

differentiate choroidal metastasis from esophageal adenocarcinoma occurred in individuals with a recent preexisting cancer diagnosis.[2,4-8] Only one case involved a choroidal metastasis as the initial presentation of esophageal adenocarcinoma.[3] In that instance, the patient had a two-month history of decreased vision in the affected eye as well as a two-month history of dysphagia, which is the most common symptom of esophageal adenocarcinoma.[16]

To our knowledge, the patient in this case did not have any systemic symptoms at the time of his eye exam, and furthermore did not have a recent history of cancer diagnosis. The PET scan was ordered to help differentiate between isolated ocular vs. widespread metastatic disease. It suggested a primary neoplasm at the distal esophagus with widespread metastasis to the liver, bone, adrenal glands and several lymph nodes. Metastasis was later confirmed with ultrasound-guided liver biopsy.

Prognosis and Treatment

With an average five-year survival rate of less than 17%, esophageal adenocarcinoma has a very poor prognosis—especially when the disease is metastatic.[1,9,17-19] The majority of patients have systemic metastasis at the time of diagnosis. Even with treatment, the median survival of metastatic esophageal adenocarcinoma is less than one year.[17]

Systemic treatment options include surgical resection, chemotherapy, radiation and improving or maintaining quality of life.[1,9,17,18] Treatment options for the choroidal metastasis itself include chemotherapy, local irradiation and enucleation.[2-8]

Most recently, experimental use of intravitreal anti-VEGF therapy for choroidal metastases from lung, breast and colorectal cancer has shown good results with significant tumor regression.[20]

This unique case illustrates the importance of routine dilated fundus exams for a patient's systemic health. Optometrists should be familiar with the common characteristics of chorioretinal lesions and be able to use and interpret specialized diagnostic testing in order to finalize a proper differential diagnosis.

The fundus findings in this case pointed toward extensive systemic disease that had advanced beyond the point of feasible intervention. However, early detection of this devastating cancer may help increase longevity and quality of life for individuals without such advanced disease. ■

Dr. Schonberg saw this patient during her ocular disease residency at the Wade Park Veterans Affairs Medical Center Optometry Clinic in Cleveland. She now works as an optometrist at Lasik Plus and Visium Eye Institute, in Independence, Ohio. She would like to thank staff optometrists Stacia Yaniglos, O.D., and Terry Daniel, O.D., and retinal specialist Eric Eleff, M.D., at the Louis Stokes VA Medical Center in Cleveland.

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Boy Suffers Collateral Damage

A ricocheted BB hit our young patient in the right eye. Will his vision be shot, too?

By Robert Simon, O.D.

Acute injury caused by a metallic foreign body is a relatively common ocular emergency. Such insults often are caused by the use of bench grinders, masonry chisels or even explosive devices.

However, some of the most potentially devastating foreign body injuries result from an impact with a high-velocity projectile, such as an air-propelled BB. Ocular trauma resulting from a BB wound is an emergent clinical situation that requires rapid resolution.

Here, we examine a case study of a young boy who presented with a BB gun injury that occurred nearly eight months earlier.

The BB following removal from our patient's right eye.

History

A 12-year-old white male presented for a routine eye examination on April 1, 2009. This was the child's first eye examination at an optometry office.

The patient's social and medical histories were normal. His family ocular history was positive for glaucoma (maternal grandfather). The patient's mother indicated that he took 10mg Adderall (amphetamine and dextroamphetamine, Teva Pharmaceuticals) for attention deficit hyperactivity disorder.

Diagnostic Data

As is common among school-aged children, he reported difficulty reading the blackboard in class. His uncorrected entering visual acuity measured 20/60 O.D. and 20/50 O.S. Upon pinhole testing, his acuity improved to 20/20- O.U.

The anterior segment exam was normal, with a white eye and no discomfort. Extraocular muscles were intact, and the patient had orthophoria at both far and near. The cornea was clear, and the anterior chamber and lens were within normal limits. Dilated fundus examination revealed no pathology and a 0.40 x 0.40 cup-to-disc ratio O.U.

We gave him a spectacle prescription of -2.25 sphere O.D. and

The BB in a specimen cup.

-1.50 + 0.25D x 160 O.S., which yielded a final acuity of 20/20 O.U. We then scheduled the patient for a yearly follow-up examination.

First Follow-up Examination

The patient returned for a routine follow-up examination on June 5, 2012 and stated that he was not having any problems with his eyes. However, his mother noted that he had a small "bump" under his right eye that was painful to the touch. Since the last visit, he and his family moved out of the state, but had just recently returned to the area.

Uncorrected visual acuity measured 20/100 O.D. and 20/60 O.S. The patient didn't bring his most recent spectacles or the prescription. External examination revealed a small, 4mm bump located under his right eye near the maxillary rim. At first glance, this presentation appeared to be a chalazion. But then both the patient and his mother informed me that he was "shot in the right eye" with a BB gun in October 2011.

His mother asked if the BB could still be in his eye. I informed her that, if in fact it were still in there, he would have had an inflammatory reaction and pain. When I pulled his lower eyelid downward, I found a mucopurulent discharge in the inferior fornix with a brown tinge. Typically, bacterial discharge is yellow, white or green, so this finding was somewhat unusual.

The patient was becoming uncomfortable secondary to the prying down of his eyelid. Nonetheless, I thought I saw a brown object located in the lower cul-de-sac. After the instillation of several more anesthetic drops, I asked one of the other doctors, Craig McCabe, M.D., to assist me with the external examination. We inserted a moistened cotton swab into the lower cul-de-sac and pushed the BB out of the inferior fornix.

The inferior conjunctiva was irritated and exhibited a rust-colored area approximately 5mm in diameter. The remainder of the examination was normal, with comparable physical findings to those observed at the initial examination.

We prescribed a neomycin/polymixin B/dexamethasone drop and instructed the patient to taper the dosage over the next two weeks. We updated his spectacle prescription to -2.00 + 0.25D x 015 O.D. and -1.50 + 0.75D x 160 O.S., which yielded a final acuity of 20/20 O.U.

We scheduled the patient for a two-week follow-up to determine if the conjunctiva healed properly. We decided that if he had any residual problems upon return, we would schedule the patient for a conjunctival resection.

Second Follow-up Exam

Our patient returned on June 21, 2012 for follow-up to determine if he required a conjunctival resection to remove damaged tissue. He was compliant with his medication and tapered the dosage appropriately. His eye was white, with no sign of trauma. His best-corrected visual acuity measured 20/20 O.U. His pupils were equally round and reactive to light and accommodation. Additionally, his cornea appeared clear, and he reported no distress or ill effects. Most importantly, the inferior palpebral conjunctiva appeared normal.

Discussion

The history of our patient's BB injury was of great interest. In early October 2011, while living out of state, our patient was in the backyard jumping on a trampoline. His friend was shooting a BB gun at several cans on a wooden fence. Evidently, a BB had ricocheted off the fence and hit the patient in the right eye.

According to the patient and his mother, a "scan or x-ray" was completed at the ER to rule out an ocular foreign body before he saw a local eye doctor. Then, the eye doctor evaluated the patient. He reported that the boy had a conjunctival abrasion and a subconjunctival hemorrhage in the right eye. Additionally, he documented a clear cornea as well as an uncomplicated fundus appearance. The eye doctor prescribed Tobradex (tobramycin and dexamethasone, Alcon) t.i.d. O.D.

Further Discussion

The 1983 film "A Christmas Story" tells the story of a boy who yearns for a BB gun for Christmas. And although Santa Claus cautions young Ralphie that "You'll shoot your eye out," this movie does not adequately depict the dangerous nature of these weapons, which many adults consider to be toys.

Between 1990 and 2000, there were 39 non-powder, gun-related deaths reported in the U.S.[1] Non-

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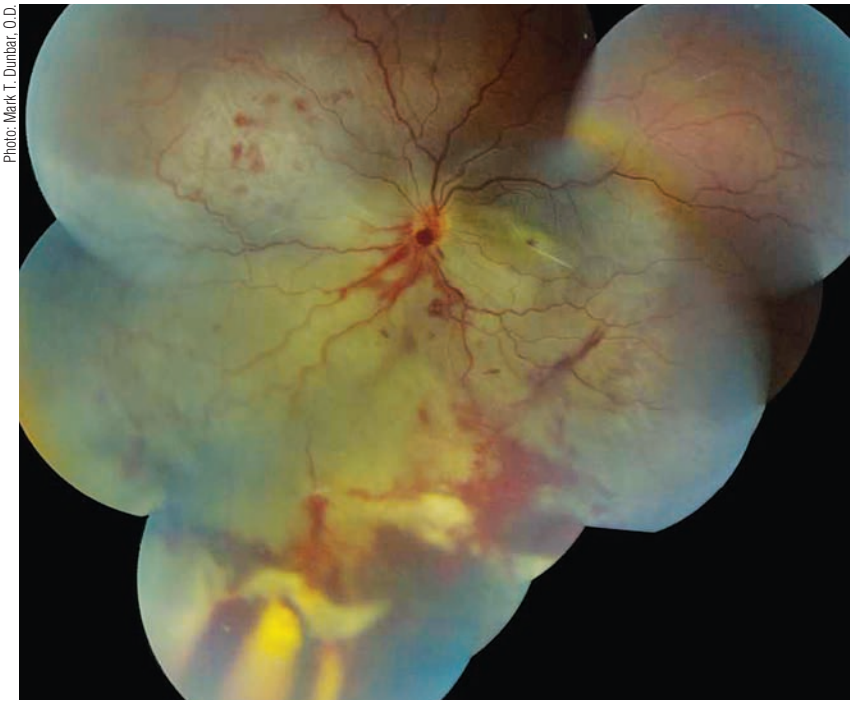

Photo: Mark T. Dunbar, O.D.

Our patient was extremely fortunate. Many ocular BB injuries result in choroidal rupture, full-thickness macular hole formation or sclopetaria (as seen here).

powder guns continue to cause serious injuries to both children and adolescents.[1] Persistent in this problem is a lack of medical recognition that BB guns can, in fact, cause very serious injuries, including penetration of the ocular globe.[1]

In most states, BB guns may be purchased at major retail stores by anyone 18 years of age or older. However, no additional safety requirements or restrictions exist (e.g., obtaining a permit or completing a training course).

Air guns are designed to fire several different forms of ammunition, including plastic pellets, metal BBs and metal pellets (0.177 caliber). Most modern BB guns are designed with spring-loaded, compressed air or CO_2 cartridge propulsion systems that are capable of firing projectiles at velocities of up to 1,200ft/s—fast enough to cause significant bodily harm and/or death.[2] (As a point of comparison, the average muzzle velocity of a standard 0.22 caliber long rifle rimfire bullet is approximately 1,150ft/s.[3]) Specifically, research has shown that even slower projectile velocities of 246ft/s have a 50% chance of penetrating the ocular globe.[4]

The incidence of air-powered, gun-related eye injury in the United States has declined somewhat between 1993 and 2002.[5] Nevertheless, the potential for severe vision damage is extremely high. One study indicated that young, black males are at the greatest risk for air-powered, gun-related eye injury.[5] Air-powered projectile insults can cause hyphema, corneal contusion, corneal abrasion, traumatic iritis, commotion retinae and traumatic mydriasis.[6] Following such injuries, entering visual acuity may range from 20/15 to light perception.[6]

Damage to the eye and surrounding structures from a BB projectile can be quite devastating. By far, perforating injuries are the most serious potential insult, potentially resulting in complete visual compromise.[7] But, besides the immediate need to remove these metallic foreign bodies, this type of injury can even threaten human life.[8]

There are several documented cases when an intraocular BB resulted in an embolus and subsequent monocular blindness.[9] Imaging always should be performed to determine if the object penetrated the orbit. While many types of imaging are used in modern medicine, x-rays are preferred in this case because no magnets are used.

The overall percentage of patients who require surgical involvement following this type of injury is 10%.[10] However, our patient was extremely fortunate that intraocular involvement did not occur in this case. ■

Dr. Simon has been practicing optometry for more than 20 years and is currently a staff member at the McCabe Vision Center in Murfreesboro, Tenn.

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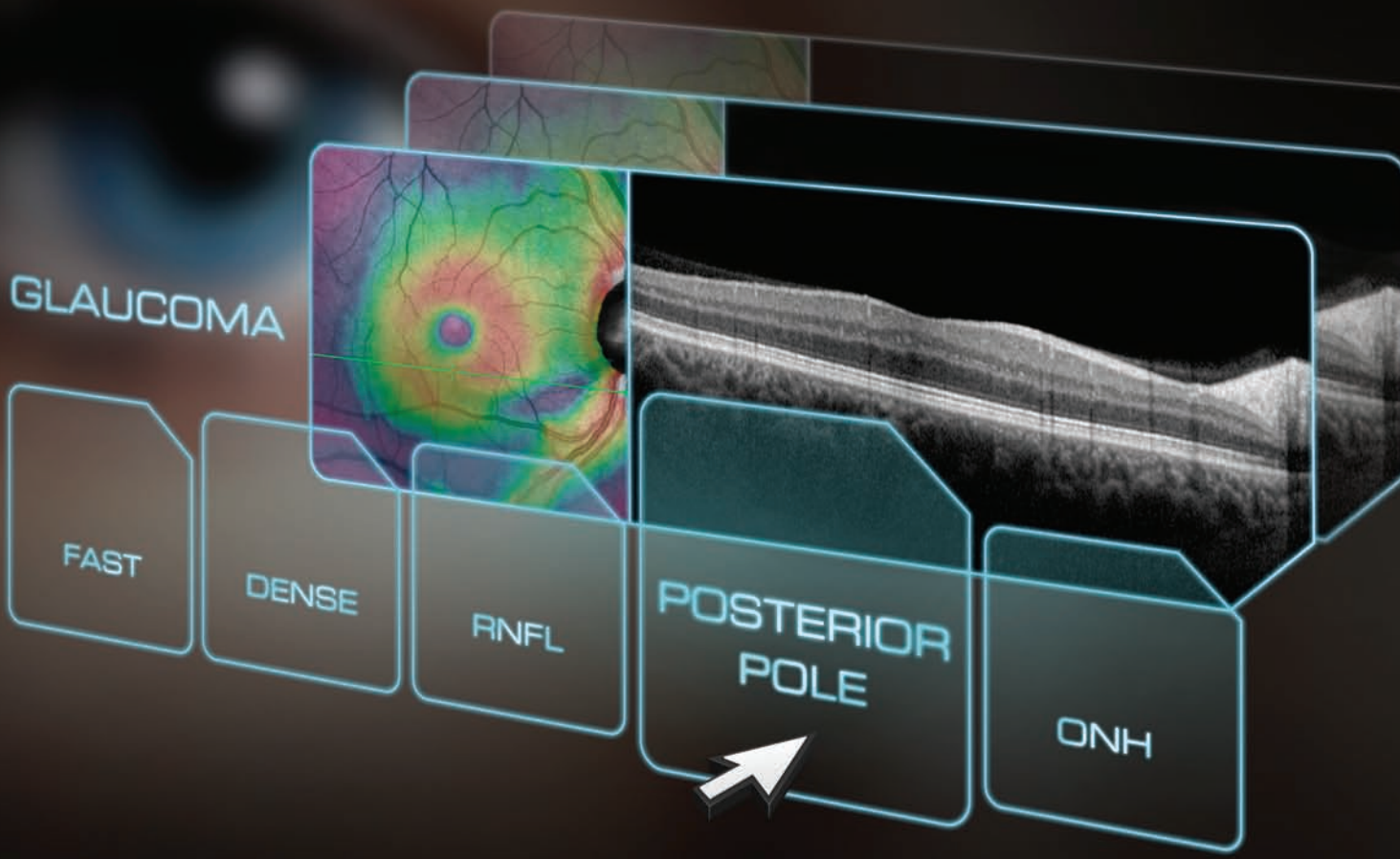

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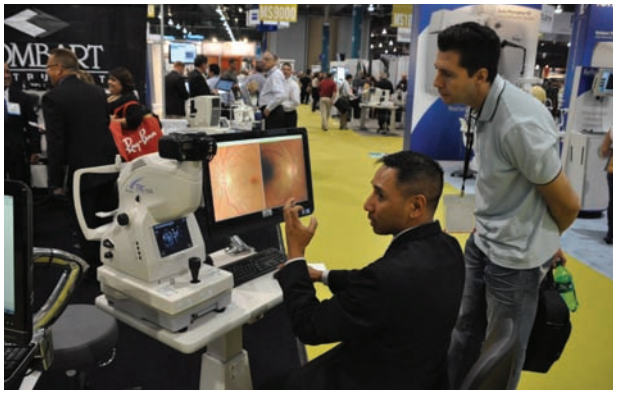
Vision Expo West:
Strong Attendance, Innovative CE in Sin City

With more than 12,000 attendees and 350 continuing education hours, this year's meeting far exceeded expectations. **By Jane Cole, Contributing Editor**

This year's Vision Expo West meeting, which was held in Las Vegas from September 5-8, attracted an estimated 12,077 eye care professionals and offered attendees 350 hours of continuing education credits as well as the opportunity to interface with 475 exhibitors and their cutting-edge technologies, latest research and frames. During the meeting, CE classes were filled, and the aisles of the Sands Convention Center's exhibit hall were buzzing with attendees eager to see hot new eyewear styles and try out the latest vision technologies.

Show organizers place preliminary exhibit hall figures at 8,209. Also, an estimated 3,868 eye care providers attended the CE sessions. A complete third-party audit of International Vision Expo West will be available approximately six weeks after the show.



Exhibitors offered first-hand views of latest technologies.

"International Vision Expo West is a healthy, energetic and vibrant event, and the number of loyal and satisfied visitors in attendance was a true testament to that," says Tom Loughran, vice president of Reed Exhibitions. "We remain committed to providing the entire ophthalmic community with a convenient location to network, hold meetings and source the best in products, education, innovative solutions and business-building tools for the health of their practice and their patients."

Eye on CE

Vision Expo West has greatly enhanced its CE offerings in recent years, and the 2012 meeting was no exception. Attendees were able to glean valuable information from many innovative courses presented by renowned speakers, including Ron Melton, O.D., and Randall Thomas, O.D., M.P.H. Their memorable sessions included "On Call with Melton and Thomas," which offered attendees a better understanding of the challenges encountered during weekend call in the tertiary care environment. Drs. Melton and Thomas completed their stellar lineup with "Glaucoma Grand Rounds," which shared patient presentations in a case-study/grand rounds format, and "Melton and Thomas Treatment Guidelines," which offered pearls on common and not-so-common disorders often seen in the primary care optometric practice.

As the federal mandate for practices to move to electronic health records has officially arrived,

Protein and Lipid Deposition in HEMA vs. SiHy Lenses

By Mike Wu, O.D.

IN OUR MISSION TO PROMOTE OCULAR HEALTH, patient comfort and satisfaction with soft contact lens wear, eye care practitioners must address the potential for deposits. Previously, selecting a deposit-resistant lens proved difficult, as there was a tendency for HEMA (especially Group IV) lenses to attract protein deposits and for silicone hydrogel (SiHy) lenses to attract lipid deposits. Fortunately, recent technological advancements have produced lenses that not only possess high Dk/t qualities, but also offer superior deposit resistance.

SOFT LENS DEPOSITS AND RELATED COMPLICATIONS

Most contact lens deposits originate from components inside the tear film, lens handling and the environment.

Protein deposits, comprised mostly from lysozyme, lactoferrin and albumin, are one of the most common types of deposit found. These proteins are not visible in tears, but as they accumulate, and eventually denature on the contact lens, they become cloudy and obscure the wearer's vision. Denatured protein has been implicated in contact lens complications such as giant papillary conjunctivitis and contact lens-associated papillary conjunctivitis as well as inflammation. Group IV HEMA lenses are more susceptible to high levels of protein deposition than any other group.[1–3]

Mucoproteins can coat the lens surface, leading to the formation of a pellicle or biofilm. This biofilm can negatively affect the performance of the lens in both comfort and visual acuity by decreasing lens wettability. It may also promote bacterial adherence to the lens, which can lead to conjunctivitis, keratitis and possibly corneal ulcers. Lenses derived from ionic polymers tend to have greater pellicle formation, as do those worn on an extended wear schedule, compared to daily wear.

Lipid deposits are commonly seen with high water soft extended wear and SiHy lenses. These deposits often cause poor surface wetting, leading to poor vision in between blinks and the sensation of dryness. Some risk factors for lipid deposits include dry eyes, meibomian gland dysfunction and high-fat diets. SiHy lenses, because of their hydrophobic surface attributes, and lenses containing vinyl pyrrolidone are especially vulnerable to these deposits.[2,3] Plasma-treated SiHy lenses are the exception to the rule, with enhanced lotrafilcon A and B materials performing better than non-plasma-treated SiHy materials.[4]

Calcium deposits, which are less common, can nevertheless be seen on the lenses of patients with hypercalcemia and chronic inflammation. Chronic inflammation may affect the pH of the tears, promoting calcium deposition on the lenses and in the cornea.

MANAGEMENT

I predominantly fit SiHy contact lenses in my practice because of their moisture retention and oxygen permeability. My staff and I are proactive in educating our patients on the benefits of switching from HEMA lenses to SiHy lenses. These efforts are rewarded with ocular health benefits, patient satisfaction and ultimately, patient loyalty. There are many good SiHy contact lenses to consider, but AIR OPTIX® AQUA Contact Lenses are the clear choice.

AIR OPTIX® AQUA Contact Lenses are more resistant to protein and lipid deposit than other major SiHy brands because of a proprietary plasma surface treatment.[4] The oxygen permeability and moisture retention are also excellent. I have had success using this lens to help patients who experience significant depositing on their contact lenses. AIR OPTIX® AQUA Contact Lenses may be worn for daily wear or up to six nights of extended wear, and must be replaced every month. In my experience, patients fit into a monthly replacement schedule are more compliant than those fit into a two-week replacement schedule.

It is also important to educate patients on how to care for their contact lenses. Recommending a SiHy-compatible solution such as OPTI-FREE® PureMoist® Multi-Purpose Disinfecting Solution, in addition to fitting patients in AIR OPTIX® AQUA Contact Lenses, usually makes for a winning combination. Clean lenses are key to ensuring successful contact lens wear; however, patients who faithfully follow all aspects of lens care are uncommon. So why not fit patients with lenses that are inherently more deposit-resistant, thus improving their chances for success?

Dr. Wu completed his residency in primary care and low vision rehabilitation at the VA Tucson and has been in practice since 2001. He is currently practicing at a Tucson, Arizona, Costco Optical.

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2. Meadows D, Ketelson H, Schlitzer R, et al. Soft contact lens care and patient education. In: *Manual of contact lens prescribing and fitting*. St. Louis, Mo.:Elsevier Inc.;2006:367.
3. Jones L, Mann A, Evans K, et al. An in vivo comparison of the kinetics of protein and lipid deposition on group II and group IV frequent-replacement contact lenses. Optom Vis Sci. 2000;77(10):503-10.
4. Nash W, Gabriel M, Mowrey-McKee M. A comparison of various silicon hydrogel lenses; lipid and protein deposition as a result of daily wear. Optom Vis Sci. 2010;87:E-abstract 105110.

Phillip Gross, O.D., offered attendees real-world EHR examples and a road map on how to navigate through the process. In "EHR Survival: Deployment and Rewards," Dr. Gross discussed critical issues and steps invovled when deploying an integrated EHR system while still focusing on realities, challenges and rewards for compliancy.

Glaucoma experts Robert Wooldridge, O.D., and Murray Fingeret, O.D., led an informative back-and-forth course that reviewed controversial glaucoma topics in regards to diagnosis and management. Their course, "Point-Counter Point Glaucoma," covered the best adjunctive medication for the treatment of glaucoma, contemporary models of care, innovative diagnostic instruments (e.g., optic nerve imagers, newer perimeters) in addition to whether surgery has a role as an intial therapeutic modality.

Diana Shechtman, O.D., navigated attendees through her presentation, "Using the OCT Beyond the Macula," where she discussed several challenging cases in which OCT analysis played a key role in the evaluation of the retinal condition that went beyond macular disease.

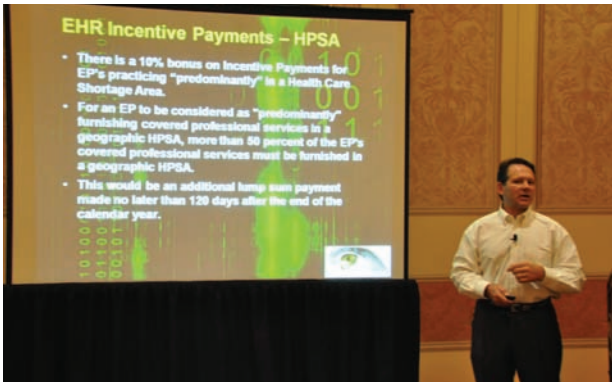
Eye care practitioners also picked up pointers during other key course offerings, including Board Certification Review, the Management and Business Academy, the UV Symposium and the Optical and Contact Lens Boot Camp.

Sheri Mayes of Nationwide Vision in Chandler, Ariz., gave high marks to the continuing education courses she attended. "The classes were great, especially the sessions on digital lenses and the optics of larger lenses," she said.

New at VEW

Vision Expo West cites several successes from this year's meeting, including new strategic partnerships that were formed between optometric associations, professional organizations, alliances and buying groups. Specifically, the Optimum Program, comprised largely of million-dollar practices, *Vision Monday*'s Top 50 Retailers and boutique optical buyers, grew by 22% and 11 new professional groups joined Vision Expo's Partner Program, bringing the total number to 38. Additionally, the growth of the Optometry Student Program enticed several organizations to host meetings at the show, including the Association of Practice Management Educators and Student Optometric Leadership Network.

"We are ecstatic with the outcome of Vision Expo West. Not only did it exceed our expectations, we hit company goals and achieved record breaking results overall," says Milena Cavicchioli, vice president of marketing for Luxottica North America. "Following the success of Vision Expo East earlier in the year, we have continued to see a remarkable increase in the demand for our brands and have kept the momentum going ever since. The show was another excellent opportunity for us to spotlight the new collections as well as update guests on the latest company news and brand initiatives, including Ray-Ban's 75th Anniversary."



Vision Expo West featured 350 hours of education, including courses on how to navigate through EHR implementation.

In addition to reporting strong sales at the event, many exhibitors were optimistic about the industry's growth potential for the remainder of 2012. "Marchon continues to gain momentum and market share as we launch spectacular product season after season," says Lloyd Gittler, vice president of retail for Marchon Eyewear. "From Michael Kors to Lacoste to Fendi, we have maintained our position as a leader in the industry and an innovator in product, design and marketing. We also had a nice response to the launch of Valentino men's eyewear. Life is good post-show."

Barney Dougher, president of Hoya Vision Care, also observed that many attendees are "conscious buyers" who come to Vision Expo with a discerning eye for new products that could help them grow their business. "For example, our new Spectangle and our augmented reality apps, and Hoya DF (Distortion-Free Optics) really attracted attention," he noted.

Next year, International Vision Expo West will be held from October 2-5 in Las Vegas, before returning to its typical late September timeframe for the next seven years. For more information go to www.vision-expowest.com. ■

The Vision Monday *staff contributed to this report.*

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Ask the Legal Consultant: When Good Employees Go Bad

What do you do when a staff member crosses the line? You asked. Our lawyer answered. **By Pamela J. Miller, O.D., J.D.**

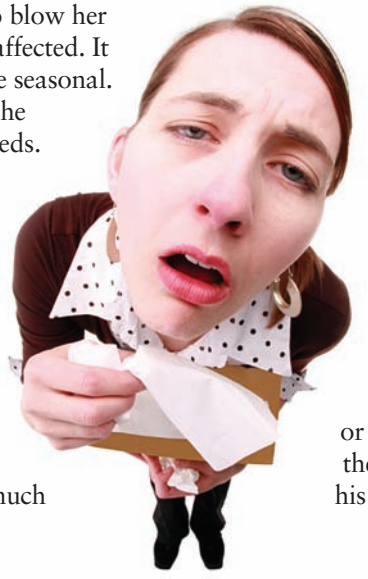
The number one headache for most private practitioners is managing staff members.

To that end, *Review* asked for your toughest staff problems, and then asked me to answer them. So, as a lawyer, a practice consultant and a practice owner, here's my best advice.

A Toxic Environment

Q We recently moved to a new location. The new office is great. Everyone loves it—except one staff person appears to be allergic to something. She sneezes and coughs and frequently has to blow her nose. No one else is affected. It does not appear to be seasonal. She can control it if she takes OTC allergy meds. On rare occasions, it is so bad that she has been unable to work and has gone home early. We have put in a new AC unit and paid to have all the ducts cleaned, but it has not helped her. My question: How much more am I required to do for this employee? What more can I do? If she is the only one affected, how much of it is her responsibility?

—Dr. W.
Tampa, Fla.



A You have several issues to think about when considering your obligation to employees.

First, find out if you are in an "employment at will" state. If so, that means you can let an employee go for any reason.

Second, consider the issue of "reasonable accommodation" for "disabled" employees. Reasonable accommodation means that an employer must make a reasonable effort (whether in cost, time, etc.) to address an employee's disability (which may be permanent or temporary) to help the employee perform his or her responsibilities. This may entail allowing an individual to assume other office responsibilities in place of those performed in the past. Each case is unique and one size doesn't fit all.

Third, what do you have written in your office policy manual?

Fourth, do you have a contract with this employee and what are your grounds for termination?

I'm assuming that this employee had no difficulty in the previous location, and this onset of allergy response is new and not improving. If she is able to control it with OTC allergy medications, then you may wish to simply offer to pay for those meds on the days she is working. (This should satisfy the "reasonable accommodation.")

Of course, a better option is for her to get tested by an allergist and find out what specifically she is allergic to, and then try to mitigate the offensive allergen. You have already gone beyond what would be considered reasonable accommodation at this point with respect to the immediate environment.

The bottom line: How valuable is this employee to you? Does she have to work directly with your

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*AIR OPTIX® AQUA (lotrafilcon B) contact lenses: Dk/t = 138 @ -3.00D. **Prior to evaluation, 100% fit AIR OPTIX® AQUA contact lenses and 85% indicated AIR OPTIX® AQUA contact lenses were their preferred SiHy lens for new fits. †Successful conversion defined as the patient received a prescription for or purchased AIR OPTIX® AQUA contact lenses. ††Compared to ACUVUE^ OASYS^, ACUVUE^ ADVANCE^, PureVision^, Biofinity^, and Avaira^ contact lenses. ‡Compliance with manufacturer-recommended replacement frequency. ^Trademarks are the property of their respective owners.

Important information for AIR OPTIX® AQUA (lotrafilcon B) contact lenses: For daily wear or extended wear up to 6 nights for near/far-sightedness. 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. Based on a post-launch evaluation in which 88 eye care practitioners refit over 400 patients in AIR OPTIX® AQUA contact lenses. Alcon data on file, 2011. **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.** Compared to HEMA contact lenses; based on the ratio of lens oxygen transmissibilities; Alcon data on file, 2010. **4.** Dumbleton K, Richter D, Woods C, et al. Compliance with contact lens replacement in Canada and the United States. *Optom Vis Sci*. 2010;87(2):131-139. **5.** Compared to 2-week replacement lenses; based on self-reported lens replacement time and third-party industry pricing information; Alcon data on file, 2012.

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patients, or can she work in billing or another back-office setting where patient contact is minimal? You will ultimately lose patients if she is constantly sneezing, coughing and blowing her nose when she is with your patients; the other employees will also become more uncomfortable around her. Furthermore, you have the additional problem of germaphobic employees and patients who might mistake her allergic response for something contagious.

Try working with your valued employee—she most likely has already given this a lot of thought. If you remember that you are a team, you'll be far more likely to succeed and avoid unnecessary costs and litigation. Sit down with her, one on one, and see if you can come to a solution. Perhaps offer to pay for the allergy testing and possibly the accompanying injections or medication.

If she is unwilling to make any effort to control the problem, you'll find yourself in the position to either fire her (and pay unemployment) or to put up with it until you cannot stand it anymore, while potentially losing patients and other staff members in the meantime.

At this point, you've done pretty much everything you can and it is up to your employee to take responsibility for controlling the problem with OTC allergy medication. Be certain that you document all efforts and counseling that you have made to resolve this issue, as you are likely to end up in labor court if you contest her filing for unemployment.

Selling on the Sly

Q I suspect—but am not sure—that one of my optical employees has sold frames and lenses "on the side" to her friends and/or family. However, she handles all the ordering and the billing, so she could easily hide these orders and sales from me. How can I legally confront her about this without making it an accusation? She has been a good employee. If I am wrong, I don't want to put a dark cloud between us. But if I'm right, what is my legal recourse?

—Dr. B.
Birmingham, Ala.

A Legally, unless you are able to document the theft, you will not be able to prosecute.

I would suggest a change in procedure. To avoid a perceived allegation of wrongdoing, you can couch it in neutral terms: you want to "expand her duties to other areas," or you just attended a practice management seminar/consultation and this was a recommendation, etc. Your optical employee will continue to handle all the ordering but, effective immediately, no orders should go out without your immediate approval at the end of the business day (you can even do a daily order sheet—patient, method of payment, type of Rx, etc.).

Also, have your labs send all bills directly to you. (You can have bills sent to you on your personal computer only, not the office computer that is accessible by employees even if it is password protected). Make certain that the labs are under specific orders to only send the bills to you or your designee.

It is never a good idea to have one employee responsible for ordering and billing. All bills need to be reconciled on a daily, weekly or monthly basis. That means that every invoice needs to be matched with the end-of-month lab billing. You need to see all bills and you need to reconcile those bills (or another trusted employee needs to do this). Separate the tasks and specifically empower employees to handle each task independently.

The bottom line: Your financial tasks need to be divided up so that no single individual has access to everything. Furthermore, you need to run periodic security checks to ensure the safety of your office income and integrity.

An Rx for This Headache

Q I have an employee who called in her prescription medicines into the pharmacy under a patient's insurance because she (the employee) doesn't yet have prescription coverage with our practice. (She's a part-timer.) As the practice owner, will I come under scrutiny or even disciplinary action because of this employee's actions? Should we pursue this matter, or can we legally ask the employee to resign if we do not pursue this matter? Should we contact the patient whose prescription coverage was used without knowledge and permission?

—Dr. M.
Philadelphia, Pa.

A Well, you have a serious problem. Fire her now. If you do not fire her, you will be setting a poor example for everyone else in the office and encourage dishonesty, fraud and theft.

Any way you look at it, this is fraud. As the employer, you are responsible for the actions or inactions of your employees while acting within the scope of your office. (Law books refer to this as the theory of *respondeat superior,* which is Latin for "Let the master answer.")

This is a punishable offense and she can be prosecuted. And if you know about it and do nothing, then that liability may extend to you. You stand to lose a lot, including being on third-party panels, charges

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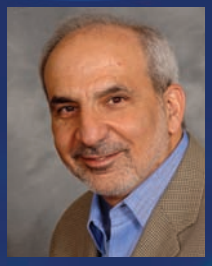

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I look forward to seeing you in Newport Beach!
Murray Fingeret, OD

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of fraud, loss of licensure, etc. So, is she worth it?

It makes no difference whether she works full time, part time, is new, experienced, etc. She has probably done this before and, unless you nip it in the bud, she likely won't be deterred from similar transgressions in the future.

I would pursue it, absolutely. To allow her to resign and not press charges is not only wrong, but it now makes you complicit in her illegal and fraudulent actions.

Notify the police department, notify the insurance company, notify the pharmacy and notify the patient. *Do not* let the employee know in advance and *do not* discuss this with anyone prior to taking action. Once you have notified the police and the insurance company, fire her immediately. When you are faced with her claim for unemployment, you now have the documentation to support your decision.

Don't Discuss Politics

Q What constitutes a "hostile work environment"? We have a long-standing and loyal employee (21 years) who now goes on long tirades and enters into heated arguments about politics with other staff members. (So far, the employee hasn't engaged patients in these debates, but it seems like it's only a matter of time.) I've personally requested that the employee cease these actions, and each time he has apologized and promised to stop. But it keeps happening, and it's making the other employees unhappy. We have an open and lively work "culture" in our practice, so in some way I feel responsible that this environment has encouraged his behavior.

—Dr. S.
San Francisco, Calif.

A A hostile work environment is a workplace where an employee is subject to harassment. This harassment may be based on race, disability, religion, gender, national origin, or be sexual in nature. Both federal and state laws prohibit this.

California laws use the following standard to determine whether harassment would affect an employee's work performance: "Would the harassment have interfered with a reasonable employee's work performance and would it affect the psychological well-being of a reasonable employee?" Most states have a similar standard.

So, the bottom line is whether the work environment is hostile to that employee, to other employees, to your patients, etc., and have you been put on notice by your employees. The courts look to the reasonable person standard. (This is an objective standard that compares how the individual's behavior in this particular situation compares with the behavior of a hypothetical "reasonable and prudent person" in the same set of circumstances.)

As the employer, you are under an obligation to maintain a working environment that is not hostile. Once your employees have put you on notice (i.e., made you aware of the bothersome situation), you must take positive steps to resolve it. If at all possible, use a pyramid system of discipline (i.e., a verbal warning, followed by a written warning, followed by further disciplinary action—possible salary decrease, probation, requirement to update skills, etc.—which, if not met, may result in termination). Be sure to document your actions as well as the complaints of other staff, and promises to change by the employee, etc.

Because you've already requested the employee stop this behavior (assuming that this was verbal, but it should also have been put into writing), you're now at the point where you must either place the employee on probation or fire him. It's best if you have the documentation that can clearly indicate the problem, who made the complaints (be careful about revealing the specific name to the offending employee), when discussions were held, and what was said as well as promises made, and what follow-up has occurred.

It's possible that the employee is now experiencing major personal problems (e.g., divorce, death, etc.) or has developed mental/emotional problems, or may have a substance abuse problem. A frank discussion is in order to see if you can determine why this behavior has now arisen. If professional counseling or medication will help, then you may be able to retain this employee.

You can place the employee on a two-month probationary period with the understanding that if this occurs again, you will have to let him go immediately—but that is not what you really want to do, since he has been a valued employee.

If your office policy manual and/or employee contract does not cover this type of situation, consider adding it to your manual. You need to include the specifics of how and where to complain and what the employee should expect in terms of resolution. Your standard procedure on how to report workplace harassment is essential and should be laid out very specifically and clearly.

Some topics and jokes, pictures, etc., should be very specifically off limits in your office (and this needs to be in writing). Consider instituting a zero-tolerance policy for harassment, political discussion, religious discussion, etc., along with the statement that if violated, this may be grounds for immediate termination or disciplinary action.

Some behavior may be so egregious that it calls for immediate dismissal of the offending employee. Your office policy manual should include a boiler-plate sentence that indicates that "an employee may face immediate dismissal for any of the following (but not limited to) violations: working under the influence of illegal drugs or alcohol, harassing a fellow employee, use of obscene language, telling off-color jokes, disclosing privileged information, theft of goods or monies, etc."

If you fail to take action to control or eliminate the problem and offending activity, you may now be legally responsible. An office meeting where you discuss the rules, examples of unacceptable behavior, and potential repercussions might be appropriate in this circumstance, along with the fact that you must be placed on notice first prior to being able to take any corrective action. If you accompany this discussion with input and suggestions from your staff, then you should have some excellent material to include in your manual.

A no-nonsense approach with firm guidelines, and the fact that you have an open-door policy and expect your staff to let you know if there is a problem so that you can take appropriate action, is best.

For specific legal advice on employment questions, consult your own attorney, and check with your state chamber of commerce or labor board for further clarification on employee issues. The advice given here should not be construed as legal advice for your own practice. ■

Dr. Miller is in private practice in Highland, Calif., and works as a practice management consultant and expert witness. She lectures and publishes extensively and has written seven books.

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When is the Right Time to Add an Associate?

The right associate can bring a lot to a practice, including added flexibility and potential for greater growth. But when is the ideal time to add an associate—and is it worth the risk? **By Cheryl G. Murphy, O.D., Contributing Editor**

For the last seven years, optometrist Justin Prasad has worked hard making his Long Beach, Calif., practice into what he had always dreamed it could be.

When Dr. Prasad first purchased the practice in a strip mall in 2005, the office was in a state of disrepair and neglect. The previous owner had used it as a second practice and held doctor's hours there only two days a week.

Since acquiring the office, Dr. Prasad has done extensive remodeling, expanded the space by 400 square feet, and has plans to do a full professional reconstruction of the optical and front office space in November.

Likewise, Dr. Prasad had his work cut out for him when it came to building up the patient base, as well as their trust. "I'm proud of how much growth we've had," he says. "I used to see four to eight patients a day when I first started. Now I'm booked a week to two weeks out."

Justin Prasad, O.D., is debating whether to hire another doctor for his growing practice. But, he says, "I'm not sure another O.D. would have the same passion I exude."

He also went from employing one staff member to four—but when it comes to hiring another optometrist, he has some reservations. "I take so much pride in my office and customer service that I'm not sure another O.D. would have the same passion I exude," he says. "Maybe I'm wrong. But in the world of online reviews, we are all under the microscope even more."

Dr. Prasad's hesitation to bring in an associate to the practice he has poured his heart and soul into reflects the reluctance of other O.D.s as they question whether or not it is or will ever be the right time for them to add an associate.

Why Hire an Associate?

There are at least two big reasons to consider bringing on an associate.

• *Covering office hours.* One of the reasons why Dr. Prasad is considering hiring another O.D. is to cover the two days a week that he is not there. When he first bought his practice, he began working at an ophthalmologist's office one day a week to help supplement his income while the practice grew. Although his own practice is now flourishing, he has decided to stay at the ophthalmologist's office for the experience and for the expanded scope of pathology that he encounters there, which he would be unlikely to see in his own

family optometric practice. It also allows him to stay fluent in Spanish and to help serve patients in a disadvantaged area of his community. In addition to his day at the ophthalmology office, he also takes one day a week off to spend time with his growing family.

By hiring an associate doctor, Dr. Prasad would gain coverage at his office on the days when he is not there.

• ***Finding a likely buyer.*** Another benefit to adding an associate is the chance to build a relationship with a possible partner or future buyer of the practice. When it comes to taking on a partner, Dr. Prasad isn't looking that far ahead just yet. "I still feel that it's too early in my career to tell if I'll take on a partner," he says. "It takes a tremendous amount of trust—it's like a second marriage! So time will tell."

Successful Teamwork

Many solo practice optometrists would agree that adding an associate and possible potential partner is indeed like entering into a marriage. "You need the right mix," says Bruce Levinson, O.D., of Syracuse, N.Y. "You are going to spend as much, if not more, time with your business partner as you do your spouse during the week. You have to like and trust the person and, yes, deal with their little quirks and have them be able to handle yours."

After Dr. Levinson graduated from New England College of Optometry, he worked for an ophthalmologist before opening his own practice cold in 1996, which he eventually merged with his father's practice in 1997. He recalls, "we had two employees: one part-time secretary and one part-time optician," he says. "I set a goal of giving superb patient eye care, and by 2000 we had four employees."

In 2001, he hired a young technician out of college. That technician, who would eventually become an optometrist in 2005 and his partner in 2010, was Joseph DiTota, O.D., also a native of the Syracuse area.

"It takes a tremendous amount of trust" to bring in a partner, says Bruce Levinson, O.D.

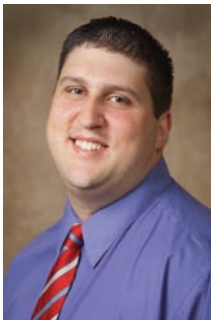
When asked why he first considered adding an associate doctor to his then-solo private practice, Dr. Levinson says, "I was at the point where I felt I could not grow without an associate. I could have gone the way I was going and done okay, but not great."

For his part, Dr. DiTota already had aspirations of becoming an optometrist while studying biology as an undergraduate at SUNY Albany, even before he became a tech at Dr. Levinson's practice. He and Dr. Levinson discovered they had a lot in common and developed a good working relationship from the start. So when Dr. DiTota decided to go to optometry school, he and Dr. Levinson began to entertain the idea of Dr. DiTota working there as an optometrist upon graduation. And that's exactly what happened.

"Dr. Levinson became a mentor for me and really showed me the world of optometry from a private practice standpoint. I was very lucky," Dr. DiTota says.

During his first two years as an associate at Dr. Levinson's practice, Dr. DiTota continued to receive practical advice and guidance from Dr. Levinson while he refined his exam style and grew his patient base. "It was a great decision for me [to return to work as an O.D. at Dr. Levinson's practice] because it left me with no doubts that I wanted to become partner," he says. "I also became familiar with all aspects of the business side of optometry. The staff is very knowledgeable, caring and driven for the practice to succeed, which made the partnership even more attractive."

Likewise, Dr. Levinson had no reservations about making Dr. DiTota his partner. He had a few other optometrists work at the practice before Dr. DiTota, but "none of them had the dynamic personality that Dr. DiTota has. We are both athletes and seem to communicate with patients in the same lighthearted manner," he says.



Being a partner at Dr. Levinson's practice "was a great decision for me," says Joseph DiTota, O.D.

Still, although they got along easily, they both took the process of forming the partnership agreement very seriously. Each step into the partnership was well thought out and pre-planned. Along with the services of a consulting group, they talked about what they each wanted personally out of the practice and the direction in which they would take the practice together.

Even though Dr. Levinson had the practice evaluated and assessed before, he encouraged Dr. DiTota

to have it assessed on his own so that Dr. DiTota would feel even more confident in his investment. When Dr. DiTota's independent analysis matched Dr. Levinson's previous evaluation, they proceeded to draw up a contract for the partnership with the help of legal counsel and an accountant.

Dr. Levinson admits that while adding an associate was a bit of a financial strain in the beginning, it has already paid huge dividends. Since they have partnered, their practice, Eyecare of CNY, now has a total of three successful optometric offices in central New York. Each agrees that partnership was the right choice for them.

Things are going so well that they're even talking about adding a third associate optometrist at some point in the future. However, Dr. DiTota says it is necessary to first "test the waters with outside optometrists who may become potential partners by hiring them for part-time work… or through a full-time salaried position."

He reasons that if a business partnership is a marriage, then finding the right associate through short-term employment is like dating. "It can really tell you a lot about someone and help to predict if they are the right fit for the office," he says.

One of the benefits to having someone to lean on is the chance to finally relax and allow someone else to take the reins every once in awhile. "Having a partner can help you to have a better way of life," Dr. Levinson says.

Now with Dr. DiTota on board, "I know my partner has my back when I am with my family on vacation," Dr. Levinson says. "It is a great feeling to know someone is tending to the practice back home. It allows me to relax. I was never really comfortable when I was solo and away from the practice."

Pros and Cons

The partnership of Drs. Levinson and DiTota has been a tremendous success, but some associateships do not result in such favorable outcomes. Optometrist Stuart Rothman, author of the textbook "Business Aspects of Optometry," as well as a private practice owner and associate clinical professor at SUNY College of Optometry (where he teaches practice management), says that there is much to carefully consider when deciding whether to hire an associate optometrist. It is not a decision to be taken lightly. (*See "Is it Time for You to Add an Associate? Four Things to Think About," left.*)

"There are advantages and disadvantages to hiring an associate O.D.," Dr. Rothman says. Some of the pros include: "A smoother transfer of ownership for an existing practice; an expansion of hours, services and care and economy of scale in purchasing equipment, supplies and inventory."

Adding an associate can also provide a blending of complementary skills where each O.D. can offer his or her own strengths to widen the patient base. Also, as Dr. Levinson indicated, having an associate allows "the existing O.D. to have increased time off, coverage when ill or away from the practice, and a greater certainty of a potential buyer for the practice," Dr. Rothman says.

As for the cons of hiring an

Is it Time for You to Add an Associate? Four Things to Think About

By Stuart M. Rothman, O.D.

Stuart Rothman, O.D.

1. Define what you are looking for.

Is there the potential for equity purchase or not? True associateship involves an initial trial period of employment followed by a buy-in of equity in the practice, leading to an eventual partnership or buy-out of the original O.D. If you don't envision that happening, then you are just looking to employ an O.D.

2. Determine the reasons for the need.

Is there patient demand for another doctor—due to volume, the need to add specialty services, or the desire to add or staff a satellite office? Or, do you want to add an associate for personal reasons (e.g., more time off, or the hope to sell the practice in the near future)?

3. Determine the percentage of equity available for the associate O.D. to purchase.

Will it be equity equal to yours as the owner? Or unequal equity, where the owner still maintains a controlling interest? Or will it be full equity, as in an eventual practice sale?

4. Is the practice financially able to handle the addition of an associate O.D.?

Is the current demand too much for you to handle solo (e.g., appointments unavailable for weeks in advance, patients leaving the practice because they can't get an appointment in a timely fashion, the increased patient demand can't be met by adding additional non-O.D. staff?)

Is there demand for specialty services (vision therapy, low vision, specialty contact lens fits, ocular disease, etc.) that the practice can't meet without an additional O.D.?

Are you willing and able to reduce your income initially (and gain additional time away from the practice)?

associate, "unless the practice demand for the associate O.D. is present immediately, there will be an initial decrease in net income for the existing O.D. until the revenue is increased by the presence of the associate," Dr. Rothman says.

Also, the existing doctor will be "relinquishing some control in the practice, especially if they hope the associateship will lead to an eventual buy-in," he says. In addition, the practice owner has to be "willing to open up the practice's financial records and share financial decision making with the associate optometrist."

Is now the time for you to add an associate? Maybe not. But now's the time to begin to think it over, at least.

"Anyone who is solo and wants to grow should start looking now," Dr. Levinson says. "Yes, you need to make a personal sacrifice to bring someone in. You have to allow them to take some of your patients and some of your money to get started. But, having the right associate/partner is invaluable. Your quality of life becomes better and you are not 'fighting the fight' alone. You can lean on each other both clinically and in business."

As for Dr. Prasad, although he has not decided whether an associate O.D. is the right move for his practice, he does have big goals. "I really want to see how far I can take my current office," he says. And once he has fully mastered his current practice, he plans to expand further and has even looked at purchasing other existing offices nearby. ■

Dr. Murphy writes frequently on both optometric business and vision science. She is also an associate O.D. at a private practice in Holbrook, N.Y.

10 Myths of Social Media

Are you *not* a fan of Facebook? Does Twitter give you the jitters? Do you lack interest in Pinterest? Don't worry. Social media is much easier than you think.

By Justin Bazan, O.D.

It's time to clear up some major misconceptions about social media (SM). Too many optometrists let these myths keep them from enjoying the practice-building benefits of SM. Well, read on if you're ready to get the real scoop. Read on if you're ready to let these truths set you free. It's time to stop being anti-social (media).

Myth 1: Social Media Costs Too Much

Social media is not free. Plain and simple, SM will cost you something. It may not require a financial outlay to use it on its most basic level, but SM does require a minimal investment of your time and a sizable investment of your creativity.

But, from a monetary standpoint, SM can be absolutely 100% free. In fact, to use all of the most popular SM platforms, you're not required to shell out any money. For example, you can create and set up a Facebook (FB) page for your business for free.

We paid Facebook a mere $20 to promote this post. More than 10,000 people saw it.

However, some businesses choose to fund their SM presence to enhance their marketing. For example, you have the option to "Promote" a post on FB in order for that post to gain more exposure. (Right now, it only costs around $10.) This often generates more fans and more engagement.

You can also choose to do a more formal advertising campaign and create ads and offers that are displayed on FB, which can help build your fan base, sell products or generate appointments.

Myth 2: Social Media is Too Time Consuming

Done correctly, SM requires surprisingly little time commitment. After the initial setup—which should take most people around a half hour—there is a very small time requirement. In my office, it's about five to 10 minutes a day.

My practice, Park Slope Eye, uploads at least one post per day. On even days, a member of the front desk team posts. On odd days, a member of the optical team posts. I post whenever I'm inspired. All of us take no more than five minutes to do it. If your staffer tells you it takes longer, he

MYTHS, METHODS AND MEANS FOR SOOTHING END-OF-DAY CONTACT LENS DISCOMFORT

Fig. 1: Headstand in an ice bucket.

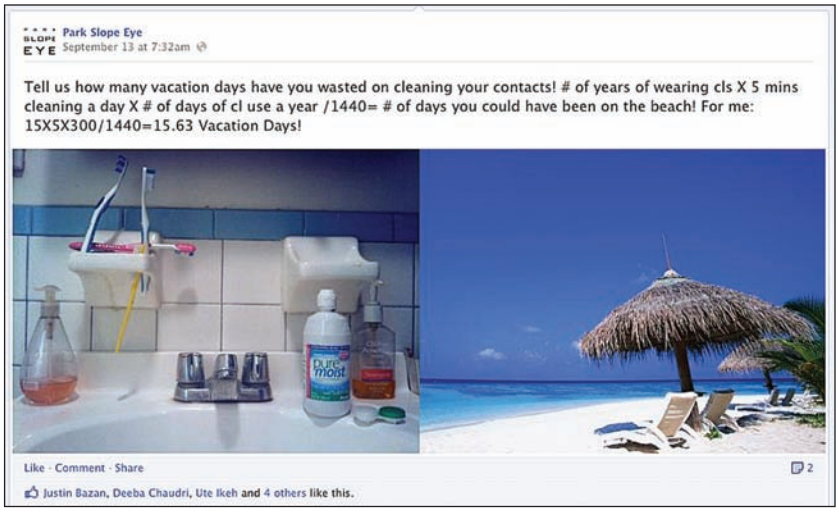
Fig. 2: Switch to Avaira®.

How far will your patients go to relieve their dry, irritated eyes? Tell your patients about Avaira® lenses for comfort that doesn't end before their day does. 8 out of 10 Avaira wearers wear their lenses for 14 hours or longer per day.* Avaira 2-week contact lenses by CooperVision™.

Scan to learn more.

CooperVision™
Live Brightly.

*U.S. Study. Data on file.



We asked a simple question: How many days of your life have you spent cleaning your contacts? (My answer: 15.63 days that I otherwise could have used for vacation.) We promoted this post for only $25. Guess how many people saw it? (See answer below.)

The response was huge: It reached nearly 40,000 people. This graph illustrates the large spike in our fanbase "reach."

or she is doing something wrong. (Most likely browsing FB for fun.)

We also spend a couple of minutes engaging other local businesses with ours. Is the restaurant down the street displaying a local artist's works? You might want to "Like" it or "Share" it with your fans. This is often an overlooked, but essential, part of building a successful FB page. You'll develop actual community involvement by virtual means.

Monitoring user review platforms, such as Yelp or Google Places, takes even less time. The best part is that consumers largely create the content on your review page. This means that the public content is self generating and it only requires you to monitor and respond. You won't get a review every day. (If you do, you should be writing this article, because you would be the biggest SM rock star around!) Most practices probably get a few reviews a month.

If the review is positive, a simple thank you is a fine response. If the review is negative, invest some time and make your public response a good one. I often write a draft and sleep on it, and then read it over the next day before I post it. This often means I spend at least a half hour of time on each negative response. (Fortunately, these don't happen often.)

Myth 3: It Takes Years to Build a Fan Base

When you first opened your practice, was your appointment book filled? I'm betting it wasn't. Think of starting with SM much like opening up a practice cold. Just because you have a Facebook page, don't think you'll have an explosion of growth from the first day. Most likely, just as it took time for your practice to grow, it will take time for your SM network to expand. With user review platforms, you can anticipate similar growth.

You can expect things to be slow at first and grow faster as time goes on. The reason is that as your fan base grows, so does your exposure to your fans' friends; the growth becomes exponential. Keep in mind that this holds true for nearly every business, which is why it's imperative that you do not waste any more time. It would be

vision
for everyone... everywhere

Brien Holden Vision Institute is one of the largest and most successful non-profit social enterprises in the history of eye care. By applying commercial strategies to vision research and product development the Institute has generated income for research and public health programs that provide quality eye care solutions and sustainable services for the most disadvantaged people in our world.

The concern for the devastating shortfall in eye care education in developing communities, especially for correction of refractive error, became action in 1998 for those at the Institute. The lack of training institutes and educational opportunities was creating a human resource gap and a critical eye care shortage for hundreds of millions of people in need of services. The concern and willingness to address the issue gave rise to the International Centre for Eyecare Education (ICEE).

Almost 15 years later, and acknowledging that 640 million people are still without access to permanent eye care, concern has galvanised into action again. To advance the process of addressing the challenge, both ICEE and Brien Holden Vision Institute will more closely align, share one common purpose and one name.

Together, we believe if we harness our efforts and broaden our scope we can achieve much more.

Together, we aim to drive, innovate, educate, collaborate, advocate and negotiate what is needed so that hundreds of millions, even billions, of people worldwide can enjoy the right to sight. Whether it's research to develop the technology to slow the progress of myopia, investment in new systems for diagnosis of disease, delivery of sustainable access to services or provision of eye care education in the most marginalised and remote communities in the world, the Institute will focus on the quality of vision people experience and equity in eye care access worldwide.

We believe in vision for everyone...everywhere.

Share the vision

brienholdenvision.org

Brien Holden Vision Institute

Education Research Technology Public Health

Brien Holden Vision Institute Foundation (formerly ICEE) is a Public Health Division of Brien Holden Vision Institute

great if you could get out in front of your competition; but if you're already behind, it's OK. You just need to make sure that you focus your efforts and are consistent with your execution.

The key to SM growth is consistent posting. With steady use, you create awareness—which is the first step to gaining a fan, a review or customer engagement.

Social media doesn't have to require a lot of time. One post or tweet a day is enough—and it should take no more than five or 10 minutes.

Myth 4: SM is Just for Kids

Facebook may have started in a Harvard dorm room, but guess who makes up one of its fastest-growing populations? Retirees![1] Nowadays, literally everybody and their mom is on Facebook. Mine included.

Social media is not just for kids any more. In fact, the 18 to 24 age group is often the demographic with the lowest utilization rate on FB, with similar trends on other popular platforms (with the exception of Twitter, because this generation both follows and tweets with many of its idols who use the platform).[2]

SM spans multiple generations and, at this point, there is no one dominating age group.

Myth 5: You Cannot Measure the Return on Investment

If I came to you 10 years ago and told you that I had a device that would allow you to stay in almost constant contact with a large number of your patients, attract new patients and generate new business, how much would you have invested in it? $1K? $5K? $10K?

So why should there be a concern about return on investment (ROI) for something that is so easy, effective, fun and free to use? This may be the lamest excuse that I hear from somebody who won't use SM.

OK, but what if you *are* spending money on SM? Well, I agree that if you are investing in social media marketing, you should have an understanding of how your investment is paying off. You can absolutely measure ROI on your SM marketing.

A simple way is to ask your patients directly and then monitor the results. You should know how profitable an exam is. You can then get a baseline of a particular statistic; for example, how many people indicated that a user review influenced them to make an appointment? Then, you can spend some money on marketing and see what happens to this statistic. If you spend $500 a month, and you're averaging $200 profit per appointment, you need to see an increase over baseline of 2.5 for that particular statistic.

Another way is to identify those who came in because of a specific marketing effort. For example, you may run a Facebook offer and require patients to indicate "FB Offer #123" when booking an appointment. You simply keep track of utilization.

Myth 6: SM is a Fad

Hula Hoops were a fad. Something like SM, which has fundamentally changed the way that marketing is thought about and conducted, is not. In a few years, SM will be woven into traditional marketing, such that all marketing will have a social media component built in.

At the minimum, SM enhances traditional marketing. The last time you saw a TV commercial, where did it send you? To a website or to a SM site. How about your TV watching experience? Did you notice the use of social media content? Maybe even incorporating live comments from the Twitterverse?

The point is that SM is easy to add and very effective in enhancing traditional marketing. SM platforms will come and go (yes, even FB will make an exit some day), but the fundamental principles of social media are here to stay.

Myth 7: People Only Use it to Complain

People can use it to complain, for sure. However, if you look at the stats for Yelp, more than 80% of all reviews are positive.[3]

Also realize that complaints aren't necessarily a bad thing. If an abundance of reviewers are saying the doctor's breath stinks, he probably could use a mint. These reviews give the doc a chance to learn about the issue and fix it. If a patient blasts you in a review for requiring an annual contact lens exam, you can use it as an opportunity to educate the world about why you do so.

In fact, it's these opportunities that allow you to attract the ideal patients—ones who come to you because they know and are in agreement with how you do

things. Your practice will grow with patients who are there for the experience they read about. As long as that holds true, you shouldn't have to worry about too many complaints.

Myth 8: Anyone Can Do It

Everyone can and—in my opinion—should do it! Your office team is composed of unique people with a mixed bag of personalities. This variety is mirrored in your fan base. If everyone on your team gets a chance to post, you'll help ensure the broadest reach into your audience and will most likely see higher levels of engagement.

Is there a learning curve? Absolutely. But as with most things, practice makes perfect. There are proven ways to get a post to garner more engagement. Begin by consciously studying the posts that you personally find engaging, and re-create that kind of interest on your FB page.

Myth 9: My Content Will Never Go Viral, So What's the Point?

I don't have to look up the statistics to tell you that your chances of being the next Internet sensation are slim to none. But can you gain some great exposure and generate real business? Absolutely.

Park Slope Eye had a recent post that reached more than 40K views. Our YouTube channel has racked up more than 17K video views. Beiber-like proportions? Of course not. But are we gaining awareness and popularity in our community? Yes. Are we staying in front of our current and potential patients? Yes. Are people sharing, liking, commenting, reviewing and re-tweeting their way to a deeper relationship with us? Absolutely!

Myth 10: SM is Only About the Mundane and the Trivial

Dr. Bazan just checked into a bagel shop. Dr. Bazan just posted a pic of a bagel. Dr. Bazan commented on a pic, "This bagel is great." Dr. Bazan shared a link about the history of bagels.

Dr. Bazan is about to be unfriended, unfollowed, blocked, banned or booted by a lot of his "friends" for going overboard on the mundane and the trivial.

The Internet is full of mundane and trivial posts. You need to learn how to take even the mundane and trivial stuff and spin it into marketing gold.

Here is a recent example. Park Slope Eye took an often forgotten piece of equipment—a UV tester—dusted it off, moved it from the lab and incorporated it into pretest. We could have put up a post about only that. Instead, we took this everyday task of UV testing lenses and created a hit post by incorporating some emotion. We made an example of a patient's fake Ray-Bans and let people know we wanted him to bring in his shades and specs for a free UV test. The result? Almost 30K views.

Another example: One of our recent marketing campaigns targeted a popular local blog's FB fan base. It generated an estimated 80 appointments, and the investment cost us just $64 and 15 minutes of time.

The bad news is that if you have not begun to use social media, you're already behind. The good news is that now is still a great time to start. So test out these 10 social media myths for yourself, and let us know how you succeeded (or failed). Drop by www.facebook.com/revoptom and leave a *comment*. We would *like* to see you *share* your thoughts! ■

A new use for an old UV tester: This post showed how a fake pair of Ray-Bans had zero UV protection. It hit nearly 30,000 views.

Dr. Bazan's practice, which he opened in Brooklyn in 2008, has integrated social media into its marketing plan from the start. Dr. Bazan lectures frequently on social media as well as refractive eye care.

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Income Survey: Group Practices Bring Home the Bacon

Compared to other professions, optometrists in solo practice are doing OK. But O.D.s in group practice are living higher on the hog. **By John Murphy, Executive Editor**

If you haven't seen the writing on the wall just yet, here it is in black-and-white: Get into group practice. Yes, you can still survive in solo practice (and many do), but you're more likely to thrive in a group.

Look at it this way: A solo practitioner is a sitting duck. You need to get with a flock if you want to fly.

Numbers don't lie. According to our latest optometric income survey, annual income for solo docs averaged $144,125 last year. But O.D.s in partnership or group practice averaged $191,195—a difference of nearly 33%.

Like other doctors, optometrists are under an ever-growing pressure to invest more in technological and practice costs; group practices can share these expenses and take advantage of efficiencies of scale. That can translate to more profit.

The same transformation is happening in other health care practices—perhaps to an even greater extent among your M.D. colleagues. For example, a recent survey found that when hospitals undertake a search for employment assignments, they hardly even look at solo practitioners.

"Nobody wants to be Marcus Welby anymore, practicing alone or with a partner, and fewer hospitals are seeking solo doctors for their communities," says James Merritt, founder of Merritt Hawkins, a physician search firm that undertook the study. "To incorporate required technology, comply with regulations, and participate in new delivery models like accountable care organizations, physicians today almost *have* to be part of larger practices or be employed by hospitals."

Incentives for quality of care rather than quantity of care are just starting to have an effect on

the practitioner's earnings. "But increasing the volume of services they provide [still] remains the most practical way for physicians to increase their incomes," Mr. Merritt says.

These are highlights from *Review of Optometry*'s annual Income Survey. The survey was emailed to more than 30,000 of our readers. More than 8,500 viewed the email, and 685 optometrists responded.

Change in Income

Annual income for all optometrists (including both employed and self-employed O.D.s) averaged $137,806 in 2011, according to our survey.

Take note that we've changed our methodology with this survey. In prior years, we had asked you to report your net income, which is income after taxes are taken out. Now, to make our survey easier to fill out and more comparable with other compensation surveys, we ask for your income before taxes. For instance, last year we reported that the average O.D.'s net income was $121,182 in 2010—but that's after Uncle Sam took his share.

In any event, this means that we cannot provide accurate data about how much optometric income has changed from 2010 to 2011.

Highlights of *Review of Optometry*'s 2011 Income Survey

Average Net Income	$137,806	(n = 546)
Median Net Income	$115,000	(n = 546)
Average Net Income by Years in Practice		
Less than 10 years	$99,651	(n = 177)
11 to 20 years	$146,820	(n = 129)
21 to 30 years	$171,755	(n = 132)
More than 30 years	$149,089	(n = 98)
Self-employed O.D.s Average Net Income		
All self-employed O.D.s	$153,372	(n = 319)
Solo practitioner	$144,125	(n = 169)
Partner/group practice	$191,195	(n = 87)
Franchisee	$188,143	(n = 7)
Independent contractor	$99,667	(n = 55)
Other	$290,250	(n = 4)
Employed O.D.s Average Net Income		
All employed O.D.s	$111,733	(n = 226)
Other O.D. or M.D.	$116,303	(n = 133)
Commercial firm	$110,080	(n = 32)
HMO/PPO	$147,833	(n = 12)
Other	$106,236	(n = 50)
Average Gross Revenue – All O.D.s	$631,058	(n = 334)
Median Gross Revenue – All O.D.s	$322,000	(n = 334)
Self-employed O.D.s Average Gross Revenue	$630,851	(n = 255)
Self-employed O.D.s Median Gross Revenue	$250,000	(n = 255)
Employed O.D.s Average Gross Revenue	$631,727	(n = 79)
Employed O.D.s Median Gross Revenue	$545,000	(n = 79)

Satisfied with Salary

But we can tell you that optometrists' satisfaction with their income has stayed mostly positive. Whether or not they're actually making more, most optometrists are pretty happy with the bacon they're bringing home. That's a good indicator that optometric income hasn't declined, at least.

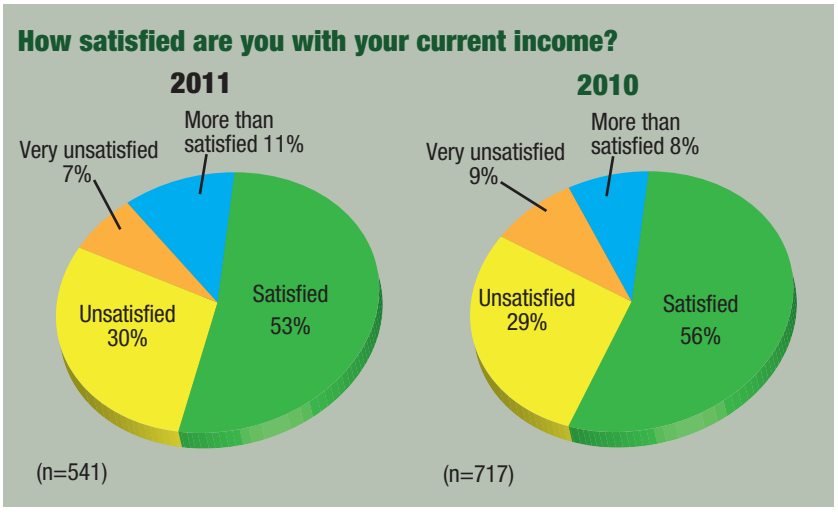
Salary satisfaction was nearly at an all-time low during the depth of the recession in 2009. Only half of respondents (51%) said they were "satisfied" with their 2009 income, and just 6% said they were "more than satisfied." Another 35% said they were "unsatisfied" and 9% said they were "very unsatisfied."

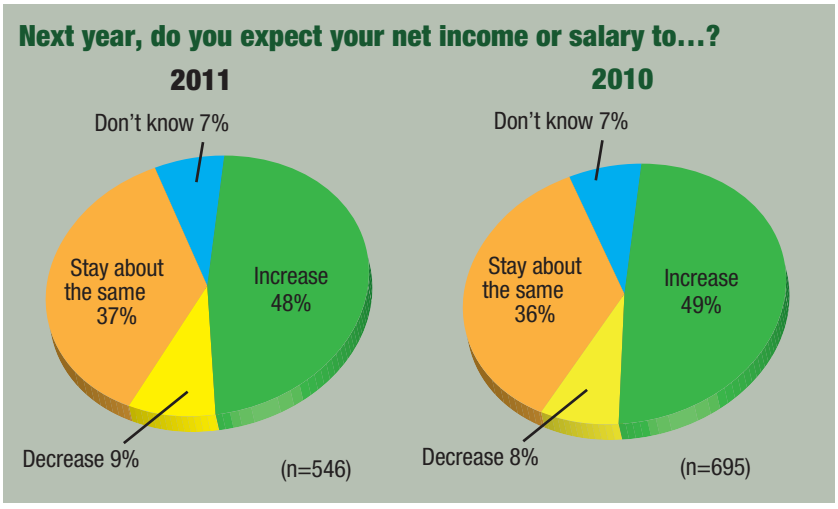
But things bounced back in 2010, and have held steady for 2011. This year's survey finds that as many as 64% of respondents say they were either "satisfied" (53%) or "more than satisfied" (11%) with their current income.

"I make enough to put food on the table, a roof over my head and pay my bills. My family is not in need of any basic essentials," says Penny Gamez, O.D., of Cedar Hill, Texas. "I also make enough to be able to donate to my church, my community and my children's school. I feel truly blessed."

On the other hand, nearly 30% of O.D.s say they're still "unsatisfied" with their current incomes. However, the number of those who are "very unsatisfied" has decreased from 9% two years ago to less than 7% this year.

In several parts of this country, the depressed economy has yet to bounce back at all—and O.D.s in those areas are still feeling the





pinch. "The last few years have really taken a toll on my business and family," says Gregory Fowler, O.D., of Augusta, Ga. "It has been a year since we have made a mortgage payment on our house. Fewer and fewer people are getting their eyes checked. I am hoping to remedy the situation by moving my practice to a new Costco. I remain optimistic [even though] we could lose our home any day now."

Salary Specifics

While income for the average optometrist was $137,806 in 2011, we don't consider any optometrist to be "average." So, we break it down by mode of employment to give you a more accurate assessment of optometric income.

For instance, O.D.s who are self-employed (whether in solo practice, partnership, group practice, franchises or independent contractors) had an average salary of $153,372.

Billy Andrews, O.D., of Horse Cave, Ky., is one of those successful self-employed solo practitioners who doesn't need a flock to fly. "I have a practice that nets 44%, compared to the average practice that nets 30%. I accept no vision plans. I accept Medicare, Medicaid and major medical insurance. I practice 35 hours per week and take eight to 10 weeks of vacation per year," he says. "This is all accomplished in a 2,000-square-foot office with myself and three employees, [located] in a rural area where over 20% of the population falls below the poverty level."

For optometrists who are employed (by another optometrist or M.D., a corporate firm, an HMO or PPO, or in other employment) average salary was $111,733 in 2011.

"Considering the state of the economy, I feel fortunate to be employed and making what I do," says one optometrist in a commercial practice in Iowa.

But not every employed optometrist is as satisfied. "I make my employers a lot of money, but they do not believe in 'trickle down economics'!" says one O.D. who asked to remain anonymous.

(*For average incomes in specific optometric settings, see "Highlights of Review of Optometry's 2011 Income Survey," page 79.*)

As you might predict, highly experienced doctors have a greater income than younger docs or senior docs nearing retirement. Specifically, O.D.s who've been in practice 21 to 30 years average the most: $171,755. Those with 11 to 20 years under their belt average $146,820, and those with more than 30 years (a number of whom are in semi-retirement) average $149,089. Optometrists with less than 10 years of experience earn an average of $99,651.

"At this point, I'm just happy that I'm able to pay the bills," says one of these younger docs, Scott Baylard, O.D., whose solo practice in Cumming, Ga., is still relatively new.

Bear in mind that very high or very low individual salaries may skew the results in surveys such as

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this one. So, median income—the midpoint of all responses—may provide a better snapshot of the typical O.D.'s income. Median income for all optometrists was $115,000 in 2011. For self-employed O.D.s, it was $129,000, and $105,000 for employed O.D.s.

'Doing Things Better'

Expenses are going up, reimbursements are going down, and revenues from goods and services have remained flat. So it's no surprise that profit margins are not rising.

Profit margin is calculated as net income divided by gross revenue, and it's commonly used to indicate a company's economic health. According to our surveys, profit margins have been about the same since 2008. The numbers for 2011 are almost identical to those of 2010: More than half of optometrists (57%) say that their profit margin hasn't changed. At the same time, 22% of respondents say their net in 2011 did increase as a percentage of gross, while the same percentage (22%) say it decreased.

To make a profit when faced with reduced revenue, businesses have tightened their belts on spending. But you can only tighten your belt so far. "We are doing things better regarding running the business," says Scott Tomasino, O.D., of his partnership practice in O'Fallon, Mo. "But our reimbursements continue to decrease from insurance, and this makes up a significant percentage of our revenue."

Noses to the Grindstone

Optometrists are working as hard as ever—and perhaps just a little bit more than before. Optometrists' average work-week in 2011 was 39.4 hours, which is up just a bit from 39.2 hours a week in 2010. This reverses a slight downward trend in work hours during the past few years.

"Despite continuing economic uncertainty, consumers are slightly more optimistic than they have been in several months."

Self-employed optometrists continue to put in more time than their employed colleagues, but perhaps that gap is closing. Self-employed docs averaged 39.5 hours per week while employed O.D.s worked 39.3 hours on average. (These numbers reflect a total of patient hours and administrative time for all O.D.s.)

Since opening up solo six years ago, "I now work fewer hours and make more than I did as an employee," says Karen Merkle, O.D., of her Milwaukee practice. "I just wish that I could actually take out the profits that I have been taxed on. Unfortunately, it is cash needed to fund the business."

Plans for the Future

Optometrists are fairly optimistic about a brighter tomorrow. Nearly half (48%) expect their income to increase in 2012, while 37% hope it will at least remain the same. Only 9% foresee a decrease in their income.

Perhaps this optimism mirrors the current Consumer Confidence Index, which increased nine points in September—the highest it's been since February this year. "Consumers [are] more positive in their assessment of current conditions, in particular the job market, and considerably more optimistic about the short-term outlook for business conditions, employment and their financial situation," says Lynn Franco, director of economic indicators at The Conference Board.

"Despite continuing economic uncertainty, consumers are slightly more optimistic than they have been in several months."

But optimism is only a forecast. It's hard work that turns dreams into reality. To that end, our readers have a number of practical plans to improve their lives and livelihoods:

- "We are going to expand and bring in another O.D., plus increase our [vision therapy] department," says Jerry Larsen, O.D., of Casper, Wyo.
- "We will be adding an OCT and billing for glaucoma treatment for the first time," says Greg Pearl, O.D., of his Norwalk, Calif., practice.
- "More medical office visits," says Wesley A. Rainwater, O.D., of Tulsa, Okla.
- Dr. Tomasino says, "We are planning to move to a bigger space to improve efficiencies and allow us to see more people."
- "We are advertising more and doing a direct mail piece with a local chiropractor," says Jean Templin, O.D., of Myerstown, Pa.
- Kristie Homuth, O.D., of Montclair, Calif., says she plans to "contract an outside consultant to establish a training program to train staff to handle phone inquiries better [and] convert callers into scheduled patients."
- Chris Huston, O.D., of Pella, Iowa, has a simple but solid plan: "Continue to provide excellent service to my patients to grow my practice." ■

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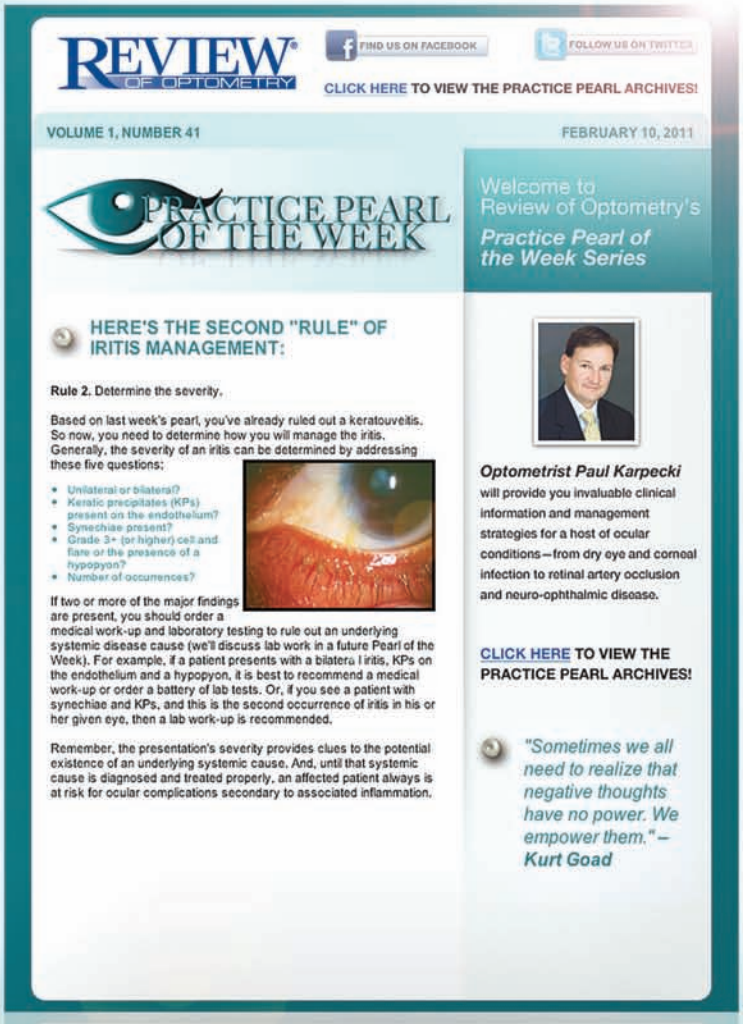

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Meds That Don't Mix with Glaucoma Patients

Many common systemic medications can precipitate acute angle closure or increase intraocular pressure in your glaucoma patients. Here's a review of the agents you should keep in mind. **By Tammy P. Than, M.S., O.D, and Erin B. Hardie, O.D**

We all get the occasional call from a patient who has just read the package insert for a specific medication and is worried about the precaution that the particular drug might not be safe for individuals with a known history of glaucoma. However, most drug labels are non-specific and merely list "glaucoma" instead of specifying the type of glaucoma.

This should cause the practitioner to take pause and think about the medication, including its pharmacological properties and potential side effects. The practitioner must then review the patient's glaucoma history before rendering a judgment on the safety of the medication in question.

Most medications that could potentially impact a patient with a known history of glaucoma, or even increase the likelihood of glaucoma development, either narrow or close the anterior chamber angle. However, there also are a small number of systemic medications that may cause or exacerbate open-angle glaucoma. Furthermore, systemic medications that may cause optic neuropathy or visual field defects secondary to toxicity confound the monitoring of patients with existing glaucoma.

If a patient presents with a potentially associated problem, the eye care practitioner must then decide if there is functional/structural glaucomatous progression or if the changes were caused by an adverse drug reaction. Some systemic medications may actually decrease intraocular pressure. While this side effect is not likely to be detrimental, it may give the eye care practitioner a false sense of security that the prescribed glaucoma medication is working more effectively than it truly is.

Many pharmaceutical agents have been known to cause drug-induced glaucoma and/or exacerbate existing glaucoma, but the actual incidence remains undetermined. This article reviews a variety of contemporary medications that eye care practitioners must be aware of in order to more accurately address the question: "With my glaucoma, is it safe to take this drug?"

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Goal Statement: Many pharmaceutical agents have been known to cause drug-induced glaucoma and/or exacerbate existing glaucoma, but the actual incidence remains undetermined. This article reviews a variety of contemporary medications that eye care practitioners must be aware of in order to more accurately address the question: "With my glaucoma, is it safe to take this drug?"
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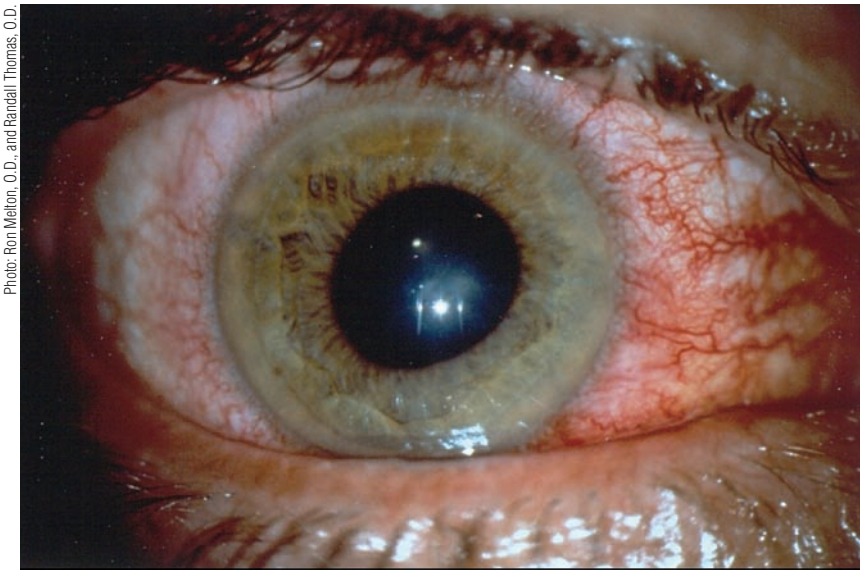


Photo: Ron Melton, O.D., and Randall Thomas, O.D.

This is a classic presentation of an eye in acute angle closure. Note the fixed, mid-dilated pupil in a red eye. Several common systemic medications may increase your glaucoma patients' risk of an acute angle-closure attack.

Ocular Adverse Effects

The eye is prone to drug-related adverse effects due, in part, to its extensive blood supply and relatively small mass.[1] Because most glaucoma patients are older, likely use multiple systemic agents for chronic conditions and exhibit an impaired ability to metabolize and excrete medications, they are at increased risk for ocular adverse drug events.

Often, it is very challenging to determine if a systemic medication is likely to exacerbate or cause glaucoma. A very useful resource is "Clinical Ocular Toxicology" by Frederick T. Fraunfelder, Frederick W. Fraunfelder and Wiley A. Chambers.[2] This text is written specifically to help eye care practitioners determine if a visual condition is related to a medication, an herbal supplement or other chemical.

In general, documented ocular side effects are gathered from reports obtained by MedWatch: The FDA Safety Information and Adverse Event Reporting Program, the National Registry of Drug-Induced Ocular Side Effects and the World Health Organization (WHO). "Clinical Ocular Toxicology" uses the WHO Causality Assessment Guide of Suspected Adverse Reactions to classify reported adverse drug-related events.[2]

A recent study questioned the clinical reproducibility of adverse events documented in these causality assessments, but the WHO classification system continues to be widely utilized.[3] With the ever increasing number of systemic medications, it is extremely difficult for the literature to address every potential complication. If, however, you observe a previously undocumented ocular adverse event caused by a systemic medication, you should report it to MedWatch (www.fda.gov/safety/medwatch).

Acute Angle Closure

Medications that could induce an acute angle-closure attack often are contraindicated in glaucoma patients. According to one study, over-the-counter and prescription medications account for 33% of acute angle-closure glaucoma.[4]

Drugs that induce acute angle closure produce this effect in several ways. In predisposed patients, a pupillary block angle closure may occur secondary to forward movement of the lens-iris diaphragm with functional apposition between the iris border and the anterior lens surface.

The restriction in aqueous flow creates excessive pressure in the posterior chamber, which bows the peripheral iris forward and closes the angle.[5,6] Any drug that causes pupillary dilation also may precipitate angle closure due to the pulling of the peripheral iris into the anterior chamber angle.[7]

Individuals who are at the greatest risk for drug-induced angle closure often exhibit one or more of the following characteristics: Asian ethnicity, advanced age, female, hyperopia, positive family history, narrow iridocorneal angle and shallow anterior chamber depth.[8,9] It has even been reported that acute angle-closure attacks are more common in fall and winter than spring and summer.[7] Angle-closure attacks are often unilateral.

The other mechanism that causes acute angle closure results from forward movement of the lens, rotation of the ciliary body and choroidal effusion. This reaction appears to be an idiosyncratic response to certain medications, which may occur irrespective of anterior chamber angle depth prior to medication use.[5]

With existing glaucoma patients, eye care practitioners already have evaluated them gonioscopically and can alert them about the risk of certain systemic medication classes. Many patients who experience an acute angle-closure attack secondary to medication use may have been unaware that they were at risk, and it simply is not practical

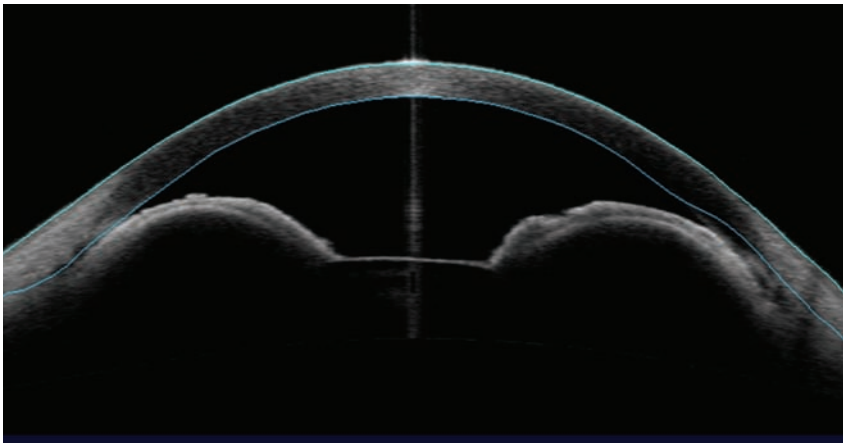
to perform gonioscopy on every patient prior to initiating systemic therapy.

Idiosyncratic reactions are just that—we cannot predict which patients will experience an adverse event. Optometrists should communicate with primary care providers and other physicians who routinely prescribe medications that are known to cause angle closure, so that they may alert patients to seek care if they experience any manifestations of acutely elevated IOP.

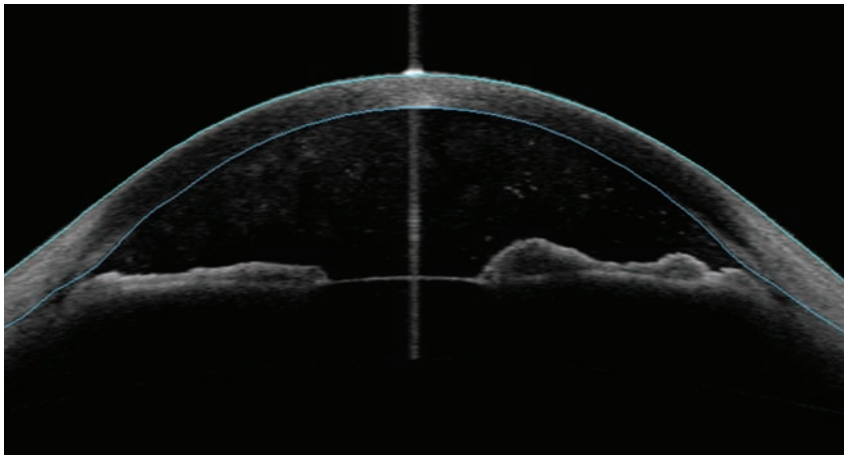
• ***Cholinergic agents.*** Systemic cholinergic agonists are used to stimulate salivary gland production in patients with xerostomia secondary to Sjögren's syndrome or following head/neck radiation therapy. These agents also may be used off-label for recalcitrant dry eye due to the stimulatory effect on the lacrimal gland.

Salagen (pilocarpine, Eisai) and Evoxac (cevimeline, Daiichi Sankyo) both list narrow-angle glaucoma as a contraindication for use, and may precipitate a pupillary block angle closure. These drugs cause anterior movement of the lens-iris diaphragm. This is more problematic in patients with advancing cataracts who already have shallower anterior chambers. According to package inserts for both medications, the incidence of glaucoma development was less than 1% in clinical trials.

Any medication that exhibits anticholinergic properties should be used with caution in patients with narrow angles. A large number of systemic medications exhibit varying degrees of anticholinergic effect, which may result in pupillary dilation. Should an acute angle-closure attack occur, the suspected medication must be discontinued immediately (in consultation with the prescribing provider) and the individual's IOP should be lowered with ocular hypotensive medications. In addition, laser peripheral iridotomy yields a prophylactic benefit against future events.



Acute angle closure secondary to pupillary block, as seen on Visante OCT (Carl Zeiss Meditec). Note the dramatic iris bombé. This is a potential side effect of many systemic medications (including any agents that exhibit anticholinergic properties).



Here is the same eye approximately 90 minutes later, following a laser peripheral iridotomy. The iris has now returned to a more planar configuration. The debris resultant from the laser procedure is evident in the anterior chamber.

• ***Antidepressants.*** Selective serotonin reuptake inhibitors (SSRIs) often are a first-line option in the management of depressive and anxiety disorders due to their excellent safety profile and tolerability. Among those used are Prozac (fluoxetine, Eli Lilly), Paxil (paroxetine, GlaxoSmithKline) and fluvoxamine. The therapeutic effect of SSRIs is rendered via a gradual increase in serotonin in the postsynaptic cleft.

The mechanism by which SSRIs result in angle closure is uncertain. It has been postulated that serotonin is responsible for increased pupil dilation and aqueous production.[10] Another study suggested that the medications' anticholinergic effects cause pupil dilation.[11] In either case, glaucomatous attacks typically occur within the first six months of starting SSRI therapy (although one case was reported as late as five years after treatment).[10]

Other antidepressants are known to demonstrate anticholinergic

Topamax, Qsymia May Cause Angle Closure

Topamax (topiramate, Janssen Pharmaceuticals) is a sulfamate-substituted monosaccharide that is indicated for the management of seizures and migraines.[1] Clinicians occasionally prescribe Topamax off label for a wide variety of applications, including smoking cessation, bipolar disorder, neuropathic pain and idiopathic intracranial hypertension.

In July 2012, Qsymia (phentermine/topiramate extended release, Vivus) received FDA approval for chronic weight management in obese patients or those with weight-related comorbidities.

Patients who use Topamax or Qsymia are at an increased risk for ocular adverse events—including drug-induced myopia and angle-closure glaucoma.[1] Ocular side effects associated with topiramate typically are experienced within the first month of dosing (85% of symptoms manifest during the first two weeks after therapeutic initiation).

activity and have precipitated angle closure in patients with a narrow iridocorneal angles. Tricyclic antidepressants (TCADs) that are often associated with ocular sequelae include amitryptiline and imipramine. Non-TCADs that have been linked to acute angle closure include Celexa (citalopram, Forest Laboratories) and Lexapro (escitalopram, Forest Laboratories).

Monoamine oxidate inhibitors (e.g., phenelzine sulfate)—which also are utilized in the management of depressive disorders—have mild anticholinergic effects and pose a risk, albeit less than TCADs.

Additionally, many antipsychotic drugs have anticholinergic activity. Although the anticholinergic activity is weak, several medications in this class, including fluphenazine and chlorpromazine, have been associated with acute angle-closure attacks.[8,11]

• ***Antihistamines.*** H2 receptor agonists, such as Tagamet (cimetidine, Prestige Brands) and Zantac (ranitidine, Boehringer Ingelheim), which are indicated for relief of peptic ulcer disease and gastroesophageal reflux disease, are weak anticholinergics that may cause angle closure.[6]

Additionally, H1-blocking agents used for anti-allergy (e.g., diphenhydramine), anti-emesis (e.g., promethazine) and anti-anxiolytic (e.g., hydroxyzine) purposes exhibit significant anticholinergic activity and may cause angle closure.[6] Safer H1-blocking agents for high-risk patients include non-sedating antihistamines, such as loratadine, cetirizine or fexofenadine.

• ***Incontinence control medications.*** Overactive bladder is thought to affect one-third of adults over age 75. It is frequently associated with urinary incontinence and urgency that can be managed with muscarinic receptor antagonists.

Current medications with anticholinergic properties include Detrol (tolterodine, Pfizer), Ditropan (oxybutynin, Ortho-McNeil Pharmaceutical), trospium, propantheline and darifenacin.[12] Moreover, the package inserts list uncontrolled, narrow-angle glaucoma as a contraindication. Several small studies have shown no effect on intraocular pressure in patients without glaucoma or those with primary open-angle glaucoma.[13]

• ***Adrenergic agonists.*** Epinephrine, used for anaphylaxis and severe asthma, and ephedrine, which is found in cold remedies, both cause pupillary dilation that may result in acute angle-closure attacks.[6] One study evaluated a series of patients with upper respiratory infections who presented with angle closure. The researchers determined that the majority of those affected had used anti-cough mixtures prior to the attack.[7]

Additionally, amphetamine, which is used to control narcolepsy and attention deficit hyperactivity disorder, may cause mydriasis. Such medications that demonstrate sympathomimetic activity typically cause pupil dilation, and should be used with caution in patients who are known to have narrow angles.

• ***Nutraceuticals.*** Ask patients about their use of herbal and nutritional supplements, because these too may affect glaucoma. Jimson weed (datura stramonium) is an annual herb that grows up to five feet tall and produces fragrant, trumpet-shaped flowers. It is used for a wide variety of conditions, including asthma, analgesia and motion sickness. Datura plants contain high concentrations of atropine and scopolamine, and should not be used by patients with narrow angles due to its association with pupil dilation.

Several other dietary supplements have been associated with mydriasis, including valerian root, mandrake and 5-hydroxytryptophan henbane.[2]

• ***Other medications.*** Management of spasms in patients with Parkinson's disease may include the use of orphenadrine citrate (an anticholinergic medication) or trihexyphenidyl (an antimuscarinic agent with a significant amount of anticholinergic activity). These antispasm medications may be associated with pupillary dilation and angle closure.[5]

Atrovent (ipratropium bromide, Boehringer Ingelheim) and Spiriva (tiotropium bromide, Boehringer Ingelheim) are anticholinergic medications for long-term management of bronchospasms associated with COPD and emphysema, and have been reported to cause angle-closure attacks.[5]

Idiosyncratic Angle Closure

• ***Sulfonamides.*** A number of sulfonamide drugs—including topiramate hydrochlorothiazide, acetazolamide, quinine, tetracycline and trimethoprim/sulfamethoxazole—can cause an idiosyncratic non-pupillary block (which often manifests bilaterally).[5] In this instance, patients likely experience an allergic reaction to the sulpha moiety, resulting in ciliary body edema with lens zonule relaxation.[6] This process, in turn, causes anterior-posterior lens thickening. Then, the ciliary body, lens and iris are shifted forward, which narrows the anterior chamber. Additionally, choroidal effusion likely is a contributing factor.[6]

The aforementioned sulfonamide medications have been shown to cause acute transient myopia and acute angle closure in approximately 3% of patients.[14] The exact mechanism of these ocular side effects is unknown; however, the presentation typically occurs bilaterally, shortly after treatment initiation.[4,5] Specific patient symptoms include blur (up to -8.00D of acute myopia), pain and nausea. (*See "Topamax, Qsymia May Cause Angle Closure," page 88.*)

In any suspected case, have the patient discontinue the medication immediately. Then, prescribe ocular hypotensive medications to lower IOP. Because pupillary block is not a contributing factor, a peripheral iridotomy typically is ineffective (although initial management with laser iridoplasty has been shown to help extract the peripheral iris from the occluded angle).[15]

• ***Norepinephrine-dopamine reuptake inhibitors.*** A recent case of bilateral uveal effusion and acute angle closure was reported two weeks after initiating treatment with bupropion hydrochloride (e.g., Wellbutrin, GlaxoSmithKline).[16] Structurally, bupropion is not a sulfonamide, but a norepinephrine-dopamine reuptake inhibitor that is used in the management of depressive disorders as well as for smoking cessation. Some research suggests that norepinephrine may play a role in the development of choroidal effusions; this adverse effect also has been reported following the use of venlafaxine hydrochloride—another norepinephrine reuptake inhibitor.[16]

• ***Anticoagulants.*** In rare instances, anticoagulant therapy (e.g., warfarin) has been reported to cause angle closure secondary to large, spontaneous, choroidal or subretinal hemorrhages.[4,5] Additional risk factors for associated angle closure include hypertension and arteriosclerosis.[4,5]

Open-Angle Glaucoma

• ***Oral steroids.*** When we think of drug-induced IOP elevation or spike, we think of oral steroids. According to a Canadian study, adults treated with oral steroids were 1.41 times more likely to experience an increase in ocular hypertension than non-users.[16]

Multiple ocular side effects have been associated with oral steroid use, including posterior subcapsular cataracts, poor or incomplete corneal wound healing and, most importantly, glaucoma secondary to increased IOP.[17] Acute-onset responses with stronger systemic steroids have been documented within weeks of initial dosing, whereas weaker steroids may not cause an IOP increase for several months.[18] While newer topical corticosteroids have been formulated to minimize the potential for secondary IOP increase, oral and injectable steroids still increase an individual's overall risk of ocular hypertension.[19]

Still, not every patient is a "steroid responder." So, we must accurately identify the most common risk factors for drug-induced glaucoma, including a previous diagnosis of primary open-angle glaucoma, diabetes, myopia and younger age.[20]

Some published reports indicate that nearly 70% of first-degree offspring from patients with primary open-angle glaucoma exhibit a significant IOP increase following use of topical and/or oral steroids.[21]

Further, researchers have uncovered a genetic susceptibility to corticosteroid-induced glaucoma via the myocilin gene (formerly known as the trabecular meshwork inducible glucocorticoid response protein, or TIGR).[18] Myocilin is highly

Why Do Steroids Spike Up the Pressure?

What is the underlying pathophysiology of IOP increase with steroid use? All forms of steroids—even nasal sprays—can increase IOP due to reduced aqueous humor outflow caused by morphological and biochemical changes in the trabecular meshwork.[22]

Much of the trabecular meshwork cell function, gene expression and extracellular matrix metabolism is altered by steroid use, which absolutely limits its ability to function properly.[23] Clinical experience suggests that higher ocular concentrations of corticosteroids yield proportionately elevated IOP measurements.

Because the trabecular meshwork accounts for nearly 90% of the aqueous humor drainage, it is reasonable to conclude that a disruption in its function will result in excess aqueous volume, decreased outflow facility and higher IOP.[8] One retrospective study indicated that discontinuing a steroid nasal spray (e.g., Flonase [fluticasone, GlaxoSmithKline]) showed a clinically significant decrease in IOP.[24] So, monitor IOP closely in all patients who use any type and/or dosage of steroidal medication to limit the potential for drug-induced glaucoma.

expressed when trabecular meshwork cells are exposed to steroids, and mutations in this gene are more commonly found in patients with juvenile- and adult-onset primary open-angle glaucoma.[18] In the future, clinicians might be able to use genetic testing to more accurately predict a steroid response.

We must also be familiar with systemic conditions that warrant frequent use of steroids and/or other anti-inflammatory drugs. Conditions such as asthma, rheumatoid arthritis, multiple sclerosis and systemic lupus erythematosus require oral steroid treatment in both children and adults. Primary eye care practitioners must recognize these diseases and educate their patients about the potential ocular complications associated with frequent or long-term steroid use.

• ***Cancer drugs***. Docetaxel and paclitaxel are anticancer agents that work as microtubule inhibitors. These agents frequently are prescribed to combat breast and prostate cancer. Elevated intraocular pressure has been noted following therapy, but the causal mechanism is not clear and might be related to fluid retention.[9,25] Additionally, one patient on paclitaxel therapy reported visual field changes that likely presented secondary to neurotoxicity.[26] In this case, however, the patient's visual changes resolved upon discontinuation of therapy.[26]

• ***Systemic beta blockers.*** Oral beta blockers are not likely to supplant their topical counterparts in glaucoma management. On the other hand, optometrists must also be aware that titration or outright discontinuation of systemic beta blockers might then cause IOP elevation. This reiterates the notion that communication with primary care physicians is crucial for comprehensive management of glaucoma patients. If a systemic beta blocker is stopped, be sure to monitor the individual's IOP.

• ***Mydriatics and cycloplegics.*** While certainly not a systemic medication, it is worth noting that topical tropicamide may cause increased IOP via mechanisms other than angle closure. After examining IOP fluctuations in children given mydriatics, researchers found an average increase of 2mm Hg; however, a potential increase or decrease of 8mm Hg was documented in many patients with open angles.[27] The investigators concluded that some alteration in aqueous dynamics occurred upon dilation and, because of the variable effect on IOP (even without the presence of anterior segment complications), all patients who use mydriatics require observation.[27]

In one published report, 23% of patients with primary open-angle glaucoma experienced a significant increase in IOP following topical installation of cycloplegic agents, compared to just 2% of patients without glaucoma.[28] The authors concluded that a significant change in IOP following anticholinergic use should be considered in open-angle glaucoma suspects.[28] Here again, the mechanism is not completely understood; however, the researchers suggested that decreased aqueous outflow facility likely contributed to increased IOP.[28]

• ***Caffeine.*** At least one study suggested that large amounts of caffeine (more than 180mg per day) might yield a small spike in IOP of 1mm Hg to 2mm Hg.[29] But, more recent studies indicate that one cup of caffeinated coffee per day likely does not have a clinically significant impact on IOP.[30]

Many medications can exacerbate glaucoma or cause acute angle-closure attacks. So eye care practitioner must be aware of these common associations and keep a high level of suspicion when taking a patient's pharmaceutical history.

We must also realize that many systemic medications that are particularly deleterious to glaucoma patients, yet associated ocular adverse events have yet to be reported. In these instances, optometrists are encouraged to report their findings to the FDA in an effort to alert other clinicians.

Thankfully, most adverse ocular events that impact glaucoma patients occur infrequently. But, if and when a problem arises, you must be adequately prepared to intervene. ■

Dr. Than is an associate professor at the University of Alabama at Birmingham School of Optometry.

Dr. Hardie is completing an ocular disease residency at VisionAmerica in Birmingham.

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OSC QUIZ

You can obtain transcript-quality continuing education credit through the Optometric Study Center. Complete the test form *(page 92)*, and return it with the $35 fee to: Optometric CE, P.O. Box 488, Canal Street Station, New York, NY 10013. To be eligible, please return the card within one year of publication.

You can also access the test form and submit your answers and payment via credit card at *Review of Optometry* online, www.revoptom.com.

You must achieve a score of 70 or higher to receive credit. Allow eight to 10 weeks for processing. For each Optometric Study Center course you pass, you earn 2 hours of transcript-quality credit from Pennsylvania College of Optometry and double credit toward the AOA Optometric Recognition Award—Category 1.

Please check with your state licensing board to see if this approval counts toward your CE requirement for relicensure.

1. Over-the-counter and prescription medications account for what percentage of acute angle-closure glaucomas?
a. 13%.
b. 23%.
c. 33%.
d. 43%.

2. What is NOT one of the common risk factors for drug-induced angle closure?
a. Asian ethnicity.
b. Hyperopia.
c. Male gender.
d. Narrow iridocorneal angle.

3. Which medication is a cholinergic agonist that could cause pupillary block angle closure?
a. Cevimeline.
b. Tolterodine.
c. Iptratropium.
d. Amitryptiline.

4. After initiating therapy with selective serotonin reuptake inhibitors, potential ocular adverse effects are most likely to occur within:
a. Two weeks.
b. One month.
c. Six months.
d. One year.

5. Use of which H1-blocking agent is most likely to precipitate angle closure?
a. Loratadine.
b. Diphenhydramine.
c. Cetirizine.
d. Fexofenadine.

6. Which antihistamine is LEAST likely to precipitate angle closure in a patient with very narrow chamber angles?
a. Loratadine.
b. Diphenhydramine.
c. Promethazine.
d. Hydroxyzine.

7. Which medication is specifically contraindicated for patients with uncontrolled, narrow-angle glaucoma?
a. Tolterodine.
b. Ranitidine.
c. Ipratropium bromide.
d. Docetaxel.

8. Ephedrine may precipitate an acute angle-closure attack because:
a. It stimulates the pupil dilation.
b. It causes choroidal effusion.
c. It causes a uveitis that results in 360° of synechia.
d. All of the above.

9. Use of which nutritional supplement may cause pupillary dilation?
a. Ginkgo biloba.
b. Bilberry.
c. Canthaxanthine.
d. Jimson weed.

10. Agents from which drug class can induce bilateral non-pupillary block angle closure?
a. Sulfonamides.
b. Nitrates.
c. Phosphates.
d. Acetates.

11. The ocular adverse drug reaction of acute myopia and angle closure that may occur following treatment with trimethoprim/sulfamethoxazole is best characterized as:
a. Paradoxical.
b. Toxic.
c. Idiosyncratic.
d. None of the above.

12. The ocular adverse drug reaction of acute myopia and angle closure that may occur following treatment with sulfonamides occurs in approximately what percentage of patients?
a. 0.5%.
b. 3%.
c. 12%.
d. 25%.

13. Which laser procedure has been shown to be most useful in the initial management of a patient with acute angle closure secondary to topiramate use?
a. Iridotomy.
b. Trabeculoplasty.
c. Iridoplasty.
d. Capsulotomy.

14. Agents from which medication class are most likely to increase IOP in a patient with primary open-angle glaucoma?
a. Antihistamines.
b. Selective serotonin reuptake inhibitors.
c. Systemic corticosteroids.
d. Antibiotic sulfonamides.

15. Potent systemic steroids typically increase IOP within:
a. Hours.
b. Weeks.
c. Months.
d. Years.

OSC QUIZ

16. Which risk factor suggests that a patient will be a "steroid responder?"
a. History of diabetes.
b. Myopia.
c. Young age.
d. All of the above.

17. Which cancer medication has been associated with increased IOP and transient visual field changes?
a. Paclitaxel.
b. Promethazine.
c. Acetazolamide.
d. Trihyexyphenidyl.

18. What percentage of patients with primary open-angle glaucoma might experience an IOP increase following use of cycloplegic agents?
a. 2%.
b. 8%.
c. 15%.
d. 23%.

19. Phentermine/topiramate (Qsymia, Vivus), which has been associated with drug-induced glaucoma, is prescribed for which indication?
a. Migraines.
b. Depression.
c. Seizures.
d. Weight loss.

20. The mechanism likely to account for elevated IOP associated with systemic steroid use is:
a. Increased aqueous production.
b. Decreased uveoscleral outflow.
c. Decreased outflow facility at the trabecular meshwork.
d. A defect located within Schlemm's canal.

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Effective September 2012, we will send the results of any CE post-course test that is manually submitted (via mail or fax) to the email address provided on your answer sheet.

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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
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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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◯ Greatly ◯ Somewhat ◯ Little
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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. Based on third-party industry report, Alcon data on file, Jan 2010-Sep 2011. **2.** Woods J, Woods C, Fonn D. Early symptomatic presbyopes—What correction modality works best? *Eye Contact Lens.* 2009;35(5):221-226. **3.** Rappon J. Center-near multifocal innovation: optical and material enhancements lead to more satisfied presbyopic patients. *Optom Vis Science.* 2009;86:E-abstract 095557. **4.** In a randomized, subject-masked clinical study at 20 sites with 252 patients; significance demonstrated at the 0.05 level; Alcon data on file, 2009. **5.** Rappon J, Bergenske P. AIR OPTIX® AQUA Multifocal contact lenses in practice. *Contact Lens Spectrum.* 2010;25(3):S7-S9.

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Get Your Head Examined!

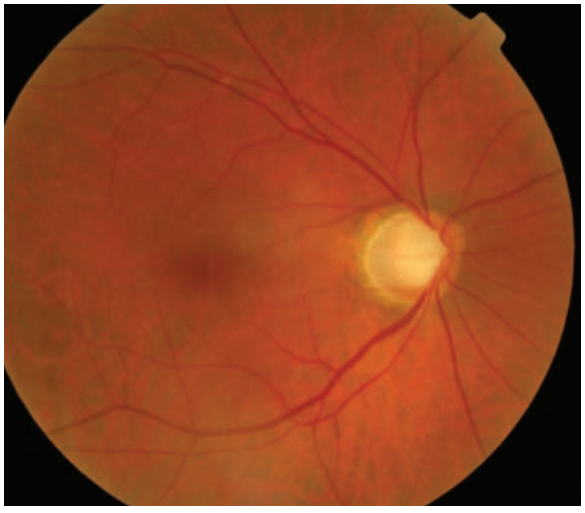
Your optic nerve head, that is! Some of us don't practice what we preach when it comes to getting regular dilated eye exams. **Edited by Paul C. Ajamian, O.D.**

Q **An optometric colleague of mine asked me to check his eyes. He is a 58-year-old white male in good health with vision correctable to 20/20. He had screened himself with a non-mydriatic camera and said his optic discs "looked fine," but he noticed that the inferior nasal field of the right eye was "obscured." So, I was not surprised to measure Goldmann pressures of 32mm Hg O.D. and 23mm Hg O.S. Also, a dilated fundus exam revealed 0.75 cupping with a superior notch in the right eye. Should I refer him to a glaucoma specialist or treat him myself?**

A Well, at the very least, don't let him treat *himself* any longer! Unfortunately, this is all too common—more than one-third of optometrists haven't had a comprehensive eye exam in three years or more, according to *Review*'s recent Diagnostic Technology Survey. It might be that, because we are eye doctors, we think that nothing will ever happen to *our* own eyes. We know that we can always get them checked or at least screened by staff members, but we never actually get around to doing so.

At Omni, we offer our referring doctors an annual holiday eye exam, and the response has been tremendous. But it's important for every O.D. to connect with a local colleague and "swap" eye exams on an annual basis. You'll have a chance to visit another office, and get to know a friend or a friendly competitor better in the process—not to mention the opportunity to rule out glaucoma, retinal problems or systemic health issues.

All patients—including optometrists—must be dilated to get a stereoscopic look at the optic nerve head. (*See "Don't Skip Dilation," below.*) All patients should have a confrontation visual field and pupil testing. All patients should be asked about a family history of glaucoma.



Could this be your optic nerve? Maybe it's time to get yours examined.

Now, should you treat this patient or refer him? Of course you should treat this patient! Obtain a visual field and some type of nerve imaging, start the patient on a prostaglandin to bring those pressures down, and see him for follow-up soon.

Glaucoma should be managed by optometrists more often than it is. Why? Because we are trained to do it and we are good at it. Pay attention to detail, the proper diagnostic testing, and careful chart documentation and follow-up.

In this case, our colleague presented with classic open-angle glaucoma that would have gone undetected, with terrible consequences. Instead, it can be controlled, and he can continue to practice happily ever after. ■

Don't Skip Dilation

When it comes to dilation, optometrists offer patients too many choices, in my opinion. For example, some practices let patients check a box that they "do or do not" prefer to be dilated. Even when the patient checks "do dilate," some practices ignore it and do an undilated exam. By doing this, we're sending a message to patients that dilation is bad.

We've also become too reliant on screening devices that "replace dilation," and are offered as an a la carte menu from which patients choose. When was the last time you went into your internist's office and they asked you, "Would you like to have your blood pressure checked today?"

Nothing replaces dilation; it's really the only way to get a clear view of the peripheral retina and, just as important (if not more), a stereoscopic view of the optic nerve.

Monthly Multifocal Pearl

Multifocal Contact Lenses: Keeping Your Focus on This Profit Center

By John Rumpakis, OD, MBA

Today's ophthalmic practices face many challenges: a stagnant economy, diminishing reimbursements from refractive insurance carriers, reduced access to patients and a high level of reticence from consumers willing to spend money where the benefit of the purchase isn't readily identifiable. To many, it sounds pretty bleak; to others, it represents a huge opportunity to recognize population trends, capitalize on new technology and create a market for clinical excellence within their practices.

The opportunity at hand here is in multifocal contact lenses—the latest frontier in contact lens technology and performance. It's important for practitioners to be comfortable with different presbyopic contact lens designs, but they must also realize that not all multifocal lenses are created equal.

THE PRESBYOPIC MODEL

The global population of contact lens wearers is significant, as is the number of presbyopes who require vision correction (see table).[1] Presbyopes, who are prevalent in most optometric practices, have increased near tasks such as computers and cell phones. They want a high-performing, well-designed lens.

When a successful contact lens patient begins to experience the effects of presbyopia, they may think they no longer have any choices to continue to be "spectacle free." Those who discontinue contact lens wear can have a considerable economic impact on the bottom line of an eye care practice. **A single patient who drops out of lens wear represents up to $24,000 of lost revenue over their lifetime.**[2] One study showed that AIR OPTIX® AQUA Multifocal contact lenses ranked as "highest performer" in subjective real-world situations when compared to monovision.[3] Therefore, establishing a multifocal center of excellence within your practice can set you apart from others in the optometric community, and instill greater loyalty to your practice.

PRESBYOPIC ANALYSIS[1]

Total U.S. Population: 310,000,000

Population Requiring Vision Correction
- At ages 45–49: 15,510,604
- At ages 50–54: 17,822,556
- At ages 55–59: 16,609,549

Population Wearing Contact Lenses
- At ages 45–49: 3,323,701
- At ages 50–54: 2,707,224
- At ages 55–59: 1,822,999

Population of Opportunity
- At ages 45–49: 12,186,903
- At ages 50–54: 15,115,333
- At ages 55–59: 14,786,550

SEIZE THE OPPORTUNITY

Presbyopes are rarely targeted and cultivated for contact lenses. Yet, they are a ripe target segment for emerging technology such as AIR OPTIX® AQUA Multifocal contact lenses, which were preferred by 90% of practitioners participating in a clinical evaluation.[4] **Providing a patient with an annual supply of contact lenses reduces the chance of them seeking out alternative suppliers while at the same time maximizing your revenue.** Take it one step further and offer online ordering through your practice's website.

Multifocal spectacles are also important in the care of the patient; however they are not mutually exclusive with multifocal contact lenses. While high-end glasses are profitable in the short term, patients may be hesitant to upgrade again for a few years because of the high initial out-of-pocket cost. Now consider the fact that multifocal lenses such as AIR OPTIX® AQUA Multifocal contact lenses can provide a steady yearly income from the same patient.

So, how can you program success into your practice with multifocal lenses? Communication with patients is essential to achieving success. Present a balanced view to each individual and set realistic expectations for him or her. The goal is to reduce dependency on—not eliminate the need for—glasses, which keeps the door open for other products you prescribe. When discussing multifocal contact lenses with your presbyopic patients, make sure they're willing to accept the occasional need to use reading glasses for fine visual tasks. If your staff is educated on the auxiliary visual needs of these patients, this is an excellent opportunity for them—or you—to suggest a second/back-up pair of spectacles and/or a pair of non-prescription sunglasses. It's also helpful to emphasize to patients what they can see vs. what they can't. Finally, keep explanations simple and pertinent to each patient's needs in terms of benefits that they can expect.

PRINCIPLES BY WHICH TO PRACTICE

When you see contact lens patients—particularly those who are multifocal candidates—prescribe with confidence. Make product-specific recommendations based on their lifestyle needs, recommend the appropriate lens care (such as OPTI-FREE® PureMoist® MPDS) with the lenses prescribed. Try to make things convenient for patients by providing an annual supply of lenses. If you create an integrated solution for your patients, you will truly have made not only an impact on their lives, but on the bottom line of your practice as well.

Dr. Rumpakis is the president and CEO of PRMI, a management and consulting firm serving the medical industry. He lectures nationally and internationally on the economics of clinical standards of care, medical coding and compliance, practice appraisal and other practice management topics.

1. U.S. Census Bureau, Population Division. Table 1. Annual estimates of the resident population by sex and five-year age group for the United States: April 1, 2010 to July 1, 2011 (NC-EST2011-01). Available at: http://www.census.gov/popest/data/national/asrh/2011/tables/NC-EST2011-01.xls. Accessed August 2012.
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3. Woods J, Woods CA, Fonn D. Early symptomatic presbyopes – what correction modality works best?" Eye Contact Lens. 2009;5: 221–226.
4. Rappon J, Bergenske P. AIR OPTIX AQUA Multifocal contact lenses in practice. Contact Lens Spectrum. 2010;25(3):S7-9.

Dangerous Liasions

Glaucoma drops and continuous contact lens wear aren't a good mix. Patients should remove their lenses before drop instillation. **Edited by Joseph P. Shovlin, O.D.**

Q **I have a 54-year-old female glaucoma patient who uses Acuvue 2 (Vistakon) contact lenses for continuous wear and instills Combigan (brimonidine tartrate/timolol maleate, Allergan) b.i.d. on top of her lenses. Her cornea exhibits signs of limbal neovascularization, but no toxic staining, and her pressure satisfies her glaucoma specialist. But is it safe for her to instill glaucoma drops on top of contact lenses that she never cleans?**

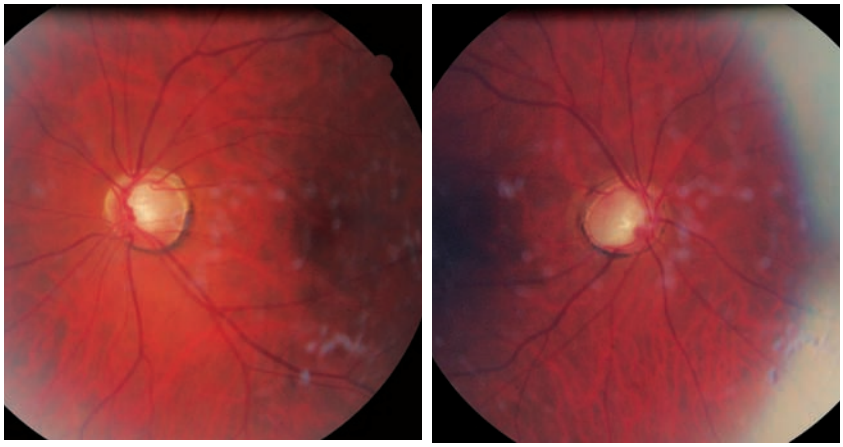

Photo: Andrée Raymond, O.D.

These fundus images show the patient's glaucomatous optic nerve head, which is more advanced in the right eye. The maculae are flat and healthy.

A The first issue is the patient's use of low oxygen-transmission hydrogel lenses for "continuous wear… that she never cleans." The limbal neovascularization shows she clearly is having adverse effects from extended-wear hypoxia. "Either she is wearing her contact lenses for too long a duration, they don't fit, or perhaps the problem is related to the use of Combigan in conjunction with the contacts," says George Spaeth, M.D., Louis J. Esposito Research Professor at the Wills Eye Institute in Philadelphia. "At any rate, clearly what's happening is not good and should be changed."

Let's start with the wear schedule and the type of lens the patient is using. Consider refitting the patient into a daily disposable or silicone hydrogel lens that can be worn on a daily basis, suggests Joel A. Silbert, O.D., director of the Cornea & Specialty Contact Lens Service at the Eye Institute at Salus University.

"If she does so, her corneal health will have received a double benefit," he says. The lack of staining confirms that her corneal epithelium is in good health, despite the use of Combigan drops.

"Although soft lenses can absorb medications, this type of thin, low-water lens is likely not delivering much to the corneal surface, as tears are likely washing much of it away, which is why we are not seeing signs of corneal toxicity," Dr. Silbert says. However, systemic absorption can still occur via the conjunctiva and drainage into the puncta.

Researchers have found that removing contact lenses for five minutes during drop instillation allows the most absorption of ophthalmic solution directly to the eye.[1] It also lowers the amount of preservatives absorbed by the contact lens. When drops were instilled on top of the contact lens, the BAK concentration was significantly higher than in lenses that were off the eye for five minutes. They concluded that 10-minute lens removal was appropriate to prevent significant BAK uptake and enhance the ophthalmic drug absorption.[1]

"As long as she is using any drug containing the preservative BAK (as Combigan does)—which is also toxic to corneal epithelium—she should instill her drops prior to lens insertion, and then again approximately 12 hours later, after lenses have been removed," Dr. Silbert says. Combigan's prescribing information cautions that soft contact lenses can absorb BAK, causing eye irritation.[2] It suggests that patients remove their contact lenses prior to using the drops, wait 15 minutes, then reinsert the lenses. ■

1. Christensen MT, Barry JR, Turner FD. Five-minute removal of soft lenses prevents most absorption of a topical ophthalmic solution. CLAO J. 1998 Oct;24(4):227-31.
2. Combigan [package insert]. Allergan, Inc., Irvine, CA; 2011. www.allergan.com/assets/pdf/combigan_pi.pdf. Accessed Sept 20, 2012.

Does She—Or Doesn't She?

A 63-year-old glaucoma suspect, who has been watched carefully, presents with a disc hemorrhage. Does she now have glaucoma? **By James L. Fanelli, O.D.**

A 63-year-old white female, who had recently moved to the area, presented as a new patient in 2011. She reported that she had been followed on a six-month basis because of "borderline eye pressures." She presented with a copy of her previous optometrist's records, which confirmed this.

She was not medicated for ocular hypertension, but her systemic medications included low-dose (81mg) aspirin q.d., Crestor (rosuvastatin calcium, AstraZeneca), doxycycline, triamterene and Zoloft (sertraline HCl, Pfizer) h.s.

She had no visual complaints on the initial visit, though she did mention that she was bothered cosmetically with her sagging eyelids.

Diagnostic Data

At the initial visit, entering visual acuity was 20/25 O.D. and O.S., and 20/20-2 O.U. Best-corrected visual acuity was 20/20-1 O.D. and 20/20-2 O.S., which did not improve with pinhole or refraction. Pupils were equal, round and reactive to light and accommodation with no afferent defect. Confrontation fields were full in both eyes. Extraocular motilities were full in all diagnostic positions of gaze. Slit lamp examination of her anterior segments was unremarkable, except for moderate dermatochalasis that did not appear to affect her superior fields.

Intraocular pressure measured 22mm Hg O.D. and 24mm Hg O.S., which was consistent with those noted in her record.

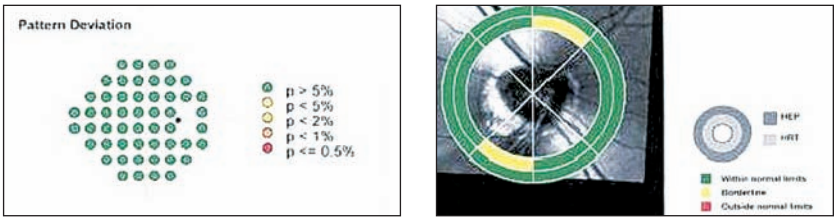

Figure 1. Notice the lack of a white-on-white defect in the pattern deviation plot as well as on the outer ring of the structure-function map.

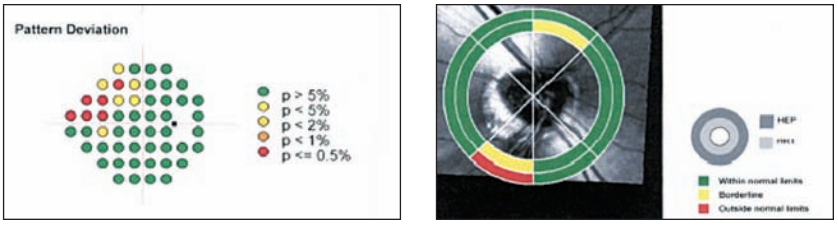

Figure 2. In the same patient, flicker defined form perimetry clearly shows the field defect in the pattern deviation plot as well as on the structure-function map.

Upon dilation, her crystalline lenses showed mild nuclear sclerosis in both eyes, consistent with her slightly reduced visual acuity. Stereoscopic examination at the slit lamp showed cup-to-disc ratios of 0.35 x 0.35 O.D. and 0.40 x 0.40 O.S. Both discs were somewhat tilted vertically with a relatively flat contour to both inferotemporal neuroretinal rims, and adjacent peripapillary atrophy in the inferotemporal quadrants of each nerve. Retinal vasculature was characterized by mild arteriolar sclerosis, consistent with her hyperlipidemia. Her peripheral retinal examination was normal, with several areas of microcystoid O.U.

We obtained stereo photographs and asked her to return for threshold visual fields and Heidelberg Retina Tomograph-3 (HRT-3, Heidelberg Engineering) imaging of her optic nerves.

Three weeks later, the patient presented for the requested testing. Given her complaints of cosmetically bothersome dermatochalasis, as well as for her ocular hypertension, we tested her with a 24-2 standard field. But she had no field defects associated with glaucomatous optic neuropathy, nor was there significant loss due to the dermatochalasis. These fields were consistent with those in her record.

We asked her to return on a six-month basis for field studies, IOP readings and nerve evaluations, which she did.

Then in March 2012, during one of her regularly scheduled follow-up visits, she presented with a disc hemorrhage at the inferotemporal portion of the neuroretinal rim in

the right eye. IOPs measured 24mm Hg O.D. and 25mm Hg O.S.

Discussion

Her record indicates no prior evidence of a disc hemorrhage in either eye. Nevertheless, a disc hemorrhage on the neuroretinal rim in the context of glaucoma certainly calls into question the *stability* of the health of the optic nerve. So, does this warrant a change in her management? Specifically, should we initiate therapy?

Interestingly, the patient was scheduled for Heidelberg Edge Perimetry (HEP) at this visit, instead of standard perimetry. The HEP's flicker-defined form stimulus targets functional assessment of the M ganglion cells, the first cells believed to be damaged in glaucoma.[1] Sure enough, this patient's HEP visual field studies demonstrated an arcuate defect in the eye with the disc hemorrhage, strongly suggestive of glaucomatous field loss in that eye.

Now, did the hemorrhage contribute to this field defect by compromising the neuroretinal rim, or did the field defect exist earlier in the care of this patient and it was simply not seen or appreciated, as all previous studies involved standard white-on-white (WOW) threshold perimetry? Either scenario is as likely to be correct.

No matter what, the patient now has documented visual field loss consistent with glaucoma, and therapy should be initiated. Accordingly, I prescribed Lumigan h.s. O.D.

Follow-Up

On a follow-up visit in August 2012, we ran WOW field studies on this patient that showed no defects in either eye (*figure 1*). While this does not answer the question of whether her glaucoma has existed for a long time or whether she converted due to functional changes as a result of the disc hemorrhage, it does point out the utility of the HEP's flicker-defined form stimulus in identifying glaucomatous visual field defects earlier than standard white-on-white field studies (*figure 2*). ■

Disclaimer: Dr. Fanelli has no financial interest in Heidelberg Engineering.

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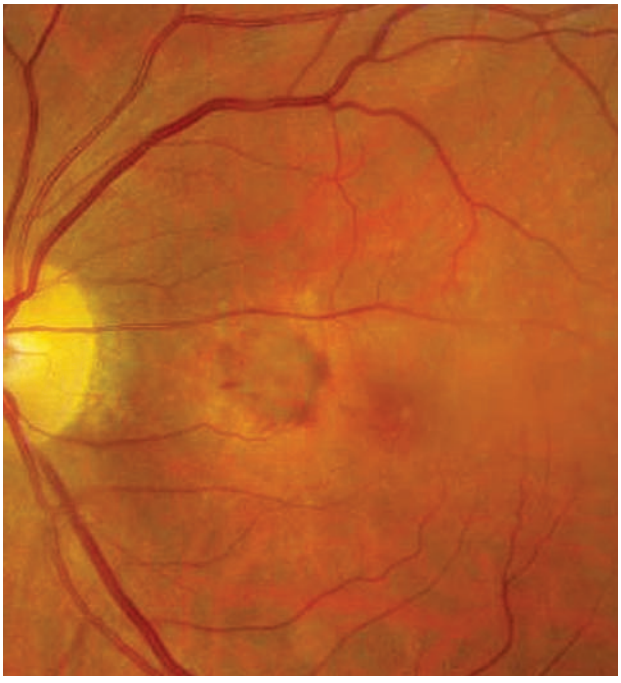
Which is Worse?

This patient presented with decreased vision in his left eye. He already had a retinal complication in his right eye. Which eye is of greater concern? **By Mark T. Dunbar, O.D.**

A 70-year-old Hispanic male presented with decreased vision in his left eye that had persisted for a week. He was a practicing physician and explained that he had a retinal problem in his right eye, which had been followed for nearly two years. Recently, he noted a significant visual change in his left eye and quickly became concerned. His medical history was unremarkable, and he did not report the use of any medications.

On examination, his best-corrected visual acuity measured 20/30 O.D. and 20/60 O.S. Confrontation fields were full to careful finger counting O.U. Amsler grid revealed central metamorphopsia in both eyes (O.S.>O.D.). His pupils were equal, round and reactive to light, with no evidence of afferent defect. The anterior segment examination was remarkable for 2+ nuclear sclerotic and cortical cataracts O.D.

Fundus examination showed small cups with good rim coloration and perfusion O.U. The retinal vessels and macula in the right eye appeared normal; however, the left macula showed definitive changes (*figure 1*). Additionally, we obtained a fluorescein angiogram (*figures 2 and 3*) of the patient's left eye, as well as a spectral domain optical coherence tomography (SD-OCT) scan of his right eye (*figure 4*).



1. Fundus photograph of the patient's left eye shows some interesting macular changes.

Take the Retina Quiz

1. What is the retinal complication in our patient's right eye?
   a. Vitreofoveal traction (VFT).
   b. Cystoid macular edema (CME).
   c. Posterior vitreous detachment (PVD).
   d. Epiretinal membrane (ERM).

2. What retinal changes do you note in the left eye?
   a. Serous retinal detachment.
   b. CME.
   c. Choroidal neovascular membrane.
   d. Choroidal nevus.

3. How should the left eye be managed?
   a. Observation.
   b. Laser photocoagulation.
   c. Anti-VEGF injection.
   d. Topical steroids and NSAIDs.

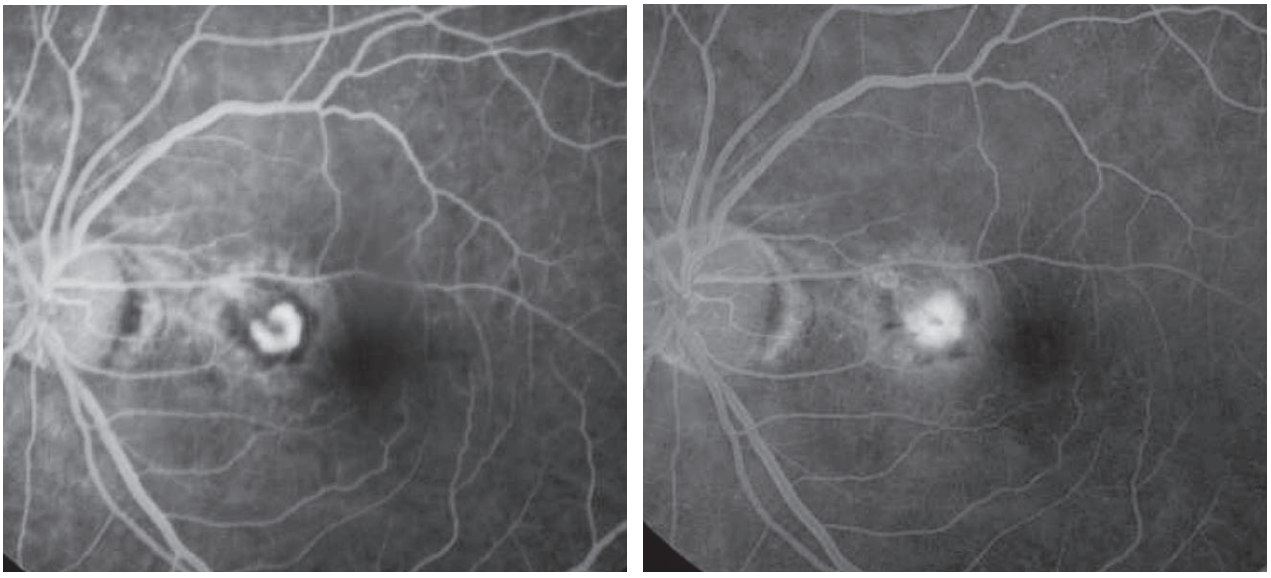
4. How should the right eye be managed?
   a. Observation.
   b. Immediate pars plana vitrectomy (PPV).
   c. PPV, only if the presentation worsens.
   d. Ocriplasmin (microplasmin, ThromboGenics) injection.

For answers, go to page 122.

Discussion

Clearly, our patient exhibited traction in the fovea of his right eye. Was this presentation, however, representative of vitreomacular traction (VMT) or a milder form, VFT?

VFT describes focal traction on the fovea that, in some instances, may induce a very slight effect on the



2, 3. Early- (left) and late-phase (right) fluorescein angiogram of our patient's left eye.

macula.[1] In other cases, however, VFT can progress to CME and/or promote full-thickness macular hole formation.[1] There is, however, some existing controversy regarding whether VFT represents a separate syndrome or simply is a variant of VMT.[2]

Interestingly, our patient had been followed for nearly three years with little or no change in the SD-OCT appearance. At 20/30 O.D., his vision had been stable, so no surgical intervention was recommended.

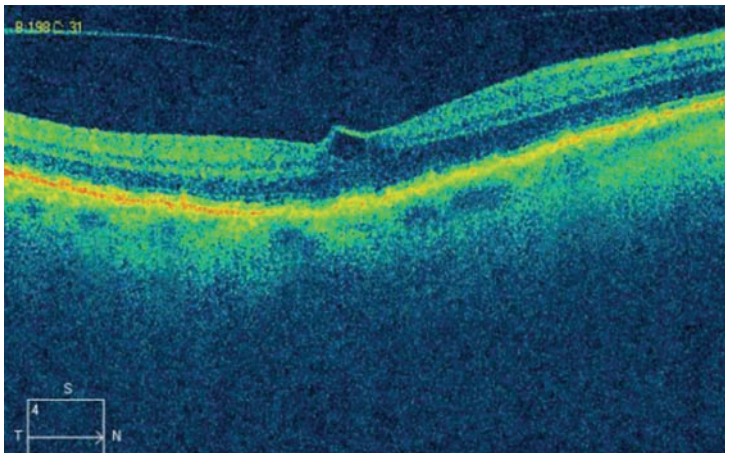
The traction appeared to be focal and had not induced any architectural changes to his macula beyond the superficial traction that was visible on the SD-OCT. In our patient's case, we expect that the vitreous either will spontaneously detach on its own or that the traction will increase and cause the formation of a full-thickness macular hole. If the latter occurs, surgical intervention will be considered (unless a more noninvasive option becomes available, which may be very soon).

Ocriplasmin is a pharmacologic treatment for PVD and VMT currently being investigated by the FDA.[3] It is a proteolytic enzyme that is injected into the vitreous and has the potential to facilitate PVD development in an effort to relieve VMT.

Specifically, Ocriplasmin erodes the protein structures within the vitreous, creating a lysis between the vitreous cortex and the retina. In a recent phase III study, 652 patients were randomized to receive either a single intravitreal injection or a placebo; 26.4% who received the therapy achieved VMT resolution within 28 days vs. 10.2% of those who received the placebo. Even patients who had full-thickness macular holes demonstrated improvement (40.6% experienced macular hole closure vs. 10.6% in the placebo group).[3] Again, Ocriplasmin injection is not yet FDA approved; however, preliminary results are encouraging, and approval is expected later this year.

But let's not forget the reason why our patient came in to see us. In fact, upon brief inspection, the finding in his left eye is more alarming than that observed in his right eye. On previous visits, our patient had some nonspecific retinal pigment epithelium (RPE) changes in his left macula located nasal to the fovea.

Evidently, since then he developed a choroidal



4. Here is the SD-OCT scan of his right eye. What does it reveal?

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neovascular membrane within the same location. This appeared as a gray/green area that was surrounded by subretinal hemorrhage. Additionally, the RPE looked depigmented around the area of neovascularization. Further, there was a serous retinal detachment in the left macula.

We treated our patient with an intrevitreal injection of Eylea (aflibercept, Regeneron Pharmaceuticals), which recently received FDA approval in November 2011. Eylea is a fusion protein that effectively binds to VEGF receptor sites and subsequently inhibits their ability to facilitate VEGF uptake.

Currently, Eylea is the only anti-VEGF agent approved for intraocular injection every two months. Furthermore, it is less expensive than Lucentis (ranibizumab, Genentech/Roche)—approximately $1,800 per q2m injection of Eylea vs. more than $2,000 per month for Lucentis.[4,5]

Overall, our patient did well with Eylea therapy. Over a period of six months, he received two injections and achieved a stabilized visual acuity of 20/50 O.S. Meanwhile, his right eye continues to exhibit persistent VFT. He is debating whether to undergo cataract surgery O.D., which now is his stronger eye despite the presence of macular traction. ■

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The Scuttlebutt on the SCUT

Despite the results of a recent clinical study, the debate over the use of corticosteroids for bacterial keratitis continues to rage. **By Alan G. Kabat, O.D., and Joseph W. Sowka, O.D.**

For many years, eye care providers have debated the most effective management approach for acute bacterial keratitis (BK). While virtually all of us accept the tenet that liberal dosing of topical, broad-spectrum antibiotics is crucial to success, the question of whether adjunctive topical corticosteroids provide any benefit has fueled debate.

Proponents of corticosteroid use claim that these agents help to curb leukocyte recruitment and activation, minimize the structural complications of local inflammation, and potentially reduce stromal loss and opacification.[1]

Critics of steroids, on the other hand, cite the potential for superinfection in cases of resistant organisms, as well as hampering the re-epithelialization process.[1] Let's take a fresh look at this debate in light of results from a new clinical trial.

A Look at SCUT

Until recently, the evidence to support corticosteroid use for BK was either anecdotal or retrospective in nature.[2-6] The literature lacked a well-executed, large-scale, prospective clinical trial to determine the benefits—if any—of incorporating steroids into the therapeutic management of BK.

But then in 2007, recruitment began for such a study: the Steroids for Corneal Ulcers Trial, or SCUT. Its fundamental purpose: "To determine whether adding topical steroids to antibiotic treatment improves the outcomes of bacterial corneal ulcers, especially visual acuity."[7] The published report of this pilot study, which evaluated 42 individuals with culture-confirmed BK, appeared in the February 2009 issue of *Archives of Ophthalmology*.[7]

In the SCUT, all subjects received 0.5% moxifloxacin every hour while awake for 48 hours, and then were randomized to receive either topical steroids or placebo in conjunction with antibiotic therapy. The steroid regimen was q.i.d. for the first week, b.i.d. for the second week, once daily for the third week, and then discontinued.

All patients were seen daily until re-epithelialization was achieved. For purposes of visual acuity and scarring, they were evaluated at the initial visit, at three weeks and at three months.

Compared to those in the placebo group, patients in the steroid group required more time to achieve complete re-epithelialization—by an average difference of about two days—even after adjusting for initial defect size.[7] There were four adverse events reported in the placebo group, including two corneal perforations. No adverse advents were documented in the steroid group.

Regarding visual acuity, there was no statistical difference between the steroid and placebo groups at three weeks or three months—although there was a trend favoring the steroid group.[7] Likewise, there was no statistically significant difference in scar size at three weeks or three months. But again, the trend favored reduced scarring in the steroid group.

SCUT Follow-Up Study

Overall, the outcome of the SCUT pilot study seemed to be a blow to proponents of steroid use in BK. But ultimately the authors concluded that, based upon statistical analysis, their sample size was far too small. They called for a larger trial of at least 360 patients to reassess the outcomes—particularly visual acuity.

In the February 2012 issue of *Archives of Ophthalmology*, the SCUT authors published the results of this proposed large-scale trial.[8] Five hundred individuals were enrolled in the SCUT follow-up study, which adhered to the exact same protocol as outlined in the original design—250 patients were randomly selected to receive corticosteroids and 250 patients were administered a placebo.

A multiple linear regression model of the data revealed that the additional use of steroids offered no significant improvement in best-corrected visual acuity at three months when compared with placebo.[8] Likewise, there was no statistically significant difference in scar/infiltrate size at three weeks, time to re-epithelialization, or adverse events between the two

groups. "The results of the SCUT demonstrate no obvious benefit in using corticosteroids in the overall study population; also, no apparent serious safety concerns were observed," the authors concluded.[8]

Impressions and Limitations

Like the pilot study, the SCUT follow-up appears to discourage the use of corticosteroids when managing bacterial corneal infections. Indeed, several editorial columns published in the wake of the SCUT echoed this sentiment.[9-11]

However, careful scrutiny uncovers several shortcomings associated with this study:

• ***The corticosteroid regimen was extremely conservative.*** The SCUT researchers employed prednisolone sodium phosphate 1% as the trial medication. Seasoned clinicians know that this drug exhibits weak anti-inflammatory capabilities—especially when compared to today's other popular choices, such as prednisolone acetate 1% or difluprednate 0.05%. Likewise, the initial dosing (q.i.d. for one week) could be considered sparse by most standards.

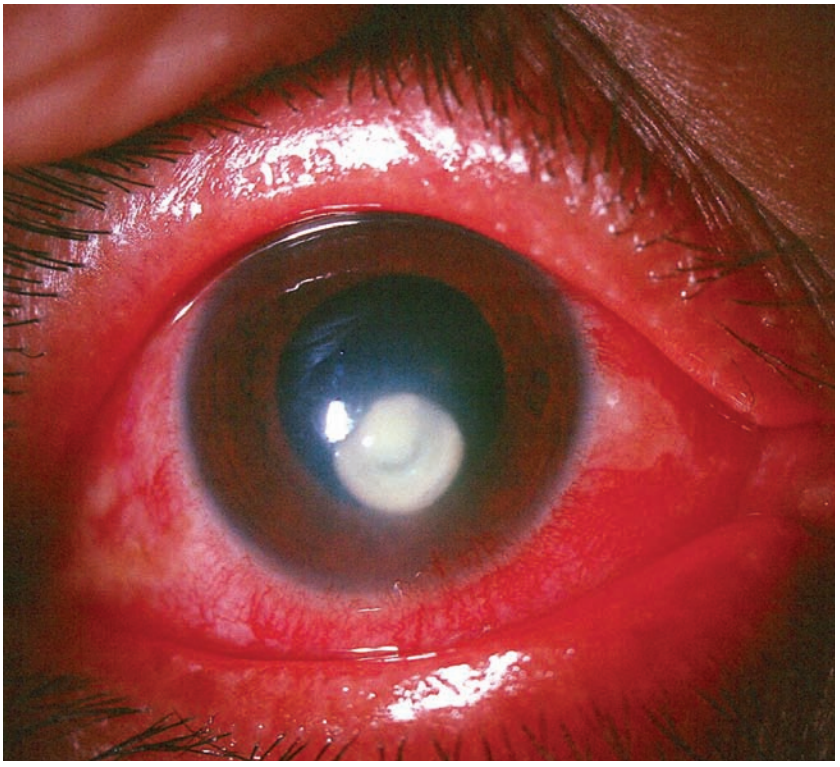
In clinical practice, we tend to favor a more aggressive regimen of prednisolone acetate 1%, dosed hourly while awake and initiated as early as 24 hours after the commencement of broad-spectrum antibiotic therapy.

Of course, this can vary based upon the severity of the ulcer as well as the time required to confirm the cultures and antibiotic susceptibilities.

• ***The SCUT researchers did not consider subjective measures of improvement, such as patient comfort and functional visual recovery time.*** Arguably, any study must have a primary outcome criterion. For SCUT, it was visual acuity at three months. Secondary outcomes included infiltrate/scar size, re-epithelialization and corneal perforation.

But, the researchers did not consider quality of life issues, such as overall patient comfort during the healing process or short-term visual recovery during the first week of therapy.

Such factors are critically important to patients and clinicians alike, because both pain and fear of vision loss are the greatest emotional stressors commonly



Should you use a topical steroid to help treat this corneal ulcer? Research from the SCUT may provide a definitive answer.

associated with corneal ulcers.

Our clinical experience suggests that both comfort and short-term visual recovery can be enhanced significantly by the use of corticosteroids.

• ***One of the most significant findings of the SCUT was buried within the discussion section, where many readers could have overlooked it.*** The SCUT researchers reported no overall difference in three-month visual acuity scores or safety concerns between the steroid and placebo groups.

However, a single paragraph in the concluding section of the publication reads: "An intriguing finding of the study was that prespecified subgroup analyses demonstrated a benefit in three-month visual acuity using corticosteroids in ulcers with greatest severity at presentation. Corticosteroid treatment was associated with a benefit in visual acuity compared with the placebo group in the subgroups with the worst visual acuity and central ulcer location at baseline."[8]

In other words, those cases of BK in which vision was most threatened and recovery most tenuous were the very instances in which corticosteroids seemed to yield the greatest therapeutic benefit.

Many cases of BK in the study were non-central; these cases would be expected to have low visual morbidity and good visual recovery, either with or without steroid use.

For our part, the urge to employ corticosteroids in BK is almost always dictated by severity, location and potential threat to the patient's vision.

The recent SCUT report certainly did not end the debate over corticosteroid use in BK management. No doubt, additional research will follow. And while the perceived message from this study may have been that "steroids don't help corneal ulcers," we are encouraged by the fact that no harm came to those in the steroid arm. It's also reassuring to note that, in the most severe cases, there was indeed some long-term benefit to employing corticosteroids in BK.[8]

For nearly two decades, we have initiated adjunct steroid use for patients with BK, and we can attest that patients treated in this fashion fared significantly better than those who had been treated with antibiotics alone.

So, we will continue to advocate for the judicious use of corticosteroids—along with appropriate antibiotic therapy—in cases of potentially sight-threatening corneal infections. ■

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Lucentis: A New Weapon For DME

Now that Lucentis has secured FDA approval for the treatment of diabetic macular edema, what does it mean for your patients?

By Diana L. Shechtman, O.D., and Paul M. Karpecki, O.D.

Today, more than 26 million Americans have diabetes mellitus.[1,2] Consequently, microvascular complications associated with diabetic retinopathy and diabetic macular edema (DME) are the leading cause of blindness among young adults in the industrialized world.[3]

Likewise, the United States has experienced an 89% increase in DR during the last decade.[4] This number likely will continue to rise during the next 10 years, which translates into a significant overall increase in the incidence of visual impairment.

During the last few years, an improved understanding of diabetic eye disease has sparked the development and evaluation of several potential treatment options. But arguably the most promising breakthrough in nearly two decades just occurred on August 10, when Lucentis (ranibizumab, Genentech/Roche) received FDA approval for the treatment of DME.

Anti-VEGF for DME

Vascular endothelial growth factor (VEGF) has been shown to play a critical role in the development of macular edema associated with several vascular diseases. After extensive testing of anti-VEGF therapy's ability to inhibit vessel permeability, Lucentis received approval for the treatment of macular edema secondary to vein occlusion.[5,6]

Like vein occlusion, VEGF and hypoxia both contribute to the pathogenesis of DME. In fact, proportionately higher levels of VEGF have been found in the aqueous humor of patients with advanced DME.[7,8]

Because of this finding, several research groups have advocated the use of anti-VEGF therapy for the treatment of DME.[9-11] Their clinical data showed that DME patients on anti-VEGF therapy exhibited decreased retinal thickness and improved visual acuity (*see "Anti-VEGF Combats DME," July 2009; and "READ-2 Results Show Promise," August 2010*).

RISE and RIDE

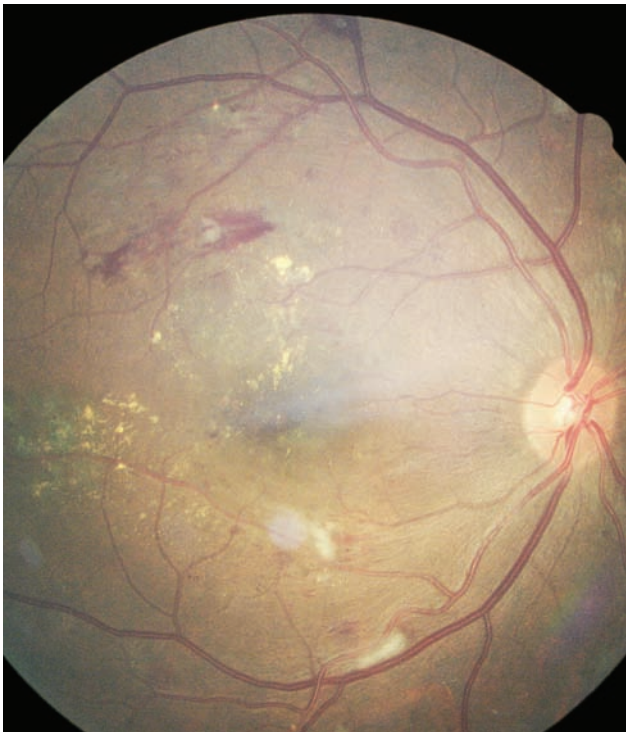
The two primary studies that evaluated the safety and efficacy of Lucentis for the treatment for DME—RISE and RIDE—included more than 750 patients.[11] Both studies were identically designed, parallel, double-masked, three-year trials. The RISE and RIDE researchers confirmed that intravitreal injections of Lucentis yielded vastly superior therapeutic efficacy to that of placebo injections.

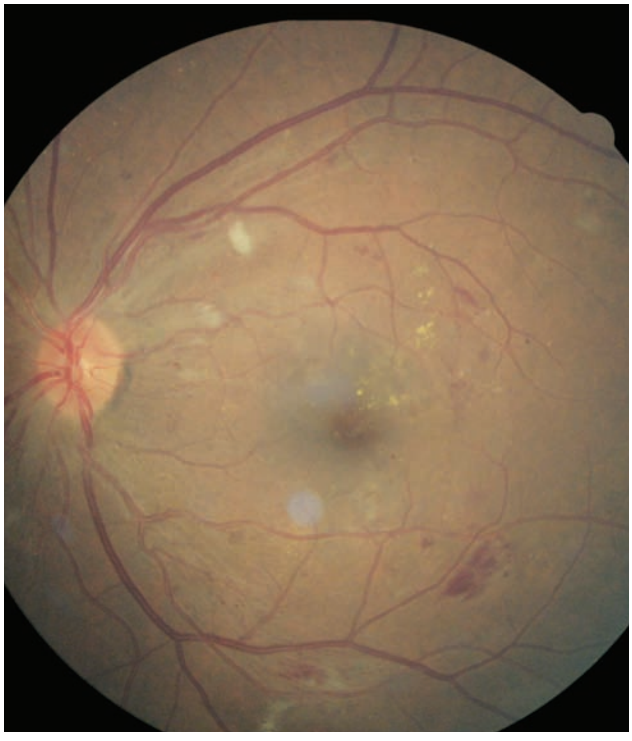
In both RISE and RIDE, the subjects were randomized into three groups: 0.3mg Lucentis injection, 0.5mg Lucentis injection and placebo. Patients in both treatment groups received monthly injections. By 24-month follow-up, 33.6% to 44.8% of those who received 0.3mg injections and 39.2% to 45.7% of those who received 0.5mg injections gained at least 15 ETDRS letters.[11] By comparison, just 12.3% to 18.1% of those who received placebo injections exhibited a comparable visual acuity improvement. It is interesting to note, however, that the RISE study showed no additional therapeutic benefit from the higher monthly dose of Lucentis.[11]

The visual improvement observed within the treatment groups was maintained through 36-month follow-up (with continued treatment). During the second year, monthly Lucentis injections were administered to patients in the control group.[11] Although vision gain was noted at 36-month follow-up, the newly treated control patients showed less visual improvement than those who were treated for a full three years.

In regard to structural changes, optical coherence tomography confirmed that the clinical improvement in macular edema paralleled patients' recovery of visual acuity. Also, patients in both treatment groups were far less likely to require adjunct macular laser and/or pan-retinal photocoagulation treatment following study completion. This finding suggested that Lucentis treatment might further decrease the long-term progression of diabetic retinopathy.[11]

Finally, the RISE and RIDE researchers documented similar overall patient safety data to





Would this patient with diabetic macular edema benefit from intravitreal Lucentis therapy?

those observed in other comparable, large-scale clinical studies of intravitreal anti-VEGF therapy (e.g., CRUISE, MARINA and PIER).[5,6,12,13] Only mild ocular side effects—primarily related to the injection procedure—were noted.[11] And, although rare, Lucentis treatment was associated with a slightly higher risk of arterial thromboembolic events, including heart attack and nonfatal stroke.[11]

For years, the standard of care for patients with DME has been laser photocoagulation. While laser therapy typically affords the patent a reduced risk of moderate vision loss, post-treatment visual improvement is limited.[14]

Fortunately, several randomized clinical trials designed to evaluate the safety and efficacy of anti-VEGF therapy in the treatment of DME have documented positive long-term effects—namely, decreased retinal thickness and improved visual acuity.[11]

And now, with the recent approval of Lucentis for DME, we can not only preserve, but also improve, the vision of our patients who present with advanced diabetic eye disease. ■

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Product **Review**

SiHy Lenses

Definitive Silicone Hydrogel

GP Specialists recently received FDA clearance to begin manufacturing made-to-order, customizable soft contact lenses using Contamac's "Definitive" silicone hydrogel material. Definitive is a new-generation material that Contamac researchers developed to give authorized lab partners the ability to manufacture high Dk specialized soft contact lenses, the company says. It's created with a blend of fluorosilicone and hydrophilic monomers designed to provide higher oxygen permeability. Definitive is now available in all GP Specialists made-to-order designs.

GP Specialists offers a complete line of iSight specialized soft lenses that include made-to-order spheres, torics, multifocals and keratoconus designs. iSight soft lenses with sphere powers up to ±20.00D and cylinders up to -8.50D are now available for patients who need a higher Dk material.

Visit www.gpspecialists.com.

Dry Eye Glasses

Micro-Environment Glasses

Developed by ophthalmologist Richard Yee, M.D., micro-environment glasses (MEGs) are designed to reduce symptoms and improve comfort for dry eye patients. They feature tinted, removable, silicone rubber Moist-Sure Shields that enclose the space around the eye. Dr. Yee says this creates a moisture-rich environment, which keeps out eye irritants and helps combat dry eye symptoms associated with ocular surface disorders, such as dry eye syndrome, computer vision syndrome and blepharitis.

Many of Dr. Yee's patients have said MEGs offer a more stylish option than bulky safety glasses that create a "goggle" effect. MEGs can be customized with prescription, anti-glare, anti-fog and/or color-treated lenses and are available in three sizes to fit all face shapes.

Visit www.seefit.net.

Pharmaceuticals

Lotemax Gel Drop

The FDA has approved Bausch + Lomb's new drug application for Lotemax (loteprednol etabonate ophthalmic gel) 0.5% gel drop formulation. A new addition to its topical corticosteroid loteprednol ophthalmic line, the gel is indicated for the treatment of postoperative inflammation and pain following ocular surgery. Lotemax is also available as a suspension and as an ointment.

One or two drops of Lotemax gel should be applied to the conjunctival sac of the affected eye four times daily, beginning the day after surgery and continuing throughout the first two weeks of the postoperative period. The most common ocular adverse reactions reported in patients were anterior chamber inflammation (5%), eye pain (2%) and foreign body sensation (2%).

Visit www.bausch.com.

Optical Design

Frame Risers

New frame risers from Opticaldisplays.com feature sleek and modern design elements, including brushed aluminum components, solid glossy white bases and soft felt bottoms that create an elegant backdrop for showcasing frames. They can be used as a selling tool in the optical to draw attention to specific frames and highlight temple details.

These frame risers easily can be added to a glass shelf unit, countertop or tabletop and are offered in various styles, sizes and sets to fit your optical's specific needs.

Visit www.opticaldisplays.com.

Pedestal Case

Tecno Display now offers a pre-assembled, tempered glass, pedestal showcase with a 16-inch high glass area and security lock. The pedestal itself is 67 inches tall by 23.5 inches deep and 23.5 inches wide. It features two 50-watt halogen top lights, an electrical cord with a switch and wheels for easier movement. Optional add-ons include microhalogen spotlights, LED spotlights, LED top lights and levelers.

The case has crown molding on the top canopy and single frame moldings on each of the pedestal side panels to accentuate the look. Shown in a solid wood veneer with an oak cherry stain and black anodized aluminum frame, this square pedestal is also available in three other colors of cherry veneer as well as mahogany, walnut and oak veneer. Tecno Display has a full stain department that can match your existing wood—all you need to do is send a sample of the color, and its technicians will match and send you sample for approval.

Visit www.tecnodisplay.com.

Electronic Resources

EMR Portal

Topcon Medical Systems recently launched a new EMR portal that provides a single online location for EMR vendors to download connectivity information for all of Topcon's devices and software. The portal provides information on the full range of Topcon's precision instruments, including:

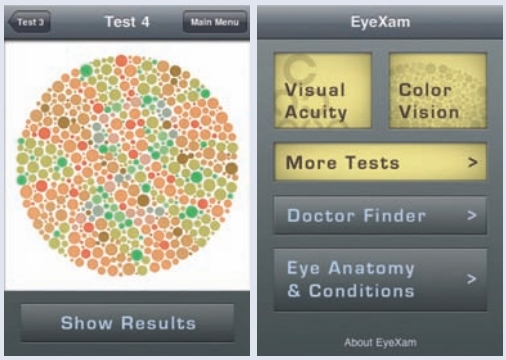
- Communication specifications for each device and software system.
- Sample data for each of the devices.
- Interface documentation for various software platforms including simple command line interface specifications.
- DICOM Conformance Statements for Topcon's capture and image management systems.
- HL7 specifications for the Synergy Image Management System.

Visit http://emr.topconmedical.com.

EyeXam App

Global EyeVentures, in partnership with Eyefinity, introduces the next generation of its EyeXam mobile app and web platform. EyeXam's new features include:

- An enhanced doctor directory designed to promote eye care and connect users with eye care professionals.
- Self screening and the ability to share results.
- A GPS-based doctor locator, which works off the user's current location or a desired zip code. VSP providers are automatically listed in the directory, and non-VSP providers can be listed for a fee.
- Live chat with doctors' offices.



In addition, patients can manage appointments with the app and receive communications from their doctor, including reminders and targeted messages. Doctors can use a web-based dashboard to monitor app activity, access a list of everyone who has viewed the app by email address and connect with app users.

The EyeXam app is available as a free download from the iTunes app store. A version for Android smartphones will be available soon.

Visit www.globaleyeventures.com.

Wall Displays

The new Prestige line of wall displays from Fashion Optical Displays offers a variety of molding choices that mix and match with existing furnishings. There are eight new designer moldings available so you can create a time-honored look, a more innovative design or an electric boutique that showcases high-end products.

Fashion Optical Displays also offers a wide selection of accessories that easily pop on and off the new Prestige wall displays, including graphics, signage and literature holders, tint and lens displays, as well as curved and straight shelves to hold eyewear cases.

Visit www.fashionoptical.com.

Vision Testing

Contrast Sensitivity Testing

The computerized Smart System contrast sensitivity testing function from M&S Technologies provides comparable contrast sensitivity values to the Pelli-Robson chart, according to a new study at the University of Toronto. The researchers also found that the computerized Smart System contrast sensitivity function provides accurate, reproducible and consistent results.

Eye care professionals can conduct contrast sensitivity tests with any of the seven optotypes available on the Smart System, as well as complete optotype randomization so no two tests are the same, the company says.

Additionally, all the tests can be operated with any of the M&S input devices, including the illuminated keypad, remote control and bidirectional tablet.

Visit www.mstech-eyes.com.

Frames

Diane von Furstenberg

The Diane von Furstenberg fall/winter 2012 eyewear collection features vintage shapes and unique hardware such as the chain link, harper buckle and power stone.

Sunglasses

• *Maya (DVF567S)*. This round frame features a feature a metal clasp on the temples and includes color blocking from front to temples. It is available in black, dark tortoise, blonde tortoise and blue tortoise.

• *Joy (DVF819S)*. This square frame has a metal front and dropped plastic temples. It is available in black/gunmetal, chocolate/shiny brown, navy/silver and plum/gold.

• *Addy (DVF572S)*. Rich zyls and crystal-colored layers add a multidimensional aspect to the frame. This style is available in black/white/grey, black/purple/pink, dark brown/light brown and dark blue/blue.

Optical

• *DVF5036*. An all-plastic, geek-chic frame, DVF5036 features a power stone-inspired design on the outside temples. It's available in black, dark tortoise, mushroom and sapphire.

• *DVF8028.* This semi-rimless frame has a retro-forward style enhanced by unique zyl colorations. It's available in black tortoise, soft tortoise and purple tortoise.

• *DVF5040.* Chain link details are laser etched from the temples to the frame front corners on this small, trendy cat eye. It comes in black, dark tortoise, grape and mauve.

Visit www.marchon.com.

Jil Sander

The fall/winter 2012 collection from Jil Sander features urban-chic styles with subtle nods to vintage nostalgia—aviator, butterfly and square silhouettes—are enhanced with pops of vibrant color options and gradient fades.

Women

• *JS131S.* Angular styling modifies the traditional aviator on this frame, which is available in black, gunmetal, silver, gold and rose.

• *JS697S.* The classic square silhouette is redone for a modern look in this frame, available in black, striped chocolate, tortoise, olive and bordeaux.

• *JS2693.* Brush detailing draws attention to the retro shape this frame, available in black, striped brown, striped denim and wine.

• *JS2689.* A classic rounded square shape is updated with delicate zyl lines, bold temples and modern variations in this frame, available in black, smoke, brown, tortoise, olive and navy.

Men

• *JS134S.* This futuristic take on the classic aviator features exposed screws that add dimension to the techy design. It's available in black, white and brown marble.

• *JS2691.* Textured and smooth zyl gives modern appeal to this rectangular frame, available in black, silver, striped chocolate, striped brown, olive and striped denim.

• *JS2696.* Clean lines give the sculpted temples a bold look on this frame, available in black shiny, black scratched, smoke, brown, tortoise, striped brown, striped green, navy, red marble and honey.

• *JS2687.* With angled facets and a futuristic geometric shape, this style is inspired by modern art. It's available in black marble, striped chocolate and striped navy blue.

Visit www.marchon.com. ■

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PS Form 3526-R, September 2007 (Page 2 of 3)

Meetings + Conferences

November 2012

■ **8-11.** *Monterey Symposium.* Monterey Marriott Hotel & Conference Center, Monterey, Calif. Hosted by: California Optometric Association. Call Will Curtis at (916) 266-5037 or email wcurtis@coavision.org. Visit www.coavision.org.

■ **9-10.** *C.E. Charleston.* Doubletree Charleston Historic District, Charleston, S.C. Hosted by: Pacific University College of Optometry. CE hours: 12. Call Jeanne Oliver at (503) 352-2740 or email jeanne@pacific.edu. Visit www.pacificu.edu/optometry.ce.

■ **9-10.** *Primary Care Symposium.* Country Springs Hotel, Waukesha, Wis. Hosted by: Wisconsin Optometric Association. Call (800) 678-5357 or email joleenwoaoffice@tds.net. Visit www.woa-eyes.org.

■ **9-11.** *FCO International 23rd Annual Educational Conference.* Abe Martin Lodge, Brown County State Park, Nashville, Ind. Hosted by: Fellowship of Christian Optometrists. Visit www.fcoint.org/services/annualConference.html.

■ **11.** *Virginia Academy of Optometry Annual Educational Conference.* The Inn at Fredricksburg Square, Fredricksburg, Va. Hosted by: Virginia Academy of Optometry. Call (540) 310-0063 or email vaacadoptom@yahoo.com.

■ **18.** *November Conference.* The Crowne Plaza Hotel, Natick, Mass. Hosted by: Eye-Sight 20/20, Inc. Instructors: Stuart Richer, O.D., and Al Morier, O.D. CE hours: 8. Call Dr. Antoinette D. Parvis at (508) 987-9679 or visit www.eyesightce.com.

■ **29-Dec. 3.** *VT/Visual Dysfunctions.* Grand Rapids, Mich. Hosted by: Optometric Extension Program. Instructor: Robert A. Hohendorf, O.D. CE hours: 35. Contact Theresa Krejci at (800) 447-0370 or theresakrejcioep@verizon.net. Visit www.oepf.org.

■ **30-Dec. 2.** *New Technology & Treatments in Vision Care East Coast.* Loews Hotel Philadelphia. Hosted by: *Review of Optometry*. Meeting chair: Paul Karpecki, O.D. CE hours: 15. Contact Lois DiDomenico at ReviewMeetings@jobson.com or (866) 658-1772. Visit www.revoptom.com/conferences.

December 2012

■ **1-2.** *Glaucoma Grand Rounds Program with Live Patients.* Western University College of Optometry, Pomona, Calif. Call (909) 706-3493 or email ceoptometry@westernu.edu. Visit www.westernu.edu/optometry-continuing-education.

■ **1-2.** *29th Annual Cornea, Contact Lens & Contemporary Vision Care Symposium.* The Westin Memorial City, Houston, Texas. Hosted by: University of Houston College of Optometry. CE hours: 16. Call (713) 743-1900 or email optce@uh.edu. Visit http://ce.opt.uh.edu/live-events/ccls2012.

■ **14-15.** *3rd Annual West Coast Optometric Glaucoma Symposium.* Fairmount Newport Beach, Newport Beach, Calif. Hosted by: *Review of Optometry*. Meeting chair: Murray Fingeret, O.D. CE hours: 12. Contact Lois DiDomenico at ReviewMeetings@jobson.com or (866) 658-1772. Visit www.revoptom.com/conferences.

■ **23-30.** *Christmas Week Cruise 2012: Current Trends in Contemporary Optometry.* Norwegian Cruise Line sailing from New Orleans. Presented by: Edward L. Paul, Jr., O.D., Ph.D. CE hours: 12. Call (800) 436-1028 or email info@drtravelinc.com. Visit www.drtravel.com/optometristsSeminars.html.

January 2013

■ **12.** *2013 Glaucoma Symposium.* Willows Lodge, Woodinville, Wash. Chaired by: Howard Barneby, M.D., and Murray Fingeret, O.D. Visit www.pacificu.edu/optometry/ce.

■ **12-14.** *24th Annual Berkeley Practicum.* DoubleTree Hotel, Berkeley Marina, Berkeley, Calif. Hosted by: University of California, Berkeley, School of Optometry. CE hours: 20. Call (800) 827-2163 or email optoCE@berkeley.edu. Visit http://optometry.berkeley.edu/ce/berkeley-practicum.

■ **19-20.** *Gold Coast Educational Retreat.* Hyatt Regency Pier 66, Ft. Lauderdale, Fla. Hosted by: Broward County Optometric Association. CE hours: 17. Email browardeyes@gmail.com or visit www.browardeyes.org.

■ **20-26.** *30th Annual Island Eyes Conference.* Hyatt Regency Maui, Hawaii. Hosted by: Pacific University College of Optometry. CE hours: 25. Visit www.pacificu.edu/optometry/ce.

February 2013

■ **6.** *IOA Winter Seminar.* Ritz Charles, Carmel, Ind. Hosted by: Indiana Optometric Association. Call (317) 237-3560 or email blsims@ioa.org. For more information, visit www.ioa.org.

■ **6-7.** *MOA Winter Seminar.* Kellogg Hotel & Conference Center, East Lansing, Mich. Hosted by: Michigan Optometric Association. Contact Amy Possavino at (517) 482-0616 or amy@themoa.org. For more information, visit www.themoa.org.

■ **8-10.** *3rd Annual Final Eyes CE.* Baptist Hospital Conference Center, Jacksonville, Fla. CE hours: 16. Contact Valerie Fernandez at (904) 202-2080 or valierie.fernandez@bmcjax.com. For more information, visit FinalEyesCE.com.

■ **12-14.** *The Eye Show London 2013.* London ExCeL International Exhibition Centre, United Kingdom. Hosted by: Emergexpo plc. CE hours: 18. Email conference@theeyeshow.com or visit www.theeyeshow.com.

■ **15-17.** *52nd Annual Heart of America Contact Lens Society Contact Lens and Primary Care Congress.* Sheraton Kansas City Hotel and Crown Center, Kansas City, Mo. Contact Dr. Steve Smith at (918) 341-8211 or registration@thehoacls.org. Visit www.hoacls.org.

■ **16-20.** *SkiVision 2013.* Viceroy Snowmass Luxury Mountain Resort, Snowmass Village, Colo. CE hours: 23. Call (888) SKI-2530 or email questions@skivision.com. Visit www.skivision.com.

To list your meeting, contact:

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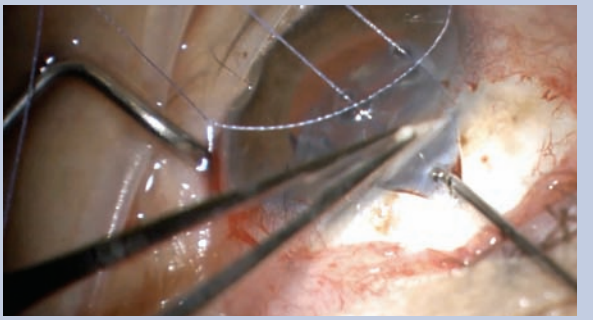
The Express Glaucoma Shunt

When medical and laser therapy fail, this aqueous filtration device may be an alternative to consider.

By Derek N. Cunningham, O.D., and Walter O. Whitley, O.D., M.B.A.



The surgeon creates a triangular scleral flap, beneath which the drainage shunt will be placed. Aqueous drains into the intrascleral space.

Go to www.revoptom.com or scan the QR code at left to see video footage of the procedure.

On The Web ›› View a narrated video of Express shunt placement in a glaucoma patient.

Historically, trabeculectomy has been the gold standard in glaucoma surgery. The procedure has been indicated when medications and/or lasers fail to adequately control IOP; however, trabeculectomies also have been employed prior to laser therapy. Although considered the standard of care for uncontrolled glaucoma, trabeculectomy may not consistently provide optimal results and could place the patient at a higher risk of complications than other procedures.

The Express shunt (Alcon), a promising alternative surgical option, was actually more successful than trabeculectomy in controlling IOP without medication use for up to three years postop.[1]

The device creates a secure, uniform channel under the scleral flap, which enables aqueous drainage. The surgical technique entails the implantation of a shunt under a scleral flap to drain aqueous from the anterior chamber into the intrascleral space. After proper eye positioning and anesthesia, a conjunctival peritomy is fashioned superiorly and dissected back. The scleral bed is cauterized for hemostasis, followed by the creation of a triangular scleral flap with a base approximately 3mm in width.

Next, the scleral flap is brought forward into clear cornea. Using a Weck-Cel ophthalmic sponge (Beaver Visitec International), mitomycin-C is placed onto the scleral bed for approximately three minutes, removed, then irrigated with balanced salt solution (BSS). A 25-gauge needle is used to make a scleral tunnel incision into the anterior chamber parallel to the iris plane.

The Express shunt is then inserted and fashioned into this opening, flush with the sclera. Aqueous flow is tested for adequacy, then the flap is brought down and closed with three interrupted sutures that are tied and buried. BSS is instilled into the anterior chamber to evaluate outflow potential through the flap. Lastly, the conjunctiva is pulled forward and peritomy closed superiorly.

Candidacy for the Express shunt is similar to that for trabeculectomy: optic nerve or visual field progression despite maximum medical therapy and/or laser therapy; the inability to take drops adequately; moderate to advanced disease; and a low target pressure.

Clinical considerations for comanaging optometrists include an individualized discussion about laser and surgical options as well as both pre- and postoperative considerations. Patients must understand that while their current therapy may not have been successful, there are multiple options available to control their glaucoma. Let them know that you will be with them along the way to help address their condition. Communication with your surgeons regarding which glaucoma procedures they prefer to perform as well as the appropriate surgical indications for each option will help you make a proper referral. ■

1. De Jong, L, Lafuma, A. Aguade, AS, and Berdeaux, G. Five-year extension of a clinical trial comparing the EX-PRESS glaucoma filtration device and trabeculectomy in primary open-angle glaucoma. Clin Ophthalmol. 2011;5:527-533.

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Diagnostic **Quiz**

Slight Anomaly or Big Problem?

By Andrew S. Gurwood, O.D.

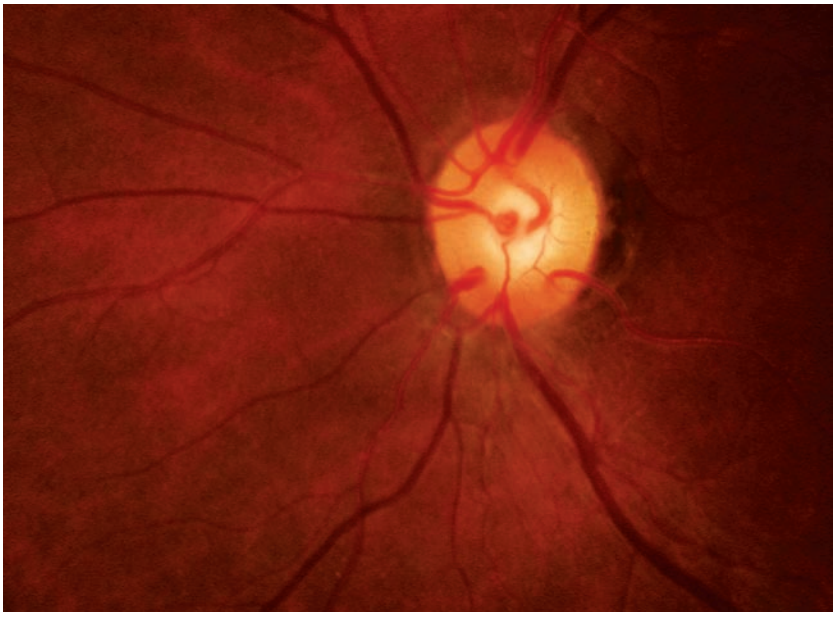
History

A 35-year-old black male presented with a chief complaint of blurred vision at distance that had persisted for six months. He explained that his spectacles were old and that he wanted a new pair with an updated prescription. He had no significant ocular or systemic history, and reported no allergies.

Diagnostic Data

His best-corrected visual acuity measured 20/25 O.U. at distance and 20/20 O.U. at near. External examination was normal, with no evidence of afferent pupillary defect. Refraction yielded a small improvement in both eyes, revealing the presence of spherical myopia.

The anterior segments of both eyes appeared healthy. Intraocular pressure measured 19mm Hg O.U. We detected an unusual finding in his right eye during the dilated fundus examination.



Fundus photograph of our 35-year-old patient who complained of blurred vision. Do you notice anything particularly odd?

Your Diagnosis

How would you approach this case? Does this patient require any additional tests?

What is your diagnosis? How would you manage this patient? What's 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. ■

Retina Quiz Answers *(from page 100):* 1) a; 2) c; 3) c; 4) a.

Next Month in the Mag

Our November issue features the 18th Annual Refractive Surgery Report, which includes:

- *Is Femto-Phaco Living Up to the Hype?*
- *Prospective Testing and Education for LASIK*
- *An Introduction to the Latest Monofocal IOLs*

Also in November:

- *Optometric Study Center: Emerging Treatments for Leber's Optic Neuropathy* (earn 2 CE credits)
- *Help Control Myopia in Children with CLs*
- *Software Updates for Your Equipment*

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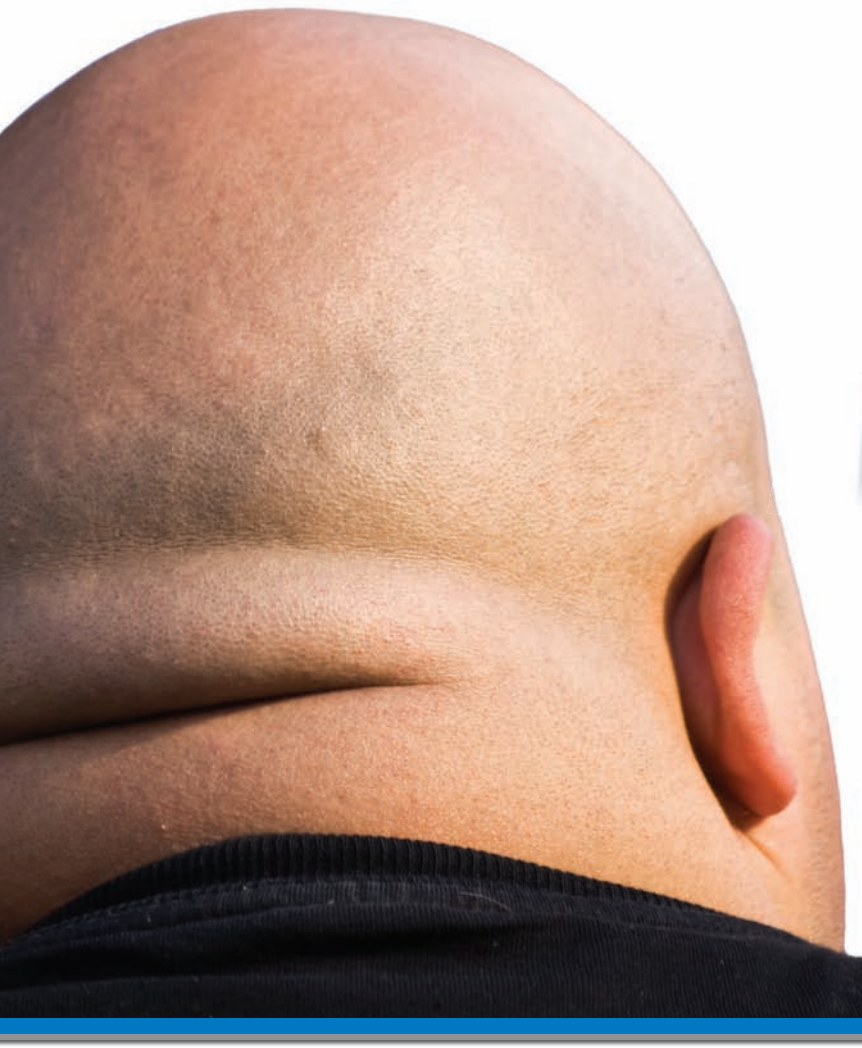

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References: 1. Based on third party industry report MAT June 2012, based on unit sales, Alcon data on file. **2.** Based on typical rebates and compliance with manufacturer-recommended lens replacement for DAILIES® AquaComfort Plus® and ACUVUE^ OASYS^, and lens care for ACUVUE^ OASYS^; Alcon data on file, 2012. **3.** 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):161-174. **4.** Alcon data on file, 2012.

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