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A clinical perspective of neovascular glaucoma

SURGICAL COMPLICATIONS

Vision may be restored to 6 left blind by free cataract surgery

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A clinical perspective of neovascular glaucoma

Understanding consequences of pathologic neovascularization of intraocular tissue

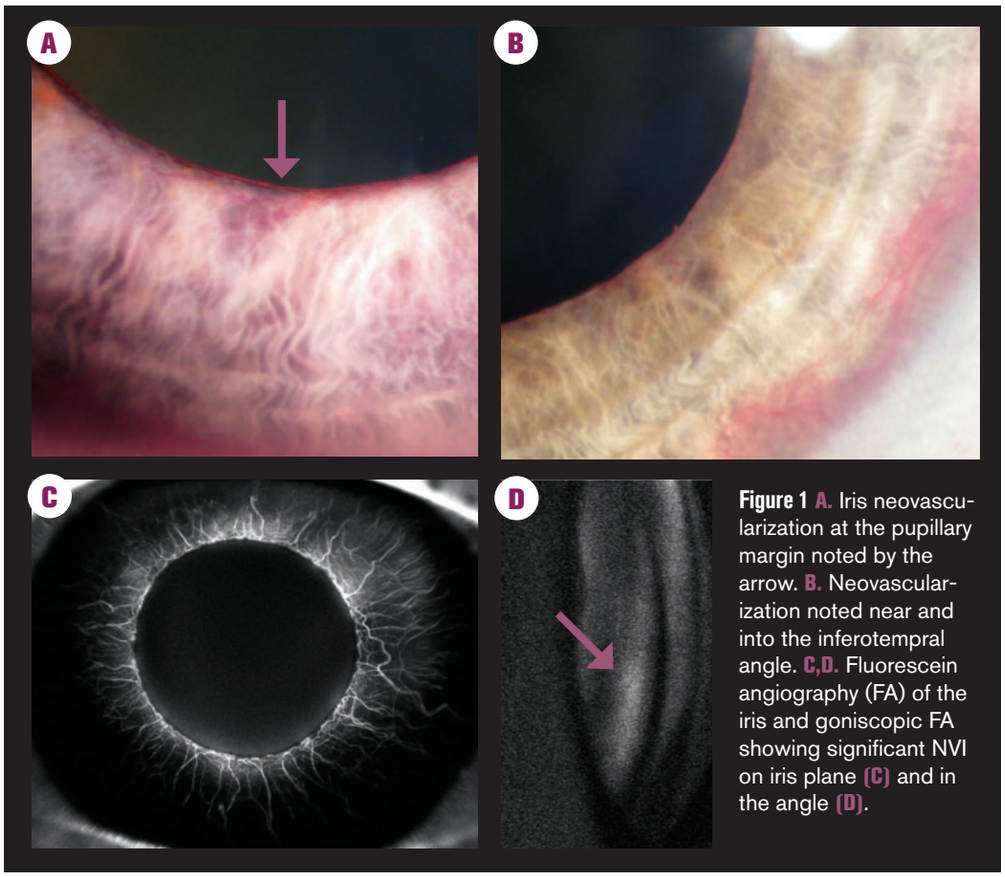

Figure 1 **A.** Iris neovascularization at the pupillary margin noted by the arrow. **B.** Neovascularization noted near and into the inferotempral angle. **C,D.** Fluorescein angiography (FA) of the iris and goniscopic FA showing significant NVI on iris plane **(C)** and in the angle **(D)**.

By Mohammad Rafieetary, OD, FAAO, and Eric J. Sigler, MD

Neovascular glaucoma is a potentially devastating ocular consequence of pathologic neovascularization of intraocular tissue. The symptoms include vision loss caused by both the underlying etiology (such as retinal vascular disease) as well as increased intraocular pressure (IOP), often accompanied by corneal edema, hyphema, or vitreous hemorrhage. Patients may be experiencing a range of ocular pain caused by increased IOP, disruption of corneal surface, and/or mechanical iritis associated with iris neovascularization.

Signs of the disease include rubeosis or neovascularization of the iris (NVI) that may be noted at the pupillary margin, throughout the mid-iris stroma, or as neovascularization of the angle (NVA) (see Figure 1). Other typical findings are increased IOP, except in cases of carotid artery stenosis (ocular ischemic syndrome) in which IOP may remain in normal range. Corneal haze due to microcystic corneal edema and sub-epithelial bullae may be present due to elevated IOP. Concomitant finding may include anterior

See **Neovascular glaucoma** on page 28

SURGICAL COMPLICATIONS

Vision may be restored to 6 left blind by free cataract surgery

By Colleen E. McCarthy
Content Specialist

NEW DELHI, INDIA—The Associated Press recently reported that at least 24 people lost vision after undergoing cataract surgery at a free medical camp, but a new report says doctors may be able to restore sight for at least six patients.

The camp—which Indian authorities say was illegal—was located in Amritsar, Punjab, which borders Pakistan in northern India. The exact number of confirmed cases of blindness varies from 20 to 24 via international news sources—while local Indian news sources are

See **Cataract surgery** on page 7

Think About Your Eyes thrives with industry support

By Colleen E. McCarthy
Content Specialist

A year and a half after the Think About Your Eyes campaign launched to bring attention to the need for regular eye exams, the campaign is seeing results thanks to support from industry partners.

This year, the campaign saw more than 940 million consumer impressions, including 400,000 national radio spots, 3,800 national cable TV spots, and more than 460,000 visi-

See **TAYE** on page 8

Q&A | **DR. GLENDA SECOR**

discusses contact lenses, leadership, night diving with sharks. SEE PAGE 34

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VOL. 7, NO. 01

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What's the value of eye care?

By Ernie Bowling, OD, FAAO
Chief Optometric Editor
He is in private practice in Gadsden, AL, and is the Diplomate Exam Chair of the American Academy of Optometry's Primary Care Section
erniebowling@icloud.com
256-295-2632

A teenager recently presented to my office for a contact lens-related red eye. The condition resolved, and at her follow-up visit, she was informed she could resume wear. The lenses she had worn at the initial visit had been discarded, and she was without replacements. She asked if I could "give her a pair of contacts."

I knew she had recently had an exam elsewhere, so I asked if she had a copy of her prescription, which her grandmother replied was at home. I told her we'd be glad to fill it, or she could obtain them where she had her exam. Short of another complete exam, there was little I could do.

"It's just that her dad is disabled, her mom is laid off from her job, I have back troubles, and there just ain't enough to go around, you know?"said the grandmother, looking up from her new iPhone 6. I assured her that I understood, but there was little I could do. They exited the office more than a little irritated, and I watched them drive off in a brand-new Yukon Denali (MSRP $63,770), the temporary tag still on.

At that moment, I thought: What is eye care worth? Survey respondents state losing their vision is the worst possible life event,[2] but when it comes to improving their sight with spectacles and contact lenses, how much are patients willing to spend? It's a value judgment, and everyone has their own set of priorities. The signs of commoditization of eye care are everywhere, from devalued eye exams and products bombarding our patients to advertising and online offerings. So, is it any wonder a poorly-informed patient would think a contact lens is nothing more than a disposable razor instead of the medical device that it is?

> **A doctor I once worked with had a saying: If you won't value your services, no one else will.**

As with most patient care concerns, the largest hurdle here is education: constantly informing the patient of the value of the services we provide. While a national ad campaign would reach a larger audience, each one of us can make an impact one patient at a time. Yet the deeper issue might be how we as eyecare providers value our services. A doctor I once worked with had a saying: If you won't value your service, no one else will. Considering the responsibility we assume in the care of our patients, shouldn't that value be high? I'm thinking a lot about what my services are worth, especially at the start of a new calendar year when we adjust our fee schedules. How about you? What do you think your service is worth? I'd like to hear your thoughts.●

REFERENCES

1. PRWeb. Americans Fear Blindness More Than Heart Disease Survey Finds. Available at: http://www.prweb.com/releases/2010SurgeResearchInc/08/prweb4372854.htm. Accessed 11/24/2014.

Need to hire an office manager? See page 22 for advice.

7 financial challenges that optometrists will face in the new year

A new year is here and will bring with it a new set of challenges for healthcare professionals in the United States. We recently asked some optometrists what they think are the biggest challenges facing the profession in 2015 and beyond.

"The real issues are the move away from fee-for-service and being locked out of providing services altogether, optometric oversupply, and vision care plans getting in the way of optometrists providing services to patients via medical insurance," Beaverton, OR, optometrist Charles McBride told us. "In the short term in 2015, ICD-10 will command the most attention."

For the full list, check out the story on our website.

OptometryTimes.com/2015challenges

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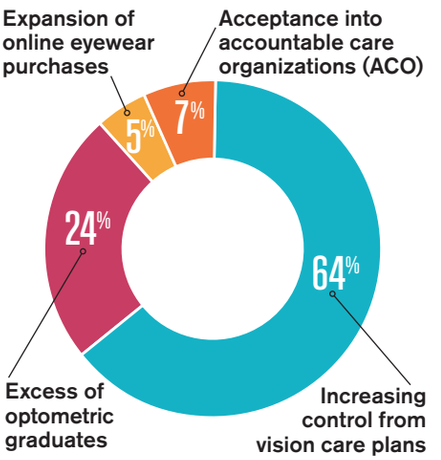
1. **Managing healthy aging and vision**
   OptometryTimes.com/babyboomers
2. **Treating demodex blepharitis**
   OptometryTimes.com/demodexblepharitis
3. **Simplifying the corneal alphabet soup**
   OptometryTimes.com/alphabetsoup

The greatest challenge facing optometry in 2015



Poll conducted by ODWire.org

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

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For allergic conjunctivitis[1]

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INDICATION 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.

IMPORTANT RISK INFORMATION

BEPREVE® is contraindicated in patients with a history of hypersensitivity reactions to bepotastine or any of the other ingredients. 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.

Please see the accompanying prescribing information for BEPREVE® on the following page.

Made by the trusted eye-care specialists at BAUSCH + LOMB

BEPREVE®
(bepotastine besilate ophthalmic solution) 1.5%

Reference: 1. BEPREVE [package insert]. Tampa, FL: Bausch + Lomb, Inc; 2012.

BAUSCH + LOMB

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

----------RECENT MAJOR CHANGES----------
Contraindications (4) 06/2012

----------INDICATIONS AND USAGE----------
BEPREVE® is a histamine H1 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)

----------CONTRAINDICATIONS----------
Hypersensitivity to any component of this product. (4)

----------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 Bausch & Lomb Incorporated. at 1-800-323-0000, or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.
See 17 for PATIENT COUNSELING INFORMATION

Revised: 10/2012

FULL PRESCRIBING INFORMATION: CONTENTS*

*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
Bepreve is contraindicated in patients with a history of hypersensitivity reactions to bepotastine or any of the other ingredients *[see Adverse Reactions (6.2)]*.

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

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.

6.2 Post Marketing Experience
Hypersensitivity reactions have been reported rarely during the post-marketing use of BEPREVE. Because these reactions are reported voluntarily from a population of unknown size, it is not always possible to reliably estimate their frequency or establish a casual relationship to drug exposure. The hypersensitivity reactions include itching, body rash, and swelling of lips, tongue and/or throat.

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 radio-labeled 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.

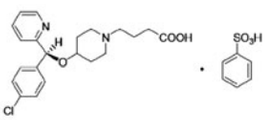
8.3 Nursing Mothers
Following a single 3 mg/kg oral dose of radiolabeled bepotastine besilate to nursing rats 11 days after delivery, the maximum concentration of radioactivity in milk was 0.40 mcg-eq/mL 1 hour after administration; at 48 hours after administration the concentration was below detection 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 24208-629-02)
10 mL (NDC 24208-629-01)

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.

Manufactured by: Bausch & Lomb Incorporated
Tampa, FL 33637
Under license from:
Senju Pharmaceutical Co., Ltd.
Osaka, Japan 541-0046

Cataract surgery

Continued from page 1

reporting as many as 60 patients blinded—out of more than 130 patients who received the free cataract operations in early November. Police are reportedly working to track down every patient who underwent the procedure to identify more victims.

Poor hygiene may be to blame for complications, and many had contracted infections.

Poor surgical hygiene may be to blame for complications, and many had contracted infections, according to some authorities. According to Health Issues India, poor sanitation is one of the biggest health problems facing the country today.

The organizer of the camp has been arrested for allegedly running the camp without governmental permission. The doctor who performed the cataract procedures has reportedly been held for questioning.

Agence France-Presse now reports that a special team of doctors from New Delhi went to Punjab to assess the situation. According to a Ravi Behagat, a senior Punjab state government official, the team found the sight of at least six of the patients can be restored.

Volunteer Optometric Services to Humanity (VOSH) President Dave McPhillips, OD, FVI, FAAO, spoke with *Optometry Times* about preventing these kinds of situations when providing care in improverished countries.

"The key for VOSH chapters to avoiding situations like what happened in India is to partner with sustainable clinics that are providing quality care in developing nations and building capacity," he says. "VOSH also partners with surgical organizations like Surgical Eye Expeditions, where surgeons from the U.S. work with surgeons in developing nations during VOSH clinics, helping to provide education as well as assisting with quality care protocols.

"We are very, very conscious of hygiene and surgery on VOSH trips, as bad outcomes can destroy credibility and potential to return to clinic sites," Dr. McPhillips says. "Patients and their families are concerned enough about getting an operation. Education is key. Word spreads very quickly if someone was made worse visually after surgery vs. before."

According to *Forbes India*, there is a wide medical access gap between those in cities vs. those who live in rural areas—70 percent of the population lives in rural areas with little or no medical care available.

"The rural population mostly relies on alternative medicine and government programmes in rural health clinics," writes Vijay Ramnath Jayaraman.

However, camps that serve rural populations are not without risk. A recent article from *First Post India* heavily criticized such camps. Last month, 13 women died after taking tainted drugs after undergoing a sterilization surgery in the state of Chhattisgarh. Sanitation at the camps was one of the main points of the *First Post* critique.

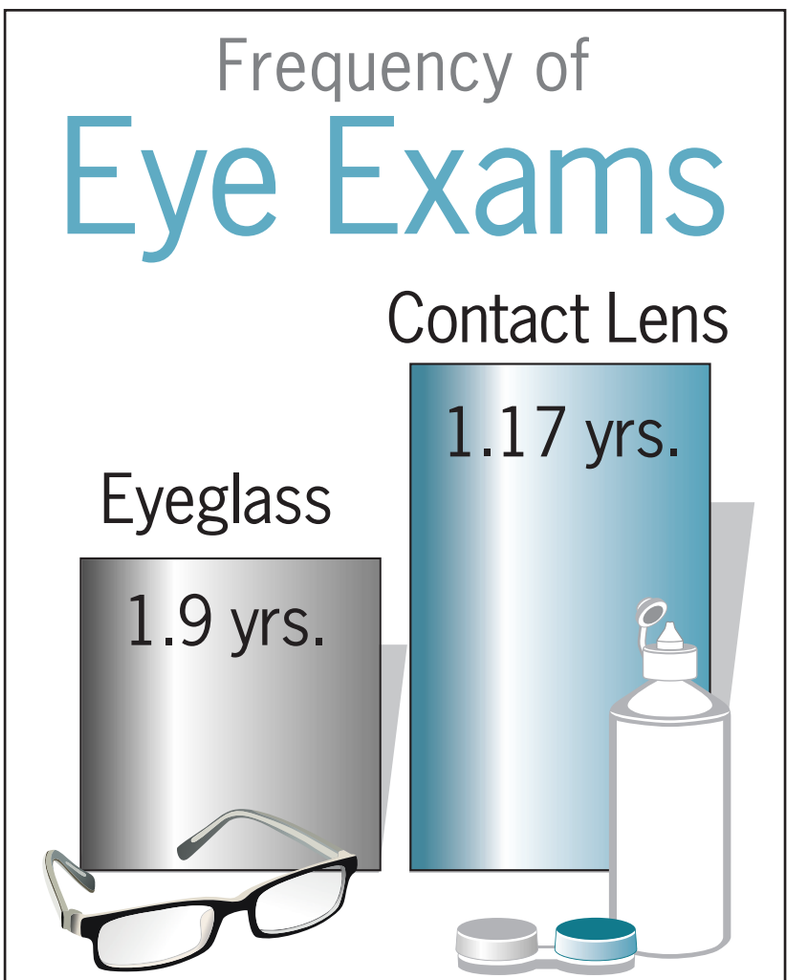
"The camps bring healthcare facility closer to the rural and urban poor," writes Parivesh Mishra in *First Post India*. "District hospitals can be more than 200 km from villages. The negatives far outweigh the positives."●

MY FAVORITE APP

About Herbs

About Herbs is referenced, searchable, and concise. It is a good resource when the patient wants to know if bilberry will prevent cataract, like she heard from the vitamin huckster on the radio! This app has a professional as well as a consumer tab.

—Leo Semes, OD, FAAO
Birmingham, AL



Source: *Contact Lens Spectrum* Practice Profile Study, 11/13

TAYE

Continued from page 1

tors to its website. And all that consumer attention has helped to increase patient visits for eyecare professionals.

"The tens of millions of dollars' worth of Think About Your Eyes ads have been increasing eye health awareness nationally and convincing more and more Americans to get eye exams from their doctor of optometry," says David Cockrell, OD, president of the American Optometric Association (AOA).

The campaign represents a win-win for both doctors and their patients. It is one of those rare instances in which "doing good" and "doing well" match up perfectly, says Dave Plogmann, managing director of Think About Your Eyes. "We all know that there is a massive need and opportunity for Americans to get more regular eye exams and to take better care of both their vision and their overall health—that is the 'do good' part.

"For the first time, we have figured out how to impact this behavior on a sustainable, measurable and broad scale," he says. "As we also know, when eye exams grow, there is a corresponding lift in all of the related categories associated with optometry, including frame sales, lens sales, contact lens sales, and much more. This is the 'doing well' part. This growth supports and drives the funding necessary to make this campaign work."

Since the campaign went national in July 2013, there has been a five percent increase in eye exams in the United States. Creating public awareness has been a benefit.

Industry lends its support

The campaign, which is a partnership between The Vision Council and the AOA, has found support from a number of leaders in the vision care industry—including companies like Essilor, Luxottica, Transitions, and Eschenbach, among others. Alcon is one of the most recent companies to declare support for the campaign.

"With Alcon joining, coupled with our existing partnerships with Essilor and Luxottica, we now are supported by a trifecta of the industry's most influential eye care leaders in all segments of the space," says Plogmann. "When you add in support from the American Optometric Association and The Vision Council—we have a powerful lineup of visionary leaders in optometry. Additionally, we have an outstanding and growing base of support from multiple other companies throughout the category."

Since the campaign went national in July 2013, there has been a five percent increase in eye exams in the United States. Creating public awareness on the importance of eye exams has been a benefit to patient, practitioner, and the industry—which is why some companies say they decided to lend their support.

"We have spent a lot of time this past year talking with optometrists about what we need to do to transform eye care," says Eric Bruno, general manager of U.S. Vision Care at Alcon. "As the only major contact lens manufacturer supporting Think About Your Eyes, Alcon is able to bring marketing expertise to help shape different campaign

See **TAYE** on page 10

IN BRIEF

Study evaluates cataract risk in men

A study recently published in *JAMA Ophthalmology* found that long-term daily supplementation with selenium and/or vitamin E did not have a beneficial effect on cataract risk in men.

Researchers conducted an ancillary study within the Selenium and Vitamin E Cancer Prevention Trial (SELECT) Eye Endpoints (SEE) Study. The SELECT was a four-group, Phase 3, randomized placebo-controlled trial of selenium, vitamin E, and a combination of selenium and vitamin E for the prevention of prostate cancer in 35,533 men, beginning in 2001. The SEE trial involved a subset of 11,267 men, beginning in 2003, excluding men with a prior diagnosis of cataract at baseline.

Participants had a median age of 61 years, with most (64 percent) ranging in age from 55 to 64 years; 43 percent were never-smokers, 48 percent were former smokers, and nine percent were current smokers; and 62 percent had one or more alcohol drinks a month and 33 percent rarely or never drank alcohol. Researchers randomly assigned the SEE participants to receive vitamin E, selenium and vitamin E, selenium, or placebo. Researchers then compared cataract incidence among the selenium vs. no-selenium groups and the vitamin E vs. no–vitamin E groups.

During 5.6 years of follow-up, 185 cataracts developed in the selenium groups and 204 in the no-selenium group, for a nonsignificant reduction of nine percent for the selenium groups. For cataract extractions, 99 cases occurred in the selenium groups and 120 in the no-selenium groups, for a nonsignificant reduction of 16 percent. In addition, 197 cataracts developed in the vitamin E groups and 192 in the no–vitamin E groups. Cataract extractions occurred in 114 vitamin E cases and in 105 no–vitamin E cases.●

HAI Labs launches the Elevate slit lamp

LEXINGTON, MA—HAI Laboratories recently launched the HAI SL-5000e Elevate Slit Lamp, a slit lamp that is re-engineered to meet the challenge of examining patients of all body types.

Slit lamp exams can be an uncomfortable experience for plus-sized patients, large-chested patients, and patients with limited mobility.

In response to requests from eyecare practitioners, HAI Labs developed the Elevate slit lamp, which combines a traditional slit lamp with a joystick and base design. By raising the first point of contact between patient and tabletop to the upper chest, the patient can comfortably reach the chinrest and the slit lamp operator can conduct a thorough examination.

Optometrists who placed their pre-orders online will start receiving the first production batch of Elevate slit lamps in 2015.●

Postoperative Inflammation and Pain Can Make a Bad Impression

CHOOSE **DUREZOL® EMULSION** TO HELP RESOLVE INFLAMMATION AND PAIN[1]

BROAD MANAGED CARE COVERAGE[2]

INDICATIONS AND USAGE:
DUREZOL® Emulsion is a topical corticosteroid that is indicated for:
- The treatment of inflammation and pain associated with ocular surgery.
- The treatment of endogenous anterior uveitis.

Dosage and Administration
- For the treatment of inflammation and pain associated with ocular surgery instill one drop into the conjunctival sac of the affected eye 4 times daily beginning 24 hours after surgery and continuing throughout the first 2 weeks of the postoperative period, followed by 2 times daily for a week and then a taper based on the response.
- For the treatment of endogenous anterior uveitis, instill one drop into the conjunctival sac of the affected eye 4 times daily for 14 days followed by tapering as clinically indicated.

IMPORTANT SAFETY INFORMATION
Contraindications: DUREZOL® Emulsion, as with other ophthalmic corticosteroids, is contraindicated in most active viral diseases of the cornea and conjunctiva including epithelial herpes simplex keratitis (dendritic keratitis), vaccinia, and varicella, and also in mycobacterial infection of the eye and fungal diseases of ocular structures.

Warnings and Precautions
- Intraocular pressure (IOP) increase – Prolonged use of corticosteroids may result in glaucoma with damage to the optic nerve, defects in visual acuity and fields of vision. If this product is used for 10 days or longer, IOP should be monitored.
- Cataracts – Use of corticosteroids may result in posterior subcapsular cataract formation.
- Delayed healing – The use of steroids after cataract surgery may delay healing and increase the incidence of bleb formation. In those diseases causing thinning of the cornea or sclera, perforations have been known to occur with the use of topical steroids. The initial prescription and renewal of the medication order beyond 28 days should be made by a physician only after examination of the patient with the aid of magnification such as slit lamp biomicroscopy and, where appropriate, fluorescein staining.
- Bacterial infections – Prolonged use of corticosteroids may suppress the host response and thus increase the hazard of secondary ocular infections. In acute purulent conditions, steroids may mask infection or enhance existing infection. If signs and symptoms fail to improve after 2 days, the patient should be re-evaluated.
- Viral infections – Employment of a corticosteroid medication in the treatment of patients with a history of herpes simplex requires great caution. Use of ocular steroids may prolong the course and may exacerbate the severity of many viral infections of the eye (including herpes simplex).
- Fungal infections – Fungal infections of the cornea are particularly prone to develop coincidentally with long-term local steroid application. Fungus invasion must be considered in any persistent corneal ulceration where a steroid has been used or is in use.
- Contact lens wear – DUREZOL® Emulsion should not be instilled while wearing contact lenses. Remove contact lenses prior to instillation of DUREZOL® Emulsion. The preservative in DUREZOL® Emulsion may be absorbed by soft contact lenses. Lenses may be reinserted after 10 minutes following administration of DUREZOL® Emulsion.

Most Common Adverse Reactions
- Post Operative Ocular Inflammation and Pain – Ocular adverse reactions occurring in 5-15% of subjects included corneal edema, ciliary and conjunctival hyperemia, eye pain, photophobia, posterior capsule opacification, anterior chamber cells, anterior chamber flare, conjunctival edema, and blepharitis.
- In the endogenous anterior uveitis studies, the most common adverse reactions occurring in 5-10% of subjects included blurred vision, eye irritation, eye pain, headache, increased IOP, iritis, limbal and conjunctival hyperemia, punctate keratitis, and uveitis.

For additional information about DUREZOL® Emulsion, please refer to the brief summary of prescribing information on adjacent page.

For more resources for eye care professionals, visit MYALCON.COM/DUREZOL

References: 1. DUREZOL® Emulsion prescribing information. **2.** Formulary data provided by Pinsonault Associates, LLC, PathfinderRx, March 2014.

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DUREZOL®
(difluprednate ophthalmic emulsion) 0.05%

THE RESULTS YOU WANT. THE RELIEF THEY NEED.

TAYE

Continued from page 8

elements that are designed to engage consumers and eyecare professionals."

The impact the campaign is having for eyecare professionals has made the industry take notice, says Essilor Senior Vice President of Customer Development Howard Purcell, OD, FAAO. "With eye exams increasing, eyecare professionals are benefiting from this industry-wide investment in creating awareness of the importance of the eye exam," he says

2015 and beyond

According to Plogmann, the campaign finished its strongest quarter ever with a 7.6 percent increase in eye exams during Q3 of this year. That growth was particularly noted in independent practices, which saw a 9.1 percent increase in eye exams that quarter. The campaign has also seen an increase in patients getting an eye exam for the first time and those patients under the age of 18.

The Think About Your Eyes team plans to continue that success into 2015, when it expects to see more than one million website visitors, but it will look to build increased support from both independent eyecare providers and companies within the industry.

"Speaking frankly, there are still too many companies, both big and small, currently sitting on the sidelines when it comes to supporting Think About Your Eyes," says Plogmann. "To be successful and sustainable, it is essential that we see continued expansion of support from other companies."

Plogmann also emphasized the need for more independent eyecare professionals to support the campaign through a listing on the website's Doctor Locator so that it can be representative of the full range of optometric practices in America.●

IN BRIEF

SECO launches SECO University for online CE

ATLANTA–SECO International recently launched SECO University, an online education resource center for optometric continuing education (CE). SECO University will provide optometrists with access to more than 50 hours of COPE-approved online CE, 1,000+ hours of SECO course audio recordings, and three years of multimedia posters.

The program is available for $299 a year, but it is free for SECO 2015 optometrists who register for the all-inclusive package, which includes all OD CE courses, special sessions, symposium series, Optometry's Marketplace, and social events, as well as SECO University.

SECO University is designed to bring the classroom to the optometry community. Courses are delivered in two formats: SECO special session videos include full-course lectures in HD-quality video, and the OD online course library is the traditional online format with audio, a presentation, and handout. This year, all online courses are exclusively for optometrists. Additional courses will be added regularly, and the SECO 2015 courses will be available beginning May 1, 2015.●

ODs must teach patients about proper nutrition

Americans, especially the poor, aren't getting enough micronutrients

By Stuart Richer, OD, PhD, FAAO

If the poor and disenfranchised cannot receive accurate health information from their doctors or the news media, whom can they trust? The percentage of Americans meeting average micronutrient-rich plant food consumption (vegetables and fruit) in the U.S., remains appallingly inadequate at 15 to 20 percent. It is worse for the poor.[1] Both the USDA and our First Lady think children, parents and adults can all make better nutritional choices. This is because science has shown cellular damage from micronutrient deficiency to be indistinguishable from cellular damage from radiation.[2] The medical literature has also shown that micronutrient deficiency is associated with cardiovascular disease and cancer when "average man" randomized, placebo-controlled, drug-type clinical trials are scaled from lowest to highest micronutrient intake.[3]

STUART RICHER, OD, PHD, FAAO, is director of ocular preventive medicine at James Lovell Federal Health Care Facility in Chicago. He is also associate professor of family and preventative medicine at Chicago Medical School and assistant clinical professor at University of Illinois at Chicago department of ophthalmology and visual science.

The importance of micronutrients

Doctors already prescribe iron for women and children, calcium and vitamin D for bone and immune health, and sublingual and injectable B12 for pernicious anemia and neuropathy, respectively. These are all vitamins and minerals. So, why is it that in 2014, few of our nations' nearly 900,000 U.S. physicians directly inquire about daily total plant food consumption? Why is it that college-educated science reporters often (negatively) sensationalize nutrition research studies rather than provide context against published literature, or the "preponderance of scientific evidence?" Why is it that modern medicine is interested in early detection and multiple disease treatment(s), rather than early prevention and true prevention (no occurrence of disease) or even the cure of existing multiple chronic diseases? Why are most multivitamins all too often poorly formulated, weakly dosed—or overdosed in some circumstances (iron for full-grown males)—or unbalanced (zinc-copper, calcium-magnesium, folate/B12 masking, vitamin E from tocotrienols as well as tocopherols)?

Why do we dwell on genetic testing which addresses ~2 percent of all chronic disease at the expense of environmental epigenetics and the body's ability to heal itself? The body heals by creating its own protective systems (including endogenous antioxidants such as glutathione, catalase, SOD). This occurs under conditions of mild biological stress such as induced caloric nutrition or molecular mimicry of the same via intake of small molecular weight nutrient molecules (i.e., resveratrol from red wine or allicin from garlic).

In this complex landscape, how do the poor receive trustworthy information? From you. As optometrists, we should at the very least, start talking about plant food consumption and the importance of vitamin C discussed briefly in most academic medical curricula.

Vitamin C

Vitamin C is the major water-soluble extracellular antioxidant in the human body that via a gene mutation is no longer synthesized by humans and must be consumed from plant food or dietary supplements. Vitamin C status has been persuasively linked to reduction of cardiovascular disease, stroke, cancer, and now, mortality.[4,5] Compared to blood serum, high concentrations are found in all ocular tissues from the front (cornea) to the back of the eye (retina), and every ocular tissue in between. And let's not forget that two prominent risk factors for age-related macular degeneration—aspirin and smoking—deplete vitamin C.[6] One health journalist reminds us of the practical limits of "real-life individuals" achieving vitamin C sufficiency:[7]

71% **of an individual's risk of developing advanced AMD is tied to his genetics**

See **Patient nutrition** on page 12

Letters TO THE EDITOR

Appreciate OE Tracker feedback

I read Chief Optometric Editor Dr. Ernie Bowling's article about COPE this morning as it was picked up by our clipping service. Thank you for the positive feedback. This was the first time we encouraged our attendees to use the OE Tracker Mobile App for what was our largest meeting of the year at nearly 400 in attendance. I am glad that it worked well for you.

Vanessa Grosso
Director of meetings, operations manager
Georgia Optometric Association

WE WANT TO HEAR FROM YOU!

Like something we published?, hate something we published?, have a suggestion? Send your comments to **gbailey@advanstar.com**. Letters may be edited for length or clarity.

Patient nutrition

Continued from page 11

1. A perfectly healthy adult who does not take any vitamin C-depleting drugs (aspirin, acetaminophen, steroids, diuretics, pain relievers)
2. Those who have no health habits that deplete vitamin C (smoking, excessive alcohol, refined sugars) and diabetes
3. A person not under excessive emotional or physical stress that depletes vitamin C from the adrenal glands

As optometrists, we should, at the very least, start talking about plant food consumption and the importance of vitamin C.

4. Those who do not have an onboard chronic or acute viral or bacterial infection that increase the need for vitamin C (hepatitis C, herpes, tuberculosis, cold or flu viruses)
5. Growing children who need more vitamin C to meet the challenges of growth and to build more connective tissue and bone
6. Pregnant or peak-menstrual cycle females whose high estrogen levels weaken blood capillaries that induce blood serum leakage and swelling
7. Typical older adults who don't secrete sufficient stomach acid to properly absorb vitamin C, bruise easily, and have low platelet counts
8. The 52 percent of Americans with *H. pylori* that impairs vitamin C absorption due to the ability of this bacterium to shut off cells that secrete hydrochloric acid
9. Wound-healing patients who require more vitamin C
10. Allergy patients with raised blood histamine levels which higher dose vitamin C quells
11. Patients with *Candida albicans* overgrowth (~70 percent of Americans) that drastically reduce vitamin C levels
12. Anemic individuals who may require more vitamin C to absorb iron from foods and to release iron for availability

15–20% **of Americans meet average micronutrient-rich plant food consumption (vegetables and fruit) in the U.S.**

The recent annual report from the American Association of Poison Control Centers showed zero deaths from multiple vitamins and no deaths from vitamins A, B6, D, E, and yes, vitamin C.[8] Wealth is not measured in dollars, but by correct application of knowledge.●

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IN BRIEF

AMD treatment markt to exceed $10 billion by 2023

LONDON–According to a report from GlobalData, the age-related macular degeneration treatment market in the U.S., UK, Germany, France, Spain, Italy, and Japan will double in value from $5.1 billion in 2013 to $10.1 billion in 2023.

New therapies entering the market and an aging population are considered the driving factors behind the rapid expected growth.

"The global AMD treatment market is overwhelmingly dominated by anti-vascular endothelial growth factor (anti-VEGF) drugs, including Lucentis (ranibizumab, Genentech), Avastin (bevacizumab, Genentech), and Eylea (aflibercept, Regeneron), which together accounted for 98 percent of sales for AMD in 2013," says Catherine Daly, PhD, GlobalData's analyst covering neurology and ophthalmology. "However, the anti-VEGF monopoly is set to take a dramatic tumble due to the launch of novel adjunctive therapies for wet AMD, Fovista (Ophthotech) and squalamine (Ohr), and the introduction of two therapies for dry AMD, lampalizumab (Roche) and emixustat (Acucela/Otsuka Pharmaceutical), during the forecast period. These entrants will cause the anti-VEGFs' stronghold on the market to drop to 64 percent by 2023."

GlobalData reports that the U.S. had the largest AMD treatment market among the seven major countries in 2013 due to its large population, relatively higher drug prices, and overall higher drug treatment rates. The U.S. accounted for 49 percent of the global AMD therapeutics market in 2013 and will achieve a 55 percent share by 2023, with its market value forecast to more than double from $2.5 billion to $5.6 billion over the same period.

"The new therapies entering the market will be the main drivers of growth in the U.S., with the wet AMD drugs Fovista, squalamine, and abicipar pegol launching in 2017, 2018, and 2020, respectivelym," says Dr. Daly. "Fovista is undergoing an extensive Phase III development program, and the data released to date have shown that this drug provides added benefit over the standard of care (anti-VEGF monotherapy). This indicates that the drug will enjoy good market success during the forecast period, with its U.S. sales reaching $603 million by 2023."●

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The importance of pachymetry and CCT

Still unknown is if CCT is causal or correlative to primary open-angle glaucoma

The measurement of central corneal thickness (CCT) by pachymetry has been an essential part of the contemporary glaucoma work-up for a number of years.[1] Corneal thickness (along with other hysterics) may hold significant influence on accurate measurement of intraocular pressure (IOP). However, the Ocular Hypertension Treatment Study (OHTS), a large-scale longitudinal study, clearly demonstrated a thin CCT value as a substantial and *independent* risk factor for the development of primary open-angle glaucoma (POAG).[2]

Reasons for thin CCT values as independent predictors of POAG have been relatively unclear, and there aren't nearly as many studies concerning CCT as there are concerning risk factors such as IOP. Moreover, the definitive answer to the question of a causal vs. correlative relationship of CCT to POAG remains somewhat elusive. However, one study recently published in the *American Journal of Ophthalmology* may help to shed some light on this intriguing feature of glaucoma.[3]

BY BENJAMIN P. CASELLA, OD, FAAO practices in Augusta, GA , with his father in his grandfather's practice.

Oxygen levels of the anterior chamber

In this cross-sectional study, 124 patients who were about to undergo cataract or glaucoma surgery had the oxygen levels of their anterior chambers measured directly by means of paracentesis and a fiber optic oxygen sensor at three different and distinct locations: just posterior to the central corneal endothelium, midway through the anterior chamber, and at the anterior chamber angle. The results of the study showed that oxygen levels were higher in patients with thinner CCT values. However, this result was isolated to the anterior chamber angles and not the other sites in the anterior chambers measured in these patients.

Such a specific correlation is particularly intriguing due to the fact that the trabecular meshwork is located within the anterior chamber angle. Could it be that oxygen and/or reactive oxygen species may damage the trabecular meshwork on a molecular level, thus affecting its structural, and therefore, functional integrity? The authors of the study are among those who suggest this very possibility, and their results certainly provide some evidence for such a scenario.

Oxidative stress from oxygen and/or reactive oxygen species resulting in tissue damage is not a novel concept in the arena of ocular disease (or glaucoma, specifically, for that matter). From the cornea to the choroid, just about every tissue in the human eye is susceptible to damage from a hyperoxic state. The Age-related Eye Disease Study (AREDS) has clearly demonstrated the effectiveness of antioxidant supplementation in patients with macular degeneration.[4] Oxidative stress likely often plays a role in glaucoma development and progression as well, and, with this in mind, certain novel therapeutic molecules, such as Rho kinase (ROCK) inhibitors, are being investigated as potential neuroprotective agents in the fight against glaucoma.[5] It has been shown that oxidative stress plays a significant role in damage to the trabecular meshwork in glaucoma models.[6] Since the trabecular meshwork and the lamina cribosa share common derivation from the neuro-ectoderm, there may be good reason to believe that oxidative stress would damage the lamina cribosa in a similar fashion, thus exposing and predisposing the retinal ganglion cells that fenestrate through it to damage and eventual premature cell death (as happens in glaucoma).

The importance of pachymetry

So, with the potential relationship between CCT values and oxidative stress (and the OHTS study) in mind, pachymetry, while relatively simple and straightforward to perform, isn't merely the mundane and boring task we think it is. In fact, reliable pachymetry values are so important and essential to an accurate glaucoma workup that it's one of the few ancillary tests that I insist on performing myself (rather than delegating to a technician). It's just too important, as I can recall a couple of patient scenarios in which thin CCT values were the tipping point for treating rather than monitoring for change.

Further, the suggested inverse relationship between CCT values and oxygen levels in the anterior chamber angle acts as another check in the box that we, as clinicians, are truly on the verge of being

See **Pachymetry** on page 16

PACHYMETRY remains an integral part of the contemporary glaucoma workup, even in light of advances in other technologies.
Photo courtesy Benjamin P. Casella, OD, FAAO

Broad Managed Care Coverage[1]

THE NUMBER OF DAILY DOSES DECLINES, BUT THE EFFICACY DOESN'T

Once-daily post-op dosing when you're managing patients after cataract surgery.

ILEVRO® Suspension dosed once daily post-op has been shown to be noninferior to NEVANAC® (nepafenac ophthalmic suspension) 0.1% dosed three times daily for the resolution of inflammation and pain associated with cataract surgery.[2,3]

One drop of ILEVRO® Suspension should be applied once daily beginning 1 day prior to cataract surgery through 14 days post-surgery, with an additional drop administered 30 to 120 minutes prior to surgery.[2]

Use of ILEVRO® Suspension more than 1 day prior to surgery or use beyond 14 days post-surgery may increase patient risk and severity of corneal adverse events.[2]

Available in 1.7 mL and new 3 mL fill sizes

INDICATIONS AND USAGE

ILEVRO® Suspension is a nonsteroidal, anti-inflammatory prodrug indicated for the treatment of pain and inflammation associated with cataract surgery.

IMPORTANT SAFETY INFORMATION

Contraindications

ILEVRO® Suspension is contraindicated in patients with previously demonstrated hypersensitivity to any of the ingredients in the formula or to other NSAIDs.

Warnings and Precautions

- Increased Bleeding Time – With some nonsteroidal anti-inflammatory drugs including ILEVRO® Suspension there exists the potential for increased bleeding time. Ocularly applied nonsteroidal anti-inflammatory drugs may cause increased bleeding of ocular tissues (including hyphema) in conjunction with ocular surgery.
- Delayed Healing – Topical nonsteroidal anti-inflammatory drugs (NSAIDs) including ILEVRO® Suspension may slow or delay healing. Concomitant use of topical NSAIDs and topical steroids may increase the potential for healing problems.
- Corneal Effects – Use of topical NSAIDs may result in keratitis. In some patients, continued use of topical NSAIDs may result in epithelial breakdown, corneal thinning, corneal erosion, corneal ulceration or corneal perforation. These events may be sight threatening. Patients with evidence of corneal epithelial breakdown should immediately discontinue use.

  Patients with complicated ocular surgeries, corneal denervation, corneal epithelial defects, diabetes mellitus, ocular surface diseases (e.g., dry eye syndrome), rheumatoid arthritis, or repeat ocular surgeries within a short period of time may be at increased risk for corneal adverse events which may become sight threatening. Topical NSAIDs should be used with caution in these patients.

  Use more than 1 day prior to surgery or use beyond 14 days post-surgery may increase patient risk and severity of corneal adverse events.
- Contact Lens Wear – ILEVRO® Suspension should not be administered while using contact lenses.

Adverse Reactions

The most frequently reported ocular adverse reactions following cataract surgery occurring in approximately 5 to 10% of patients were capsular opacity, decreased visual acuity, foreign body sensation, increased intraocular pressure, and sticky sensation.

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

References: 1. Formulary data provided by Pinsonault Associates, LLC, PathfinderRx, June 2014. **2.** ILEVRO® Suspension prescribing information. **3.** NEVANAC® Suspension prescribing information.

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Pachymetry

Continued from page 14

able to treat glaucoma in ways other than lowering IOP. The potential for these concepts to lead to such new horizons in glaucoma treatment is especially exciting in the presence of conditions such as normal-tension glaucoma, in which IOP plays a role, but perhaps less of a role. Thinking about glaucoma variables other than IOP as risk factors also helps us, as clinicians, to move beyond that golden number of 21 mm Hg.

The future of glaucoma therapy is likely to be highly personalized. By this I mean we will likely be able to not only modify variables other than IOP (such as oxidative stress), but we will also be able to identify patients in which one or more variables matters more than the others. We will then be able to identify what variable(s) is/are most responsible for glaucomatous damage (IOP levels, oxidative stress, etc.) in a particular patient and tailor therapy accordingly. This is all relatively conceptual, but it's not off the radar. Moreover, with this possible CCT-oxidative stress relationship in mind, pachymetry may provide at least a clue into such concepts.

In the age of big and colorful OCT printouts that quantify retinal nerve fiber and ganglion cell layer thickness down to just a few microns, I think it's pretty cool that little ol' pachymetry is still so important.●

> **From the cornea to the choroid, just about every tissue in the human eye is susceptible to damage from a hyperoxic state.**

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How hygiene products affect ocular surface

Basic lifestyle questions can help identify potential pH problem products

It's sort of funny—one of my childhood recollections is a discussion with my mother (the PhD in organic chemistry) regarding the virtues of Phisohex (hexaclorrphene, Septisol), a facial cleaner. "Phisohex is pH balanced," she said, "so it is better for your skin." At the time, the pH comment wasn't important to me. What was important was that *my mother* said I should use it, and therefore the characteristic 1970s green bottle of Phisohex was standard at each sink in our home.

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

Phisohex face cleaner has long since been removed for the over-the-counter (OTC) market in the U.S.; but an offshoot OTC product, pHisoderm, is available. In fact, in Canada, pHisoderm products are marketed with skin pH raising and lowering properties (pHisoderm pH down for dry skin/ pHisoderm pH up for oily skin.)

Maintaining pH balance

A quick review: pH (potential of hydrogen) is a measurement of the degree of the acidity or alkalinity of a solution as measured on a scale (pH scale) of 0 to 14. The midpoint of 7.0 on the pH scale represents a neutral solution—it is neither acid nor alkaline (i.e., water). Numbers below 7.0 indicate acidity; numbers greater than 7.0 indicate alkalinity. Typically, healthy skin has a slight acidic pH average of 5.5. Although controversial, many dermatologists believe that maintaining the skin surface pH prevents overgrowth of microorganisms and protects the skin's integrity and multifold functions.[1]

5.5 **The slightly acidic average pH of healthy skin**

The acid mantle is a thin, oily, protective film made up of sweat and sebum that sits on top of the outmost layer of our skin. Many contaminants that contact our skin, such as chemicals from the atmosphere and bacteria, are alkaline. Skin's natural acidity neutralizes chemicals and bacteria, a part of the body's defense system.

The acid mantle becomes unbalanced with the use of strong alkaline soaps, cleansers, and detergents. Excess perspiration may also affect pH. On the other hand, many environmental impurities that settle on or are applied to the skin require cleaners to remove. Skin cleaners are surface-active substances, primarily detergents and soaps. Soap cleans by acting as an emulsifier; it allows oil and water to mix so oily debris can be removed during rinsing. Detergents are primarily surfactants: substances that allow or promote "wetting" of a soiled surface and dispersion or suspension (emulsification) of greasy oils in a solution. Surfactants achieve this by reducing the surface tension of the solvent (such as water) or the interfacial tension between two non-miscible liquids such as water and oil. They can bind to skin keratin, causing protein denaturation, damaging the cell membrane of keratinocytes. This leads to adverse cutaneous responses. Cleaner residues may also be a potential irritant, and the alkaline pH of some soap may cause damage to the lipid bilayer of the skin, causing dryness.[2]

Depending on the application, cleaners are mixed with builders or pH boosters (carbonates, phosphates, silicates), foam boosters, and suitable solvents (such as alcohols or hydrocarbons) to formulate household, industrial, and personal care products.[3]

Effects on the ocular surface

What is your patient using to clean her skin, particularly around the eyes? What other chemical/soap/disinfectant products is she exposed to at home or on the job? How do the products associated with a patient's day-to-day activities affect her lid margins and ocular surface? Can these products elicit a chronic response? A careful patient history can tease out potential unrecognized irritants/allergens that can sabotage management of ocular surface disease.

I recently carried my handy pH pencil with me, testing my skin after contact with various products associated with my routine. Although most soaps and body products were slightly acidic, there were instances where my wrist displayed the navy blue color of alkalinity. Keep in mind that although faint, these alkaline products may be aerosolized, create fumes, and can linger on surfaces, including the delicate mucous membranes of the eyes, nose, and throat.

> **A careful patient history can tease out potential unrecognized irritants/allergens that can sabotage management of ocular surface disease.**

I encourage you to pursue lifestyle questions with your patients, particularly in patients with recalcitrant lid or ocular surface disease. Keep in mind the pH pencil! ●

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The rub on lens care compliance

Make lens care compliance a part of your patients' New Year's resolutions

Well, here we are, another year behind us, another new start ahead. And what made the cutoff for our list of resolutions? Lose 10 pounds, wake up earlier, save more money, make more family time?

BY CRYSTAL M. BRIMER, OD, FAAO
In private practice in Wilmington, NC.

But wait—how can we possibly forget everyone's list topper: To rub your contact lenses every day and replace the solution, to throw your lenses out on time? Adding this as a resolution sounds preposterous because it just doesn't hold a place of priority for many patients. Unfortunately, they don't see an immediate impact from lens care compliance—or the lack thereof. I've always believed that if we make it seem substantial to us, it will seem important to the patient.

80% **of respondents were already aware of complications risk factors, but awareness did not cultivate positive behavior**

Bui found that while 86 percent of patients surveyed believed they were compliant with their lens care regimen, only 32 percent were compliant with even 90 percent of the recommended protocol.[1] Another survey showed full compliance to be as low as 0.4 percent, and "good" compliance was confirmed in only two percent of those surveyed.[2] Because total compliance seems to be an overwhelming goal, let's look at the impact of simply rubbing and rinsing.

Rub and rinse

It is believed that lipid deposition is more common on silicone hydrogel (sihy) lenses because the hydrophobic lipids in the tear film have an affinity for the hydrophobic silicone. And with the build up of lipid comes contact lens awareness, or worse yet, dryness, friction, intermittent blur, and inflammation. Luckily, with the decreased wear cycle compared to years past, the problem is somewhat limited, or is it? Nash recently compared the amount of lipid deposition on seven different sihy materials (140 lenses) via fluorometric enzymatic assay, each having been worn for two to four weeks. He found that the actual sorption was polymer dependent; enhanced-lotrafilcon B showed the least amount of sorption and enfilcon A showed the most (0.09±0.1microg/lens and 3.96±0.8microg/lens, respectively).[3]

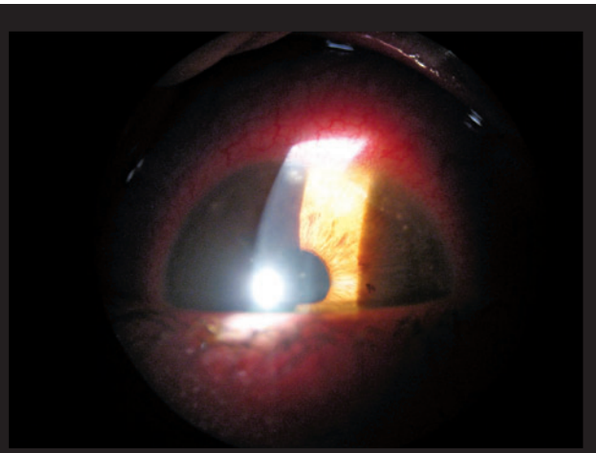
Recently, Tam looked to see how saline and multi-purpose solution (MPS) impact the sorption of radiolabeled dipalmitoylphosphatidylcholine (DPPC) and cholesterol (CH) on five different lens materials. As expected, sihy absorbed more lipids than hydrogel. Pre-soaking the sihy materials in MPS for 16 hours reduced sorption by more than 10 percent compared to the controls; however, the reduction was not statistically significant.[4]

Tam then compared the ability of two MPS in reducing lipid sorption in two sihy materials. After pre-soaking the lenses, both PureMoist (Alcon) and Biotrue (Bausch + Lomb) were able to reduce the amount of DPPC and CH sorption in senofilcon A; however, neither was effective with balafilcon A. While neither solution *removed* deposition without rubbing, a small but detectable amount of CH was removed after a good rub (as compared to controls). Even with rubbing, the sorption of DPPC was not notably affected.[5]

> **The bottom line remains: until the vast majority of us behave differently in educating the patient, we cannot expect the vast majority of patients to behave differently.**

Despite this researcher's findings that neither the MPS nor rubbing create a monumental reduction in lipid deposition, we need to consider the impact of digital manipulation and compliance on other aspects of the wearing experience.

In a 2014 study, 200 samples consisting of contact lenses, lens cases, solutions, and bottles were collected and analyzed for contamination. Overall, 52 percent (104/200) of the samples showed contamination via microorganism growth. However, the patient's history of compliance was a strong indicator as to the level of contamination. Among those who reported low compli-



CONTACT LENS-ASSOCIATED RED EYE (CLARE) can be a possible sequelae of contact lens noncompliance. External ocular inflammation can result from overwear or solution sensitivity. Image courtesy of Ernie Bowling, OD, FAAO, NAP

ance (habitually completing fewer than three of the six cleaning steps), *100 percent* of the samples were contaminated. Subjects reporting medium compliance (three to four of the cleaning steps) incurred contamination in 93.75 percent of the samples, and among those with high compliance (>5 steps), only 43.75 percent of the samples were contaminated.[6]

But how much impact does not rubbing have on the patients' actual wearing experience?

> **Maybe this is our cue that instead of threatening patients with the travesties of infection and inflammation looming, we should tout the benefits of better compliance.**

Does the fact that everything in her contact lens world is likely contaminated lead to actual or perceived complications? In Dumbleton's survey of 501 sihy wearers, 29 percent of those who failed to rub and rinse their lenses daily reported having symptoms suggestive of contact lens complications, while only 17 percent of those who incorporated a daily rub reported symptoms.[7] That's almost double! There is also clear evidence in the literature that when using a MPS, rubbing and rinsing the lenses reduces the risk for microbial keratitis[8] and may also reduce the incidence of corneal infiltrates.[7] Yet 40 percent to 75 percent of patients still fail to rub and rinse on a regular basis.[7,9,10]

The responsibility of ECPs

This topic of noncompliance has been written about with great frequency for decades. As eyecare providers, we can read the figures and profess to be astonished and offended. But the bottom line remains: until the vast majority of us behave differently in educating the patient, we cannot expect the vast majority of patients to behave differently.

In Bui's survey previously mentioned, 80 percent of those surveyed were already aware of the risk factors associated with contact lens complications, but it did not cultivate positive behavior.[1] Maybe this is our cue that instead of threatening patients with looming infection and inflammation, we should tout the benefits of better compliance. Improved comfort and vision, longer wear time, and whiter eyes: these are enhancements that many patients would like to enjoy.

Looking back, I learned something unexpected from my dental hygienist. Like many kids, I didn't floss. Year after year I read the sign that hung over the doorway, "Don't worry, you don't have to floss *all* your teeth, just the ones you want to keep!" Disturbing as it was, it didn't instigate a change in my behavior.

See **Lens care compliance** on page 20

Lens care compliance

Continued from page 19

But in high school, my hygienist began to comment that my smile was beautiful. She went on to tell me how flossing regularly would make it even *more* beautiful. My habits changed that day.

Though some patients will respond to threats of impending doom, may we get a bigger response if instead we offered hope for improved comfort and enhanced appearance? Perhaps improved compliance won't land on the resolution list of many patients, but any increase in awareness we create will be a step in the right direction toward improving the patient's experience and outcome.●

29% of those who failed to rub and rinse their lenses daily reported having symptoms suggestive of contact lens complications

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A comparison of one-step peroxide systems
OptometryTimes.com/peroxide

The harsh reality of contact lens care compliance
OptometryTimes.com/harshreality

Compliance is not my problem
OptometryTimes.com/notmyproblem

What's so special about specialty lenses?

Advancements in manufacturing allow more patients to wear contact lenses

Increasingly, many practitioners in today's practices are using specialty contact lenses. These contact lenses historically have been viewed as hard to fit, difficult to find, and much higher in cost. Let's look at what's so special about specialty contact lenses.

BY DAVID I. GEFFEN, OD, FAAO
Director of optometric and refractive services in San Diego, CA.

Extended-range lenses

What determines that a lens is a "specialty" lens? There are many categories of these lenses and way too many to list every brand and manufacturer. The most common specialty lenses are the lenses which fall out of the parameters of normally available lenses in a category. These would be lenses that are higher in spherical power than the company normally manufactures. Biofinity (CooperVision) is a typical lens in this category. Biofinity spheres are available from +6.00 D to -10.00 D—a very large range, which is good for the vast majority of patients. The Biofinity XR or extended range lens is now available from +15.00 D to -20.00 D.

Most doctors and manufacturers consider these extended-range contact lenses to be specialty lenses. These lenses allow us to serve the need of our patients who fall out of the normal parameter ranges. These are ordered and manufactured on an as-ordered basis at this time, so you may need to wait up to a few weeks to receive these lenses. There are also a number of smaller specialty lens companies that manufacture lenses on an as-needed basis. These companies have thrived in providing eyecare practitioners with lenses with most any power or base curve or diameter a patient may need. They also can get these lenses to patients in a few days.

Toric and multifocal lenses

Toric lenses are the next category of specialty lenses. Like spherical lenses, the major manufactures have a limited power range, typically from +6.00 D to -9.00 D. The typical cylinder limit for readily available toric lenses is -2.25 D. Smaller labs are able to fill in the gaps and make a toric lens for our patients with almost any axis or power we need. These lenses are available in a few days to our patients.

Multifocal lenses are also available in many custom designs from small contact lens manufacturers. Some ingenious designs have come out of these labs, and we can serve many more patients than ever before.

Lenses for irregular corneas

Now let's cover some of the truly special designs coming out of smaller labs. Lenses for irregular corneas are changing the way we think about providing excellent vision and comfort to our patients. These lenses have provided a way for doctors to care for those patients who cannot or will not wear gas permeable (GP) lenses. Bausch + Lomb brought us the Kerasoft soft contact lens for irregular corneas. Kerasoft is available in a wide range of custom parameters and base curves to correct the irregularities in the cornea caused by keratoconus, surgical imperfections, and disease.

Another lens in this category is Novacone from Alden Optical, one of several specialty contact lens labs that have made great innovations in soft lens designs. Novacone comes in any custom base curve you would like and has different center thickness parameters to correct for irregularities. There are several other lenses of these types from great-minded individuals creating new and improved contact lenses for every need.

> **Lenses for irregular corneas provide excellent vision and comfort. They have provided a way for doctors to care for those patients who cannot or will no wear gas permeable lenses.**

What makes them special

So why are these lenses special? They seem to be treated as devices only certain doctors are allowed to use. They have a reputation as being difficult and eating up too much chair time for many doctors. However, because specialty lens companies are utilizing very advanced manufacturing processes, the reproducibility and quality has never been better. You can have the confidence that the patient will not be calling your office complaining about the lens. These lenses do take a little more time and thought. Specialty contact lens company consultants are excellent partners in your practice—they want you to succeed and make it as easy as possible. The cost of the lenses is higher than standard lenses, and this is a concern for many doctors. Remember that these patients know that they are not the usual contact lens wearer and know that they have special needs. As such, they expect to spend more for both your expertise and the cost of the device. Optometrists are notorious for not charging enough for our expertise and time. We need to be compensated for the extra knowledge and study we do to learn about these special lenses and the time we spend without patients.

So what is so special about specialty contact lenses? I can answer that question only one way. These lenses are so special because we are truly changing the life of patients who have sought our expertise to improve their quality of life!●

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Finding and incorporating the right office manager

A good office manager can be the key to success. Hire the right one.

PAUL BATSON, OD

Finding the right office manager can be one of the most important, yet challenging aspects of a practice. I often tell my interns at the University of Alabama at Birmingham School of Optometry that while it may be hard to believe right now, seeing patients is the easiest part of practice—running a business is the difficult part. You can be the best clinician in the world, but if you cannot effectively run a business, you are likely to struggle. Having the right office manager is a key part of that success.

Not only can the right office manager help a practice run efficiently and increase profitability, but he can also allow you to focus on practice growth and life outside of the practice. On the flip side, having the wrong person in place or not making a change to find the right person can be very destructive and costly. A good office manager will more than pay for herself. As center director for a multi-specialty referral center for nearly 20 years with a staff of almost 60 people, I have worked with several office managers. In addition, I have also seen a variety of successful and not-so-successful situations in private practices.

Hiring and onboarding an office manager

These suggestions can help you find and work with the best person to manage your practice.

- Avoid hiring within
- Avoid hiring family members
- Hire someone to fill in your weaknesses
- You cannot teach work ethic
- Be prepared for backlash
- Give autonomy
- Allow him to make mistakes
- Prior medical experience is not always necessary
- Look for a servant leader
- Communicate and give feedback
- Good staffers are not always good managers

I have put together a list of tips that I think are critical to finding and incorporating a successful office manager.

Avoid hiring within

While it is possible to have a successful in-house transition, it definitely comes with its challenges, so be prepared. I had the fortunate opportunity to work within our practice before and during optometry school. It was a time when I gained a lot of great experience. Once I graduated from school, I was hired as an assistant center director, then moved to center director within a few years. Transitioning from coworker to boss can be challenging on many fronts. It is hard for coworkers to recognize the authority shift, and it can be difficult for the new boss to properly manage and not show favoritism. Hiring from the outside can also bring new and fresh ideas to the practice.

Avoid hiring family members

For some reason, having your spouse as the office manager seems to be more common in eye care than in any other form of medicine. While I have seen this work well in some practices, I have also seen this be disastrous. Although typically very loyal, the spouse inevitably has much more flexibility at work than a non-spouse, which can create mistrust and tension among other staff. Running errands, picking up the kids from school, or attending a school event may not seem like much of a problem unless your other staff is sitting around wishing they could be with their children. The inevitable "favoritism" ends up creating behind-the-scenes ill will. And let's be honest, do you really want to be in the position of having to terminate the employment of your husband or wife? Things will not go well at home—I promise!

Hire someone to fill in your weaknesses

While there are many of you out there who are perfect in all areas, for those of us who have areas of weakness (or room to improve), it can be very helpful to find someone who fills those gaps. If you tend to be quiet and reserved, find someone more outgoing. If you struggle with organization, find a person who is focused on keeping things in order. If you are nonconfrontational, find someone who is not afraid to speak up when needed. Be prepared to be annoyed at times because someone is filling in the areas where you need help; however, having someone fill those weaknesses can be of tremendous benefit.

TAKE-HOME MESSAGE Finding an office manager who is a good fit for your practice can take time. Be sure to interview promising candidates several times and give your new office manager time to grow in the job. However, if it's clear that it's not working out, move quickly to make changes. Other suggestions include finding someone who fills the gaps with your weaknesses and avoid promoting from within or hiring family members.

You cannot teach work ethic

We all want to find hard workers, but having an office manager who sets the example for work ethic is critical. If your candidate for office manager immediately starts asking about work hours, then I would be cautious. You need that person who is often willing to arrive before and leave after anyone else. He must set a high standard for work ethic.

Be prepared for backlash

If you have not had an office manager in place or if you are incorporating someone who supplements your weaknesses, be prepared for backlash from other staff. I always have an open door policy for all of my staff, but you have to be cautious of those who will manipulate the situation and come directly to you, bypassing the office manager to get what she wants. Be willing to listen, but try to involve your office manager in staff decisions and discussions.

Give autonomy

If you continue to micromanage the office, then the office manager will never be able to fully manage for you. While you are ultimately in charge, make sure you delegate responsibility and authority to your office manager.

Allow him to make mistakes

You have made mistakes and have learned from them—allow your office manager to do the same. That being said, try to keep them at a minimum and not too costly. If you see a mistake coming, offer guidance and allow the office manager to fix the problem, but try to avoid correcting things for him (especially in front of other staff).

Prior medical experience is not always necessary

Good leaders will quickly establish themselves in the practice and learn the medical and vision aspect. It is more important to have someone who can manage and has a good work ethic than have someone with medical or vision experience who is not a good leader. In addition, leaders from other industries can bring fresh ideas to the practice.

Look for a servant leader

Having worked in the practice before school, I was able to gain experience in all aspects of the practice, from scheduling to insurance billing, to acting as a technician. I tell my new employees that I will never ask them to do something that I have not done or am willing to do. If you have a manager who dictates from a distance, it never works out very well. The best generals in history were often those who were close to or in the trenches. When interviewing, role-play with the candidate to try to uncover her leadership style. She needs to be willing to pick up trash in the parking lot as much as she is willing to negotiate a managed care contract.

Communicate and give feedback

A strong office manager is often developed over years. Like any staff member, you must have an open line of communication and be willing to receive constructive criticism. If the person is always defensive and has an excuse, then he is often not looking for ways to improve. The best manager will always ask for feedback.

Good staffers are not always good managers

We often want to reward great staff members by giving them opportunities to grow professionally and financially. However, just because someone is a great technician, optician, or insurance person does not mean he will be a good office manager. Being an office manager typically involves managing people, and not everyone is made to do this. Do not push this on someone who is uncomfortable with confrontation or leadership. Praise their strengths and give them every opportunity to excel, but making someone a leader just because she is a good employee can set her up for failure and leave you with a very uncomfortable and unhappy employee.

Finding the right office manager often takes time. I would encourage you to not rush to simply fill a need, but to diligently find the right person. Role-playing during the interview process with different scenarios that you have faced can help uncover leadership styles. I would also suggest having multiple interviews. This is a very important decision for you and your practice, so take the time to meet several times before making a decision. In the end, give the new manager time to settle in and succeed, but at the same time, if it does not seem to be the right fit, do not settle for just having a warm body to help. Be willing to make a change for long term success.●

> **If your office manager cannot receive constructive criticism and is defensive with an excuse, he is not looking for ways to improve.**

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STUDENT STANDPOINT

How to crush it with a residency

Advice from a fourth-year student looking to take on a residency

By David Kading, OD, FAAO, FCLSA, and Alison Bozung

I believe that residencies give an opportunity to catapult us into our careers. When approached with the right mindset and the fortitude to work your tail off, you will be surprised what one more year of training can bring you.

Rarely do we get a guarantee in life, but I'll give you one here: When you set out to crush it, are willing to work hard, are flexible, and consider failure as a learning opportunity, you are guaranteed to succeed.

Below is a discussion from Alison Bozung, an intern at my clinic. She has impressed me with her ability to go above and beyond. As a fourth-year looking to take on a residency next year, if you follow her advice and approach "another year" as she is, you'll come out of the experience having already succeeded.

ALISON BOZUNG is a fourth-year student at Southern College of Optometry in Memphis.

DAVID KADING, OD, FAAO, FCLSA owns a three-physician, two-location practice in the Seattle area.

The search is on

There comes a time in each optometry student's life when graduation is finally *right* around the corner. I cannot wait to walk that stage and make my next career move—by spending another year as a student.

Over the last few months, I have been talking with peers about the residency search process. On one hand, it's simple: choose your area of special interest, find the sites that fit you best, and apply. However, once the process begins, it can get a little overwhelming. What if we choose the wrong one? How do we know we will be matched with our top pick? I want to share things I have learned from both my mentors and peers alike regarding the search for the perfect residency. Sure, there are still details we have to work through, but this can shed some light for students desiring to pursue (or those still on the fence about) another year of education.

Choose something that excites you. A mentor recently told me that you can find your passion in optometry when you reflect on a hectic day of seeing a specific subset of patients. How did you feel at the end of the day of seeing pediatric patients or managing glaucoma? If you feel like you just ran a marathon backwards, this *may* not be your area. Instead, if at the end of the day you feel tired but wired, you've found your niche.

Talking goes a long way. In the midst of searching all possible residency options in your area of interest, don't miss the importance of talking to those who have been in your shoes. Contact the residency directors of your prospective sites, and reach out to the current and previous residents who have spent time there. No one can give you the inside scoop of the residency programs like those who have done them. Ask them questions including the positives *and* negatives of their experience.

Residencies open new doors. This phrase is thrown around often, but I think what it really means is that when you complete a residency, you have more room to choose your path. Technically speaking, there are specific job opportunities like Veterans' Affairs hospitals, teaching institutions, some private practice offices, and co-management sites that require a residency-trained individual. Most optometry positions still do not

TAKE-HOME MESSAGE Thinking about participating in a residency? Do your research. Talk to residency directors and doctors who have participated in the residencies that interest you. Find a program that will offer you experience and opportunities in a clinical area you're passionate about. And when you find the right fit for you, work and work hard.

Why residency was the best thing I ever did for my career

A perspective from a seasoned OD who is training the next generation

By Christopher Borgman, OD, FAAO

When I was a student intern at ICO in Chicago, I spent the first half of my third clinical year thinking I wasn't interested in doing a residency because I thought, "I don't want to teach," and, "I'm tired of being in school and I don't want to spend a year getting paid next to nothing for something I will be qualified for when I graduate, anyway." I think if many students are honest, they probably have had these same thoughts when considering a residency.

I will tell you, though, my residency year was the most fun I've had as an optometrist. I worked the hardest and most hours I've ever worked in my

See **Residency best thing** on page 26

CHRISTOPHER J. BORGMAN, OD, FAAO, is a clinical instructor at Southern College of Optometry in Memphis, TN.

require an additional year of training, but unless you have a specific career path already chosen, you may want to consider keeping your options wide open after graduation.

It's OK to have weaknesses. Weaknesses usually carry a negative connotation, but why? I'll be the first to admit that the more I learn about optometry, I realize the less I know. As new grads, one of our (innate) weaknesses is that we are not seasoned veterans. We are not expected to be. So, you don't have to apply for residency positions only if you know everything; apply for residency positions because you *want* to know everything.

Interview both ways. When you arrive at your interview, don't let yourself be completely on the witness stand. Remember: *you'll* want to find out if the site is a wise fit for *you* just as much as *they*'re trying to decide if you're a good match for *them*. Asking questions about what you can expect, how many patients you will have the chance to interact with, and how the mentoring relationships are built is not going to faze them. It can, however, give you great insight.

Work your tail off. Optometry school has been a mental workout. I also think we could all agree that Part I of national boards stole our social lives, and that second year was no joke, either! Though those things are in the past, a residency will likely begin one of the most demanding (and rewarding) years of your education. Get ready to be a sponge.

Don't let someone else make your decision. Not every student feels a pull to do a residency, and that's OK! In the end, a residency is a huge investment for both the resident and the residency program. The biggest reward will be for the individuals who truly believe a residency is worth the time and pay-cut and are determined to make it so. Make your decision based on what you feel is right for you and not what you feel pressured to do.

All conversation aside and regardless of what you decide for your post-graduate plans, remember what our education as optometric physicians boils down to. We strive so that we can provide the best care to every patient who finds his way into our exam chairs. That's what each one deserves. And if we keep sight of the goal, we won't miss the path to get there.●

No one can give you the inside scoop of the residency programs like those who have done them. Ask them questions including the positives and negatives of their experience.

I'm interested—Now what?

- You can search for residency sites by the program type/emphasis, location, affiliated institution, and more.
  - A list of current residency sites can be found here: **http://asco.surveydomain.org/residency/search**
- Once you decide to apply for a residency (or two or three), Optometry Residency Match (ORMatch) is the site to connect you with the process.
  - Simply go to this website and click the "For Applicants" tab: **https://www.natmatch.com/ormatch/index.html**

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Residency best thing

Continued from page 24

life, but man, did it fly by. And when it was all over, I didn't recognize the same young punk who started the residency. My fellow residents and their family members became some of my closest friends and are still super dear to my heart to this day.

Residency material

I almost wrote myself off as not being good enough to do a residency as a student. As a third-year, as far as I knew, I was an average clinician who did well in school but wasn't "residency material" because I honestly didn't even know what residency material looked like. That changed when two of my clinic attendings each told me why they thought

> **I almost wrote myself off as not being good enough to do a residency as a student. That changed.**

I'd be a great candidate for residency and that they were hoping that I would seriously consider doing one. It was a huge compliment and honor to see these doctors who I respected and looked up to reach out to me on a personal level. It was truly humbling and shattered the low-level plans I had for myself after graduation. I am so happy and grateful they reached out to me in the way

More Excellent Options

Post-graduate educational sites are expanding in number, and your experience is not limited to solely "accredited residency sites." In fact, there are two more great options to check into:

- Unaccredited residency sites
  - Also listed on ASCO's website, there are a number of excellent newer residency sites that are not yet accredited
  - Matching is done through ORMatch
- Fellowships
  - Most fellowships, like residencies, provide a one-year, in-depth educational platform for those looking to increase their clinical skills and knowledge
  - Currently, there is not a centralized online resource to use for information. Contact your school's residency director about these additional sites that are available
  - Deadlines vary, but typically they are before ORMatch deadlines
  - Matching is done by contacting fellowship directors personally once you learn of a site in which you are interested

IN BRIEF

Konan Medical launches EvokeDx

IRVINE, CA–Konan Medical recently launched EvokeDx, the next-generation visual pathway diagnostics platform to assess visual evoked potentials (VEP) and electroretinograms (ERG).

VEPs are visually elicited electrophysiological signals recorded near the brain's visual cortex. EvokeDx provides highly quantitative, objective measures of visual function.

ERG signals are used to differentially assess retina-specific dysfunction, reflecting the integrity of the eye's optics, photoreceptors, bipolar cells and retinal ganglion cells, providing a limited assessment of the visual pathway.

icVEP is the patented, isolated-check stimulus and analysis strategy that was the subject of an NIH-sponsored, multicenter clinical trial at four U.S. sites and two international locations to rapidly and objectively assess glaucomatous damage.

"In the NIH-sponsored trials, our icVEP strategy had a classification accuracy of 89 to 94 percent," said Vance Zemon, PhD, a professor at Yeshiva University, Albert Einstein College of Medicine Campus and co-inventor of EvokeDx.

A glaucoma diagnostic indication based upon these data was recently granted for the icVEP strategy in China.

EvokeDx is FDA 510(k) cleared and the CE Mark is anticipated in the first half of 2015 (an application for glaucoma diagnostic indication has not yet been submitted to FDA for review).

According to the company, the EvokeDx features include patented test strategies that are designed to isolate and test various visual pathways and visual functions, with Fourier-transform frequency analysis methods.

The EvokeDx device also includes an all-in-one design incorporating a organic LED stimulus display and an automated gaze tracking system that helps ensure patients are fixated correctly during the procedure.

Synchronized data collection combined with analysis of the entire EEG waveform provides detailed information about visual pathway function.●

Study finds HIV/AIDS drugs may treat AMD

LEXINGTON, KY–A recent study published in *Science* found that drugs that have been used to treat HIV/AIDS for 30 years can also be used to treat age-related macular degeneration (AMD) and other inflammatory disorders, due to previously undiscovered intrinsic and inflammatory activity those drugs possess.

Nucleoside reverse transcriptase inhibitors (NRTIs) are the most widely used class of anti-HIV drugs and are thought to be therapeutic in HIV/AIDS patients because they target the enzyme reverse transcriptase, which is critical for replication of HIV.

Researchers report that multiple FDA-approved NRTIs prevented retinal degeneration in a mouse model of dry AMD.

Surprisingly, this effect of NRTIs in the eye was not due to the well-known function of these drugs to inhibit reverse transcriptase.

Instead, NRTIs blocked an innate immune pathway called the inflammasome, even in experimental systems in which the NRTIs were not capable of blocking reverse transcriptase.●

they did, as I know I would not be here at SCO without their encouragement.

Residency provided me a safety net for a new graduate to see crazy clinical cases, but it also allowed me to bounce ideas off of my attendings/colleagues who undoubtedly are some of the brightest optometrists in our profession today. It was the perfect learning atmosphere in which I jumped in with both feet and never looked back. In fact, I think my residency coordinators would agree that I may have pushed myself almost a little too hard, and that some days I even beat them to the office! You see, although I didn't make very much money doing it, I loved the experiences I gained and the friendships I made. In my mind, everything about residency was totally worth it professionally and personally.

Opening doors

Residency opened job interviews that would have never been open to me otherwise—which is how I got a private practice OD/OMD gig before joining academia again. My time in residency also exposed me to teaching third- and fourth-year students, which as it turns out, I absolutely loved working with them, sharing knowledge, and guiding them along their clinical experiences. I found a passion and talent in learning, teaching, sharing, and caring for patients that I never even knew I had. Talk about liberating and exciting at the same time—I was getting paid (although not very much) for doing something I loved.

I will tell you though, my residency year was the most fun I've had as an optometrist. I worked the hardest and most hours I've ever worked in my life, but man, did it fly by.

After three years in private practice, my educational juices got fired up and I was offered a job at the Southern College of Optometry in Memphis as a full-time faculty member. I get up every day, excited to see what questions the students will ask me and what interesting cases will walk through the door that I can share and teach my students about. It sounds cheesy, but it's true. Some people are made for corporate optometry, some for research, and others for private practice. But there are a few of us who are academics at heart and always will be. I'd like to publicly say thanks to Drs. Keith Tyler and Eric Baas. To pay them back (and to hopefully pay things forward), I have continued this practice of pulling aside students I work with every day who I think would be great candidates for residency and planting the idea of residency into their heads. Part of my job as a faculty member is pushing students to be future leaders of our profession. Who knows, perhaps one of my students will be one of the great future educators of our profession, who may not have been otherwise, had I not planted the seed early on.●

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Neovascular glaucoma

Continued from page 1

peri-lenticular vascularization, ciliary flush, and hyphema (see Figure 2).

Pathogenesis of neovascular glaucoma

Pathologic neovascularization, or formation of new capillaries from preexisting blood vessels, is a common consequence of hypoxia and inflammation. Hypoxia-inducible factor alpha is upregulated in response to decreased tissue oxygen levels. This leads to increased production of vascular endothelial growth factor (VEGF), commonly resulting in neovascularization of ocular tissue following an ischemic event, such as retinal vascular occlusions (see Figure 3). Neovascular tissue may be considered an aberrant healing process, in which excessive proliferation of micro-capillaries results in bleeding, exudation, and fibrovascular scarring. Thus hyphema, vitreous hemorrhage, and edema may be common clinical features. The clinical consequence of fibrovascular scarring may be contraction or mechanical blockage, such as traction retinal detachment or synechial angle closure from neovascularization of the iris (NVI).

MOHAMMAD RAFIEETARY, OD, FAAO, is a consultative optometric physician at the Charles Retina Institute in Memphis.

ERIC J. SIGLER, MD, is a retina specialist in practice at Ophthalmic Consultants of Lon Island, Division of Retina and Vitreous.

Etiology

Neovascular glaucoma occurs secondary to an underlying ischemic, or less commonly inflammatory, etiology. Neovascular glaucoma has long been considered a severe feature of retinal vein occlusion[1] and diabetic retinopathy.[2] NVG may develop in 33 to 64 percent of eyes with untreated, proliferative diabetic retinopathy (PDR).[3] NVG occurs in central retinal vein occlusion (CRVO) in approximately 15 percent of cases. NVI and NVG may be encountered in previously treated eyes with PDR (see Figure 4). Other vascular causes of NVG include retinal vein occlusion, sickle cell retinopathy, Coats disease, and carotid insufficiency[4] (ocular ischemic syndrome) (see Figure 5).

Although vaso-occlusive disorders are common causes of NVI and NVG, there are a number of non-vascular causations. These include chronic rhegmatogenous and exudative retinal detachment, posterior segment tumors (see Figure 6), and retinal infectious and inflammatory diseases. Inflammatory neovascularization may also lead to NVG and occurs following severe posterior segment inflammation, usually with retinal vasculitis, or may be the consequence of advanced intraocular infections. Intraocular malignancies may also lead to NVG, due either to inflammation or up-regulation of vasogenic tumor factors. NVG in chronic retinal detachment occurs secondary to outer retinal ischemia[5] and is an indication for retinal reattachment procedure. Eyes with altered media density, such as post-vitrectomy eyes,[6] eyes with aphakia, and indwelling silicone oil may have increased VEGF load in the anterior segment, and may have increased risk of NVG.

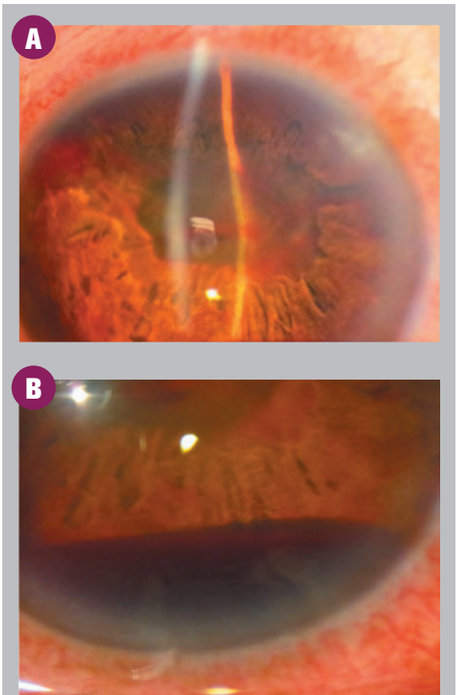

Figure 2. **A.** Ciliary flush, severe iris and lenticular neovascularization. **B.** Same patient with layered hyphema noted in the inferior angle.

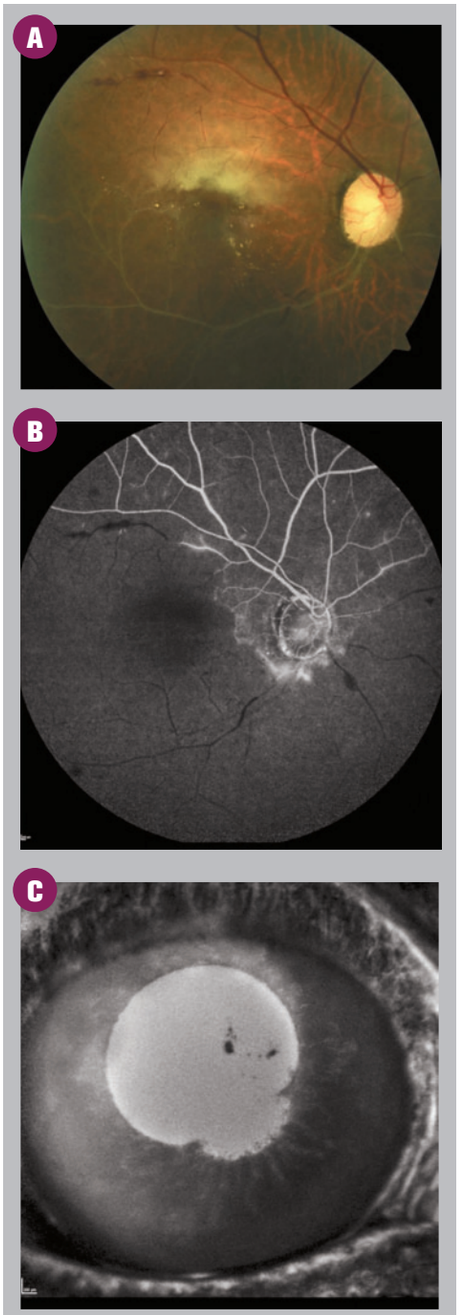

Figure 3. **A.** Patient with retinal arterial occlusive disease; note retinal whitening superior to macula and occluded (ghosted) inferotemporal vessels. **B.** Angiography shows remarkable non-perfusion. **C.** Angiographic leakage of NVI is seen here.

Clinical management

Slit lamp assessment of the iris—particularly in patients at risk to develop NVI—is crucial during the course of examination. Gonioscopy is necessary to evaluate the angle structure for presence of NVA or other signs or neovascularization, such as peripheral anterior synechiae. Undiagnosed iris and retinal neovascularization can lead to complications following intraocular surgery and are therefore critical in preoperative assessment. Fluorescein angiography is essential in cases in which NVI is suspected but not detected by slit lamp. It must be noted that topical agents used for pupillary dilation, particularly adrenergic receptor agonist such as phenylephrine, can mask the presence of NVI, although most NVI may still be detected following topical agents.

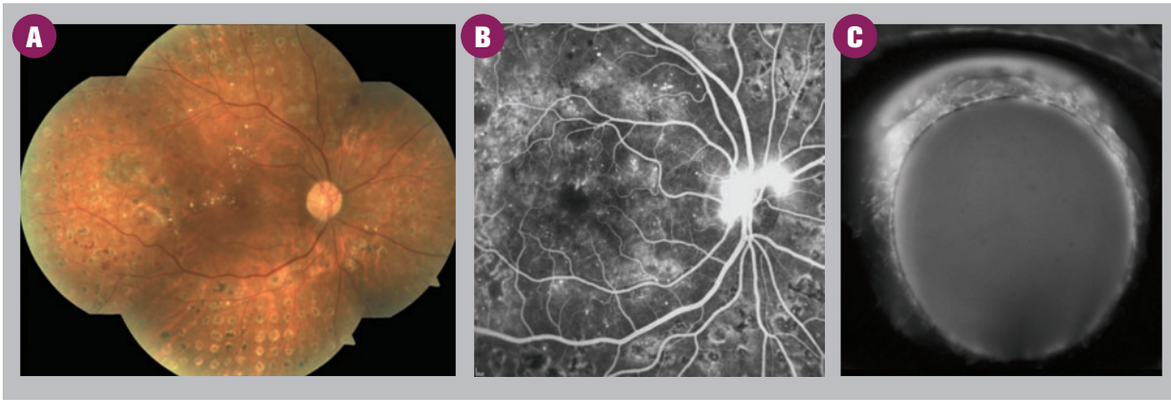

Figure 4. A. Fundus photograph of patient with proliferative diabetic retinopathy previously well treated with panretinal photocoagulation. **B.** Fluorescein angiography demonstrates active neovascularization of the disc and the iris **(4)**.

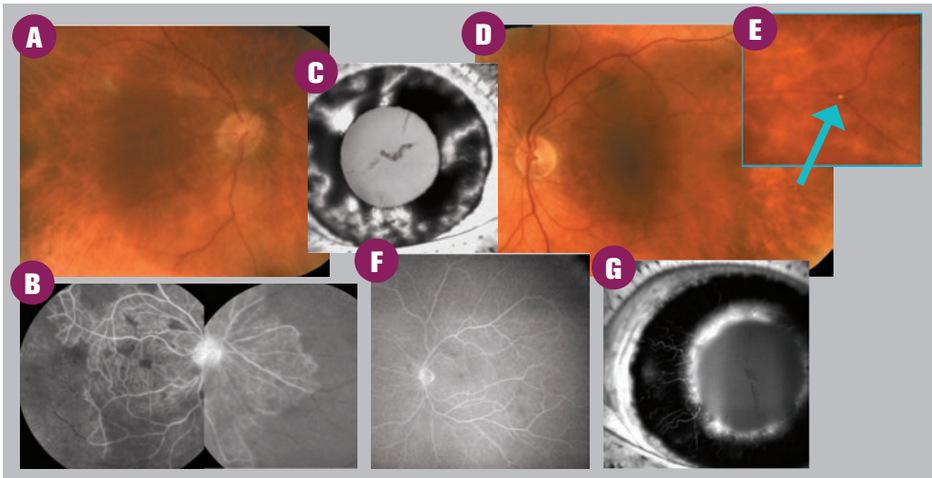

Figure 5. A. An 81-year-old white male with chronic total occlusion of internal carotid artery on the right side and moderate occlusion of the left side. At the time of examination images shown here, VA OD: CF@4' OS: 20/50 IOP OD: 24 OS: 13 (Patient was on Travatan [travoprost, Alcon] qhs OD). **A** and **D** show some signs of retinal arterial-occlusive disease, including the peripheral Hollenhorst plaque **(E)**. Fluorescein angiography (FA) OD shows significant retinal ischemic disease **(B)** with severe NVI **(C)**. Although left eye retinal angiogram is not very impressive, **(F)** the iris shows significant neovascularization at the pupillary margin **(G)**.

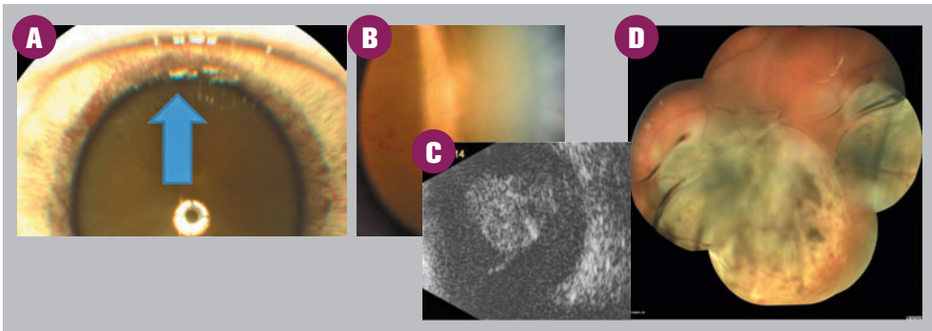

Figure 6. A. A 55-year-old white female presented with recent onset eye pain OS and vision loss for approximately one month. She had light perception (LP) vision, with IOP of 40 mm Hg. Other remarkable findings were iris neovascularization, significant opacification of the lens, and retorlenticular space **(B)**. She has a total retinal detachment (RD) with a suspicious but inconclusive B-scan **(C)**. Repair of the RD was attempted by pars plana lensectomy, vitrectomy, and use of silicone oil. Intra- and post operatively, the patient was noted to have a large central mass **(D)**.The retina is under silicone oil; large pigmented central mass obscures the optic nerve and macula. The lesion was subsequently confirmed as a malignant melanoma and, due to poor visual outcome and high systemic risk, patient underwent an enucleation.

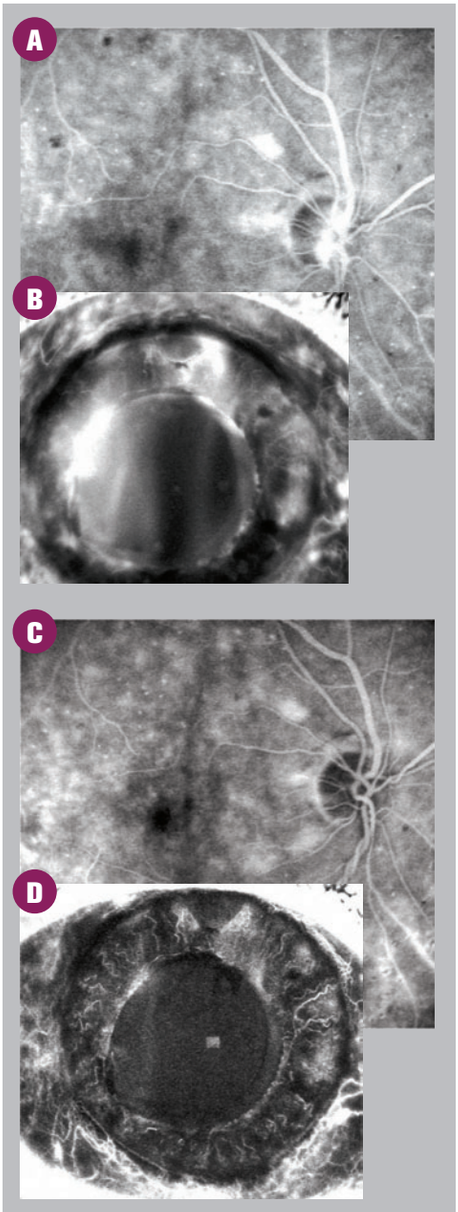

Figure 7. A. Angiography showing active neovascularization of the disc and iris **(B)**. One week following treatment with intravitreous injection of Avastin (bevacizumab, Genentech), significant regression of neovascularization is noted **(C,D)**.

See **Neovascular glaucoma** on page 30

Neovascular glaucoma

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Treatment of NVG involves attempts to decrease the level of hypoxia and intraocular pressure control. This is accomplished by use of intravitreal anti-VEGF[7,8] such as Avastin (bevacizumab, Genentech) which can significantly reduce further need for glaucoma surgery (see Figure 7). Anti-VEGF therapy also treats any concomitant macular edema that is common to many retinal vascular diseases. Although anti-VEGF treatment is sufficient to rapidly reduce neovascularization, underlying retinal ischemia is treated with pan-retinal photocoagulation[9-11] of retinal non-perfusion. Retrobulbar causes of eye ischemia may be successfully treated with improving ocular blood flow, particularly in cases of carotid occlusive disease.

Neovascular glaucoma is a common, potentially severe condition, and may present as an eye emergency. Characteristic findings are helpful in developing a differential diagnosis, and systemic co-morbidities must be ruled out. However, with prompt diagnosis and timely management patients can have improved and stable prognosis. ●

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IN BRIEF

Plugs help with cataract surgery pain

CHICAGO–A recent study found that the first puctum plug developed to treat inflammation and pain following cataract surgery has been shown to be a reliable alternative to medicated eye drops.

The punctum plug automatically delivers the correct amount of postoperative medication in patients, potentially solving the issue of poor compliance with self-administering eye drops. The researchers tested punctum plugs designed to deliver a sustained release of the anti-inflammatory pain medication dexamethasone to the eye over a period of 30 days following the removal of cataracts.

After 30 days, the plug softens, liquefies and is cleared through the tear duct without the need for removal. The researchers concluded that when compared to a placebo, the dexamethasone punctum plug provides sustained reductions of inflammation and pain for up to one month following cataract surgery.

The 60 participants were randomly split into two groups, with one group of 30 patients receiving a placebo vehicle punctum plug and the other group of 30 patients receiving a dexamethasone-medicated punctum plug. At various points throughout the 30 days following cataract surgery, the researchers assessed the number of patients in both groups with ocular inflammation (measured by the presence of anterior chamber cells in the treated eye) and pain.

They found that the medicated plug group had significantly less pain throughout the 30 days. On Day one, the placebo group reported a mean ocular pain score more than three times higher than the medicated plug group.

By Day 14, the placebo group reported a mean ocular pain score 11 times higher than the medicated plug group, remaining at this level through the conclusion of the study.

Ocular inflammation in the medicated plug group was also significantly less than the placebo group throughout the 30 days. By Day 14, more than 30 percent of patients in the medicated plug group showed no ocular inflammation, compared to just three percent in the placebo group.

By Day 30 of the study, over 60 percent of the patients in the medicated plug group had no signs of inflammation compared to 13 percent of patients in the placebo group.●

FDA approves AMD telescope implant

SARATOGA, CA–The U.S. Food and Drug Administration recently approved VisionCare Ophthalmic Technologies' Implantable Miniature Telescope for use in patients living with bilateral end-stage age-related macular degeneration (AMD) who are age 65 or older.

The telescope implant is the only FDA-approved surgical device for end-stage AMD and is Medicare eligible. According to the company, the telescope implant improves visual acuity and quality of life for suitable patients with AMD whose sight is permanently obstructed by a blind spot in their central vision, making it difficult or impossible to see faces, read, and perform everyday activities such as watching TV, preparing meals, and self-care.

End-stage AMD is uncorrectable by any other treatment including glasses, vitamins, drugs, or cataract surgery and is associated with increased stress and depression as vision diminishes.

"Once end-stage AMD patients have lost their central vision, cataract surgery will not provide them with as much benefit to their quality of life as the telescope implant," said Dr. David Boyer, of Beverly Hills, CA.●

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Glenda B. Secor, OD, FAAO

Chairman of the board of trustees of the Marshall B. Ketchum University, Chair of the Communications Committee for the American Academy of Optometry

Contact lenses, leadership, night diving with sharks

Why contact lenses?

My story is I'm fairly myopic. When I got my first pair of contact lenses when I was in high school, I thought they were wonderful. Now, they have studies that talk about self-esteem and contact lenses and what a great difference they can make in a young person's life. But I think I was representative of that philosophy because I thought my contact lenses were wonderful. It made a lifelong impression on me, so that's what I wanted to do.

What attracts you to leadership within organized optometry?

We're very lucky—optometry is a very small profession. To be able to call one of my colleagues who has written a textbook or has an expertise that I may need some advice on. Going to meetings and being in a position of leadership, I know these people by first name. If I call them, they'll take my call. If I hadn't been active, I would never have the friends and the networking abilities. So, it's made me a better practitioner, it's opened doors for me professionally, I can travel all over the world and know somebody there, or I know people who I can call if I need help. It's made the profession more entertaining and more exciting to have colleagues who are friends rather than competitors.

How has your leadership with Women of Vision changed your perspective?

I don't know if it's changed my perspective on leadership. I think it's been an area in which we're trying to get more women active. It is a tough nut with families, professions, and trying to see the bigger picture: why you will grow as both a person and a professional by the friends you make and the acquaintances that will expand opportunities farther than just seeing patients in an exam room. We're trying to educate young women to know that there is a tremendous benefit from being active early and becoming a role model. Those who get it are blossoming beautifully and really have done well.

Why don't more private practice ODs get involved?

Couple of reasons. I think part of it's generational, and younger practitioners are less driven for the greater good; they're more driven for personal gain. I have two children. You know, there's no question that being a working mom is a challenge, and having a family does make it tougher to volunteer. But, you've got to look past the immediate time constraints, and it's only gotten better. In the early days of my volunteering, we didn't have Internet, cell phones, and conference calls. It was all snail-mail or when we got together at meetings to get things accomplished. I think we were less effective. We have so many tools now that make the volunteer time that I spend more effective. A lot of it is done on my lunch hour or between patients, so the commitment is less now than it was early on. We have things happen faster because of our ability to impact change quicker.

Do you have any regrets?

Probably that I didn't spend enough time with my children—I have adult children—I didn't go to all of their activities. I couldn't be a room mom, you know. There were things I just couldn't do because of my career. They're good people and are successful. I do think that they see me as a role model, especially my daughter. You can be active, have a family, do those things, and be happy.

What don't your colleagues know?

I'm a certified scuba diver. The Great Barrier Reef is unbelievably beautiful. Everything else pales in comparison... the things you see and the variety of what's there.

What is the best way to serve the profession?

Being a good practitioner and embracing change. The profession is moving forward.

What is the craziest thing you've ever done?

Night diving with sharks. It's a different world at night in the ocean. About four or five years ago. Night diving with sharks in Australia was an amazing experience. White tip and black tip reef sharks…we were not a threat to them, and they were not a threat to us. But the life that you see at night—we were in the same location, diving day and night, and it is an incredibly different experience.

—Vernon Trollinger

Photo courtesy Glenda B. Secor, OD, FAAO

To hear the full interview with Glenda Secor, listen online: **optometrytimes.com/GlendaSecor**

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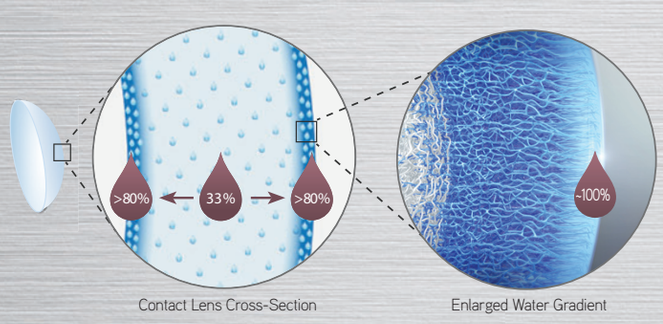

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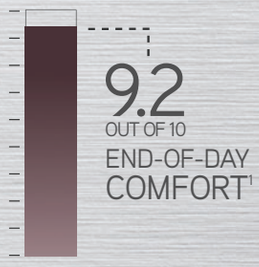

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