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April 15, 2012

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36TH Annual Contact Lens Report

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VOL. 149 NO. 4 ■ APRIL 15, 2012

IN THE NEWS

"Routine screening for **glaucoma** in **African American individuals** is a potentially clinically effective and economical method to reduce the burden of **glaucoma-related visual impairment and blindness**, though its absolute benefit is likely to be modest," researchers concluded in a study reported in the March issue of *Archives of Ophthalmology*. Such a screening program for black patients in their 50s, without known glaucoma, would reduce the lifetime prevalence of **undiagnosed glaucoma** from 50% to 27%, the researchers estimated.

About two-thirds of Americans don't know that **omega-3 fatty acids** or **lutein** are involved in eye health. Nine out of 10 Americans aren't aware of the role of **zeaxanthin** in eye health. That's why Americans need **nutritional guidelines** to make better choices for their eye health, according to a panel of experts assembled by the **Ocular Nutrition Society**, and sponsored by **Bausch + Lomb**. "We support new efforts to develop such guidelines as well as subsequent educational initiatives designed to raise awareness of these recommendations among public and professional audiences," the panel members wrote in a consensus statement.

A protein called **cochlin**, found in the trabecular meshwork, is at the heart of a newly discovered process of IOP regulation in **glaucoma**, according to Bascom Palmer researchers. In the April 4 issue of *PLoS ONE*, they report that cochlin plays a role in mechanical stimuli at the cellular level—a process called **mechanosensing**.

Myopia: It's Not Just the Length, but the Lens

Myopia is commonly described as having an eyeball that is "too long." Not exactly. **By Colleen Mullarkey, Senior Editor**

A new study finds that myopia develops in children when the crystalline lens stops adapting to the eye's continued growth, according researchers at The Ohio State University College of Optometry.

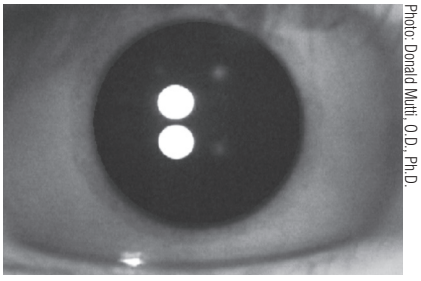

Photo: Donald Mutti, O.D., Ph.D.

Myopia is an imbalance between growth of the eyeball and development of the crystalline lens, new research finds.

The new research, published in the March issue of *Optometry and Vision Science*, indicates this breakdown occurs about a year before myopia actually occurs.

Lead author Donald Mutti, O.D., Ph.D., and his colleagues found that in children without myopia, the lens grew thinner and flatter to maintain normal vision as the eye grew. But in children who became nearsighted, the lens stopped changing in response to eye growth.

"What this work is trying to show is that it's not just about the length of the eye—it's how the length of the eye relates to the rest of the eye," Dr. Mutti says. "The onset of myopia is really the sudden occurrence of an imbalance between the growth of the eye and the development of the crystalline lens."

To determine this, the researchers analyzed repeated measurements of vision and eye growth from 732 children ages six to 14. This data was collected over several years for the Collaborative Longitudinal Evaluation of Ethnicity and Refractive Error (CLEERE) study, so they were able to look at the children's eyes before, during and after the onset of nearsightedness.

They believe that the ciliary muscle, which controls accommodation, may also play a role. While current treatments for myopia target the back of the eye, these findings could suggest a different direction for the future. "If the ciliary muscle is involved in becoming myopic, there might be treatments [developed] aimed at enabling the muscle to respond to increases in the size of the eye," Dr. Mutti says.

To that end, Melissa Bailey, O.D., Ph.D., one of Dr. Mutti's colleagues at OSU, is currently conducting studies in which she is imaging the ciliary muscle to find out how it develops in children.

Mutti DO, Mitchell GL, Sinnott LT, et al. Corneal and crystalline lens dimensions before and after myopia onset. Optom Vis Sci. 2012 March;89(3):251-62.

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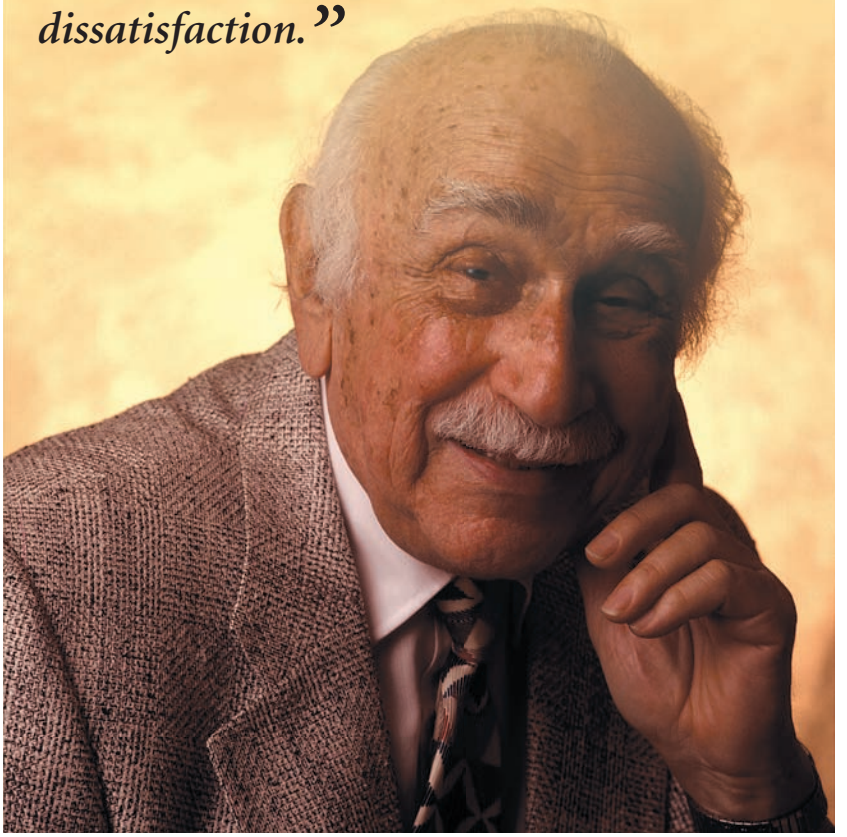
* Boston lenses are prescribed 3 times more often than the closest GP competitor. Source: Survey conducted by Decision Analyst, March 2011.

Optometry Mourns Loss Of Irvin Borish, O.D.

"I would like to see more optometrists devoted to and loyal to the field, but dissatisfied with it. In this way they keep the profession moving forward with a combination of loyalty and dissatisfaction."



In 1999, *Review of Optometry* acclaimed Irvin Borish, O.D., as "The Most Influential Optometrist of Our Time." At that time, we wrote, "His *Clinical Refraction* served as the bible for generations of practitioners. His foresight in the late 1960s fueled optometry's DPA and TPA movements. And, if you're a graduate of Indiana University School of Optometry, Dr. Borish has had a direct impact on your life."

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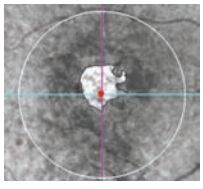

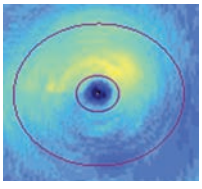

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B+L to Buy ISTA for $500 Million

On March 26, representatives from Bausch + Lomb announced that they had agreed to purchase ISTA Pharmaceuticals for $9.10 per share—a total approximate value of $500 million. The transaction was unanimously approved by both company's boards of directors and is anticipated to be finalized during the second quarter of 2012.

The merger incorporates ISTA's current drug portfolio—including topical agents Bromday (bromfenac), Bepreve (bepotastine besilate) and Istalol (timolol maleate)—into B+L's existing pharmaceutical inventory.

Additionally, B+L will inherit ISTA's current developmental drug pipeline, which currently includes several topical agents intended to treat ocular inflammation and pain.

"ISTA is an excellent strategic fit with Bausch + Lomb's rapidly growing pharmaceutical business, and this combination represents an important step in Bausch + Lomb's commitment to becoming the best global eye health company. With this combination, we will significantly enhance our pharmaceutical pipeline, nearly doubling the number of mid- to late-stage innovations," said Brent Saunders, president and chief executive officer of B+L.

"ISTA's portfolio of prescription eye and allergy products is a natural extension of Bausch + Lomb's pharmaceutical business focus. Together, we create an impressive platform to commercialize new eye care and allergy products already under development," added Vicente Anido, Jr., Ph.D., president and chief executive officer of ISTA Pharmaceuticals.

The transaction is still subject to regulatory approval and other customary closing conditions, including the approval of ISTA's shareholders.

The companies will continue to operate independently until official completion of the acquisition.

Don't Donate Old Glasses, Study Says

Sending recycled glasses to developing countries may be green in theory, but they actually cost more green for these already struggling communities, according to a recent study in the March issue of *Optometry and Vision Science*.

Only 7% out of a sample of 275 pairs of recycled glasses were useable, which pushed the delivery cost to more than $20 per pair, found researchers from the International Centre for Eyecare Education.

On the other hand, ready-made glasses can be supplied for around half the cost. The authors suggest it's more beneficial to donate $10 for an eye examination and a new pair of glasses, and it's also better for building capacity in these communities. While this isn't the first argument against the use of recycled glasses, it's the first time an accurate delivery cost for the glasses has been highlighted.

Photo: Dean Saffron/International Centre for Eyecare Education

A $10 donation for an eye exam is better than a donation of used eyeglasses.

"Although well intentioned, recycled glasses will neither suit many of those affected by the most common forms of vision impairment, nor provide a cost-saving solution to the problem," says co-author Brien A. Holden, Ph.D., D.Sc.

Wilson DA, Cronié S, Frick K, Holden BA. Real cost of recycled spectacles. Optom Vis Sci. 2012 Mar;89(3):304-9.

ACOE Aims to Accredit CE

The AOA's Board of Trustees submitted a proposal to amend the organization's bylaws that, if approved, would give the Accreditation Council on Optometric Education (ACOE) the authority to inspect and accredit providers of optometric continuing education. The ACOE already has the authority to accredit schools and colleges of optometry.

Currently, the main accrediting body of optometric CE is the Council on Optometric Practitioner Education (COPE), which is overseen by the Association of Regulatory Boards of Optometry (ARBO).

The ACOE proposal will be voted on at the AOA's House of Delegates meeting in late June. Meanwhile, ARBO is planning a report in response to this proposal.

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Reference: 1. Alcon data on file, 2011.

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X-Ray Therapy Prevents Glaucoma

X-ray radiation that targets only the eye may provide lifelong protection from the development of glaucoma, according to a study in the April 2 issue of the *Journal of Clinical Investigation*.[1]

Using glaucoma-prone mice, researchers at the Jackson Laboratory in Bar Harbor, Maine, demonstrated that localized irradiation of just the eye protects against the disease—at lower doses than previously published.

They found that a single X-ray treatment to an individual eye prevented detectable neuronal damage and dysfunction in the targeted eye, but offered no protective effect in the untreated eye.

This discovery supports previous research, which indicated that whole-body irradiation along with bone marrow transfer in mice provided protection against glaucomatous damage (96% of treated eyes exhibited no signs of glaucoma at one-year follow-up vs. just 20% of untreated eyes).[2]

Senior staff scientist Simon John, Ph.D., and associates explained that a class of immune cells known as monocytes enter the optic nerve and retina in response to early tissue damage secondary to glaucoma development.

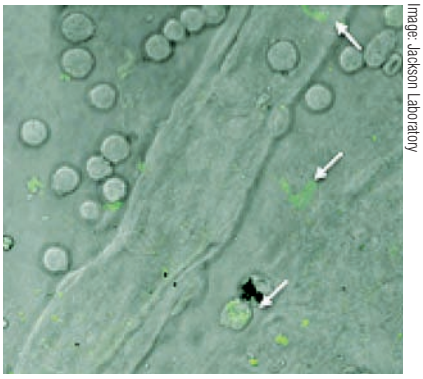

Image: Jackson Laboratory

Cells, shown here by arrows, enter untreated eyes through the bloodstream but rarely enter radiation-treated eyes.

The monocytes then express destructive molecules that are widely responsible for optic nerve damage and subsequent vision loss in glaucoma patients. However, radiation treatment appears to affect the entry of the monocytes into the optic nerve and retina.

"While more work is needed to fully understand how the radiation confers long-term protection, radiation appears to hinder the adhesion and migration of monocytes into the areas of the eye prone to nerve damage," says study co-author Gareth Howell, Ph.D., research scientist at the Jackson Laboratory.

This finding suggests vision may be maintained in eyes with high intraocular pressure using treatments that block the entry of monocytes into the eye.

Before attempting localized radiation of the eye to prevent glaucoma in humans, the authors suggest it will be necessary to conduct additional research in other animal models to further assess the safety and efficacy of targeted X-ray therapy.

1. Howell GR, Soto I, Zhu X, et al. Radiation treatment inhibits monocyte entry into the optic nerve head and prevents neuronal damage in a mouse model of glaucoma. J Clin Invest. 2012 Apr 2;122(4):1246-61.
2. Anderson MG, Libby RT, Gould DB, et al. High-dose radiation with bone marrow transfer prevents neurodegeneration in an inherited glaucoma. Proc Natl Acad Sci U S A. 2005 Mar 22;102(12):4566-71.

Missouri Kids' Vision Law to Expire?

No more pencils. No more books. No more teachers' dirty looks…And no more mandatory eye exams? In June, school's out for summer—and the children's vision law in Missouri may be out as well.

The Missouri children's vision law was passed in 2007. It requires kindergartners and first graders to have a comprehensive vision exam by a licensed optometrist or physician. But the law also has a five-year "sunset" clause, so it will expire this year unless it's renewed by the legislature.

The state House of Representatives approved a version of a bill that would renew the children's vision law. But, a similar bill in the state Senate hit a dead end—it never made it out of committee.

Now the law is in limbo, and opponents are coming out against extending the law, says Jeff Weaver, O.D., president of the Missouri Optometric Association.

"We are definitely in a dogfight," he says. But, "for the benefit of the children of Missouri, we are not giving up the fight yet."

So, optometrists in the Show-Me State are redoubling their efforts and meeting with advisors and lobbyists.

"It's too important for the future of the [children of our] state to let it go without our best fight," Dr. Weaver says. ■

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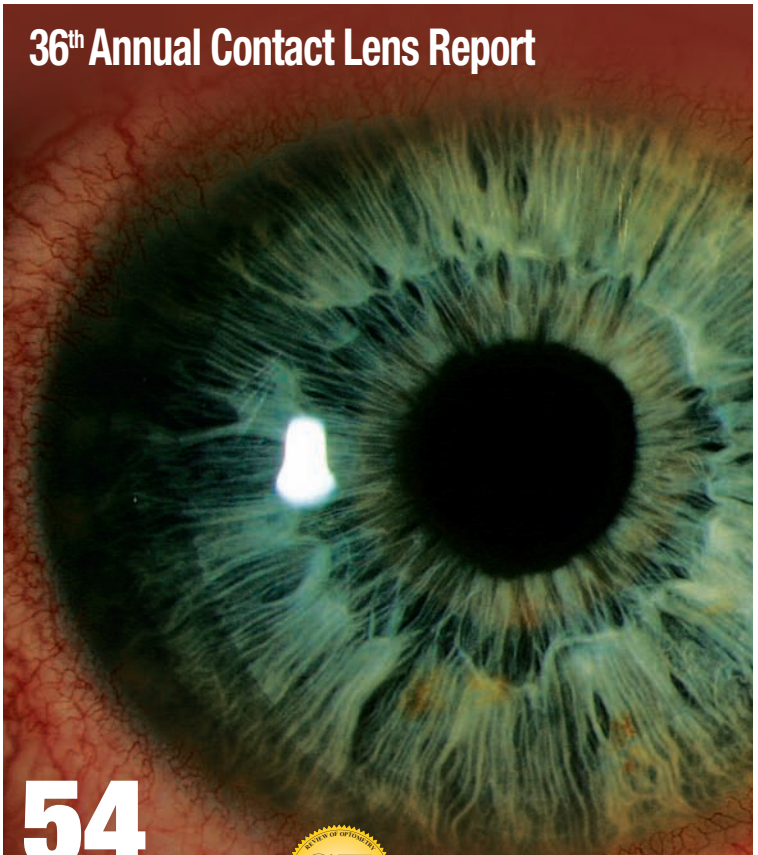

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Inflammatory events are common with contact lens wear. But, with preventive measures and proper care, you can help most patients achieve a healthy and comfortable fit. **By Douglas P. Benoit, O.D.**

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Do you hesitate to offer multifocal contact lenses to your presbyopes? Not to worry. You can fit these patients successfully—and without the endless follow-up visits. **By Jason R. Miller, O.D., M.B.A., and Mile Brujic, O.D.**

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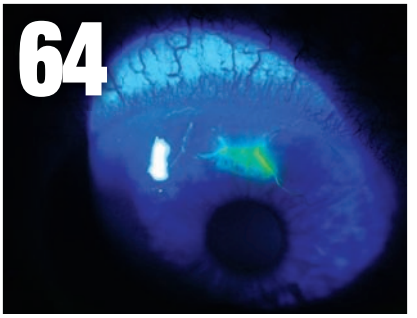

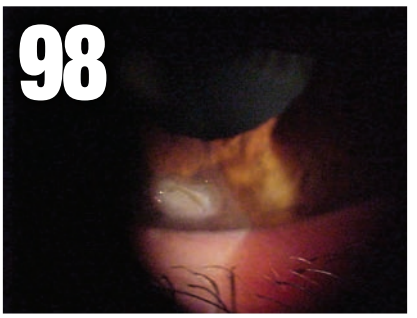

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Please see Brief Summary of Prescribing Information on the adjacent page.

* In most patients, one LACRISERT® placed into each eye once daily is effective in providing all-day symptom relief. Some patients may require twice-daily use for optimal results.

References: 1. Koffler BH, McDonald M, Nelinson D, Improved signs and symptoms and quality of life with dry eye syndrome: hydroxypropyl cellulose ophthalmic insert patient registry. *Eye Contact Lens.* 2010;3:170-176. **2.** LACRISERT [package insert] Madison, NJ: ATON Pharma, 2009.

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Feeding of hydroxypropyl cellulose to rats at levels up to 5% of their diet produced no gross or histopathologic changes or other deleterious effects.

Pediatric Use

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Geriatric Use

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The following adverse reactions have been reported in patients treated with LACRISERT, but were in most instances mild and transient: transient blurring of vision, ocular discomfort or irritation, matting or stickiness of eyelashes, photophobia, hypersensitivity, edema of the eyelids, and hyperemia.

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Issued June 2007

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Letters to the Editor

Abuse Affects Us All

Abuse is an issue that all health care practitioners must be aware of. When abuse is reported or suspected, and contusions may be present, documentation is essential. The practitioner should be familiar with bruising, causes of bruising (including non abuse), if lesions are consistent with the patient's/patient representative's story(ies), reporting protocols, and available imaging techniques.

Clinical manifestations of abuse may include many systems. The eye care practitioner may encounter ocular signs of trauma (which may be associated with abuse), which include hyphema, orbital fracture, blowout fracture, entrapment, Purtscher's retinopathy, shaken impact injury (formerly referred to as shaken baby syndrome) and traumatic brain injury.

Abuse is one of those topics that optometrists (as well as other health care practitioners) are hesitant to address, despite local laws that require us to report suspected abuse.

We may also observe cutaneous contusions of the face, arms and neck (areas typically exposed during an exam). Fortunately, optometrists have fairly inexpensive and readily available methods of imaging (and therefore documenting) these contusions. The techniques include the use of infrared digital imaging through cosmetic cover, visible digital imaging, imaging under the Wood's lamp, imaging with 390nm torch with and without yellow filter, and image enhancement via digital contrast manipulation. Of the ultraviolet techniques, we found the 390nm illumination coupled with the yellow filter provided more distinct imaging than the 365nm Wood's lamp.

A potential method for imaging contusions clinically: An ophthalmic optical coherence topography unit (OCT) can be set in anterior segment mode to image the area of bruising. Currently, ophthalmic OCT can only penetrate skin approximately 2mm, so it does not yet have the penetration or practicality that is needed to do the job.

Observation is one of the skills the practitioner must have. But once we observe, often we must act. Abuse is one of those topics that optometrists (as well as other health care practitioners) are hesitant to address, despite local laws that require us to report suspected abuse.

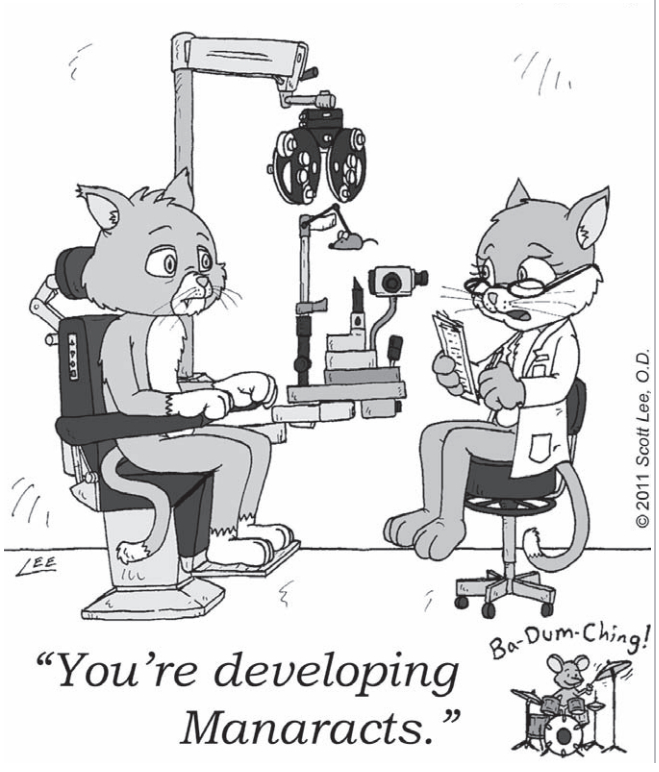
For more on this topic, we would like to point your readers to an article we wrote, "Clinical Detection and Imaging of Contusions in Suspected Physical Abuse," in the winter 2011 issue of *The Forensic Examiner.*

—Eugene R. Bertolli, O.D.,
Clifford D. Brown, O.D., M.P.H., Capt. USPHS,
Dominic R. Pannone, O.D.,
Thaddeus W. Bartles, O.D.

To send a Letter to the Editor, e-mail Amy Hellem, editor-in-chief, ahellem@jobson.com, with "Letter to the Editor" as the subject line. ■

Sight Gags

By Scott Lee, O.D.



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Set the Tone

Patients feed off of your attitude. What do they hear when you discuss multifocals?

By Amy Hellem, Editor-in-Chief

Traveling with small children is neither easy nor fun. We've all been there, either as the parent wearily pulling a toddler down the center aisle of the aircraft, or as the solo traveler who silently chants, "Please don't sit by me, oh please don't sit by me."

Admittedly, no one wants to sit near a sticky, squirmy kid on an airplane—not even his parents. That's because the under-5 traveler is really a ticking time bomb—you expect it to go off, you just don't know how long you've got. Your best hope with a bored, tired toddler is to remain positive yourself and not let on how utterly taxed you feel, too.

In fact, it's a lot like fitting young presbyopes in multifocal contact lenses. Their success is largely dependent on your attitude and approach. If you remain upbeat and put on a happy face, the child (or, in this case, the presbyope) gets the sense that, while it may not seem easy or fun right now, you're on a worthwhile adventure.

As Jason R. Miller, O.D., M.B.A., and Mile Brujic, O.D., describe in "Minimize Follow-Up for Multifocal Contacts" (*page 48*), you might be your own worst enemy when it comes to multifocal fits. In fact, according to a survey of 500 presbyopic patients, only 8% of those currently wearing contact lenses were educated about multifocal contacts.

"One of the hurdles to multifocal success is managing patient's expectations and excitement," write Drs. Miller and Brujic. "When they inquire about the possibility of wearing this technology, their eye doctor often responds with some trepidation." Does that sound like you?

But let's assume you are on board with multifocal contact lens technology and believe in the ease and benefits of the latest multifocal lens technology. That being said, choose your words carefully. It's important to use positive language.

For example, the authors recommend you try to communicate presbyopic fitting in such a way as to avoid the words "compromise" or "loss of vision." Instead, they say, describe multifocal lenses as "customized" or "balanced" according to each patient's visual system. Also, they say, "It is important to talk about adaptation to everyone, but don't make a big deal about it."

Like children, patients feed off their doctor's attitude. The tone you set determines their faith in you and in the treatment you recommend. You want them to be prepared, yet confident and optimistic.

Before a recent flight with my three kids, I sat them down and explained that the trip across the country was not going to be easy. There would be moments when we might wish we never left in the first place. But in the long run, this trip would make us really happy.

Fitting multifocal contact lenses can be a challenging journey as well, but when you arrive at a successful fit, they can make your patients very pleased. ■

Amy Hellem
Editor-in-Chief

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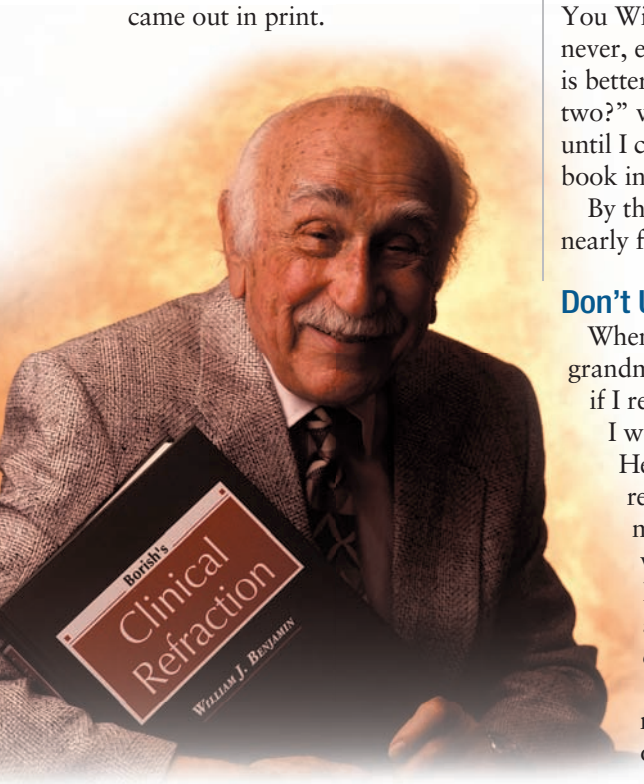
Borish Built a Better O.D.

Dr. Irvin Borish was not a simple fame-monger like I am. He was as humble as a card-carrying genius could be. **By Montgomery Vickers, O.D.**

I don't think Dr. Irv Borish actually understood why we all made such a fuss over him and his work. He had so much respect for us—his students and his colleagues—that he truly believed we were all equally learned and sophisticated. He looked at us all as his equals. Dr. Borish's built-in humility and his honorable notion that we should all be of service to one another, and thus to our patients, was really the reason we should love the man.

Nothing ever got by Dr. Borish. Every now and then I would try to sneak some vague Borish reference into this column. He always knew, sometimes even before the column came out in print.



And, to beat all, Dr. Borish, most likely with a chuckle, always thought it was just dandy when I did mention him. When he would let me know he enjoyed a column, usually via one of our mutual friends like my idol Dr. Jack Runninger, I stammered and blushed like I just got my first kiss. Dr. Borish had whatever "it" is.

But his famous text, "Clinical Refraction," just made me mad. I mean "mad" as in "freakin' crazy." Now, y'all, I have never been the smartest guy in the room (usually falling somewhere below the guy who dims the lights in a CE meeting) but "Clinical Refraction" should have been named "Today You Will Feel Stupider, Stupid." I never, ever realized that, "Which is better: number one or number two?" was so impossibly complex until I cracked open Dr. Borish's book in 1975.

By the way, it's 2012 and I'm nearly finished reading it.

Don't Use the "V" Word?

When I was seven years old, my grandmother Mimi told me that if I read the Bible front to back I would automatically go to Heaven someday. I have no reason to doubt what she told me. Likewise, I think that when you finish "Clinical Refraction," you should automatically be board certified.

Of course, that would mean we'd only have four or five board certified O.D.s and all of them would be living in a mental hospital. "Clinical Refraction" can kill a good man.

Unless…

Unless you, my doctor, take a second to realize what you have in your hands is not something you must ingest all at once. Relax… chill. Hold the book in your hands like you would hold a small, precious child and consider its heft and beauty. Don't you wonder about the author, such a brilliant man, who dedicated so much to making sure that YOU knew what you should know? "Clinical Refraction" is like a gift from your crazy aunt—what's in the package is scary, but you know it will be something irreplaceable that you'll have to keep forever just in case she comes to dinner and asks you to show it to her.

During the initial battles in optometry's fight to provide medical care, one of my mentors told me to never use the "V" word. Never use the word "vision." Even as a young doctor, I thought he had lost his mind. To me, eye health and vision are the same thing. Only insurance thinks they are different, mainly because then the insurance company can sell two products instead of one.

Dr. Borish helped create the modern optometrist and we all owe him for that. We are the vision experts. Vision is what we do. Patients are glad we do it. Even now—today—Dr. Borish just wants us to do it right.

God bless, Irv. ■

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Coding **Abstract**

Time for Spring Cleaning

You probably don't perform compliance reviews, do you? If not, it's time to start cleaning house! **By John Rumpakis, O.D., M.B.A., Clinical Coding Editor**

For those of you who saw the press release (on Valentine's Day, incidentally), understand that we are under scrutiny (*see "Government Recovers Nearly $4.1 Billion Taken by Fraud," below*). Health care fraud is not something that we, as a profession, can ignore any longer because of reasons such as, "Optometry is small," or "They don't pay attention to practices of my size."

In 1996, when the United States adopted the Health Insurance Portability and Accountability Act (HIPAA), part of the provisions of that were to create and install a compliance officer within your practice. Your compliance officer has many responsibilities, one of which is to insure that your claim submission process for both refractive and medical carriers and your medical records fall within the current guidelines for compliance.

Yet when I ask doctors, "When was the last time you performed a compliance review?" most have a blank look on their face or they answer, "What the heck are you talking about?"

Compliance reviews *need* to be an essential part of both your offensive and defensive strategies for your practice's third-party medical claims and medical record keeping.

If you don't have an idea of what is needed for a compliance review, here are some excellent resources to get you started:

- Compliance Specialists (http://cseye.biz/) is a firm that analyzes your compliance with Medicare and Office of Inspector General guidelines for CPT code selection, and compares your usage against anticipated usage profiles for medical/legal and audit exposure.[1]
- "Quality Assessment and Improvement: A Manual for Optometric Practices," from the American Optometric Association's Commission on Quality Assessment and Improvement, is an excellent resource on what should be contained in a self-performed compliance review (www.aoa.org/x5501.xml).
- Your local State Board of Optometry.
- Your individual medical or refractive insurance carrier.

In some practices, medical coding is like a sport: whoever is the most creative or whoever bills the most wins—at least in the short term. But, we shouldn't be paid for being "creative." We should be paid for delivering best-of-class care for our patients, and that should always come first.

The bottom line: It's time for you to take charge of your practice, not hide your head in the sand. If you're not performing compliance reviews on a regular basis, then you're at risk, plain and simple.

As optometry becomes a bigger player in the health care field, our risk of audit increases commensurately. So, while being more profitable is good, being safe is better. Be sure you know that not only what you're doing is correct, but how you're doing it is proper, as well. So don't delay: Start your "spring cleaning" now. ■

Please send your comments to CodingAbstract@gmail.com.

1. *Disclaimer*: Compliance Specialist, Inc., uses ReimbursementPLUS.com as a tool in their compliance review. I have 100% ownership of ReimbursementPLUS.com.

Government Recovers Nearly $4.1 Billion Taken by Fraud

In February, the government issued a press release that reported its success in recovering billions due to health care fraud: "Health Care Fraud Prevention and Enforcement Efforts Result in Record-Breaking Recoveries Totaling Nearly $4.1 Billion—Largest Sum Ever Recovered in Single Year." Here's an excerpt:

"Attorney General Eric Holder and Department of Health and Human Services (HHS) Secretary Kathleen Sebelius today released a new report showing that the government's health care fraud prevention and enforcement efforts recovered nearly $4.1 billion in taxpayer dollars in Fiscal Year (FY) 2011. This is the highest annual amount ever recovered from individuals and companies who attempted to defraud seniors and taxpayers or who sought payments to which they were not entitled."

Source: U.S. Department of Health & Human Services web site. Press release. February 14, 2012; Washington, D.C. Available at: www.hhs.gov/news/press/2012pres/02/20120214a.html. Accessed March 6, 2012.

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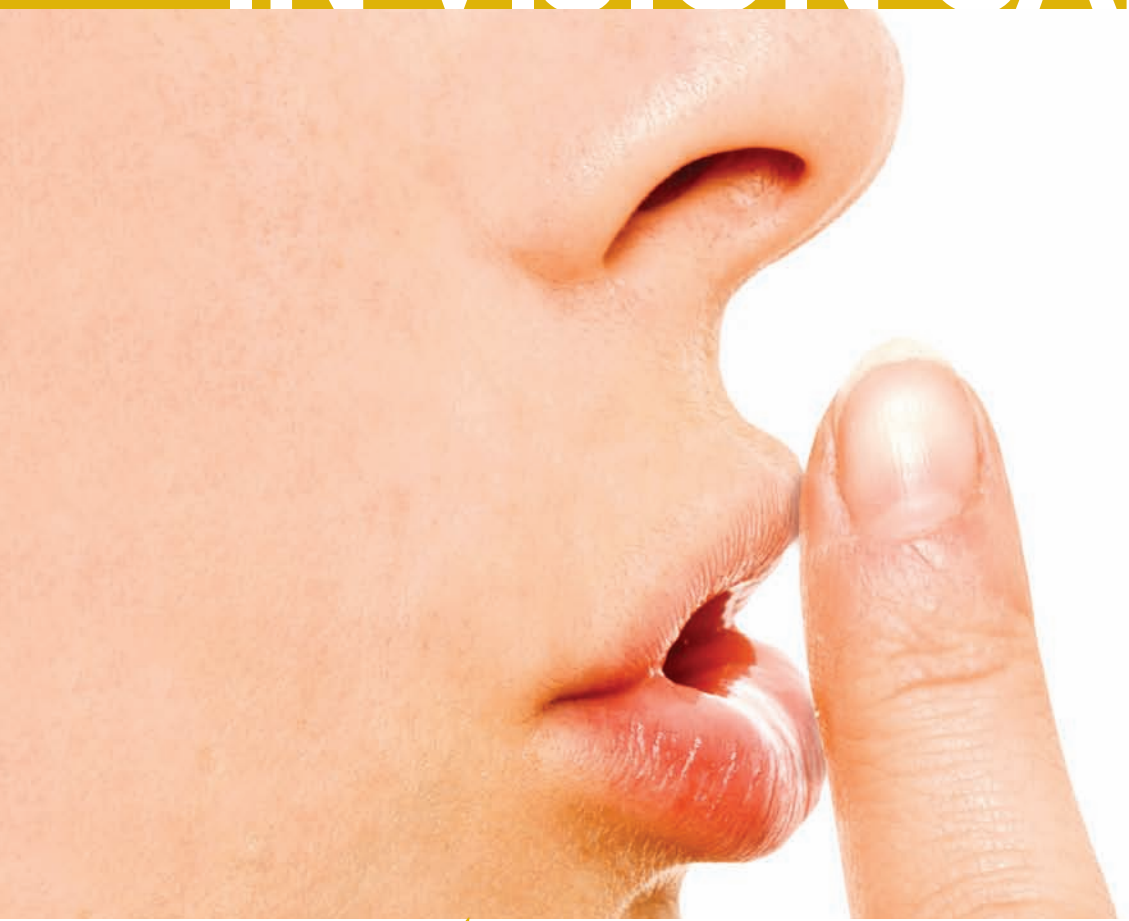

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SECO 2012:
Education Plus a Whole Lot More

From education to exhibitors, SECO offered something extra for attendees this year.

By Paul C. Ajamian, O.D., Education Committee Chair

SECO 2012 was true to this year's theme, delivering "Education Plus" to approximately 8,000 eye care professionals who descended on Atlanta in March for an unparalleled meeting they will never forget.

From education to exhibits to the more than 50 social and affiliate events, SECO 2012 offered an extra "plus" in every way imaginable for attendees to get the most out of their meeting experience.

SECO designed an exceptional CE program this year, with nearly 400 hours of continuing education, special sessions, hourly lectures, hands-on workshops, and certification reviews for optometrists and allied ophthalmic professionals (AOPs).

Optometrists attending SECO 2012 had access to a world-class continuing education program, featuring 10 all-new educational tracks, 106 courses led by the world's leading optometry experts, and 16 hours of free special sessions.

Attendees in the Sydney Marcus Auditorium awaited the start of the sold-out session, "Harnessing the Pluses of Technology."

Course Highlights

SECO 2012 also offered a big plus in technology, with interactive text polling and cutting edge courses—including the innovative and hands-on special session "Harnessing the Pluses of Technology," which provided audience members the knowledge to implement the latest electronic gadgets and programs in their practices. In this session, Justin Bazan, O.D., Nathan Bonilla-Warford, O.D., Leonard Press, O.D., Adam Parker, O.D., and Walt Mayo, O.D., explored how to more effectively use social media, online payment systems and electronic health records (EHR) software to provide better patient care, expand a practice and increase revenue.

The outstanding education continued for attendees with courses such as "Rapid Fire Retinal Rounds" featuring ophthalmologists Virgil Alfaro, M.D., and Eric Jablon, M.D., who discussed several recent advancements in retinal disease management, including some of the latest and most effective treatment options for macular edema secondary to retinal vein

occlusion and neovascular age-related macular degeneration.

In the sold-out special session "Current Quandries in Glaucoma," audience members emailed their questions to an all-star panel that offered expert insight into some of the hottest topics in glaucoma. Topics ranged from the importance of taking blood pressure in the diagnosis and management of glaucoma to the relevance of visual field testing for glaucoma patients. This memorable session featured experts Danica Marrelli, O.D., Murray Fingeret O.D., Daryl Mann, O.D., Michael Chaglasian O.D., and Kevin Lavery, M.D.

Another educational "plus" was the special session "What Lies Ahead," which featured Michelle Welch, O.D., Ben Gaddie, O.D., and Richard Castillo O.D., D.O., who expertly tackled the topics of how primary eye care providers are becoming increasingly more involved in specialized diagnostic testing and advanced procedures.

Virgil Alfaro, M.D., discussed treatment options for macular edema secondary to retinal vein occlusion.

Micheal Chaglasian, O.D., Danica Marrelli, O.D., Kevin Lavery, M.D., Murray Fingeret, O.D., and Daryl Mann, O.D., presented the special session "Current Quandaries in Glaucoma."

Top-Tier Tech

As today's technology continues to change at lightning speed, SECO stayed ahead of the curve by launching the first SECO iPad app, which offered attendees the unprecedented ability to manage course schedules and download free course handouts on site.

SECO also provided free Wi-Fi in public areas of the Georgia World Congress Center, allowing attendees the ability to download any updated course handouts and connect with the new social media station.

To ensure attendees accurately and easily tracked their courses, SECO also implemented a new verification of attendance voucher system, which enabled attendees to download or print their CE certificate within two hours of taking a course, thus making SECO the first optometric continuing education meeting to offer such a service.

Optometry's Marketplace featured approximately 300 industry-leading companies and offered yet another real plus for attendees who got firsthand looks at the latest products and technologies on the market. The exhibit hall also featured the Advanced Media Learning Center, including 100 multimedia educational posters, self-assessment exams, computers with Internet access and peer comparison surveys that continued the learning experience.

AOPs and Students

SECO also offered stellar learning opportunities for both AOPs and students during this year's Congress. AOPs benefited from 208 educational course hours, with 124 of these course hours at no additional charge. From basic education to hands-on workshops to certification reviews, AOPs had the opportunity to expand and sharpen their skills.

Students also had a program custom-tailored to their specific needs, including a full-day of free education that featured these innovative courses: "Hot Topics: From the Classroom to Practice," "Rational Prescribing and Prescription Writing" and "Glaucoma from the Classroom to the Exam Room." Because SECO appreciates the time and effort required to attend optometry school, students who attended all three Student Education Program courses received a $100 cash stipend in appreciation for their participation.

Social Events

And finally, what would SECO be without the signature social events and networking opportunities that attendees have come to expect?

This year, SECO didn't disappoint, starting off with the opening reception, optometry student party, and the AOP networking reception.

The Saturday Night Party capped off the festivities with a night of great music by Broadway-turned--country-star Laura Bell Bundy at the Georgia Aquarium.

For those of you who attended SECO 2012, the benefits of your experience will be reaped in your practice for years to come. On behalf of the continuing education committee, thank you for your attendance, and I look forward to seeing you in Atlanta in 2013! ■

An Eye on Design

A fresh look in your optical can improve your professional image and allow patients to see your practice in a whole new light. **By Colleen Mullarkey, Senior Editor**

Let's say you've decided to try out a new doctor who's been highly recommended, but when you step inside the office, you feel as if you've just been transported back to 1991.

If they haven't bothered to update the seashell décor, do you think they sprung for the latest medical equipment? Even if they have, the way they've presented their practice suggests otherwise—and that matters when you're trying to attract patients in a highly competitive market.

"Your facility conveys the image of your practice and sets the tone with patients," says David Wolf, O.D., owner of the Lake Oswego Vision Clinic and Eyewear Gallery, who recently relocated to a brand-new office in Lake Oswego, Ore. "If you're going to do it, don't do it cheap. People walk in here and they're wowed, and in the long run, that's going to be worth it."

"People walk in here and they're wowed, and in the long run, that's going to be worth it," says David Wolf, O.D., of the newly relocated Lake Oswego Vision Clinic and Eyewear Gallery.

Design is especially important in the optical, where patients are looking for the latest styles in fashionable frames. Many optometrists would much rather focus on eye care than eyewear, but investing in the optical could pay off on both sides of the practice.

"The success of my optical allows me to be that much better on the clinical side," Dr. Wolf says. "If it generates revenue and you can afford new technology, new equipment, and take better care of people because you have the instrumentation to do that, it's a win-win."

Expanding Your Options

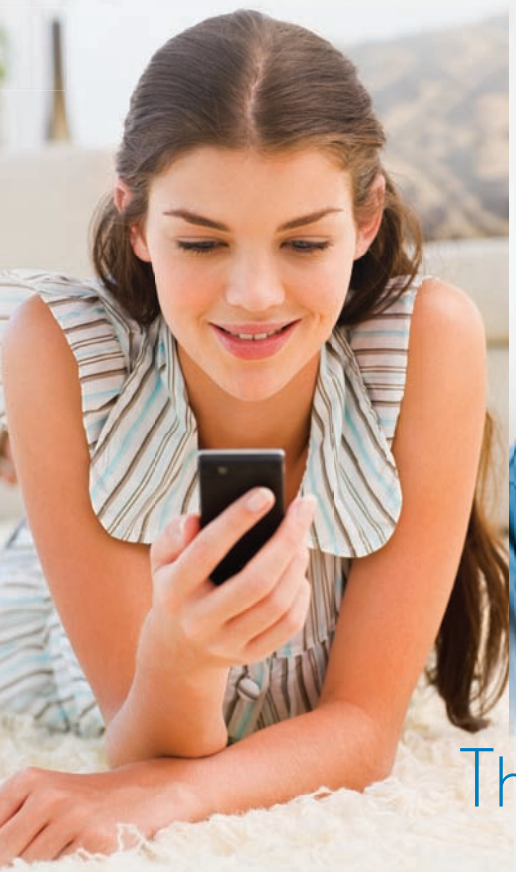
At Kapperman and White Eye Care in Chattanooga, Tenn., growth was the motivating factor for change. In the past year, the

What do all these patients have in common?

First-time wearers

Wearers looking for better vision

Wearers with astigmatism



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84% of eye care professionals say PureVision2 HD provides crisp, clear vision[3]

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[1] Results from a 21-investigator, multi-site study of PureVision2 HD contact lenses. After 14 days of daily wear, subjects completed an online survey regarding lens performance. A total of 225 new-to-contact lens subjects completed the survey. Consumers rated the extent to which they agreed or disagreed with performance attributes on a 6 point scale (1 = strongly disagree and 6 = strongly agree).

[2] Results from a 20-investigator, multi-site cross-over study of PureVision2 For Astigmatism and PureVision Toric lenses. A total of 292 subjects completed the study. After 7 days of wear for each lens, subjects completed an online survey regarding lens performance. Consumers rated performance attributes using a 6-point scale (1 = strongly disagree and 6 = strongly agree) and using a 5-point scale (excellent, very good, good, fair, poor). At the final visit, investigators rated the extent to which they agreed or disagreed with performance attributes also using a 6-point scale.

[3] Results from a study of eye care professionals who had prescribed PureVision2 HD lenses. 201 eye care professionals completed an online survey regarding lens performance and rated the extent to which they agreed or disagreed with performance attributes on a 6-point scale (1 = strongly disagree and 6 = strongly agree).

Kapperman and White Eye Care's remodeled office design creates a spa-like atmosphere.

doctors finally reached a point where they felt the space they had just wasn't working any more—for them or their patients. "We had the confidence and the patient base to know that if you want to grow, you've got to provide your patients with the products and the space they need and want," says Mark Kapperman, O.D., founder and primary practice owner.

He also believed that it was the perfect time to take advantage of competitive pricing from contractors and attractive financing from lenders. They ultimately decided on a complete remodel, adding 2,200 sq. ft., three more exam rooms and several other areas in the office. The additional space not only provided the practice with more room, but also gave them the freedom to improve upon their old office design—particularly in the optical.

"If you're working on an expansion, I think the key is identifying what problems you currently have," Dr. Kapperman says. Where is the patient flow bottlenecking? Where are people running over each other within your current space? Before the renovation, patients were always lined up at the checkout because there weren't enough stations, and in the dispensary because the opticians didn't have enough desks to work with patients.

Dr. Kapperman called in some experts to come up with a plan that would address these issues and make the new office design more efficient and esthetically pleasing. "We can sit down and draw up a plan, but there are professionals who know how things flow and how space works," he says. "That's not something we learn in optometry school. In order to be successful, we have to utilize those resources."

They chose to work with Eye Designs, a design company that specializes in planning, designing and outfitting an optical environment. Because a number of patients had complained that the practice didn't have enough frames for them to select from, Dr. Kapperman wanted to increase their offerings and upgrade their displays. They more than doubled their inventory—from 500 frames to about 1,200—and purchased a number of sleek wall and floor display cases to show off their

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Zero-itch Starts Here

Once Daily Pataday™ (olopatadine hydrochloride ophthalmic solution) 0.2%

Prescribe the Number One prescription allergy eye drop to Start and Finish the day with Zero-itch.[1,2]

- Start: As soon as 3 minutes following allergen challenge, 60% of patients achieved Zero-itch*†
- Finish: At 16 hours, 60% of patients had Zero-itch*‡

INDICATION AND DOSING

PATADAY™ Solution is a mast cell stabilizer indicated for the treatment of ocular itching associated with allergic conjunctivitis. The recommended dose is one drop in each affected eye once a day.

IMPORTANT SAFETY INFORMATION

PATADAY™ Solution is for topical ocular use only. It is not for injection or oral use.

To prevent contaminating the dropper tip and solution, care should be taken not to touch the eyelids or surrounding areas with the dropper tip of the bottle. Keep the bottle tightly closed when not in use.

PATADAY™ Solution should not be used to treat contact lens-related irritation. The preservative in PATADAY™ Solution, benzalkonium chloride, may be absorbed by soft contact lenses. Patients who wear soft contact lenses should be instructed to wait at least ten minutes after instilling PATADAY™ Solution before they insert their contact lenses.

Symptoms similar to cold syndrome and pharyngitis were reported at an incidence of approximately 10%.

For additional information about PATADAY™ Solution, please refer to the brief summary of prescribing information on the following page.

*Post-hoc analysis of combined data from two studies using a contralateral conjunctival allergen challenge (CAC). Based on a scale of itching scores of 0-4, with 0 as no itching and 4 as severe itching. Ocular itching was evaluated 3 minutes after allergen challenge at onset and at 16 hours.

†(N=85; 95% CI=48.8, 70.5) ‡(N=82; 95% CI=48.3, 70.4)

References: 1. IMS Health, IMS National Prescription Audit™, August 2010 to February 2011, USC 61500 OPHTH ANTI-ALLERGY. **2.** Data on file.

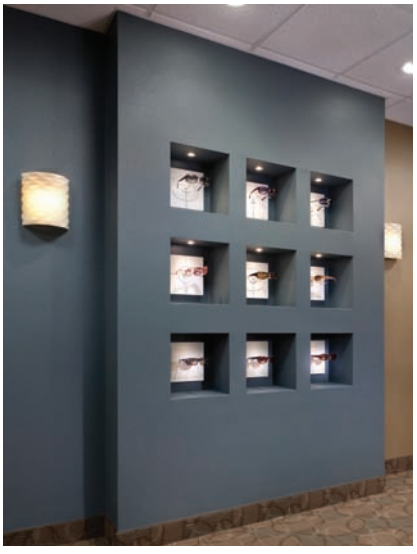
Alcon®

expanded selection.

"We've already seen a tremendous spike in our optical sales, just in the first couple months we've been in this space," Dr. Kappermen says. And, they expect to see an enthusiastic response at their "Grand ReVision" launch on April 19, when patients will be invited to celebrate the new redesign and purchase discounted prescription eyewear.

A Change of Scenery

For Dr. Wolf, the critical decision came when the lease was up for the office space he had practiced in for 14 years. It was located in an excellent growth area, but he couldn't expand his space due to his location in the building. In addition to getting more room, he wanted to increase the practice visibility—at his previous location, he was limited in what signage he could use and he believed that his practice was buried amid all of the corporate offices in the building.



He decided on a new location in a freestanding building on the corner of a

Lake Oswego now features high-quality frame displays as well as more computer stations so optical staff can help multiple patients.

busy street, which gave his practice considerably more square footage and visibility. Since his first day in the new office on January 9, he's had an overwhelmingly positive response from patients and even a few new faces from the neighborhood who saw the construction and decided to check it out. "Drive-by new patients totally sold me on the choices I made," Dr. Wolf says.

In his previous space, the waiting area and optical were distinctly separate—so much so that patients often asked if he had "anything to do with the glasses out there." With a new open, cohesive layout, he doesn't get those questions anymore. "Now, the front desk, waiting area and optical displays all flow as a complete unit," Dr. Wolf says. "So, instead of people sitting off in a waiting room, they can browse the frames selection until they're called."

And there's plenty for them to peruse, because the new optical area is about three times the size of his old one. To bring more attention to his optical business, Dr. Wolf added the Eyewear Gallery tagline to his clinic's name and worked closely with an optical design company to carefully choose lighting, colors and layout. "I wanted my optical to look like it was truly sales-oriented," he says. "When you walk into Nordstrom's, they have lighting and displays positioned in a way that draw people toward what they want to sell—I wanted to apply the same principles."

Dr. Wolf opted to install some high-quality frame displays that offered a lot of space, a few that featured jewelry-quality trays to highlight the products and four separate computer stations so the optical staff could take care of multiple people at any station. "Work with good companies and trust what they're going to do," he says. "For us, Eye Designs did some incredible things from an interior design standpoint. We wanted to make it look like a high-end space so that people would walk in here and say 'wow,' and they do."

Designer cabinetry and pendant lights give the new redesigned optical (above) at Moorestown Eye Associates a more elegant look than their previous suite (right).

Reinvigorate Your Practice

Like Dr. Wolf, Kimberly Friedman, O.D., and her husband, Les Friedman, O.D., reached a crossroads when the lease was ending for their office in Moorestown, N.J. They planned on moving Moorestown Eye Associates to a new facility, but opted for an expansion and remodel when their landlord made an "unbelievable offer." One of the challenges was the atypical shape of the office space, which was designed to accommodate a number of small suites as opposed to one large practice.

They contracted an architect to draw up a plan that would address those issues, but the work was pretty extensive. They didn't want to close the office, lay off employees or cut hours. So, shutting down for a few weeks wasn't feasible. But, they also didn't want to settle for less.

"We didn't want to make a decision for short-term convenience that would have long-term ramifications—we didn't want to compromise what our office was going to be for the next 10 years just so it would be easier now," she says.

Instead, they decided to complete the remodel in three phases:

- *Phase 1*. Completely remodel the two suites adjacent to the current location.
- *Phase 2*. Move into remodeled suites while previous office is redesigned.
- *Phase 3*. Remove temporary wall and reconnect all four suites into one large office.

With phase 1 complete and phase 2 underway, the staff and clientele are already excited about the changes that have been made, even though some areas are still under construction. The expanded optical in the new space is up and running, with six dispensing tables as opposed to just two in the previous suite. This will enable their technicians to work with multiple people at once, doing repairs, dispensing and handling new selections.

The Friedmans worked with the electrical company to install recessed high hats and pendant lights for a slightly more elegant look, and consulted with Eye Designs on the cabinetry design. "It certainly might be easier for someone doing this for the first time to keep it all under one house, but we had become comfortable with the process of coordinating the work," she says.

It's a big undertaking, but the couple is confident about the eventual payoff. "Every time you want to invest a large amount of money into your practice, it's always a little scary, especially in certain economic climates," Dr. Friedman says. "But having completed three major office remodels and having purchased many large pieces of equipment, I can say that every single time we have invested in our practice, it has paid back multiple times over in multiple ways."

After 21 years in the optometry business, Dr. Friedman says these investments have not only improved the bottom line in their practice, but also improved their overall sense of professional satisfaction. "It makes you fall in love with optometry all over again and makes you rededicated to what you do every day in a way that just staying in the same stagnant place doesn't do," she says. ■

Alcon®

Systane®

Surface Protection and More

References

1. Christensen MT, Blackie CA, Korb DR, et al. An evaluation of the performance of a novel lubricant eye drop. Poster D692 presented at: The Association for Research in Vision and Ophthalmology Annual Meeting; May 2-6, 2010; Fort Lauderdale, FL. **2.** Lane S, Paugh JR, Webb JR, Christensen MT. An evaluation of the in vivo retention time of a novel artificial tear as compared to a placebo control. Poster D923 presented at: The Association for Research in Vision and Ophthalmology Annual Meeting; May 3-7, 2009; Fort Lauderdale, FL. **3.** Davitt WF, Bloomenstein M, Christensen M, et al. Efficacy in patients with dry eye after treatment with a new lubricant eye drop formulation. J Ocul Pharmacol Ther. 2010;26(4):347-353. **4.** Alejandro A. Efficacy of a Novel Lubricant Eye Drops in Reducing Squamous Metaplasia in Dry Eye Subjects. Presented at the 29th Pan-American Congress of Ophthalmology in Buenos Aires, Argentina, July 7-9, 2011. **5.** Wojtowica JC., et al. Pilot, Prospective, Randomized, Double-masked, Placebo-controlled Clinical Trial of an Omega-3 Supplement for Dry Eye. Cornea 2011:30(3) 308-314. **6.** Geerling G., et al. The International Workshop on Meibomian Gland Dysfunction: Report of the Subcommittee on Management and Treatment of Meibomian Gland Dysfunction. IOVS 2011:52(4).

Don't Let Rejection Get You Down

Follow along as we navigate the maze of medical claim rejection and successfully appeal a denied claim—while we discuss how to prevent rejected claims in the first place. **By John Rumpakis, O.D., M.B.A., Clinical Coding Editor**

It's a very frustrating experience when you receive an Explanation of Benefits from a carrier only to find out that the claim you filed a few weeks ago has been denied or rejected for payment.

But, it's not a matter that you have to take lying down.

Medical claim rejections and denials are a daily occurrence in most optometric practices. This article explains how to fight claim rejection and denial, using the Center of Medicare and Medicaid Services (CMS) as the prototypical carrier. CMS has a very detailed process for allowing you to fight a claim denial or rejection, with many easy-to-follow printable resources (www.cms.gov/OrgMedFFSAppeals). Each carrier with which you have a signed provider agreement should have similar processes in place for claim adjudication. Refer to the specific carrier provider agreement or website for specifics regarding its individual processes.

Let's take a claim through the process of submission and denial to see how to not only fight claim rejections properly, but to prevent them as well.

Fill Out CMS-1500 Properly

There is an excellent publication from the Medicare Learning Network that summarizes the use of the ubiquitous CMS-1500 form—if I had to choose a single publication to read to prevent claim submission errors, this would be it:
www.cms.gov/MLNProducts/downloads/form_cms-1500_fact_sheet.pdf

To download a sample of the form, go to:
www.cms.gov/cmsforms/downloads/CMS1500805.pdf.

To download the complete CMS-1500 form instructions, go to:
www.cms.gov/manuals/downloads/clm104c26.pdf.

Submit 'Clean' Claims

When submitting a claim, there are very specific requirements that you must follow in order to submit a "clean" claim—that is, a claim that's free from submitter errors and can be placed properly into the claims processing system.

The CMS-1500 form and its electronic equivalent are the most common claim submission forms used for professional service and durable medical equipment in the medical field. The CMS-1500 form answers the needs of many health insurers. It's the basic form required by CMS for claims from physicians and suppliers for the Medicare and Medicaid programs. (*See "Fill Out CMS-1500 Properly," at left.*) It's been adopted by the TRICARE Program for the military, and has received the approval of the American Medical Association Council on Medical Services.

So, let's assume that you've done your best to fill out the form prop-

SWITCH TO THE POWER OF BEPREVE

For the treatment of itching associated with allergic conjunctivitis

Turn off itch—turn on comfort.

Discover the power to turn off ocular itching associated with allergic conjunctivitis–even for severe patients.

BEPREVE (bepotastine besilate ophthalmic solution) is indicated for the treatment of itching associated with allergic conjunctivitis. BEPREVE is for topical ophthalmic use only. To minimize risk of contamination, do not touch the dropper tip to any surface. Keep the bottle closed when not in use. BEPREVE should not be used to treat contact lens-related irritation. Remove contact lenses prior to instillation of BEPREVE. The most common adverse reaction occurring in approximately 25% of patients was a mild taste following instillation. Other adverse reactions occurring in 2%-5% of patients were eye irritation, headache, and nasopharyngitis.

Prescribe the Power.™

Rx only. Please see full prescribing information.

ISTA Pharmaceuticals®
www.istavision.com

BEPREVE®
(bepotastine besilate ophthalmic solution) 1.5%

HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use BEPREVE (bepotastine besilate ophthalmic solution) 1.5% safely and effectively.

See full prescribing information for BEPREVE.

BEPREVE
(bepotastine besilate ophthalmic solution) 1.5%

Initial U.S. Approval: 2009

----------INDICATIONS AND USAGE----------

BEPREVE is a histamine H_1 receptor antagonist indicated for the treatment of itching associated with allergic conjunctivitis. (1)

----------DOSAGE AND ADMINISTRATION----------

Instill one drop into the affected eye(s) twice a day (BID). (2)

----------DOSAGE FORMS AND STRENGTHS----------

Solution containing bepotastine besilate, 1.5%. (3)

----------WARNINGS AND PRECAUTIONS----------

- To minimize the risk of contamination, do not touch dropper tip to any surface. Keep bottle tightly closed when not in use. (5.1)
- BEPREVE should not be used to treat contact lens-related irritation. (5.2)
- Remove contact lenses prior to instillation of BEPREVE. (5.2)

----------ADVERSE REACTIONS----------

The most common adverse reaction occurring in approximately 25% of patients was a mild taste following instillation. Other adverse reactions which occurred in 2-5% of subjects were eye irritation, headache, and nasopharyngitis. (6)

To report SUSPECTED ADVERSE REACTIONS, contact ISTA Pharmaceuticals, Inc. at 1-877-788-2020, or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

See 17 for PATIENT COUNSELING INFORMATION

Revised: 01/2010

FULL PRESCRIBING INFORMATION:
CONTENTS*

1 INDICATIONS AND USAGE
2 DOSAGE AND ADMINISTRATION
3 DOSAGE FORMS AND STRENGTHS
4 CONTRAINDICATIONS
5 WARNINGS AND PRECAUTIONS
5.1 Contamination of Tip and Solution
5.2 Contact Lens Use
5.3 Topical Ophthalmic Use Only
6 ADVERSE REACTIONS
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17.3 Concomitant Use of Contact Lenses

*Sections or subsections omitted from the full prescribing information are not listed.

FULL PRESCRIBING INFORMATION

1 INDICATIONS AND USAGE

BEPREVE (bepotastine besilate ophthalmic solution) 1.5% is a histamine H_1 receptor antagonist indicated for the treatment of itching associated with signs and symptoms of allergic conjunctivitis.

2 DOSAGE AND ADMINISTRATION

Instill one drop of BEPREVE into the affected eye(s) twice a day (BID).

3 DOSAGE FORMS AND STRENGTHS

Topical ophthalmic solution containing bepotastine besilate 1.5%.

4 CONTRAINDICATIONS

None.

5 WARNINGS AND PRECAUTIONS

5.1 Contamination of Tip and Solution

To minimize contaminating the dropper tip and solution, care should be taken not to touch the eyelids or surrounding areas with the dropper tip of the bottle. Keep bottle tightly closed when not in use.

5.2 Contact Lens Use

Patients should be advised not to wear a contact lens if their eye is red. BEPREVE should not be used to treat contact lens-related irritation.

BEPREVE should not be instilled while wearing contact lenses. Remove contact lenses prior to instillation of BEPREVE. The preservative in BEPREVE, benzalkonium chloride, may be absorbed by soft contact lenses. Lenses may be reinserted after 10 minutes following administration of BEPREVE.

5.3 Topical Ophthalmic Use Only

BEPREVE is for topical ophthalmic use only.

6 ADVERSE REACTIONS

The most common reported adverse reaction occurring in approximately 25% of subjects was a mild taste following instillation. Other adverse reactions occurring in 2-5% of subjects were eye irritation, headache, and nasopharyngitis.

8 USE IN SPECIFIC POPULATIONS

8.1 Pregnancy

Pregnancy Category C: Teratogenicity studies have been performed in animals. Bepotastine besilate was not found to be teratogenic in rats during organogenesis and fetal development at oral doses up to 200 mg/kg/day (representing a systemic concentration approximately 3,300 times that anticipated for topical ocular use in humans), but did show some potential for causing skeletal abnormalities at 1,000 mg/kg/day. There were no teratogenic effects seen in rabbits at oral doses up to 500 mg/kg/day given during organogenesis and fetal development (>13,000 times the dose in humans on a mg/kg basis). Evidence of infertility was seen in rats given oral bepotastine besilate 1,000 mg/kg/day; however, no evidence of infertility was observed in rats given 200 mg/kg/day (approximately 3,300 times the topical ocular use in humans). The concentration of radiolabeled bepotastine besilate was similar in fetal liver and maternal blood plasma following a single 3 mg/kg oral dose. The concentration in other fetal tissues was one-third to one-tenth the concentration in maternal blood plasma.

An increase in stillborns and decreased growth and development were observed in pups born from rats given oral doses of 1,000 mg/kg/day during perinatal and lactation periods. There were no observed effects in rats treated with 100 mg/kg/day.

There are no adequate and well-controlled studies of bepotastine besilate in pregnant women. Because animal reproduction studies are not always predictive of human response, BEPREVE (bepotastine besilate ophthalmic solution) 1.5% should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

8.3 Nursing Mothers

Following a single 3 mg/kg oral dose of radiolabeled bepotastine besilate to nursing rats 11 days after delivery, the maximum concentration of radioactivity in milk was 0.40 µg-eq/mL 1 hour after administration; at 48 hours after administration the concentration was below detection limits. The milk concentration was higher than the maternal blood plasma concentration at each time of measurement.

It is not known if bepotastine besilate is excreted in human milk. Caution should be exercised when BEPREVE (bepotastine besilate ophthalmic solution) 1.5% is administered to a nursing woman.

8.4 Pediatric Use

Safety and efficacy of BEPREVE (bepotastine besilate ophthalmic solution) 1.5% have not been established in pediatric patients under 2 years of age. Efficacy in pediatric patients under 10 years of age was extrapolated from clinical trials conducted in pediatric patients greater than 10 years of age and from adults.

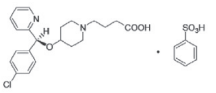
8.5 Geriatric Use

No overall difference in safety or effectiveness has been observed between elderly and younger patients.

11 DESCRIPTION

BEPREVE (bepotastine besilate ophthalmic solution) 1.5% is a sterile, topically administered drug for ophthalmic use. Each mL of BEPREVE contains 15 mg bepotastine besilate.

Bepotastine besilate is designated chemically as (+) -4-[[(S)-p-chloro-alpha -2-pyridylbenzyl]oxy]-1-piperidine butyric acid monobenzenesulfonate. The chemical structure for bepotastine besilate is:



Bepotastine besilate is a white or pale yellowish crystalline powder. The molecular weight of bepotastine besilate is 547.06 daltons. BEPREVE ophthalmic solution is supplied as a sterile, aqueous 1.5% solution, with a pH of 6.8.

The osmolality of BEPREVE (bepotastine besilate ophthalmic solution) 1.5% is approximately 290 mOsm/kg.

Each mL of BEPREVE (bepotastine besilate ophthalmic solution) 1.5% contains:
Active:
Bepotastine besilate 15 mg (equivalent to 10.7 mg bepotastine)
Preservative: benzalkonium chloride 0.005%
Inactives: monobasic sodium phosphate dihydrate, sodium chloride, sodium hydroxide to adjust pH, and water for injection, USP.

12 CLINICAL PHARMACOLOGY

12.1 Mechanism of Action

Bepotastine is a topically active, direct H_1-receptor antagonist and an inhibitor of the release of histamine from mast cells.

12.3 Pharmacokinetics

Absorption: The extent of systemic exposure to bepotastine following topical ophthalmic administration of bepotastine besilate 1% and 1.5% ophthalmic solutions was evaluated in 12 healthy adults. Following one drop of 1% or 1.5% bepotastine besilate ophthalmic solution to both eyes four times daily (QID) for seven days, bepotastine plasma concentrations peaked at approximately one to two hours post-instillation. Maximum plasma concentration for the 1% and 1.5% strengths were 5.1 ± 2.5 ng/mL and 7.3 ± 1.9 ng/mL, respectively. Plasma concentration at 24 hours post-instillation were below the quantifiable limit (2 ng/mL) in 11/12 subjects in the two dose groups.

Distribution: The extent of protein binding of bepotastine is approximately 55% and independent of bepotastine concentration.

Metabolism: *In vitro* metabolism studies with human liver microsomes demonstrated that bepotastine is minimally metabolized by CYP450 isozymes.

In vitro studies demonstrated that bepotastine besilate does not inhibit the metabolism of various cytochrome P450 substrate via inhibition of CYP3A4, CYP2C9, and CYP2C19. The effect of bepotastine besilate on the metabolism of substrates of CYP1A2, CYP2C8, CYP2D6 was not studied. Bepotastine besilate has a low potential for drug interaction via inhibition of CYP3A4, CYP2C9, and CYP2C19.

Excretion: The main route of elimination of bepotastine besilate is urinary excretion (with approximately 75-90% excreted unchanged in urine).

13 NONCLINICAL TOXICOLOGY

13.1 Carcinogenesis, Mutagenesis and Impairment of Fertility

Long-term dietary studies in mice and rats were conducted to evaluate the carcinogenic potential of bepotastine besilate. Bepotastine besilate did not significantly induce neoplasms in mice receiving a nominal dose of up to 200 mg/kg/day for 21 months or rats receiving a nominal dose of up to 97 mg/kg/day for 24 months. These dose levels represent systemic exposures approximating 350 and 200 times that achieved with human topical ocular use.

The no observable adverse effect levels for bepotastine besilate based on nominal dose levels in carcinogenicity tests were 18.7 to 19.9 mg/kg/day in mice and 9.6 to 9.8 mg/kg/day in rats (representing exposure margins of approximately 60 and 20 times the systemic exposure anticipated for topical ocular use in humans).

There was no evidence of genotoxicity in the Ames test, in CHO cells (chromosome aberrations), in mouse hepatocytes (unscheduled DNA synthesis), or in the mouse micronucleus test.

When oral bepotastine was administered to male and female rats at doses up to 1,000 mg/kg/day, there was a slight reduction in fertility index and surviving fetuses. Infertility was not seen in rats given 200 mg/kg/day oral bepotastine besilate (approximately 3,300 times the systemic concentration anticipated for topical ocular use in humans).

14 CLINICAL STUDIES

Clinical efficacy was evaluated in 2 conjunctival allergen challenge (CAC) studies (237 patients). BEPREVE (bepotastine besilate ophthalmic solution) 1.5% was more effective than its vehicle for relieving ocular itching induced by an ocular allergen challenge, both at a CAC 15 minutes post-dosing and a CAC 8 hours post dosing of BEPREVE.

The safety of BEPREVE was evaluated in a randomized clinical study of 861 subjects over a period of 6 weeks.

16 HOW SUPPLIED/STORAGE AND HANDLING

BEPREVE (bepotastine besilate ophthalmic solution) 1.5% is supplied in a white low density polyethylene plastic squeeze bottle with a white controlled dropper tip and a white polypropylene cap in the following size:

5 mL (NDC 67425-007-50)
10 mL (NDC 67425-007-75)

STORAGE
Store at 15° – 25°C (59° – 77°F).

17 PATIENT COUNSELING INFORMATION

17.1 Topical Ophthalmic Use Only

For topical ophthalmic administration only.

17.2 Sterility of Dropper Tip

Patients should be advised to not touch dropper tip to any surface, as this may contaminate the contents.

17.3 Concomitant Use of Contact Lenses

Patients should be advised not to wear a contact lens if their eye is red. Patients should be advised that BEPREVE should not be used to treat contact lens-related irritation.

Patients should also be advised to remove contact lenses prior to instillation of BEPREVE. The preservative in BEPREVE, benzalkonium chloride, may be absorbed by soft contact lenses. Lenses may be reinserted after 10 minutes following administration of BEPREVE.

Rx only

Manufactured for: ISTA Pharmaceuticals®, Inc.
Irvine, CA 92618

By: Bausch & Lomb Incorporated
Tampa, FL 33637

Under license from:
Senju Pharmaceutical Co., Ltd.
Osaka, Japan 541-004

BRV859-7/10

erly, yet the claim comes back as rejected or denied.

Rejection vs. Denial

There are very important differences between "claim rejection" and "claim denial." There are many reasons for claim rejection and denial; so let's review the six different variations when a claim is returned to you without payment:[1]

- **Claim Rejection:** *There are one or more edits present that cause the whole claim to be rejected*. A claim rejection means that the provider can correct and resubmit the claim but cannot appeal the claim rejection.
- **Claim Denial:** *There are one or more edits present that cause the whole claim to be denied*. A claim denial means that the provider cannot resubmit the claim but can appeal the claim denial.
- **Claim Return to Provider (RTP):** *There are one or more edits present that cause the whole claim to be returned to the provider*. A claim returned to the provider means that the provider can resubmit the claim once the problems are corrected.
- **Claim Suspension:** *There are one or more edits present that cause the whole claim to be suspended*. A claim suspension means that the claim is not returned to the provider, but is not processed for payment until the fiscal intermediary (FI) makes a determination or obtains further information.
- **Line Item Rejection:** *There are one or more edits present that cause one or more individual line items to be rejected*. A line item rejection means that the claim can be processed for payment with some line items rejected for payment. The line item can be corrected and resubmitted but cannot be appealed.
- **Line Item Denials:** *There are one or more edits present that cause one or more individual line items to be denied*. A line item denial means that the claim can be processed for payment with some line items denied for payment. The line item cannot be resubmitted but can be appealed.

Top 10 Medicare Part B Claim Denials

	Denial Category	CARC/RARC Messages
1.	Duplicate Claim/Services	18 N347 M86
2.	Medical Necessity	50 N102 N115 N109
3.	Medicare Advantage Plans	109
4.	Provider Eligibility	B7 172 38
5.	National Correct Coding Initiative	M80 B15
6.	Screening/Routine	49 M37
7.	Non-Covered Services	204 N386 N103 N113
8.	Patient Supplies	M15
9.	Non-Covered Charge	N126 N425
10.	Time Limit	29

Data from November 2011 to January 2012 for Part B providers located in Colorado, New Mexico, Oklahoma and Texas.

Source: www.trailblazerhealth.com/Claims/Reports/Default.aspx?DomainID=1#ctl00_ContentMain_ctl03_Part%20B%20Top%20Claim%20Denials. Accessed March 5, 2012.

While seemingly simple, many of us don't understand the subtleties of these differences. Correcting an error on a claim and resubmitting it for payment is significantly easier than trying to appeal a claim to the carrier. Yet, while burdensome, it is also very important to understand the appeals process and the rights that the system affords the practitioner.

The top errors in claim submissions vary from year to year, but they are somewhat consistant. For example, the top errors for claim *denials* from one CMS carrier include duplicate claims/services, medical necessity, patient already enrolled in Medicare Advantage Plan, provider eligibility, non-covered services, and others (*see "Top 10 Medicare Part B Claim Denials," above*). Some of the top errors for claim *rejections* include patient eligibility, missing/incomplete/invalid information for the referring or ordering provider, a procedure code that is inconsistent with the modifier, missing/incomplete/invalid information for the rendering provider, and others (*see "Top 10 Medicare Part B Claim Rejections," page 42*).

So, if we actually know the top reasons why claims get denied or rejected ahead of time, then we can

Top 10 Medicare Part B Claim Rejections

	Rejection Category	CARC/RARC Messages
1.	Patient Eligibility	MA61 140
2.	Referring or Ordering Physician (Item 17)	N264 N265 N285 N286
3.	Procedure Code	4
4.	Incomplete/Invalid Rendering Provider Primary Identifier	N290
5.	Clinical Laboratory Improvement Amendments (CLIA) (Item 23)	MA120
6.	MSP	MA04 N541
7.	Claim Not Covered by This Payer/ Contractor	109 N105
8.	Patient Signature	MA75
9.	Days/Units	M53
10.	Where Services Furnished	MA114

Data from November 2011 to January 2012 for Part B providers located in Colorado, New Mexico, Oklahoma and Texas.

Source: www.trailblazerhealth.com/Claims/Reports/Default.aspx?DomainID=1#ctl00_ContentMain_ctl04_Part%20B%20Top%20Claim%20Rejections. Accessed March 5, 2012.

properly review them and scrub them to ensure that we've addressed these problems prior to submitting to the carrier.

Correct the Causes of Rejection and Denial

Once a claim has been submitted, either it will get paid or it will get returned to the practitioner as denied or rejected without payment. In the below examples, there are many reasons listed in the right-hand column that appear on the Remittance Advice (RA) or the Explanation of Benefits (EOB) form. These Claim Adjustment Reason Codes (CARC) and/or Remittance Advice Remark Codes (RARC) can be very confusing in their meaning and definitions because they are often truncated or abbreviated on the RA or EOB.

Fortunately, the complete lists of CARC and RARC codes are published by the Washington Publishing Company (WPC) and are listed on its website: www.wpc-edi.com/reference.

Let's consider the top cause for claim rejection and its accompanying reason: Patient Eligibility. Two codes are listed next to that reason: MA61 and 140. If you go to the WPC website, you can look up these codes and find the definitions, so that you can correct the claim for resubmission.

- ***140 (CARC):*** Patient/insured health identification number and name do not match.
- ***MA61 (RARC):*** Missing/incomplete/invalid social security number or health insurance claim number.

So, if I saw those codes next to a patient claim item, I would go back and review that patient's coverage, eligibility and identification numbers. I would make the appropriate corrections and resubmit the claim to the carrier for payment.

Let's do the same thing for the second most common cause for denial, Medical Necessity. The reason codes listed there are 50, N102, N115 and N109. Again, you can look these up and find the definitions so that you can correct the claim for resubmission.

- ***50 (CARC):*** This is a non-covered service because the payer does not deem it a "medical necessity."
- ***N102 (RARC):*** This claim has been denied without reviewing the medical record because the requested records were not received or were not received timely.
- ***N115 (RARC):*** This decision was based on a Local Coverage Determination (LCD). An LCD provides a guide to assist in determining whether a particular item or service is covered.
- ***N109 (RARC):*** This claim/service was chosen for complex review and was denied after reviewing the medical records.

Now you know exactly what you need to refer to when submitting the claim or responding to the carrier to get proper adjudication of the claim. No more wondering or shooting in the dark trying to figure out why the claim was not paid. Moreover, each of these issues will be preventable for your subsequent claims because you now know the specifics for claims of this nature.

I've Tried Everything, But Still Can't Get Paid

Even if you are formally denied after resubmitting the claim, you are not at the end of the road. There is a formal appeals process that each carrier employs to allow the practitioner to have a *voice and process* to get paid. (*See "Medicare Appeals Process Flowchart," page 44.*)

Once an initial claim determina-

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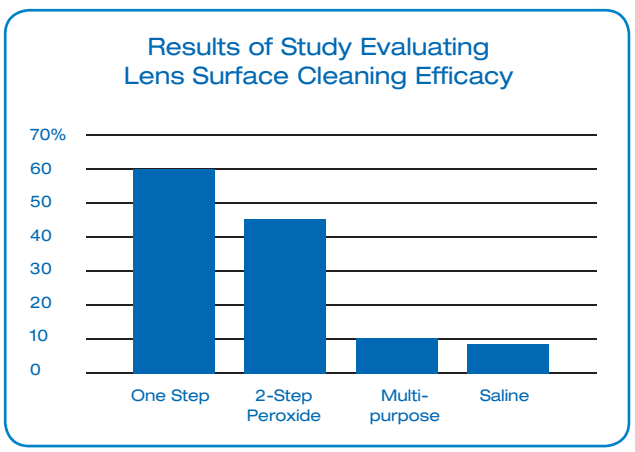

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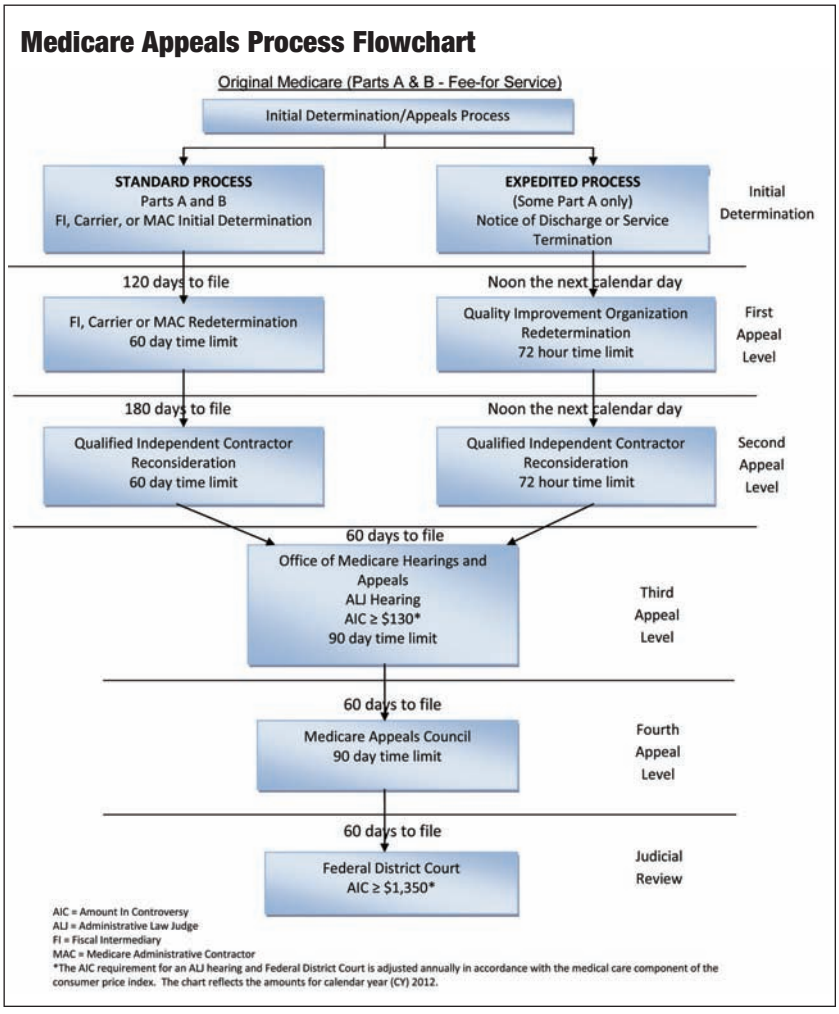

tion is made, beneficiaries, providers and suppliers have the right to appeal Medicare coverage and payment decisions. The appeals process is straightforward, but requires you to follow each step in the process to get your issues resolved. Some steps have specific monetary requirements (amount of claim) to reach, while others do not.

There are five levels in the Medicare Part A and Part B appeals process:

• ***First Level of Appeal***—Redetermination by a Medicare carrier, fiscal intermediary (FI), or medicare administrative contractor (MAC).

• ***Second Level of Appeal***—Reconsideration by a qualified independent contractor.

• ***Third Level of Appeal***—Hearing by an administrative law judge in the Office of Medicare Hearings and Appeals.

• ***Fourth Level of Appeal***—Review by the Medicare Appeals Council.

• ***Fifth Level of Appeal***—Judicial review in federal district court.

Let's discuss each level of appeal in order.

1. Redetermination

A redetermination is an examination of a claim by the fiscal intermediary, carrier or MAC personnel who are different from the personnel who made the initial claim determination. The appellant (the individual filing the appeal) has 120 days from the date of receipt of the initial claim determination to file an appeal. A redetermination must be requested in writing. A minimum monetary threshold is not required to request a redetermination.

A request for a redetermination must be filed either on form CMS-20027 (www.cms.gov/OrgMedFFSAppeals/Downloads/CMS20027a.pdf) or in writing. A written request not made on form CMS-20027 must include the following information:

• Beneficiary name

• Medicare Health Insurance Claim (HIC) number

• Specific service and/or item(s) for which a redetermination is being requested

• Specific date(s) of service

• Signature of the party or the authorized or appointed representative of the party

2. Reconsideration

If you (or the carrier) is dissatisfied with the redetermination decision, you (or the carrier) may request a reconsideration. A qualified independent contractor (QIC) will conduct the reconsideration.

A written reconsideration request must be filed with a QIC within 180 days of receipt of the redetermination. To request a reconsideration, follow the instructions on your Medicare Redetermination Notice (MRN). A request for a reconsideration may be made on the standard form CMS-20033 (www.cms.gov/cmsforms/downloads/cms20033.pdf). This form is mailed with the MRN. If this form is not used, the written request must contain all of the following information:

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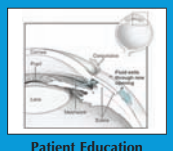

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- Beneficiary's name
- Beneficiary's Medicare HIC number
- Specific service(s) and item(s) for which the reconsideration is requested, and the specific date(s) of service
- Name and signature of the party or representative of the party
- Name of the contractor that made the redetermination

The request should clearly explain why you disagree with the redetermination. A copy of the MRN and any other useful documentation should be sent with the reconsideration request to the appropriate QIC. Evidence not submitted at the reconsideration level may be excluded from consideration at subsequent levels of appeal unless you show good cause for not submitting the evidence.

Generally, the QIC will send its decision to all parties within 60 days of receipt of the request for reconsideration. The decision will contain detailed information on further appeals rights if the decision is not fully favorable. If the QIC cannot complete its decision in the applicable timeframe, it will inform the appellant of their right to escalate the case to an administrative law judge.

3. Hearing by Administrative Law Judge

In 2012, if at least $130 remains in controversy following the QIC's decision, a party to the reconsideration may request an administrative law judge (ALJ) hearing within 60 days of receipt of the reconsideration decision. Appellants must send notice of the ALJ hearing request to all parties to the QIC for reconsideration.

Refer to your reconsideration decision letter from the QIC for details regarding the procedures for requesting an ALJ hearing. The standard form CMS-20034 A/B may be used to file a request for an ALJ hearing (www.cms.gov/cmsforms/downloads/cms20034ab.pdf). ALJ hearings are generally held by video-teleconference (VTC) or by telephone. If you do not want a VTC or telephone hearing, you may ask for an in-person hearing. Appellants may also ask the ALJ to make a decision without a hearing (on-the-record).

The ALJ will generally issue a decision within 90 days of receipt of the hearing request. If the ALJ cannot issue a decision in the applicable timeframe, the ALJ will notify the appellant of their right to escalate the case to the Medicare Appeals Council.

4. Review by the Medicare Appeals Council

At this stage, if a party to the ALJ hearing is dissatisfied with the ALJ's decision, the party may request a review by the Medicare Appeals Council. There is no minimum requirement regarding the amount of money in controversy.

The request for Medicare Appeals Council review must be submitted in writing within 60 days of receipt of the ALJ's decision, and must specify the issues and findings that are being contested (www.cms.gov/OrgMedFFSAppeals/Downloads/DABform.pdf). Refer to the ALJ decision for details regarding the procedures to follow when filing a request for Medicare Appeals Council review.

Generally, the Medicare Appeals Council will issue a decision within 90 days of receipt of a request for review. That timeframe may be extended for various reasons, including but not limited to the case being escalated from the ALJ level.

5. Last Chance…Judicial Review

If $1,350 or more is still in controversy following the Medicare Appeals Council's decision, you can request judicial review before a federal district court judge. As the appellant, you must request a federal district court hearing within 60 days of receipt of the Medicare Appeals Council's decision. The Medicare Appeals Council's decision will contain information about the procedures for requesting judicial review.

If you have reached this stage, things are serious and you have incurred significant costs in both time and money. Fortunately, it's rare that an optometrist ever gets to this stage of the appeals process.

Finding Balance

Navigating the maze of claim rejections and denials may be nerve-racking and frustrating; however, there are significant resources available to not only get your claim properly adjudicated, but also build a culture of prevention.

Although prevention is time consuming and frustrating in its own right, the long term savings and financial reward to your practice is certainly worth it. ■

Dr. Rumpakis is the founder of Practice Resource Management, a management and consulting firm. He lectures nationally and internationally on medical coding and compliance, the economics of clinical standards of care, managed care, practice appraisal and other practice management topics. He is Clinical Coding Editor for Review's *"Coding Abstract" column.*

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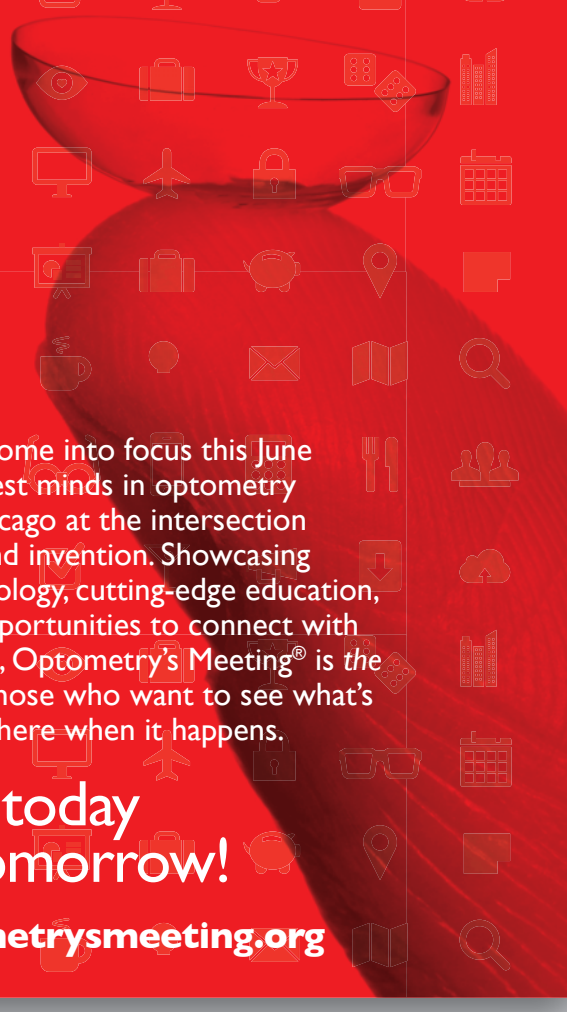

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36th Annual Contact Lens Report

Minimize Follow-Up for Multifocal Contacts

Do you hesitate to offer multifocal contact lenses to your presbyopes? Not to worry. You can fit these patients successfully—and without the endless follow-up visits.

By Jason R. Miller, O.D., M.B.A., and Mile Brujic, O.D.

There are a number of reasons why patients drop out of contact lens wear. Discomfort, of course, is one major reason. But decreased visual acuity due to presbyopia is another major concern.

And, it's not a concern we should shy away from. We have the opportunity to help our presbyopic patients function in their environment without the need for glasses. How? By offering multifocal contact lenses.

Among a survey of 500 presbyopic patients, only 8% of those currently wearing contact lenses were educated about multifocal contacts.[1] We need to educate presbyopes about these options so that we can find a mutually agreed-upon treatment based on the patient's needs and the practitioner's professional judgment.

By discussing multifocals and the benefits they may offer, you do two things: You offer the patient a truly customized approach to vision correction; and you separate your practice as one that emphasizes the newest technologies.

However, one of the major complaints of fitting multifocal contact lenses is the numerous follow-up visits that seem to be required. Patients don't like coming back again and again, so we need to focus on efficient techniques to minimize follow-up and to maximize success.

Defining Success

One of the hurdles to multifocal success is managing patient's expectations and excitement. A patient's excitement about wearing multifocal contact lenses rarely matches the subdued interest of their optometrist. Often, a patient has heard about multifocal contact lenses from a friend or family member—and only occasionally from their eye care professional.

When they inquire about the possibility of wearing this technology, their eye doctor often responds with some trepidation. There are many reasons this can happen. And if it happens in your practice, ask yourself a few questions:

- *How many multifocal patients do you fit annually?* Set some goals for 2012 and aim high.
- *Do you proactively recommend multifocal lenses or do you wait for the patient to inquire?* If you offer them to patients and let patients know they are great candidates for this technology, it will generate more excitement.
- *Why would you fit multifocal lenses?* Is it because of the intermediate vision, flexibility with designs, binocular vision improvements and/or the differentiation your practice can receive?
- *Does your staff proactively recommend multifocal lenses?* And, are they able to help set the stage for the doctor when he or she comes into the room?

A positive attitude goes a long way, and it often reaps positive results. So, when developing your protocol and fitting philosophies with multifocal contact lenses, first consider the key factors that create positive outcomes with these lenses.

The first key factor is good communication skills. Eye care professionals need to have good communication skills in order to be successful with multifocal contact lenses. (*See "How to Get the Multifocal Message Across," page 52.*)

The second key factor is good fitting skills. Be creative. It's important to understand the difference in each design of multifocal lens and ways to be successful with each. Success is not defined as wearing two multifocal lenses at completion. Be ready to fall back to a modified multifocal lens fit—it's not uncommon to fall back about one-third of the time, in our experience. It really depends on what patients want and how they use their eyes on a daily basis.

Identify Needs

When interviewing patients, it is important to determine their specific needs. Find out about your presbyopic patients' occupations, hobbies and daily visual requirements in order to educate them properly on their available options. Listen to their needs and customize the lenses to match their needs.

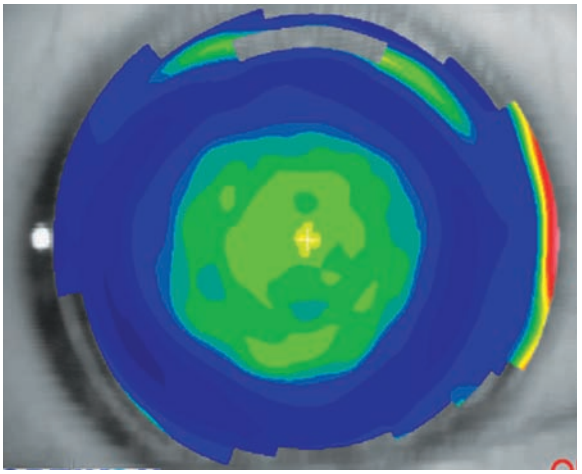
For example, one patient may spend 14 hours a day on the computer and want to maximize his intermediate and near vision. This may be a key piece of information when deciding which multifocal contact lens to fit.

Control Patient Expectations

The other side of the coin in identifying patient needs is managing patient expectations. To that end, consider these two questions:

1. *What is the most effective way of setting patient expectations?*

Keep current on presbyopic contact lenses in order to present options in a positive way, while setting realistic expectations. For example, try to communicate presbyopic fitting in such a way as to avoid the words "compromise" or "loss of vision." Instead, describe multifocal lenses as "customized" or "balanced" according to each patient's visual system.



This is a topography over a center near aspheric soft multifocal contact lens. The small cross hair in the center of the topography represents the patient's line of sight. In this eye, the optics of the multifocal contact lens are lined up well over the visual axis.

Remember the key technique is to under-promise and over-deliver. Let them know they may need reading glasses for small print. If they don't, then you are their hero. Let them know these lenses can provide good vision for 90% of their visual needs, but there may be some loss of crispness 10% of the time. If the patient needs readers to see the phone book or medicine bottles, then this tactic is successful. Gauge their interest and describe the expected fitting timeline and appropriate fees up front.

2. *What is most effective in explaining adaptation to multifocal lenses?*

It is important to talk about adaptation to everyone, but don't make a big deal about it. Let them know it will take a little while for their eyes to adapt to this design, just like a new pair of spectacles. It may even take from four to six weeks for their eyes to adjust. Set the first follow-up appointment for one week and make adjustments as needed.

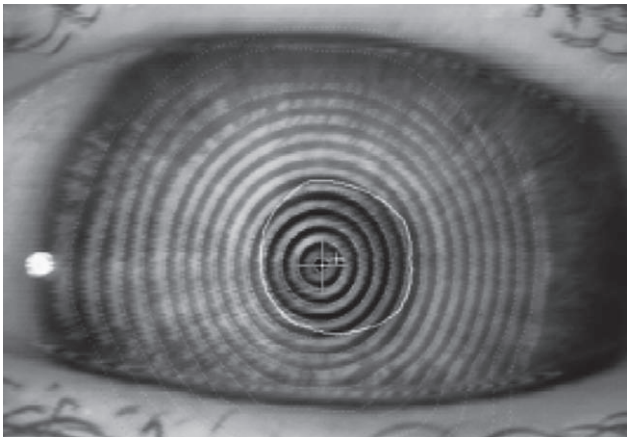
The Dispensing Visit

Near visual acuity is not always a good predictor of success with multifocal contact lenses. However, the next time you fit a patient with multifocal contact lenses, consider a practical test to demonstrate functional improvement with the lenses: Tell the patient to look at his or her cell phone, and ask how well he or she can see the numbers. By allowing patients to see the instant improvement in vision with something that they utilize every day, they will be more likely to realize the functionality that this modality can offer.

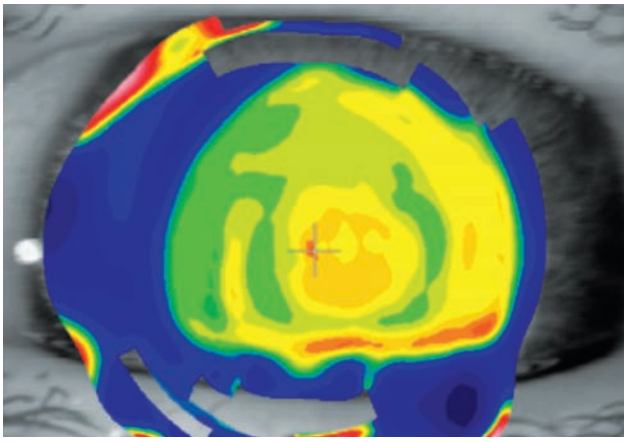
Consider these strategies at the dispensing visit in order to save time and minimize follow-up appointments later down the road:

1. *Always know eye dominance up front.* This will enable minor adjustments independently down the road.

2. *After allowing the multifocal lenses to settle for 10 to 15 min-*



A videokeratoscopic image of the left eye of a patient who is interested in multifocal contact lenses. The yellow circle outlines the patient's pupil. The center ring, which represents the patient's line of sight, is nasal to the pupillary axis.



A topography over a center near aspheric multifocal contact lens on the patient's eye at left. The center of the steepest zone of the lens, which corresponds to the center of the optical zone, is located temporal to the patient's line of sight.

utes at the initial visit, make minor adjustments. Err on the side of more distance to start.

3. *Utilize staff*. Your staff can improve efficiency by measuring visual acuities. You may also consider allowing them to assess the fit.

Topography Over Contacts?

An interesting lecture by Patrick Caroline, C.O.T., and a follow-up conversation with him and Matthew Lampa, O.D., fundamentally changed the way we position topography in our practice for multifocal contact lens wearers. Lens centration is a critical component to contact lens wearing success. This begs the question: Is centration over the pupil or the visual axis required to maximize multifocal success?

Angle kappa, which is the difference between the visual axis and the pupillary axis, does not play a significant role in the success of single vision contacts because of a consistent power profile across the optical zone of the lens. But a multifocal contact lens becomes much more dependent on centration over the visual axis.

The question then becomes: How do we determine if the multifocal contact lens optics are centered over the visual axis and will it play a role in how we fit multifocal lenses? A lens that appears to be centered on the eye when assessing the fit with a slit lamp may not necessarily be optimally aligned if a patient's line of sight is not aligned with the center of the pupil.

An interesting study recently assessed multifocal contact lens centration with the aid of corneal topography, and compared it to the patient's line of sight.[2] This was accomplished by understanding that the center ring of the videokeratoscopic image is centered over the patient's line of sight and comparing topographic images of multifocal lenses to this point to determine whether their optical centers were aligned with the patient's line of sight.

Soft multifocal contact lenses have their multifocal powers on the surface of the contact lens, allowing a topography reading to identify areas that are slightly steeper or flatter. A center near design multifocal will have a steeper profile in the center of the lens. A center distance profile will have a flatter profile surrounded by a slightly steeper profile. A topography over a contact lens will help identify the center of the optical zone of these lenses.

This is a powerful tool as it allows a practitioner to compare the line of sight and the center of the optical zone in the multifocal lens. Logically, we would want the patient's line of sight to center over the optical zone of the contact lens. This would presumably offer the patient the full benefit that a multifocal contact lens is intended to deliver.

We've utilized this method in an attempt to understand why some patients do so well in multifocal contacts while others tend to struggle with them (*see images above*). Anecdotally, we've seen a number of instances where following the fitting guides with various multifocal lenses would lead to success or failure based on how well or poorly the multifocal optics were centered over the patients' line of sight.

Fitting multifocal contact lenses successfully depends on a number of factors. Performing topographies

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over a patient's contact lenses is one additional factor that has helped in both understanding and minimizing multifocal contact lens follow-ups.

The Follow-Up Visit

Troubleshoot fit and vision efficiently. There may be specific occasions in which the patient wants more functional distance and/or more near vision. But, make sure that patients are very specific with what their visual limitations are. "My near vision is not as good as I thought it would be" is simply not specific enough to offer them the best solution. A follow-up question that could help you determine whether or not you feel you can improve their vision would be, "What specifically are you having troubles seeing?"

For example, two patients come in with the same complaints, but one says that he cannot see small print on medication bottles while the second has difficulties focusing on the computer. These two patients should be treated completely differently. The first may simply require education on the proper expectation of multifocal contacts while the second will likely require some power modifications to be successful.

So, be ready to make adjustments to satisfy the patient's needs. Even a small change in the prescription can make a large improvement in the patient's visual abilities. If you made your initial calculations correctly, you are basically customizing the multifocal contact lenses to the patient's daily visual tasks.

It is important to understand the recommended fitting guides. They will often lead you to an improved endpoint. Remember, a modified multifocal fit is an acceptable endpoint.

As you know, monovision has many limitations, such as sensitivity to blur and imbalance, whereas multifocal technology allows our patients to have better binocular balance and offers the ability to see clearly with both eyes at all distances. The most important statistic: 76% of patients report that they prefer multifocal contact lenses over monovision contact lenses consistently in multiple studies.[3,4] Eye care professionals are changing their fitting trends to better meet these needs, but we still lag behind patient preference (i.e., multifocal lenses).

How to Get the Multifocal Message Across

How do we introduce multifocal contact lenses as a visual correction option?

- Keep it simple.
- "Have you ever considered...?"
- "I recommend..."
- Personalize the fit.
- Use props to describe the design of multifocal lenses.

Maximize your time at the follow-up visit:

1. *Perform all testing with normal room illumination to stimulate real world surroundings.*
2. *Use spherical flipper lenses to over-refract outside the phoropter.*
3. *Over-refract one eye at a time but have the patient view targets binocularly to simulate what their vision may be with modified powers.* It may surprise you if you have to change the near eye to improve distance or change the distance eye to improve near.
4. *Listen to your patient's visual needs.* They will tell you if they want better distance or better near and make those changes appropriately. Most importantly, if the lenses are falling short of expectations, make sure that the patient is as specific as possible in what situations he or she experiences difficulties.

The presbyopic wave is here to stay. Prepare your patients about the vision symptoms and how your practice can handle their near vision problems. Many will return to tell you they are ready to try this new multifocal technology.

There is a wide array of multifocal choices for emerging presbyopes, advanced presbyopes and even presbyopic astigmats.

The benefits to actively providing these option to your patients are manifold. In addition to meeting visual demands and exceeding expectations come the benefits of increased patient referrals to you practice. This increases patient demand and sets your practice as a leader in offering new technologies to your patients. Practitioners who actively embrace these options and fit them in an efficient manner will solidify themselves as the contact lens experts in their communities. ■

Dr. Miller is in a partnership practice in Powell, Ohio. He is an extern preceptor for fourth year students at The Ohio State University College of Optometry, and he is the Central Ohio InfantSEE Coordinator. Dr. Brujic is a partner of Premier Vision Group, a four-location practice in northwest Ohio. He frequently lectures on contemporary topics in eye care.

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36th Annual Contact Lens Report

Inflammation and Contact Lens Wear

Inflammatory events are common with contact lens wear. But, with preventive measures and proper care, you can help most patients achieve a healthy and comfortable fit.

By Douglas P. Benoit, O.D.

Inflammation is the body's way of responding to a physical or chemical insult. When a stimulus is presented, the immune system releases histamine and other chemical mediators to address the problem and return the system to normal.

Classic signs of inflammation in the body include redness, swelling, heat and pain—these pertain to ocular inflammation as well. For the external eye, redness is expressed as hyperemia, either in conjunctival vessels or the lid tissue. The redness is due to increased blood flow in the area. Swelling usually is caused by edema, generally due to fluid exudation from increased vascular permeability, and can be seen in the cornea, conjunctiva and/or lids. Heat and pain also result from vascular dilation and inflammatory cells, like leukocytes, being drawn into the affected area.[1]

Because the conjunctiva is a vascular structure, it is easy to understand how injection and chemosis can occur. For the cornea, which is avascular, the response of the limbal vasculature accounts for the edema, vessel penetration and infiltrative events.[2] Recent studies have shown that, on a cellular level, the cornea demonstrates changes in the Langerhans cells when it is confronted with mechanical irritation

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Goal Statement: This article will explore ocular inflammation as it pertains to the use of contact lenses. We will look at the etiology of inflammation, the diagnosis and treatment of this entity, and preventive measures that can be taken in contact lens wearers. The role of allergies and dry eye will also be discussed as contributors to inflammation in contact lens wear.
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Classic signs of inflammation in the body include redness, swelling, heat and pain—these pertain to ocular inflammation as well. For the external eye, redness is expressed as hyperemia, either in conjunctival vessels or the lid tissue.

or inflammation.[3,4] In each case, the normally immature central Langerhans cells undergo a rapid maturation, which has been visualized with the confocal microscope.

In this article, we'll focus on ocular inflammatory events related to contact lens wear, the causes of which can be multifactorial. We will look at the etiology of inflammation, the diagnosis and treatment of this entity, and preventive measures contact lens wearers can take. We'll also discuss the role of allergies and dry eye as contributors to inflammation in contact lens wear.

How It Happens

Mechanical trauma can result from a tear or break in the lens, or a poorly fit lens can inflict damage as well. A tight-fitting contact lens or a lens that does not provide good oxygen flow to the underlying tissue can cause physiologic stress. Immunologic factors, introduced by poor cleaning and/or failure to replace the lenses on the prescribed schedule, can also trigger a response.[5]

If we start with the introduction of a contact lens on the eye, there can be immediate physical trauma from the lens itself. A blunt, unpolished edge on a rigid lens can irritate the cornea and cause superficial punctate keratopathy, or it can initiate a localized conjunctival reaction where it hits the tarsal plate.[6] Some of the higher modulus silicone hydrogel lenses can evoke similar responses. These changes may be due to the inherent stiffness of these polymers or to the edge design itself, or a combination of the two.

Over time, poor cleaning and/or replacement habits can also result in inflammation due to allergic or hypersensitivity reactions. The latter could be due to the preservatives in the solutions used, or a reaction to the build-up of lipids and proteins on the lens surface. A number of studies have shown that when cellular debris is left on a contact lens (because the patient has failed to properly rub and rinse the lens before soaking it in the case with disinfecting solution), the risk of corneal inflammatory events increases.[7,8] Further, this activity can lead to the development of a biofilm in the lens case and possibly on the contact lens surface as well.[9]

Dry eye adds another layer of complexity to the situation. As the patient ages, dryness becomes a bigger problem. Thus as some lens wearers get older, their complaints with lens wear increase.

Careful Evaluation

Ideally, we would like to prevent these problems from occurring in the first place. To do that, it is important to assess each patient thoroughly before fitting the contact lens. If the patient presents wearing contact lenses or already has a prob-

lem, management becomes a bigger concern. With any patient, start with a detailed history:

- *Does the patient have any pre-existing allergies—either environmental or medication related?*
- *Do they experience redness of the eyes or eyelids?*
- *Is there any discharge from the eyes, or mattering of the lashes?*
- *Do they complain of grittiness, burning or itching of the eyes?*
- *Is the patient mature enough to handle the responsibility of contact lens wear?*

Even if all of these factors are normal and the patient is a good candidate, that still doesn't mean that he or she will be a problem-free lens wearer. It's a good idea to find out how the patient intends to use the contact lenses. The lens chosen can be customized to the patient's needs and desires. For instance, at least one study has shown that daily disposable contact lenses may act as a barrier to airborne antigens, and thus could be helpful in alleviating some allergy symptoms.[10] This type of lens may or may not help prevent problems with other causes of inflammation.

A good evaluation of the patient's physical condition is necessary as well. Assess the general appearance of the face and the lids in particular. Note any puffiness or redness of the lids. Look for ptosis, proptosis and the apposition of the lids to the globe. At the slit lamp, examine the lid margin and lashes. Are there signs of blepharitis or frank infection? Are the meibomian glands free of clogs? Are the lacrimal drainage puncta patent? Is there a good tear meniscus, and are the tears free of cellular debris? Evaluate the bulbar conjunctiva for hyperemia, pinguecula and conjunctivochalasis.

Next, evert the lids to look at the lid wiper and tarsal plate. Is the lid wiper margin smooth? Does the tarsal conjunctiva show hyperemia, or a papillary or follicular response? Move on to the cornea and examine for irregularities, such as vascularization, pterygia, epithelial basement membrane dystrophy and scars or infiltrates. Check for corneal sensitivity with a simple cotton swab test as well.

Stain the surface with fluorescein and either lissamine green or rose bengal dyes. Look at all the same ocular structures again after instillation of each dye to determine if there are any subtle areas of compromise. Assess the tear meniscus again, and assess the tear film break-up time (TFBUT). Also, perform keratometry or corneal topography to check the cornea for irregularity, or extremely flat or steep corneal curvature.

Preparing the Surface

Of course, if you discover problems during this examination process, you need to address them before fitting the contact lenses. External lid issues can generally be handled with warm compresses and lid scrubs. If infection is present, however, additional therapy with topical or oral medications may be needed. Meibomian gland dysfunction (MGD) will require remedy by gland expression and then warm compresses. Sometimes, lubricants can be used to reduce issues related to dryness, and dietary modifications and supplements to increase the omega-3 ratio can be helpful. In most instances, warm compresses and these measures will help to increase TFBUT.

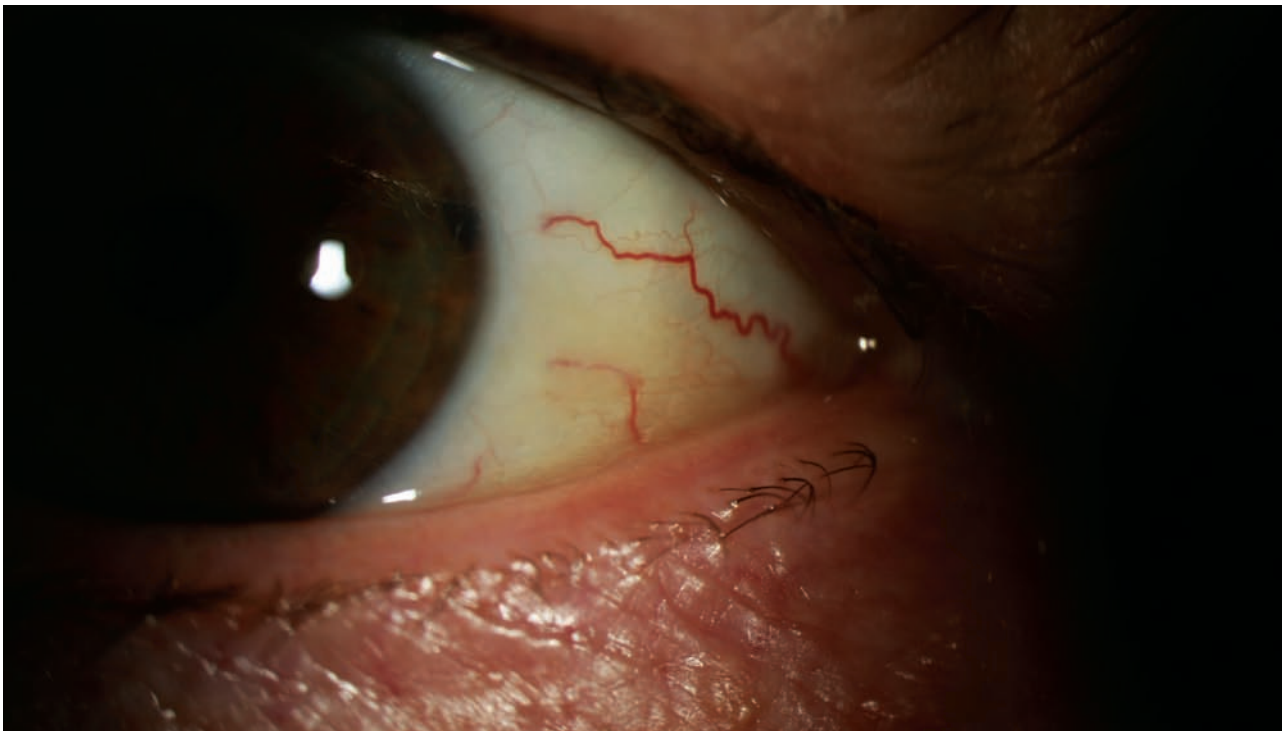
A poor TFBUT can lead to an increase in evaporative dry eye. This manifests on the front surface of the contact lens just as it would on the cornea. The unstable tear film will cause dry spots that disrupt comfort and also can affect vision. Certain contact lens materials, with or without surface treatments, may also help to decrease dryness problems. Another possible mechanism for contact lens intolerance in the presence of MGD is due to the release of bacteria or bacterial exotoxins into the pre-corneal/pre-lens tear film.[11]

If the lid wiper is compromised, the patient also may experience symptoms of a dry eye, even if dry eye signs are absent.[12,13] The lid wiper is that portion of the marginal conjunctiva of the upper eyelid that wipes along the ocular surface, or contact lens anterior surface, during blinking.[14] When it is no longer functioning properly, it's like an old wiper blade going over a windshield, leaving streaks behind it.

Conjunctivochalasis, a redundancy of the bulbar conjunctiva, can cause dry eye symptoms as well. Its presence is thought to be predictive of patients who will develop dry eye symptoms once fit with contact lenses.[15] If the tarsal conjunctiva is compromised, the etiology of the problem needs to be discovered. Most often the tarsal conjunctiva will have papillary, or even follicular, changes in response to insult. The cause could be immunologic or mechanical. In the case of an allergy-related papillary reaction, removing the allergen is the best solution. If that is not possible, a short course of topical steroids or a non-steroidal anti-inflammatory agent would be helpful. If the problem is mechanical, as from a blunt lens edge, then a design change will likely quiet the reaction.

This is Fitting

Once you are satisfied with the individual's ocular health, you can proceed to the actual contact lens fitting. Keep in mind the exam findings and the patient's stated goals for contact lens usage. For instance, a patient who will be a part-time wearer might be better served with a daily disposable lens. Someone



It is imperative to look for any conjunctival impingement or vessel blanching, which are good predictors of a tight-fitting lens. Sometimes, the fit must be modified, or a different lens chosen, to achieve the optimal lens-to-cornea fitting arrangement.

who desires occasional or continuous overnight wear might be a better candidate for a very high-oxygen permeability lens, either silicone hydrogel or gas permeable.

When a diagnostic lens is placed on the eye, it should be allowed to settle. This may take as little as five minutes or up to 20 minutes, depending on the lens type and material being used as well as the patient's prior contact lens wearing experience. The patient's subjective evaluation of comfort and vision is important. Visual acuity can be improved via over-refraction, as needed.

The fit of the contact lens must be evaluated. Most soft lenses need to center well and move well in all positions of gaze, while a gas-permeable lens generally works best with a slight upper-lid attachment fit. Movement is usually is good in that situation. It is imperative to look for any conjunctival impingement or vessel blanching, which are good predictors of a tight-fitting lens. The fit must be modified, or a different lens chosen, to achieve the optimal lens-to-cornea fitting arrangement. If all appears normal, the contact lens can be dispensed (or ordered in the case of a lens that needs parameter adjustments).

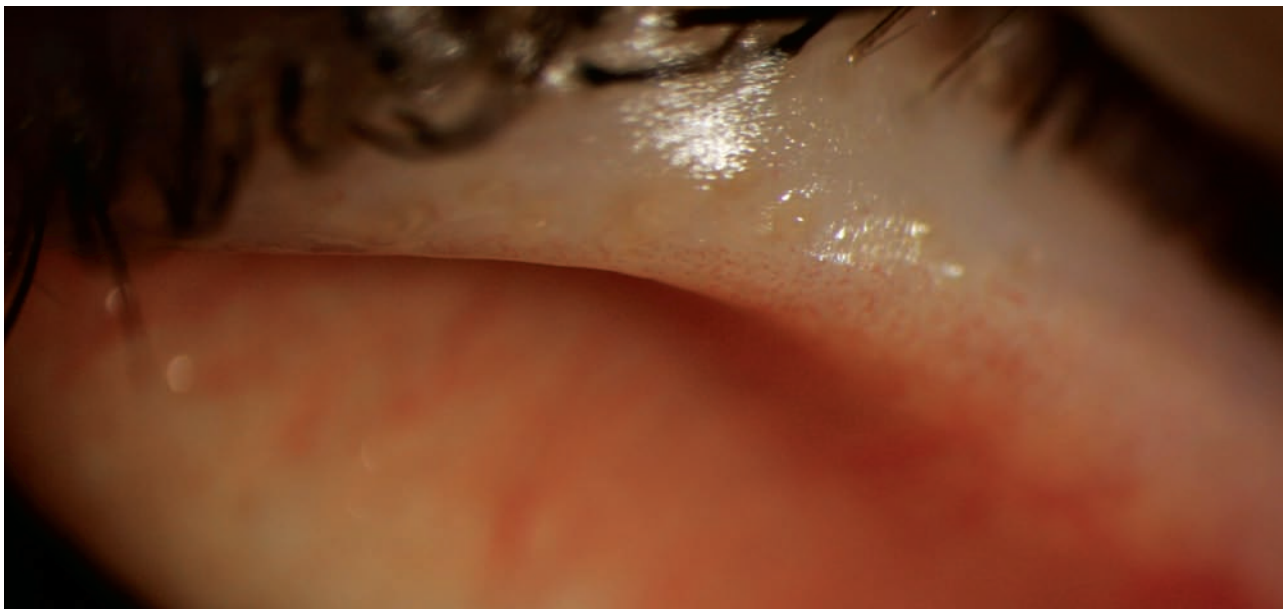
Dispense and Discuss

When contact lenses are dispensed, instruct the patient on the proper technique for insertion and removal of their lenses. These techniques must be practiced until you are satisfied that the patient can confidently perform the procedures.

Next, instruct the patient on cleaning and care of any contact lens that will be used more than once. Thankfully, modern solution systems allow the patient to use a single bottle to care for most reusable lenses. The lenses still need to be rubbed and rinsed to remove make-up and other debris that collect on them during the wearing cycle. Fresh solution should be used in the case for overnight storage. When lenses are inserted the next time, the lens case needs to be emptied and wiped with a towel or tissue. It should be allowed to air dry while the contact lenses are being worn.[16]

Be sure to discuss wearing time per day for daytime-only wearers, or length of time permitted between removals for overnight wearers. Also, review the prescribed replacement schedule for the contact lens being worn.

When the patient is released from the dispensing visit, schedule a progress evaluation (usually within one to two weeks). The follow-up visit gives patients an opportunity to ask questions or review procedures that may seem unclear to them. Further,



Note any puffiness or redness of the lids. Look for ptosis, proptosis and the apposition of the lids to the globe. At the slit lamp, examine the lid margin and lashes.

it gives the practitioner a chance to gauge the patient compliance with wear and care regimens. Also conduct a slit lamp examination of the patient to assess the contact lens-to-cornea fitting relationship.

Through this objective evaluation, the cleanliness of the lens surfaces and the response of the cornea and conjunctiva to the presence of the lens can be determined. Signs of keratitis or changes to the conjunctival appearance could be warnings. If there are issues with poor lens hygiene or abuse of the wearing or replacement schedules, this is the time to address them. The patient may need re-education and clarification of proper techniques. If the lens fit is the problem, then a refit is in order. The change could involve either a different lens or the same lens with a different set of parameters. This should decrease the chance of physical trauma triggering an inflammatory response.

Issues Beneath the Surface

We need to be especially vigilant with our contact lens-wearing patients because, as stated earlier, sometimes the presence of the lens itself can alter the ocular landscape enough to trigger an inflammatory reaction. Here are some potential secondary complications to consider:

• ***Marginal dry eye.*** A patient with a marginally dry eye may be asymptomatic with no overt signs of dryness. Unless practitioners look for other indicators, such as the appearance of the lid wiper, subtle signs could be missed.[17] Some patients with a marginally dry eye may do very well with contact lenses; while others will have their dry eye issue degrade to the point of intolerance once they wear contact lenses.

Sometimes managing the dry eye condition alone may be enough to enable the patient to continue lens wear. This may involve using warm compresses, lubricants and modifying behavior, as in the case of a patient with an incomplete blink.[18] Other times, a different lens type or wearing schedule may be necessary to decrease dry eye symptoms. In any case, diagnosing the dry eye is the key. The recent report from the International Workshop on Meibomian Gland Dysfunction concluded that MGD is an underestimated condition and is very likely the most frequent cause of evaporative dry eye disease.[19]

• ***Conjunctivochalasis.*** Another area to look at is the bulbar conjunctiva. Conjunctivochalasis is a non-edematous redundancy of the bulbar conjunctiva at the lower eyelid.[20] The etiology is unknown, but researchers have theorized that it could be a senile change or the result of oxidative stress due to multiple factors.[21,22] A 2009 study suggested that contact lens wear was a risk factor for conjunctivochalasis.[21] The following year, another study showed increased levels of pro-inflammatory cytokines in the tears of patients with conjunctivochalasis.[22]

Questions remain about what is responsible for the tear cytokine levels—whether it is decreased tear clearance from the presence of the conjunctival folds or a mechanical rubbing of the conjunctiva with

blinking and eye movement, with or without a contact lens. What is certain is that the increased presence of the inflammatory cytokines has an adverse effect on the ocular surface.[23] Corneal staining was significantly worse in patients with severe conjunctivochalasis. Surgical correction of this condition has been shown to greatly improve patient comfort and decrease corneal staining.[24]

• ***Solution toxicity.*** The cornea should not be left out of this discussion. As noted, even though the cornea is avascular, it can still show an inflammatory response to various stimuli. Solution toxicity is a case in point. Many studies have shown that solution components released onto the cornea during contact lens wear can lead to solution-induced corneal staining, or SICS.[25,26] SICS definitely causes comfort issues and may also lead to infiltrates in the cornea, generally in the periphery.

This makes sense considering that the limbus is a rich vascular area and the inflammatory response causes increased vascular flow to the area of insult. The increased blood flow is accompanied by intracellular and intercellular edema, which allows chemotaxis of leukocytes to the same area.[27] These events lead to infiltrate formation.

Researchers in Australia showed that patients who had experienced a previous contact lens-related corneal inflammatory problem had a higher likelihood of developing limbal redness, bulbar redness and conjunctival staining with overnight contact lens wear.[28] However, a more recent study found that corneal staining was not associated with the development of cornea infiltrative events in extended wear; it was the bacterial bioburden on the contact lens.[29]

• ***Corneal sensitivity.*** As alluded to earlier, corneal sensitivity should be evaluated—especially in patients with a history of recurrent corneal erosion or diabetes. It has been shown that decreased corneal sensitivity, due to lost sensory function in the nasociliary branch of the trigeminal nerve, leads to neurotrophic keratopathy. This condition can manifest itself in many ways affecting the cornea and conjunctiva, such as breakdown of the corneal epithelium. This can occur even without dryness problems, infection or trauma.[30] Decreased corneal sensitivity could allow a problem related to the contact lens to go undetected until it is a much tougher situation to treat.[31]

So, what does all this mean to those of us who fit contact lenses? Should we refrain from giving patients the visual freedom that contact lenses provide? A better approach would be to embrace the information at hand and use it to guide us along the proper path. As with anything, not every product, device or service is appropriate for all individuals. A comprehensive and balanced approach is necessary to select patients who are good candidates for contact lenses. Patients with dry eyes and/or allergic conditions can still wear contact lenses—but you must address their underlying problems first. Otherwise, inflammatory conditions could develop that may derail the patient's contact lens wear, and possibly lead to permanent impairment.

You must take the same care when selecting the proper lens type, wearing modality and replacement schedule. At each progress evaluation, quiz patients on their habits with lens and case care. Further, have them demonstrate their technique to confirm good compliance. Look at lens use to gauge the replacement schedule the patient is really using. Where necessary, review and/or re-educate the patient. If parameter availability was not a consideration, it might be tempting to put every patient into a daily disposable lens. Even though daily disposables do not prevent all of these inflammatory events, they do lessen the incidence.[32]

Taken together, all of these approaches could surely go a long way toward having happier and healthier contact lens wearers. ■

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OSC QUIZ

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1. Signs of inflammation include:
a. Redness.
b. Swelling.
c. Pain.
d. All of the above.

2. Changes in corneal epithelial Langerhans cells has been detected with:
a. Slit lamp biomicroscopy.
b. Corneal ultrasound.
c. Binocular indirect ophthalmoscopy.
d. Confocal microscopy.

3. Contact lenses can cause inflammation due to all but which factor?
a. Damaged lenses.
b. Poor fit.
c. Poor care.
d. The polymer itself.

4. Contact lens-related inflammation can be caused by:
a. Toxic reaction to solution components.
b. The contact lens polymer.
c. Interactions between the lens polymer and solution components.
d. Both a and c.

5. Patients with ocular allergies:
a. May wear only extended wear lenses.
b. May not wear contact lenses.
c. May find relief with daily disposables.
d. May not wear GP lenses.

6. During the cleaning process, soft contact lenses:
a. Need a rub-and-rinse step.
b. Must not be rubbed.
c. Can be rinsed in tap water.
d. Can be stored in saline.

7. During contact lens wear, the lens case should be:
a. Topped off and left open to evaporate.
b. Rinsed with tap water.
c. Emptied of solution, wiped and air dried.
d. Be topped off and closed.

8. Progress evaluations for contact lens wearers are:
a. Necessary.
b. Optional.
c. Unimportant.
d. Time consuming.

9. The appearance of the lid wiper:
a. Can predict dry eye.
b. Can help diagnose dry eye.
c. Is clinically insignificant.
d. Is different for males vs. females.

10. Meibomian gland dysfunction is:
a. Underestimated.
b. Overdiagnosed.
c. A leading cause of aqueous deficient dry eye.
d. Has no effect on contact lens wear.

11. Conjunctivochalasis is possibly caused by:
a. Alcohol use.
b. Oxidative stress.
c. Poor diet.
d. Makeup usage.

12. In conjunctivochalasis, inflammatory tear cytokine levels are:
a. Decreased.
b. Increased.
c. Unchanged.
d. Unable to be measured.

13. Increased inflammatory tear cytokine levels:
a. Have an adverse effect on the ocular surface.
b. Cure keratitis.
c. Have no effect on keratitis.
d. Do not occur.

OSC QUIZ

14. The acronym SICS stands for:
a. Stromal inclusion cyst stimulation.
b. Solution-induced corneal staining.
c. Soak in correct solution.
d. Saline in contact lens systems.

15. During the inflammatory response, increased blood flow is accompanied by:
a. Intracellular edema.
b. Intercellular edema.
c. Headache.
d. Both a and b.

16. Overnight contact lens wear in patients with prior corneal inflammatory problems can:
a. Increase limbal redness.
b. Increase bulbar redness.
c. Increase conjunctival staining.
d. All of the above.

17. Bacterial bioburden on contact lenses is:
a. Difficult to detect.
b. A cause of corneal infiltrative events.
c. Seen on fresh lenses.
d. An unimportant artifact.

18. Decreased corneal sensitivity is caused by a problem with which cranial nerve?
a. Oculomotor.
b. Trigeminal.
c. Vagus.
d. Trochlear.

19. Neurotrophic keratopathy can lead to:
a. Dry eye problems.
b. Ocular pain.
c. Trauma.
d. Epithelial breakdown.

20. Dry eye patients:
a. Should not wear contact lenses.
b. Should not wear contact lenses overnight.
c. Should not be excluded from contact lens wear.
d. Should not use lubricants.

Examination Answer Sheet

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RO-PCO-0412

When Interferon Interferes

A patient with hepatitis C presents with cotton-wool spots. Is the patient's interferon treatment causing the problem? **Edited by Paul C. Ajamian, O.D.**

Q **I've seen a few patients lately on interferon therapy for hepatitis C. The patient I saw today had some cotton-wool spots on fundus examination. Is there any correlation?**

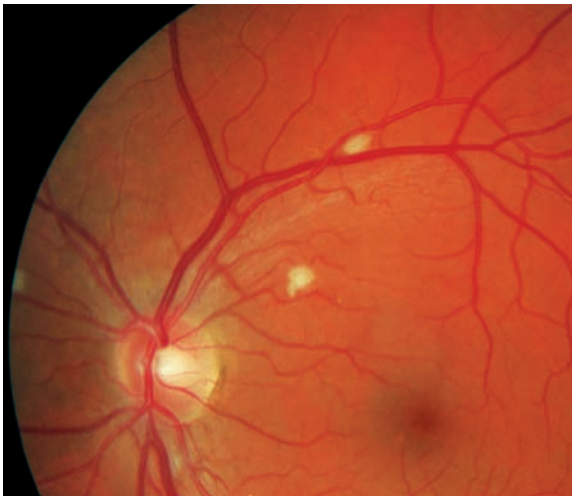
A "There is a very good chance that the cotton-wool spots are a direct correlation from the interferon treatment," says Trennda L. Rittenbach, O.D., who occasionally sees this presentation in patients (particularly those with hypertension) at the Minneapolis VA Health Care System.

"The human body is constantly making interferon and makes even greater amounts when we get an infection or virus, like the flu," Dr. Rittenbach says. So, for patients diagnosed with hepatitis C, the current treatment of choice to suppress the active viral load is injection of pegylated interferon alpha (PegIFNα) combined with ribavirin.[1]

"While the interferon in our body is slightly different than the artificial interferon used for treatment, the process to defeat the virus is the same: The interferon attaches itself to healthy cells to help defend against the invading virus. It stops the virus from multiplying and it assists the body in getting rid of the infected cells," she says.

For reasons not yet known, a virus in the liver is somewhat invisible to the body's immune system. This invisibility allows the virus to replicate in the liver causing a chronic infection.

"Interferon helps the body to distinguish between infected cells and non-infected cells, and targets infected cells for destruction," Dr. Rittenbach says. "The body's immune system will then have better chances to detect the virus, and therefore be able to attack it."



Cotton-wool spots from interferon retinopathy.

Q **This therapy sounds helpful for the patient with hepatitis C—except for the development of retinopathy. What can be done about that?**

A Retinopathy occurs in perhaps one-third of patients treated with interferon, although studies report that the incidence is anywhere from 18% to 86%.[2] "The incidence is also greater in patients with hypertension," Dr. Rittenbach says.[3]

Interferon-associated retinopathy often presents with cotton-wool spots, retinal hemorrhages or other retinal microvascular irregularities.[4] If it does occur, it is most likely seen two weeks to five months after interferon treatment is initiated.[2] Patients are usually asymptomatic. Fortunately, the retinopathy usually resolves spontaneously after the treatment is discontinued.

However, "if this type of retinopathy is allowed to progress, one would be concerned about the possibility of severe ischemic events such as neovascularization," she says.

The prescribing doctor should be notified of any retinopathy findings, which warrants a discussion about discontinuing treatment—especially if the patient is symptomatic or evidence of retinal or optic nerve ischemia is present, Dr. Rittenbach says. "All patients starting interferon treatment should be seen by an eye physician, and if retinopathy is found, should be followed every two to three months until resolution." ■

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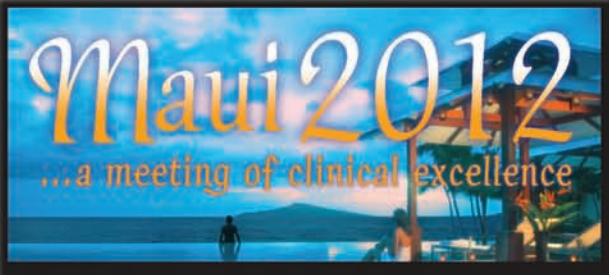

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A Real Pain in the Eye

There's no shortage of pain management options for severe corneal injuries. It's just a matter of choosing the best one for your patient. **Edited by Joseph P. Shovlin, O.D.**

Q What treatment options would you recommend for patients with severe pain from corneal injury (abrasion, lacerations, etc.) who need something stronger than Tylenol or an NSAID?

A First, before prescribing any medication, get the patient comfortable so you can adequately examine the injured area. "The ability to physically examine the tissue really gives you an advantage in the decision-making as far as gauging the level of damage and the intensity of the pain," says J. James Thimons, O.D., center director for Ophthalmic Consultants of Connecticut. Second, take a thorough patient history to identify drug sensitivities, contraindications or potential drug interactions.

Be judicious about which pain management option you choose. Rarely, if ever, should you prescribe a narcotic for more than two to three days. If the pain persists, send the patient to the primary care provider or a pain management specialist. "You can ease the patient's fear by assuring them they will not go blind, and explain that the goal of pain management is not zero pain, but reduction in pain to a manageable level," says A. Mika Moy, O.D., of Tang Eye Center in Berkeley, Calif.

Also, consider the demands of the patient's lifestyle and career. For patients who need to operate a motor vehicle or machinery, or have to perform high-end cognitive tasks, Dr. Thimons often uses 50mg p.o. q.i.d. tramadol because it doesn't interfere with executive function but provides a level of control similar to hydrocodone.

However, if the patient can stay at home and relax for 24 to 48 hours, then Dr. Thimons might consider a drug like Vicodin (hydrocodone/acetaminophen, Abbott Laboratories). Percocet (oxycodone/acetaminophen, Endo Pharmaceuticals) is another alternative; however, it has a stronger, more sedating effect than hydrocodone, he says.

"Hydrocodone helps to allay anxiety—which is probably its largest benefit to the patient, as emotion is a huge component to the sensation of pain," Dr. Moy notes. In very severe cases, Dr. Thimons sends the patient home with a sterile bottle of homatropine with enough drops for two or three days.

Talk with patients about side effects and contraindications with these drugs, and follow up within a day or two. Because the eye heals so quickly, the situation almost always improves enough in two days that you can either taper or discontinue the oral agent.

At the Tang Eye Center, Dr. Moy and chief Christina Wilmer, O.D., have found that a combination approach works well in severe cases they've seen, including a few where

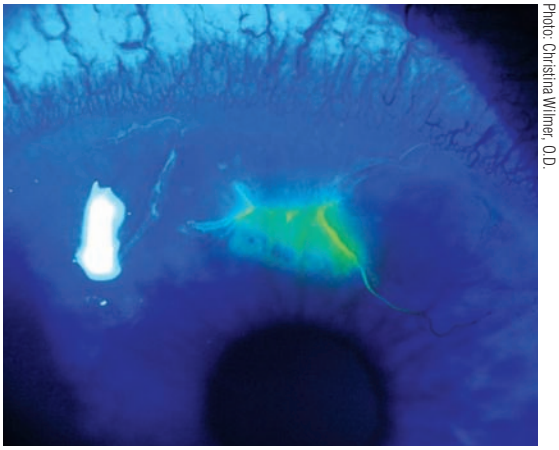

Photo: Christina Wilmer, O.D.

A corneal laceration resulting from a dog scratch.

essentially the entire corneal epithelium was abraded and missing. They used a bandage contact lens in combination with a topical NSAID and an oral agent like Vicodin.

While optometrists in California don't have access to Schedule II drugs, Dr. Wilmer finds Schedule III meds can manage the pain for most corneal issues she encounters. "We really can offer a lot of good pain management without going to a scheduled medication," she says.

Of course, you always need to be on the lookout for malingering and drug shopping. "There are certain buzzwords or phrases that patients use that will put you on alert [for abuse]," Dr. Thimons says. It's a red flag when the patient requests a specific type of medication, or claims that he or she needs a higher dosage or something stronger. "When you start seeing a person with a repetitive need for narcotics, you need to start looking into a bigger problem," he says. ■

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9:00am – 9:30am	Break with Sponsors
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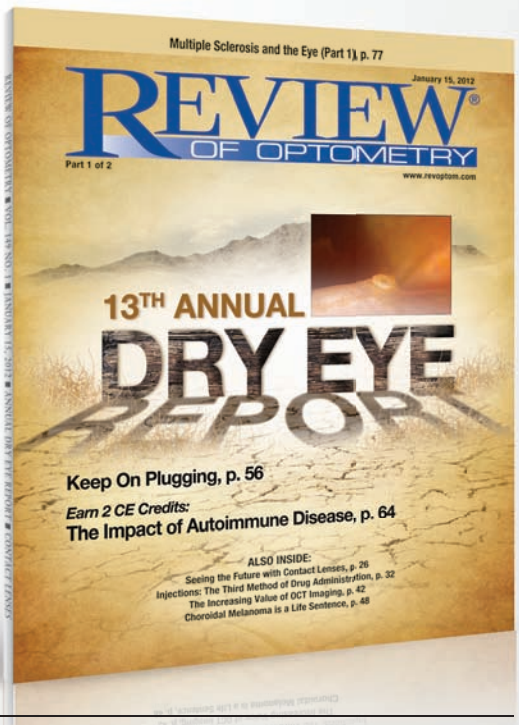

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Patient Has a Bad Latitude

A longstanding patient with pseudoexfoliative glaucoma in one eye wonders how she 'got' it. **By James L. Fanelli, O.D.**

A 72-year-old white female with pseudoexfoliation syndrome (PXS) in her right eye converted to pseudoexfoliative glaucoma (PXG) in mid-2007, indicated by increasing intraocular pressure and subtle changes to her neuroretinal rim.

Diagnostic Data

When initially seen in 2005, this patient's IOP measured 21mm Hg O.D. and 12mm Hg O.S. Her anterior segment in the right eye was characterized by classic findings of PXS, including pseudoexfoliative material noted on the anterior lens capsule, the papillary ruff and in the anterior chamber angle.

Optic nerve cup-to-disc ratios were 0.55 x 0.55 O.D. and 0.50 x 0.55 O.S., with healthy, plush, well-perfused neuroretinal rims. Threshold visual fields (using standard automated perimetry) were normal O.U. She reported no family history of glaucoma.

Because of the PXS, I scheduled her to return for follow-up every six months.

But in 2006, her IOP in her right eye began to fluctuate, with pressures ranging as high as 31mm Hg. I adjusted the patient's follow-up visits to every four months.

When seen in June 2007, her best-corrected visual acuity was 20/20 O.D. and O.S. through minimally hyperopic astigmatic correction. Pupils were equal, round and reactive to light and accommodation, with no afferent defect. IOP measured 28mm Hg O.D. and 17mm Hg O.S. Central corneal thickness measured 549µm O.D. and 537µm O.S. Threshold visual fields (SAP) were normal O.U. Gonioscopy demonstrated 4+ open angles O.U. with minimal trabecular pigmentation and normal iris root configurations.

Stereoscopic disc evaluation indicated cup-to-disc ratios of 0.55 x 0.60 O.D. and 0.55 x 0.55 O.S. I took stereo optic nerve photos; overlay analysis using similar images (obtained in 2004) revealed a subtle change in the vertical component of the neuroretinal rim of the right eye.

Diagnosis and Management

When she returned in September 2007, we performed retinal topography (Heidelberg Retinal Tomograph III). The Topographic Change Analysis confirmed loss of neuroretinal rim tissue in the right eye. Other studies during this visit were unchanged from previous visits. Accordingly, I prescribed 1gtt Lumigan (bimatoprost, Allergan) h.s. O.D.

Subsequent follow-up visits have demonstrated stabilization of the neuroretinal rim loss, no SAP field loss, and post-treatment IOP in the right eye ranging from 15mm Hg to 19mm Hg. The IOP in the left eye has remained unchanged since baseline examination.

Meanwhile, she developed mild nuclear cataracts with cortical spokes in both eyes, and a subsequent reduction of best-corrected visual acuity to 20/30- O.D. and O.S. Her macular and retinal vascular evaluations have remained stable, characterized by fine retinal pigment epithelium granulation and minimal arteriolarsclerotic retinopathy. Her systemic medications at her most recent visit in March 2012 included lisinopril, metoprolol, Lipitor (atorvastatin, Pfizer) and low-dose (81mg) aspirin.

At the conclusion of this most recent visit—after reassuring her that all was stable and that she needed to continue taking her glaucoma drops—she looked me squarely in the eye and asked, "Doc, how did I get this?"

Discussion

In a previous column, I discussed pseudoexfoliation syndrome and pseudoexfoliative glaucoma (*"What's Your Next Step?" March 2011*). We know that a relatively high number of patients with PXS go on to develop PXG.[1] Studies vary on the percentage of conversion from PXS to PXG—some studies estimate that as many as 50% of PXS patients ultimately convert to PXG. But, a more realistic percentage is likely about one third.[2]

In addition, PXS and PXG have racial and genetic predispositions; the LOXL1 gene mutation recently has been linked to the development of exfoliation.[3]

Furthermore, research indicates that pseudoexfoliation is not a disease specific to the eye; rather it appears to be a systemic disease affecting basement membranes, with its most visible signs found in

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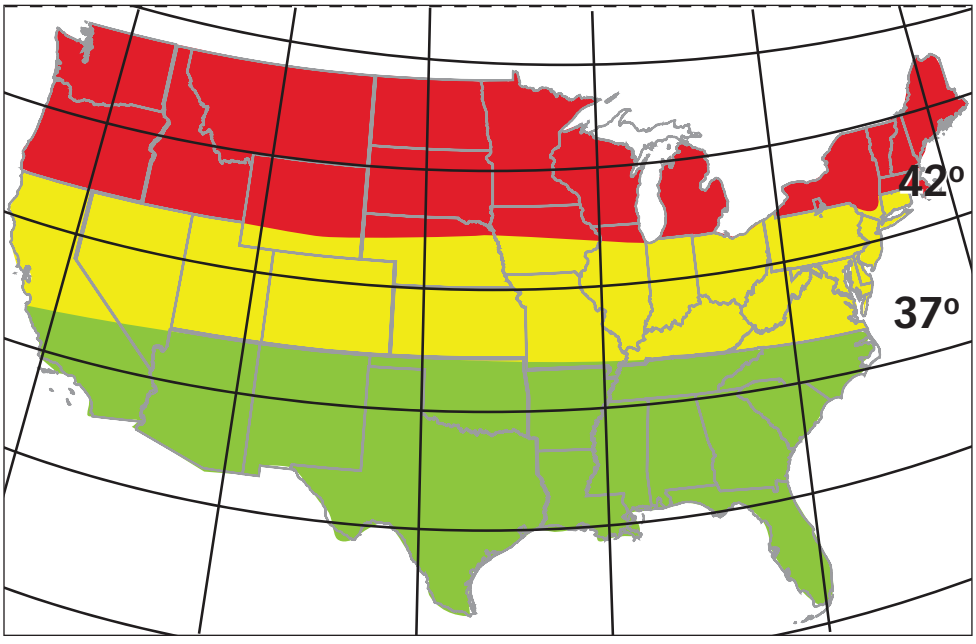
the eye. We also know that patients with PXG generally do well when undergoing laser trabeculoplasty to control IOP.

But the patient's question was interesting. We've all seen glaucoma patients who have asked us "How did I get this?" as if it was something they did that brought the condition on. Our usual answer is that, other than genetics, steroid use and anatomical issues, glaucoma is something that develops separate from anything that a person does (though there are indications that inversion, caffeine intake, tight collars, etc., can affect IOP in the short term).



In the United States, people who live in the northern tier (above 42° latitude) have the highest incidence of exfoliative syndrome. Those in the southern tier (below 37°) have the lowest incidence.

But, some recent studies of PXS and PXG indicate that maybe something that the patient actually inadvertently does affects the incidence of both diseases.

For instance, researchers at the Kellogg Eye Center performed a retrospective study of 3,367 individuals diagnosed with pseudoexfoliation syndrome to see if there is a link between where they lived and the incidence of PXS.[4] Interestingly, by looking at geographic and climate data from the individuals identified with PXS, the researchers found that patients who lived in the upper tier of the continental United States had the highest incidence of exfoliative syndrome. Meanwhile, those in the southernmost tier had the lowest incidence of the syndrome, and those in the middle tier had an intermediate incidence.

When the data was stratified by temperature, higher average temperatures measured in January and July were associated with a significantly lower risk of exfoliation.[4] But, for each additional sunny day, the risk increased by 1.5%. Furthermore, these findings did not change when white participants were removed from the study.

A more recent prospective study of 348 suspects or individuals diagnosed with exfoliative glaucoma (out of a pool of more than 120,000 health care professionals) looked at the relationship between exfoliative glaucoma and demographic and geographic data.[5] This study found that female gender and increased age are associated with a higher incidence of PXG, and that ancestry, including Scandinavian descent, is not.

This study also corroborated that individuals who live further south in the U.S. are less likely to develop PXG than those living in the northernmost states. As it turned out, this patient had moved to North Carolina in 1994, but had been born in Pennsylvania and lived there for most of her life.

While these studies show a link between where one lives in the U.S. and exfoliative syndrome and glaucoma (independent of race and ethnicity), other known factors are also involved. But, they do beg the question about how environmental issues play a role in its genesis.

So, how did this patient "get it," to use her words? Maybe, just maybe, it had something to do with where she lived during her life (especially the early years), among other things. ■

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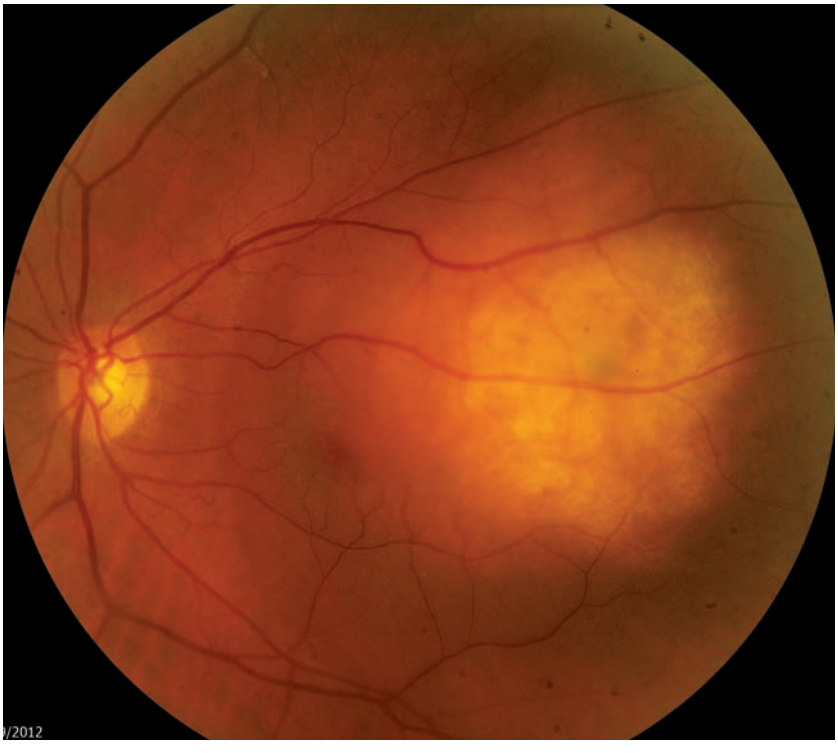
Medical History is Critical

This patient reported a history of both skin and lung cancer. However, not all patients disclose such information to their eye care providers. **Edited by Mark T. Dunbar, O.D.**

A 63-year-old white female presented with a chief complaint of blurry vision O.S. that was accompanied by floaters and flashes of light. She reported that the visual disturbances had progressively worsened over the past month.

Her medical history was significant for hypercholesterolemia as well as both cutaneous and lung malignancy. She underwent hysterectomy, tonsillectomy, resection of the cutaneous malignancy, and systemic chemotherapy and radiation. She was, however, free of metastatic disease at the time of initial presentation. Her current medications included simvastatin and Prilosec (omeprazole, AstraZeneca). She reported that she drinks socially and had never smoked.

On examination, her best-corrected visual acuity measured 20/25 O.D. and 20/100 O.S. Confrontation fields were full to careful finger counting in her right eye and constricted 360° in her left eye. On Amsler grid testing, she reported metamorphopsia in her left eye; however, her right eye was normal.



1. Fundus photograph of the left eye shows a suspicious, elevated lesion located in the posterior pole.

Extraocular motilities were full O.U. Pupils were equal, round and reactive to light, without evidence of afferent defect O.U. The anterior segment examination was significant for grade 1+ nuclear sclerotic cataracts in both eyes. Her intraocular pressure measured 14mm Hg O.U.

Dilated fundus examination of the right eye showed clear vitreous; a moderate-size cup with distinct margins; a flat macula; and a small (<0.5 disc diameter), flat, amelanotic lesion located superiorly in the periphery. The left eye showed a clear vitreous; a moderate-size cup with distinct margins; and a slightly elevated, creamy, yellow lesion (*figure 1*). Additionally, we performed an optical coherence tomography (OCT) scan (*figure 2*).

Take the Retina Quiz

1. What does the OCT scan reveal?
   a. Posterior staphyloma.
   b. Pigment epithelial detachment.
   c. Choroidal mass.
   d. Choroidal neovascular membrane (CNVM).

2. What test would be most helpful in establishing a diagnosis?
   a. Visual fields.
   b. Fluorescein angiography.
   c. MRI.
   d. Standardized ultrasound.

3. What is the correct diagnosis?

a. Metastatic carcinoma to the choroid.
b. Choroidal melanoma.
c. Choroidal hemangioma.
d. Posterior staphyloma.

4. How should this patient be managed?
a. Intravitreal anti-VEGF injection.
b. Observation.
c. External-beam radiation therapy (EBRT).
d. Plaque radiotherapy.

5. What is the prognosis for this patient?
a. Excellent.
b. Guarded.
c. Too early to tell.
d. Poor.

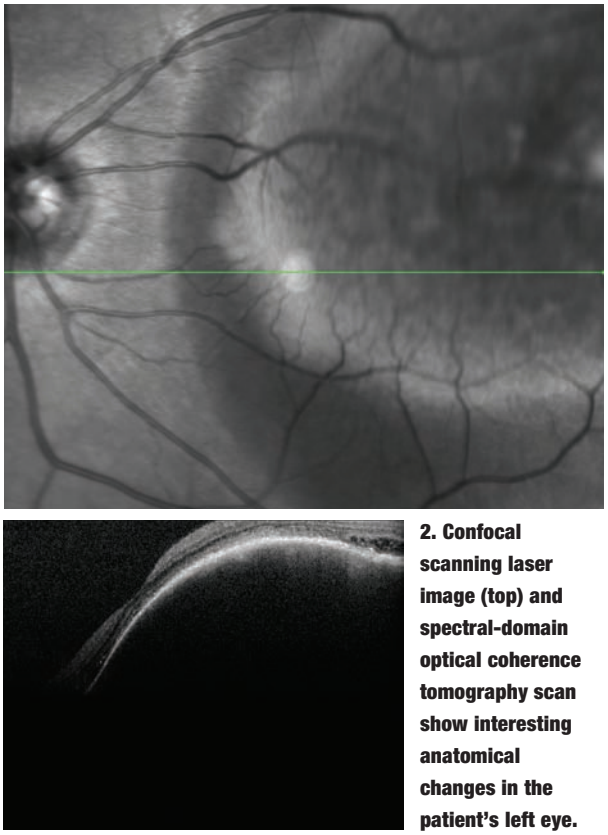
For answers, go to page 98.

Discussion

On clinical exam of the left eye, we observed a poorly circumscribed, creamy, yellow, elevated lesion with fluid that extended inferiorly. The elevation of the lesion was clearly evident on indirect binocular ophthalmoscopy. We noted that the lesion was intruding into the macular area, with extension of fluid toward the optic nerve.

In order to assess the area of fluid surrounding the lesion, we performed OCT. This showed a dome-shaped elevation of the RPE that originated from the choroid. Largely, this was due to a significant choroidal mass that was also causing a serous retinal detachment that extended inferiorly. Based on the patient's history of lung carcinoma, we were highly suspicious that this finding was indicative of a metastatic lesion to the choroid.

Standardized echography was performed, which showed a dome-shaped lesion located posterior to the equator with dimensions of 12.5mm x 9.5mm and 3.6mm of elevation. It was irregularly structured with moderate internal reflectivity. The lesion was also shown to be mildly vascular. We confirmed the presence of the focal detachment at the inferior edge of the lesion on the B-scan. It is important to note that we uncovered no extraocular extension.



2. Confocal scanning laser image (top) and spectral-domain optical coherence tomography scan show interesting anatomical changes in the patient's left eye.

Based on the clinical appearance, you could potentially mistake this finding for an amelanotic choroidal melanoma. However, on diagnostic A-scan, a melanoma would have exhibited consistent low internal reflectivity. Additionally, we considered choroidal hemangioma in the differential diagnosis. These lesions show high internal reflectivity on the A-scan.

Typically, metastatic choroidal lesions are a result of lung cancer in men and breast cancer in women. Additional, less likely sites of origin include cancer of the kidneys, thyroid, prostate and/or gastrointestinal tract.[1] If the primary lesion site is unknown, biopsy by fine needle aspiration may be necessary.[2]

Although the mechanism is debatable, it is suspected that the vascularity of the choroid makes this location the most likely part of the eye for metastatic growth.[3] It is extremely important to take a thorough history, because many patients may not disclose a history of cancer to their eye care providers. Once an adequate history has been taken, it is vital that these patients continue to be followed on dilated fundus examination, despite the state of their primary disease.

In our patient's case, she had recently undergone a positron emission tomography (PET) scan and was told that she had no signs of active disease. However, we must keep in mind that the sensitivity of PET scans often cannot detect ocular lesions.

Once a diagnosis of metastatic carcinoma is made, the course of treatment should be expedited due

to the potential for rapid lesion growth. Coordinated care among the eye care provider, oncologist and radiation therapist is critical for the success of treatment. The patient also will need to undergo a complete metastatic evaluation, including a PET scan.

In one report of 420 individuals with choroidal metastasis, 34% of the patients had no history of cancer at the time of diagnosis.[1] Further, the tumors were unilateral in 320 patients and bilateral in 100 patients.[1] Additionally, multifocal lesions were found in 20% of eyes, with a mean number of two lesions.[1]

In our patient, a second lesion thought to be an early "met" was seen superiorly in the right eye. Unfortunately, because it was located so far in the peripheral retina, we were unable to capture the entity on fundus photography.

In the past, once a metastatic lesion was detected in the eye, there was little consideration for treatment other than enucleation. Today, however, EBRT is the standard of care in bilateral cases. Plaque radiotherapy is occasionally used as well, especially in unilateral cases.[4] Radiation therapy is especially important in cases where the lesion involves the macula or optic nerve.

In one published report, the researchers determined four indications for the use of EBRT in the treatment of metastatic breast carcinomas to the eye.[4] These included secondary retinal detachment, measured decrease in visual acuity, threat for decreased visual acuity and rapidly enlarging tumor.[4]

Keep in mind that multidisciplinary, coordinated, individualized care often leads to the best outcomes for patients with choroidal metastasis.

Regarding our patient, we chose to perform EBRT due to the bilateral nature of the metastasis as well as the location of the lesion that extended into the macula and caused serous retinal detachment. ■

Thanks to Brigitte Keener, O.D., postgraduate optometry resident at Bascom Palmer Eye Institute in Miami, for contributing this case.

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‘Like Sandpaper in the Morning’

Here’s how you can help break the vicious cycle of nocturnal lagophthalmos.

By Alan G. Kabat, O.D., and Joseph W. Sowka, O.D.

A 46-year-old woman was referred for a specialty ocular surface evaluation after being seen by her family optometrist. “My eyes feel like sandpaper in the morning,” she claimed. “Some days, they burn so badly I can barely open them. I get a little relief after I shower, but my eyes are still very red and irritated for most of the day. I’ve tried all types of eye drops, but most of them sting and nothing provides the relief I need.”

What can we do to help provide this patient with some relief?

Beyond Dry Eye

Many patients present with ocular burning and irritation as either a chief or peripheral complaint. Most eye care providers tend to lump these individuals into the broad diagnostic category of “dry eye,” and treat reactively with one or more artificial tear solutions.

In some instances, we may sense a bacterial or allergic component, and will then add an antibiotic, antihistamine or anti-inflammatory agent (or a combination of these) to the mix. But, in all cases of ocular surface disease, it is important to inspect for mechanical and anatomical dysfunctions that can be at the root of the problem.

In the case presented above, a few simple questions helped lead us to the appropriate cause:

- *Are your symptoms worse upon awakening, and do they tend to improve throughout the day?*
- *Do you sleep under an air vent or ceiling fan?*
- *Has anyone ever mentioned that you sleep with your eyes partially open?*

If the answer to these questions is “yes”—as was the case in our patient—then the likely diagnosis is nocturnal lagophthalmos.

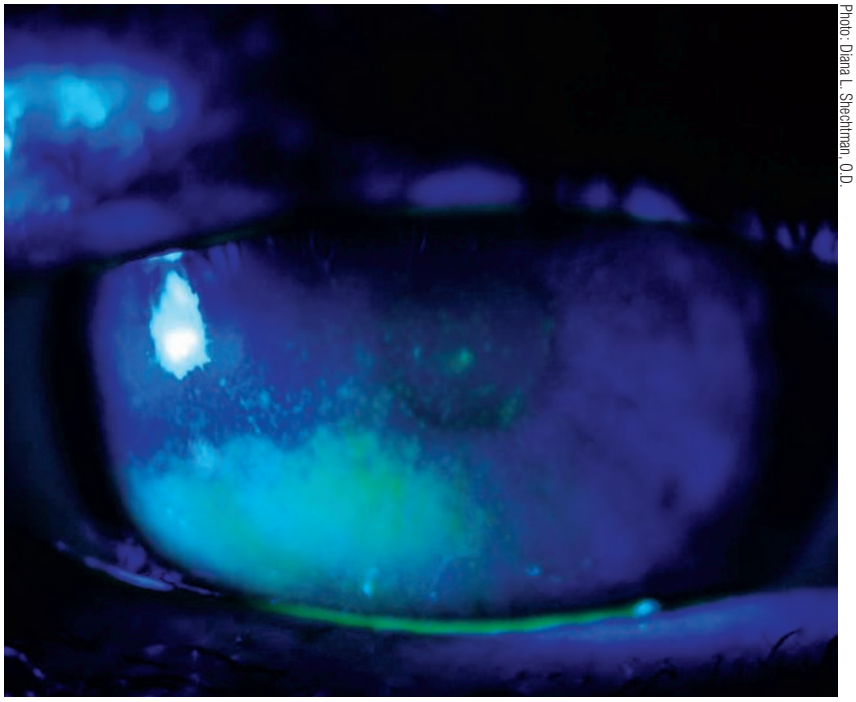

Photo: Diana L. Shechtman, O.D.

Patients with nocturnal lagophthalmos characteristically present with this telltale staining of the inferior cornea that corresponds to the area of exposure.

What is Nocturnal Lagophthalmos?

One of the first individuals to discuss nocturnal lagophthalmos in the modern era was Herbert Kaufman, M.D. Dr. Kaufman, and fellow researcher Jeffrey Katz, M.D., described nocturnal lagophthalmos as “corneal exposure during sleep […] a relatively common cause of previously undiagnosed, chronic keratitis.”[1]

The term lagophthalmos has a most interesting derivation; it comes from the Greek word lagos—meaning hare—as members of the rabbit family were once believed to sleep with their eyes open.[2,3] Lagophthalmos can result from a number of potential causes, but usually is attributable to one of three etiologies: proptosis, or excessive ocular surface exposure; palpebral insufficiency (e.g.,

shortened tarsal height or reduced tonus); and idiopathic.[2]

While some of the syndromes associated with nocturnal lagophthalmos may be readily obvious (i.e., thyroid eye disease and cicatricial lid scarring), other cases may be more elusive. In some patients, the eyelashes may obscure a definite gap in the palpebral fissure, making it difficult to observe on clinical examination.

Even more confusing is the situation in which the upper lid extends beyond the edge of the lower eyelid, leaving a small gap that allows the ocular surface to remain exposed to the environment.[2] So, it is important to recognize the classic, symptomatic presentation and discern the specific elements of the patient history outlined above to accurately diagnose these patients.

Testing for Lagophthalmos

Additional testing can help you confirm a diagnosis of nocturnal lagophthalmos. Slit lamp evaluation may reveal an incomplete blink along with desiccation and inflammation of the exposed region. Typically, the patient will demonstrate fluorescein staining at the exposed area of the ocular surface that usually occurs in a "band" pattern along the lower third of the cornea.

Conjunctival injection in the interpalpebral zone, with or without associated lissamine green dye staining, is another important sign. Chronic disease can lead to inferior corneal scarring and vascularization as well as conjunctivochalasis.[3]

Direct testing for lagophthalmos is not complicated. First, slightly recline the patient in the exam chair and dim the overhead room lights. Then, instruct him or her to gently close both eyes, as if preparing to take a nap. Exposure is often not immediately apparent, but after 30 to 60 seconds, the upper eyelid on the most afflicted side frequently begins to twitch. Exposure of the ocular surface then may be observed using a penlight or transilluminator that is directed beneath the lower lid.[3]

Treatment Options

Treatment of nocturnal lagophthalmos can be supportive or invasive, depending upon the patient's disposition and the condition's severity. All attempts should be made to rearrange the patient's sleeping environment in a way that minimizes direct airflow toward the eyes and maximizes environmental moisture, including the possible use of a room humidifier in dryer climates.

Likewise, any concurrent blepharitis or meibomian gland dysfunction (MGD) should be addressed and treated accordingly because these conditions only exacerbate the inflammation and intensify the symptoms experienced upon awakening.

Mildly symptomatic individuals with nocturnal lagophthalmos may find relief with the use of bland ointments at bedtime, such as Refresh Lacri-Lube (Allergan) or Systane Nighttime (Alcon). For patients who prefer not to use eye ointments due to blur or discomfort, we often recommend higher-viscosity tear products, such as GenTeal Gel (Novartis) or Refresh Celluvisc (Allergan).

In addition to generous lubrication of the eyes at bedtime, it is also important to ensure mechanical lid closure. Physical taping of the eyelids has been advocated in the past; however, this approach is often not well tolerated, and may result in contact dermatitis or iatrogenic lash epilation in some individuals.[1-3]

Typically, we recommend the use of a "sleep mask" as a first-line therapy for these patients, which may be obtained at virtually any drugstore or beauty supply shop. Eye Eco, Inc., for example, has developed numerous products to shield and protect the eyes from dryness and lagophthalmos, such as the Tranquileyes line and its newer silicone sleep shields.

More symptomatic patients, however, may require pharmacologic intervention. The use of certain topical antibiotics (e.g., erythromycin or azithromycin) may be beneficial in addressing some of the chronic lid changes seen concurrently with nocturnal lagophthalmos, such as anterior blepharitis and MGD.[4,5]

Likewise, the use of topical NSAIDs or corticosteroids may be beneficial in the initial management of severely inflamed or symptomatic patients. However, these rarely are a long-term solution and likely should be limited to no more than two weeks of therapy.

The use of oral tetracycline derivatives is often recommended for a variety of inflammatory lid disorders, because these agents have been shown to reduce the expression of matrix metalloproteinases, decrease the production of lipase by staphylococci, reduce the eyelid bacterial flora and alter meibum secretion in a positive way.[2]

Some researchers have even advocated the administration of a Botox (onabotulinumtoxinA, Allergan) injection into the levator of these patients; however, this treatment is not widely accepted as an effective long-term strategy.[6]

For patients with unrelenting lagophthalmos that impacts sleep

and daily quality of life, surgical intervention may be necessary.[7] Lid lengthening procedures typically are reserved for patients who may have mechanical obstruction or cicatricial scarring. For those with neural dysfunction (e.g., seventh nerve palsy), tarsorrhaphy may be required.

However, for individuals with idiopathic nocturnal lagophthalmos, "lid loading" with weighted implants often helps facilitate complete closure with minimal effort.[6] Complications of this procedure may include implant migration or extrusion, excessive ptosis and secondary astigmatism. But, because the weights are easily removed, this procedure offers great promise for the most symptomatic patients.[6,8]

Patients with dryness, burning and irritation may indeed have "dry eye syndrome," but this is just one diagnosis in a litany of ocular surface disorders. The successful clinician is one who takes the time to scrutinize, examine, converse with and educate his patients, no matter how seemingly trivial or routine the presentation may seem. ■

Drs. Kabat and Sowka are paid consultants for Alcon, and Dr. Kabat serves on the Institutional Advisory Board for Allergan.

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The Role of Topical NSAIDs

Today, eye care providers use topical NSAIDs for more than just postoperative pain management. **Edited by Paul M. Karpecki, O.D., and Diana L. Shechtman, O.D.**

Optometrists primarily use topical non-steroidal anti-inflammatory drugs (NSAIDs) during postoperative care, such as after cataract surgery, corneal refractive procedures or even retinal injections. Not only do NSAIDs greatly help in the management of pain, but also these agents can reduce the severity of inflammation and swelling.[1,2]

Such key attributes may also play a fundamental role in primary eye care applications.

Mechanism of Action

NSAIDs typically demonstrate rapid and prolonged pain control for the cornea, and the analgesic effects can last as long as 24 hours.[3] NSAIDs often provide more effective relief from corneal pain than topical corticosteroids.[4]

This could be because of their targeted approach at mitigating prostaglandin production via the cyclo-oxygenase pathway, as opposed to the steroid mechanism of inhibiting the entire arachidonic acid pathway.[5] While steroids tend to provide effective pain management when acting on inflammation-based tissue swelling, NSAIDs provide markedly better pain control when significant inflammation is not present.

Topical NSAIDs also have the added benefit of acting as a temporary anesthetic on all types of corneal sensory fibers—including mechanical, chemical and thermal receptors—before their analgesic properties are maximally achieved.[6]

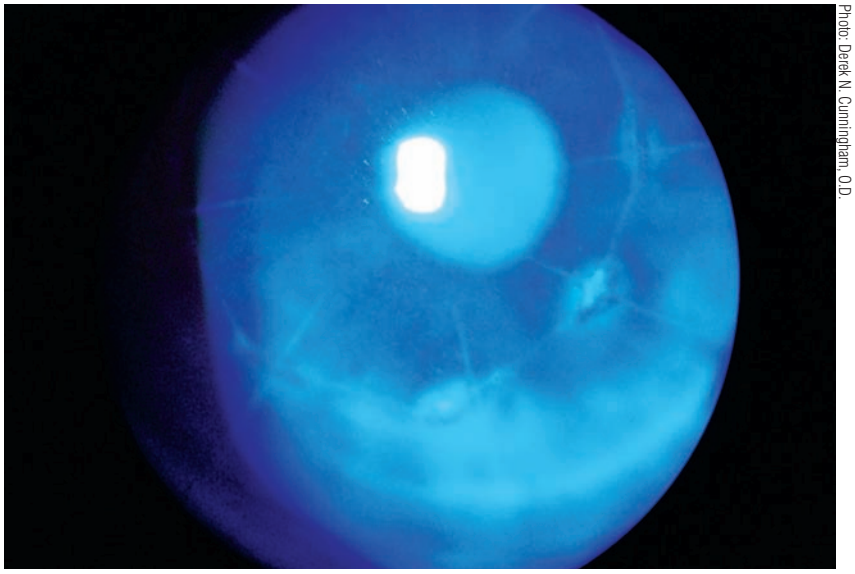


Photo: Derek N. Cunningham, O.D.

This patient, who underwent radial keratotomy, presented with a failed lasso suture and reported debilitating photophobia and dry eye. He exhibited no benefit from topical steroid dosing, but experienced complete symptom resolution following one day of topical NSAID use.

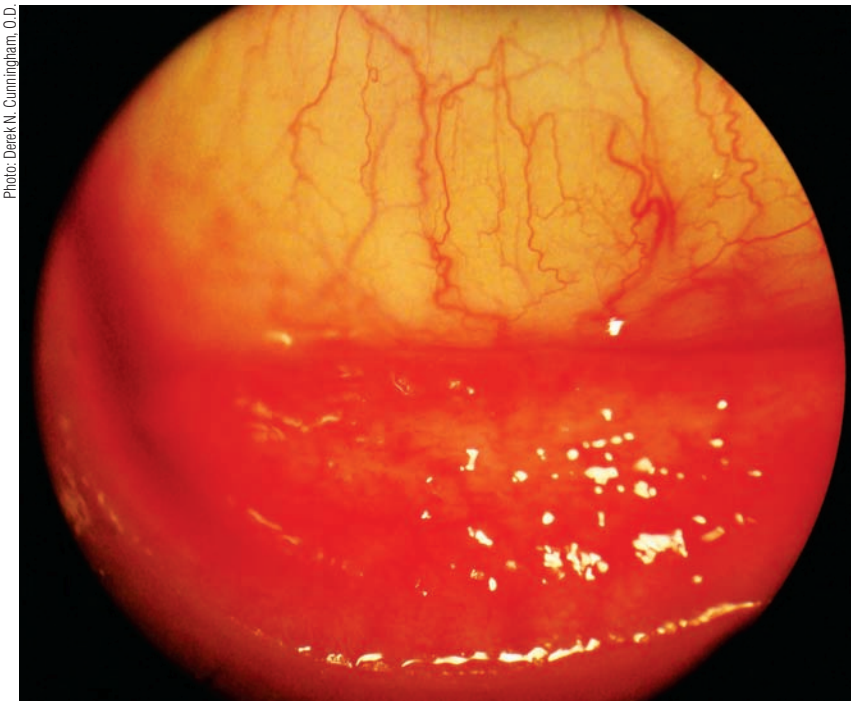
This immediate loss of sensation contributes significantly to pain control. Unlike the analgesic effects, the anesthetic effect from NSAIDs is both short-lived and mild, and does not require the same amount of caution that would be necessary when using clinical anesthetics (such as tetracaine). The immediate relief that patients experience from topical NSAID use is key to increasing compliance when treating corneal inflammatory conditions and ocular trauma.

Pain Management

One obvious example in which patients experience extreme pain and often require topical NSAIDs is in the event of a corneal abrasion. In fact, research has shown that topical NSAID dosing in conjunction with a bandage contact lens is a more effective treatment strategy than the use of either therapeutic approach alone.[7]

In addition to corneal abrasions, topical NSAIDs are useful in the management of pingueculitis, inflamed pterygium and scleritis.[8,9] Further, these agents have been shown to enhance the comfort of bandage contact lenses in the management of persistent corneal epithelial defects.[10] Other clinical applications for topical NSAIDs include the treatment of filamentary keratitis as well as pain management following PRK and various cases of blunt ocular trauma.[11,12]

Photo: Derek N. Cunningham, O.D.



This patient experienced persistent ocular burning during allergy season, despite the use of antihistamine eye drops. But, temporary use of a topical NSAID q.d., in addition to antihistamine drops, completely relieved her burning symptoms during the peak of Mountain Cedar season.

In our offices, we have also had success in treating pain secondary to photokeratitis using NSAID eye drops. Adhering to the FDA-approved surgical dosing, we have had patients experience day-long pain control with as little as one drop of Bromday (bromfenac, Ista Pharmaceuticals). Typically, corneal healing is relatively fast, and pain control medication is required for just a few days.

Topical NSAIDs for CME

Topical NSAIDs have been shown to prevent retinal thickening after cataract surgery.[13] So, you may wish to prescribe both oral and topical NSAIDs to patients with cystoid macular edema (CME) or even diabetic macular edema.

Today, many patients receive anti-VEGF therapy for CME. However, when this treatment option isn't available or patients cannot see a retinal specialist in a timely manner, topical steroid dosing and topical/oral NSAID use may be warranted. In fact, many retinal specialists include topical NSAIDs before anti-VEGF injection to prepare the eye against pain and help reduce edema.

In addition to retinal surgery, topical NSAIDs may even increase the efficacy of several glaucoma surgeries, including implantation of the Ahmed Glaucoma Valve.[14] Also, topical NSAIDs have been found to decrease postoperative pain associated with pan-retinal photocoagulation.[15]

Care With Topical NSAID Use

Clinicians must be aware of potential complications associated with topical NSAID use. Corneal melts have been reported in patients with severe ocular surface diseases, such as Stevens Johnson syndrome.[16]

Although newer topical NSAIDs may cause corneal complications, the majority of problems have been associated with generic NSAID use.[17] For example, generic diclofenac was implicated for numerous cases of corneal melts and toxicity in the late 1990s.[18-20] One treatment center reported 18 complications, including keratitis, ulcerations and perforations (11 cases occurred following cataract surgery; one case was reported in a patient with sarcoid uveitis; and the remaining cases included patients with systemic diseases, such as rheumatoid arthritis, Sjögrens syndrome and rosacea).[21]

Also, optometrists must be adequately educated about the proper selection and application of topical NSAIDs to maximize therapeutic benefit and minimize adverse events. When making a selection, keep in mind that generic medications are not required to demonstrate safety, efficacy, absorption or tolerability (which are all affected by the inclusion of different preservatives, buffers, fillers, pH enhancers and manufacturing processes).

The Future

While further study is required, one emerging area of interesting research is the use of topical NSAIDs for the long-term management of chronic dry eye. Current studies are evaluating the therapeutic benefits of low-dose applications in the general dry eye population.[22] Until that research is published, however, clinicians should use caution with liberal NSAID use in patients with advanced ocular surface disease.

And most recently, several research groups have examined the anti-inflammatory impact of topical NSAIDs in patients with diabetic retinopathy and age-related macular degeneration.[23-25] ■

Thanks to Derek N. Cunningham, O.D., director of research and optometry at Dell Laser Consultants in Austin, Texas, for contributing to this article. He has received research support from Allergan, Alcon, Bausch + Lomb and Ista Pharmaceuticals. Dr. Karpecki is a paid consultant to Allergan, Alcon, Bausch + Lomb and Ista Pharmaceuticals. Drs. Karpecki, Shechtman and Cunningham have no direct financial interest in any of the products mentioned.

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Product Review

Contact Lenses

1-Day Acuvue Moist for Astigmatism

The Vistakon Division of Johnson & Johnson Vision Care, Inc., recently introduced 1-Day Acuvue Moist for Astigmatism. This new daily disposable toric soft contact lens for individuals with astigmatism is made using Lacreon technology, which permanently embeds a water-holding ingredient (similar to that found in natural tears) into the etafilcon A material. It also features a blink-stabilized design, harnessing the natural pressures of a blinking eye to help keep the lens in place and quickly realign the lens if it rotates out of position.

The design also benefits practitioners because the lens settles within one minute, reducing chair time and the need for further progress evaluations, the company says. 1-Day Acuvue Moist for Astigmatism has more than 1,500 SKUs (12 axes, 4 cylinders) at distance parameters of +4.00D to -9.00D. The contact lens also blocks approximately 82% of UV-A radiation and 97% of UV-B radiation. For more information, visit www.jnjvisioncare.com.

PureVision 2 HD for Astigmatism Additional Range

Bausch + Lomb is expanding the range of powers to its PureVision 2 For Astigmatism contact lens line. The expanded range is lauching in two waves.

The first wave, rolled out on March 1, 2012, extended the sphere powers from plano to -9.00D (0.50D steps above -6.00D), and cylinder powers of -0.75D, -1.25D, -1.75D and -2.25D in 10° increments around the clock.

A second wave, to be released May 1, will add plus powers up to +6.00D (0.25D steps). The entire range will be available in the same four cylinder powers, -0.75D, -1.25D, -1.75D and -2.25D in 10° increments around the clock. For more information, visit www.purevision2.com.

Contact Lens Solution

OcuSoft Lens Care System

The OcuSoft Lens Care System, a convenient three-in-one system, deep cleans, stores and disinfects with the efficacy of 3% hydrogen peroxide and ensures comfort with a lubricating agent and no added preservatives. The system is ideal for all soft contact lenses but is especially beneficial for silicone hydrogel lenses, which are prone to reduced wettability and subsequent microbial contamination, the company says.

Patients with sensitive eyes, contact lens-induced dry eye or poor contact lens retention time may also benefit from using this system. Special discount pricing is available to doctors for dispensing from their offices, and patients may also order order directly from the OcuSoft website. For more information, visit www.ocusoft.com.

Nutraceuticals

Diabetic Vision Formula

The new Diabetic Vision Formula from EyeScience Labs was developed in an effort to help protect against potential vision problems associated with diabetic retinopathy. It is formulated to help target the oxidative stress that can negatively impact the

Frames

Marc Jacobs Eyewear

The new collection of Marc Jacobs sunglasses and optical frames, manufactured and distributed by the Safilo Group, mixes retro charm with unique color combinations. The optical frames feature a vintage-chic square shape and come in candy colors.

Contrasting colors in multilayer acetates enhance the oversized silhouettes of the sunglasses, from the solid tones of cyclamen/blue/white, coral/green/white and orange/lilac/white, to the softer nuances of nude/orange/white. The collection also features Havana brown/blue/white as well as a new take on the classic shades of black/dark tortoiseshell/Havana brown and black/grey/brown. For more information, visit www.safilousa.com.

Nine West Eyewear

Lifestyle

nw107s

nw505s Hero

Marchon debuted its first Nine West Eyewear collection under a license with The Jones Group. The spring/summer 2012 launch collection features 22 ophthalmic and 10 prescription-ready sun styles. Prevalent color blocking in bright green, red, pink and turquoise mixed with black and tortoise zyl

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Other prevalent colors include peach blonde, ruby orange, rose ombre and silver mesh. In addition to color, animal prints and polka dots line the interior or exterior temples. Nine West logo plaques, studs and/or half-star details also adorn the temples for an element of glamour and edge. For more information, visit www.marchon.com.

blood vessel system in the eyes for people who live with diabetes, the company says.

The formula contains 11 different nutrients, including vitamin B_6, omega-3, niacin, lutein, alpha lipoic acid, cinnamon bark, bilberry and grapeseed extract. For convenience and increased patient compliance, EyeScience formulas are sold directly through participating eye care professionals and nationwide at any CVS Pharmacy. For more information, visit www.EyeScience.com.

Imaging Technology

Spectralis Anterior Segment Module

The new Spectralis Anterior Segment Module (ASM) from Heidelberg Engineering GmbH recently received FDA clearance. Using Heidelberg's noise reduction technology for enhanced detail, the module provides high-resolution images of the cornea, anterior chamber angle and sclera.

Clinicians can assess both chamber angles at the same time using a 16mm-wide angle-to-angle OCT scan. The ASM adds to the list of modules available for Spectralis devices, including BluePeak blue laser

REVIEW® OF OPTOMETRY

2012 Clinical Guide to Ophthalmic Drugs

by Ron Melton, O.D., and Randall Thomas, O.D.

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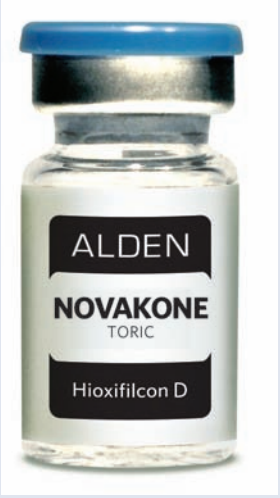

Alden Optical, Inc. will extend its series of NovaKone webinars through May 2012 to address the ongoing interest in this new soft lens for keratoconus. The lens features a posterior design to neutralize irregular astigmatism and optimize physical fit. Front surface toricity is then applied to correct for residual regular astigmatism, while Alden Optical's proprietary dual elliptical stabilization ensures rotational stability, the company says.

These comprehensive webinars cover lens design, patient selection and fitting philosophy, ensuring that participating practitioners are successful with this novel new lens. To register for a NovaKone introductory webinar, visit www.aldenoptical.com/novakone.

TheRightContact.com

The Right Contact team has developed a new method for prescribers to research information on contact lenses and contact lens care products at TheRightContact.com. With just a few clicks, one can easily search and compare lenses (as well as lens care products) on dozens of preferred and relevant parameters. The website is a search engine with a robust infrastructure that allows for detailed searches that yield results on 2,000+ contact lens products from more than 150 different contact lens manufacturers.

Aspex E-Commerce Website

Aspex Eyewear Group launched its completely re-engineered e-commerce site, which showcases all Aspex brand lines, including EasyClip, Manhattan Design Studio and Takumi Magnetic Eyewear, and offers a host of new features. The site allows users to view new styles and products on the day of release as well as place orders at any time of the day throughout the year.

Additional features include a zoom capability, providing enhanced viewing options for visitors, the ability to order parts such as clips, temples, fronts, and a "wish list." Users can also check on the availability of products and colors on a live basis, view point-of-purchase material and display products to consumers with or without prices. For more information, visit http://myaspexeyewear.com.

autofluorescence, wide-field composite imaging, as well as fluorescein and ICG video angiography. For more information, visit www.heidelbergengineering.com.

UV Protection Rating System

Essilor Launches E-SPF

Essilor International introduced a new "Eye-Sun Protection Factor" (E-SPF) system in order to increase consumer awareness about the importance of protecting the eyes from ultraviolet rays. The Essilor-developed international E-SPF rating system is similar to the index used to rate skincare and sunscreen products' efficiency. The E-SPF protocol provides an objective laboratory index for eyewear, certifying the global UV protection of a lens.

The higher the E-SPF, the better the UV protection on both sides of the lens. Values vary from two to a maximum of 25 for clear lenses, and go up to 50+ for sun lenses. The system can be used for any eyeglass brand, any type of UV protection and any kind of sight correction. The goal is to help consumers and opticians better evaluate the level of protection a lens offers their eye, regardless of the brand. For more information, visit www.essilor.com. ■

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Meetings + Conferences

May 2012

■ **3-5.** *Mountain West Council of Optometrists Annual Congress.* Caesar's Palace, Las Vegas. Hosted by: Mountain West Council of Optometrists. Contact Tracy Abel, CMP, at (888) 376-6926 or tracyabel@earthlink.net. Visit www.mwco.org.

■ **5-6.** *2012 Eastern States Optometric Congress.* Crowne Plaza Hotel, White Plains, N.Y. Under the auspices of: The Optometric Extension Program Foundation. CE hours: 12. Contact Stuart M. Rothman, O.D., at smrod@aol.com.

■ **5-6.** *Glaucoma Grand Rounds Program with Live Patients.* Western University College of Optometry, Pomona, Calif. Call (909) 706-3493 or e-mail ceoptometry@westernu.edu. Visit www.westernu.edu/optometry-continuing-education.

■ **6-10.** *ARVO 2012.* Greater Fort Lauderdale/Broward County Convention Center, Fort Lauderdale, Fla. Hosted by: The Association for Research in Vision and Ophthalmology. Contact (240) 221-2900 or arvo@arvo.org. Visit www.arvo.org/am.

■ **16-18, 20-22.** *CE in Italy: Cinque Terre and/or Castiglion Florentino, Tuscany.* To register for one or both programs, contact James L. Fanelli, O.D., at (910) 452-7225 or jamesfanelli@CEinItaly.com. Visit www.CEinItaly.com.

■ **18-20.** *Nova Southeastern University's 16th Annual Clinical Eye Care Conference & Alumni Reunion.* NSU College of Optometry. Contact Vanessa McDonald, M.S., Manager of Continuing Education, at (954) 262-4224 or oceaa@nova.edu. Visit http://optometry.nova.edu/ce.

June 2012

■ **1-3.** *Essentials in Eye Care: Board Certification Exam Preparation and Continuing Education.* Western University College of Optometry, Pomona, Calif. Call (909) 706-3493 or e-mail ceoptometry@westernu.edu. Visit www.westernu.edu/optometry-continuing-education.

■ **2-3.** *Regional Clinical Seminar: Maximizing Stereopsis in Patients with Strabismus or Amblyopia.* Metro Washington DC (Gainesville, Va.). Sponsored by: The Optometric Extension Program Foundation. Speaker: David Cook, O.D. CE hours: 12. Contact Tod Davis, O.D., at toddavis@verizon.net.

■ **8-10.** *OAL 75th Anniversary Celebration Convention.* Lafayette Hilton, Lafayette, La. Hosted by: The Optometry Association of Louisiana. CE hours: 16. Contact James D. Sandefur, O.D., Executive Director, at (318) 335-0675 or optla@bellsouth.net.

■ **8-10.** *19th Annual Ocular Disease Update.* Chateau on the Lake, Branson, Mo. Hosted by: Northeastern State University Oklahoma College of Optometry. CE hours: 13. Contact Ashley Beason Manes, CME coordinator, at (918) 444-4033 or beason01@nsuok.edu. Visit http://optometry.nsuok.edu/ContinuingEducation.aspx.

■ **10-24.** *Majestic China 2012.* Hosted by: iTravelCE, LLC. CE hours: 20. Contact Dr. Bridgitte Shen Lee at (832) 390-1393 or info@itravelce.com. Visit www.itravelce.com.

■ **21-24.** *Maui 2012.* Wailea Beach Marriott Resort & Spa, Maui, Hawaii. Hosted by: *Review of Optometry.* Meeting chair: Paul Karpecki, O.D. CE hours: 14. Contact Lois DiDomenico at ReviewMeetings@Jobson.com or (866) 658-1772. Visit www.revoptom.com/conferences.

■ **27-July 1.** *Optometry's Meeting.* McCormick Place West, Chicago. Hosted by: The American Optometric Association and the American Optometric Student Association. To register, call (866) 229-3691 or visit www.optometrysmeeting.org.

July 2012

■ **2-6.** *CE in Belize.* Sunbreeze Hotel, Ambergris Caye, Belize. Hosted by: The International Academy of Optometry. Contact Edward Paul, Jr., O.D., Ph.D., Education Director, at (910) 256-6364 or e-mail epauljr@aol.com. Visit www.CEinBelize.com.

■ **12-15.** *Colorado Vision Summit.* The Steamboat Grand, Steamboat Springs, Colo. Hosted by: Colorado Optometric Association. Call (877) 691-2095 or e-mail CVSummit@visioncare.org. Visit www.visioncare.org.

■ **13-15.** *OEP/SCO Conference on Clinical Vision Care: Time, Rhythm and the Visual Process.* Southern College of Optometry, Memphis, Tenn. Sponsored by: SCO and The Optometric Extension Program Foundation. Call OEP at (949) 250-8070, or e-mail Howard Bacon, O.D., at hbbacon@familyoptometry.net.

■ **18-22.** *44th Annual NOA Convention.* Hyatt Regency, Toronto. Hosted by: The National Optometric Association. Keynote Speaker: Joseph Pizzimenti, O.D. CE hours: 13. Visit http://www.nationaloptometricassociation.com/convention.html.

■ **19-22.** *Puerto Rico 2012.* Ritz Carlton, San Juan, Puerto Rico. Hosted by: *Review of Optometry.* Meeting chair: Paul Karpecki, O.D. CE hours: 14. Contact Lois DiDomenico at ReviewMeetings@Jobson.com or (866) 658-1772. Visit www.revoptom.com/conferences.

■ **19-22.** *Northern Rockies Optometric Conference.* Snow King Resort, Jackson Hole, Wyo. CE hours: 16. E-mail Mrs. Marian Schulz at wyoschulz@yahoo.com or visit www.nrocmeeting.com.

■ **26-29.** *SECO Vancouver 2012.* The Westin Bayshore, Vancouver, British Columbia. CE hours: 14. E-mail info@secostaff.com or visit www.seco2012.com/vancouver.

August 2012

■ **3-5.** *Educational Retreat 2012.* South Seas Island Resort, Sanibel, Fla. Hosted by: Southwest Florida Optometric Association Inc. CE hours: 12. Contact Brad Middaugh, O.D., at (239) 481-7799 or swfoa@att.net. Visit www.swfoa.com.

■ **19.** *Orlando Super Sunday #1.* Orlando Campus, NOVA Southeastern University, Orlando, Fla. CE hours: 8. Contact Vanessa McDonald, M.S., at (954) 262-4224 or oceaa@nova.edu. Visit http://optometry.nova.edu/ce/supersunday.

September 2012

■ **5-8.** *International Vision Expo & Conference West 2012.* Sands Expo & Convention Center, Las Vegas. Call (800) 811-7151 or visit www.visionexpowest.com.

■ **6-9.** *Middle Atlantic Optometric Congress.* Doubletree Hotel and Convention Center, Pittsburgh/Monroeville, Pa. E-mail Barry Cohen, O.D., at barryc51@gmail.com.

■ **6-10.** *The Art and Science of Optometric Care: A Behavioral Perspective.* Grand Rapids, Mich. Held by: The Optometric Extension Program Foundation. CE hours: 35. E-mail Theresa Krejci at TheresaKrejciOEP@verizon.net or visit www.oepf.org.

■ **12-15.** *Envision Conference.* Hilton St. Louis at the Ballpark, St. Louis. Call (316) 440-1530 or e-mail info@envisionconference.org. Visit www.envisionconference.org.

■ **13-14.** *South Dakota Optometry Society Fall Conference.* Hilton Garden Inn, Sioux Falls, S.D. Call Deb Mortenson at (605) 224-8199 or e-mail deb.mortenson@pie.midco.net. Visit www.sdeyes.org.

■ **14-16.** *SWCO 2012.* InterContinental Hotel, Dallas. Sponsored by: The Southwest Council of Optometry. Call Niki Bedell at (713) 743-1856 or e-mail nbedell2@uh.edu. Visit www.swco.org.

■ **14-16, 18-20.** *CE in Italy: Florence and/or Castiglion Florentino, Tuscany.* To register for one or both programs, contact James L. Fanelli, O.D., at (910) 452-7225 or jamesfanelli@CEinItaly.com. Visit www.CEinItaly.com.

■ **21-23.** *New Technology and Treatments in Vision Care.* California. 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.

October 2012

■ **4-7.** *EastWest Eye Conference.* Cleveland Convention Center, Cleveland. Hosted by: The Ohio Optometric Association. Call (800) 999-4939 or e-mail info@ooa.org. Visit www.eastwesteye.org.

■ **6-7.** *PSS 2012: 2nd Annual Forum on Ocular Disease.* The Castle Hotel & Resort, Orlando, Fla. Hosted by: PSS EyeCare. CE hours: 18. Call (203) 415-3087 or e-mail education@psseyecare.com. Visit www.psseyecare.com.

■ **24-27.** *Academy 2012 Phoenix.* Phoenix Convention Center. Hosted by: The American Academy of Optometry. Visit www.aaopt.org/meetings/academy2012. ■

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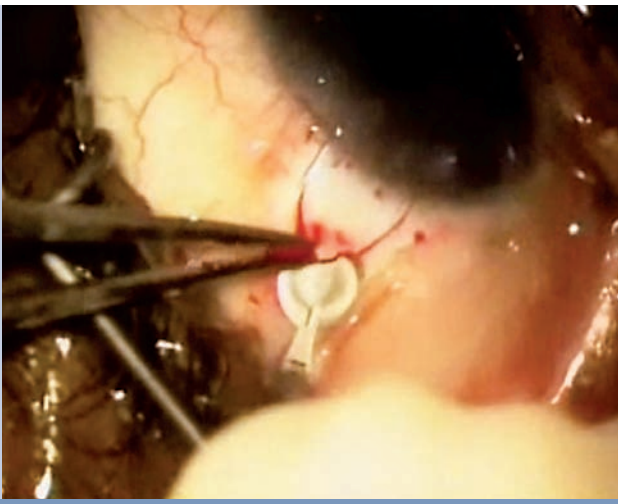
SOFTWARE

Comanaging Canaloplasty

This procedure is becoming increasingly desirable. Read on for what every O.D. needs to know about it, and visit *Review* online for a video demonstration of the procedure. **By Derek N. Cunningham, O.D.**



Go to www.revoptom.com to see video footage of this fascinating IOP-lowering procedure.

On The Web ›› Canaloplasty is the disco party of glaucoma surgery.

With an increased demand for less invasive glaucoma procedures, IOP-lowering surgeries that can be managed by other eye care specialists have become very desirable. Canaloplasty is one such procedure. I call it the disco party of glaucoma surgery. It involves the circumferential viscodilation and tensioning of Schlemm's canal using a flexible microcatheter that has a flashing LED light on the end (hence, the disco party).

The surgeon starts by dissecting the sclera to expose Schlemm's canal. A flexible microcatheter is then used to dilate the full circumference of the canal by injecting Healon GV (sodium hyaluronate, Abbott Medical Optics) during catheterization. Finally, a suture loop is placed in the canal and tensioned permanently. Although the surgery is slightly more time consuming than other glaucoma procedures, it does have a significant "wow" factor for observers. You can actually see the flashing catheter circumnavigate its way 360° around Schlemm's canal. You can't help but hear music inside your head while this happens.

In trained hands, this surgery can have similar outcomes to that of a trab and the surgery time is similar. However, the learning curve for this procedure is quite steep. Also, though this is not considered a full-penetrating surgery because the inner wall of Schlemm's canal is left intact and no bleb is created, there is significant dissection of the conjunctiva and a scleral flap is created—such that postoperative scarring could limit options for subsequent glaucoma surgeries. Postoperatively, you will see some sutures and incisions on the sclera located adjacent to the limbus, but you should not see a formed bleb.

There are several benefits to canaloplasty:

- There's no bleb and it's easily combined with cataract surgery.
- It is not a penetrating surgery.
- Hyphema is not typical.
- IOP decrease can be 30% to 45%.
- If surgical complications occur, you can convert to a trab.
- It does not increase dry eye symptoms (it can lessen them).

Likewise, however, there are also several drawbacks, including:

- Significant learning curve for the surgeon.
- The procedure can be time consuming.
- It's likely not useful for inflammatory glaucoma.
- It is more costly in the short term compared to medical therapy.

Canaloplasty is often done concurrently with cataract extraction. Typical postoperative management after a combined cataract procedure is not much different from the stand alone cataract protocols. Close evaluation for infection or poor wound closure are the major additional steps required by the comanaging optometrist. The IOP-lowering effect may not be appreciated until all post-surgical inflammation has subsided, which may take several weeks. ■

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Diagnostic **Quiz**

More Than a New Rx?

By Andrew S. Gurwood, O.D.

History

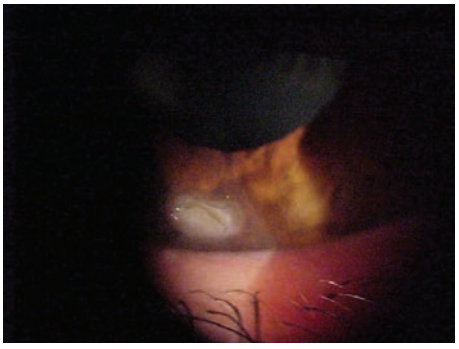
A 59-year-old black male presented for a routine eye examination. His chief complaint was that he wanted an updated spectacle prescription.

He had no other ocular complaints. His systemic history was unremarkable. He had no established ocular history, and reported no allergies.

Diagnostic Data

His best-corrected visual acuity measured 20/20 O.U. at distance and near. The external examination was normal, and there was no evidence of afferent pupillary defect.

Upon visually inspecting the individual's eyes without a biomicroscope, a small, dense, white lesion located in the inferior portion of the left cornea was noted. Using the biomicroscope, the lesion was closely inspected. There was no indication of iritis, keratic precipitate or iris synechiae O.S.



Biomicroscopy image of our 59-year-old patient who wanted a new spectacle prescription. What do you notice?

The anterior segment examination of the right eye was normal. His intraocular pressure measured 14mm Hg O.U. The dilated fundus findings were unremarkable O.U.

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, 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 72):* 1) c; 2) d; 3) a; 4) c; 5) d.

Next Month in the Mag

Our May issue features the 13th Annual Report from ARVO, which will summarize the latest research in:

- Retina
- Cataract & Refractive Surgery
- Glaucoma
- Cornea

Also in May:

- *Optometric Study Center: Vision Care for Athletes* (earn 2 CE credits)

And...

- Don't miss the May issue of *Review of Cornea & Contact Lenses*

Feedback

Review of Optometry welcomes questions and comments. E-mail Amy Hellem, editor-in-chief, ahellem@jobson.com, with "Letter to the Editor" as the subject line.

Or, write to *Review of Optometry*, 11 Campus Blvd., Suite 100, Newtown Square, PA 19073.

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*AIR OPTIX® AQUA Multifocal (lotrafilcon B) contact lenses: Dk/t = 138 @ -3.00D. **Based on subjective ratings of intermediate and distance vision, and vision for daytime driving, night driving, and TV viewing. †In emerging presbyopes, among those with a preference. ††Among those with a preference. ^Trademarks are the property of their respective owners.

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

References: 1. 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.

See product instructions for complete wear, care, and safety information.

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