When to send a hypertensive patient to the ER

By Kuniyoshi Kanai, OD, FAAO

Optometrists and their staffs are measuring blood pressure in the office more often than ever before. This is partly a consequence of the ever-increasing number of patients with hypertension.

The American Heart Association, American College of Cardiology, and nine other groups published the new guideline that increases the number of adults with hypertension from 32 percent to 46 percent in U.S.1

In addition, the Centers for Medicare & Medicaid Services (CMS) has reinforced reporting of certain exam information, including blood pressure values. To do this, CMS initially provided incentives for those who reported and now penalize those who don’t. As ODs routinely measure blood pressure in the office, they face challenges of how to manage patients with abnormally high blood pressure readings.

Blood pressure emergency
ODs may wonder what blood pressure reading requires an emergency room referral.

The answer may be when the patient’s reading reaches the level of “severely elevated blood pressure.”

Because the eighth report of the Joint National Committee (JNC) in 2014 does not
See Hypertension on page 24

Dry eye protocol for any practice

By Whitney Hauser, OD

Optometrists see a large disparity between the prevalence of dry eye disease and the number of patients who are treated. ODs know that they need to jump in with both feet, but that’s easier than it sounds.

Doctors attend dry eye courses offered at just about every meeting, and many may feel paralysis of analysis. They learn about the latest high-tech diagnostics and treatments. They read protocols for dry eye disease with a depth and breadth that makes busy practitioners wonder where to begin.

To make dry eye evaluation and treatment routine for all patients and solve the problem of this underdiagnosed, undertreated disease, we need an accessible entry point for practices that don’t have a battery of diagnostic equipment or dedicated capital and space for dry eye.

See Dry eye protocol on page 22

WHY OSMOLARITY SHOULD BE THE TOP TEST FOR TEAR FILM EVALUATION

By Marc R. Bloomenstein, OD, FAAO

The ability to get the most out of our patients is limited by the best that our patients can achieve. The tear film influences vision, the tear film influences the refraction, and refraction changes influence measurements for everything we do. Therefore, it only stands to reason ODs need to constantly work on the tear film. I am again making my pitch to my OD colleagues to measure the osmolarity of this critical yet
YOU CAN GIVE YOUR PATIENTS NOTHING (but the best)

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of additional comfortable wear time for symptomatic patients versus prior lenses

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Vision care back in Medicaid mix in Kentucky

By Benjamin P. Casella, OD, FAAO
Chief Optometric Editor
Practices in Augusta, GA, with his father in his grandfather’s practice
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A s doctors of optometry, we believe that proper eye health (I include vision as part of eye health) is essential to maximizing one’s quality of life.

In fact, we are also aware that eye health examinations can additionally lead to better quantity of life because we know that an eye examination can lead to the discovery of conditions such as tumors and chronic disease.

Put this way, the argument for eye healthcare as being innate to the concept of fiscal responsibility as well. Fewer sick people means fewer people requiring at times costly measures in order to be made well again (or just to be made less sick).

This statement may seem cold, but the cost of caring for the sick is one that comes into play with every state’s budget every year.

Medicaid in Kentucky

With this in mind, I am happy and relieved for the hundreds of thousands of Kentuckians relying on Medicaid for whom vision care has been restored. Public response to doctors of optometry have an obligation to do what we can to help ensure that this intrinsic attribute of welfare remains available.

It goes along with caring for our patients, and the recent events in Kentucky hit close to home earlier plans this summer to cut these essential health benefits was a motivating factor in this reversal of decision, and optometry, both in Kentucky and on the national level, was a significant part of this outcry.

As stewards of eye health (again, I include vision as part of eye health), doctors of optometry have an obligation to do what we can to help ensure that this intrinsic attribute of welfare remains available. It goes along with caring for our patients, and it is in our oath to do so.

OD as lobbyist

I am no policy maker, nor is it my intent to be one. However, like all ODs, I am a lobbyist of sorts. I lobby (through my practice)

Human welfare gets caught in the crossfire of policy decision-making all the time, and the recent events in Kentucky hit close to home

Dr. Whitney Hauser, OD explains her dry eye protocol on page 22.
NEW INFORMATION

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**HydraLuxe™ Technology uniquely helps support a stable tear film:**

- Enhanced network of tear-like molecules that mimic mucins
- Smooth, tear-like refractive surface
- Integrates with patient’s own tear film every day
- Has high optical precision

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1. JJVC data on file 2017. Compared to ACUVUE OASYS® Brand Contact Lenses with HYDRACLEAR® PLUS Technology. Three visit, non-dispensing study conducted in the US, n=35, visual acuity and contrast sensitivity results of current contact lens wearers testing ACUVUE OASYS® 1-Day Brand with HydraLuxe™ Technology (with high optical precision) compared to ACUVUE OASYS® Brand Contact Lenses with HYDRACLEAR® PLUS Technology.
2. JJVC data on file 2015. LACREON®, HYDRACLEAR®, HYDRACLEAR® Plus, HYDRACLEAR® 1, and HydraLuxe™ Tear Film Technologies. Revision 2.0
4. ACUVUE® Brand Contact Lenses are indicated for vision correction. As with any contact lens, eye problems, including corneal ulcers, can develop. Some wearers may experience mild irritation, itching or discomfort. Lenses should not be prescribed if patients have any eye infection, or experience eye discomfort, excessive tearing, vision changes, redness or other eye problems. Consult the package insert for complete information. Complete information is also available by visiting jnjvisionspro.com, or by calling Johnson & Johnson Vision Care, Inc. at 1-800-843-2020.

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Why osmolarity is important
Osmolarity is my number-one test for dry eye. I view it as the “standard of care” because it is representative of the properties of a patient’s tears and offers a strong predictive tool for the diagnosis of this refractive nemesis. Notice I avoided calling it “dry eye.” When ODs are diagnosing changes to the tear quality, we may see alterations that precede the traditional symptoms patients and doctors associate with dry eye. This is a tear abnormality and needs a more proactive diagnostic approach.

Other tests
The Schirmer’s test, for example, is limited from the perspective that all it does is give us a volume of tears coming out of the eye with no information about the quality or property of those tears. Few doctors perform the test because it is not very predictive, as well the amount of time it takes in the chair—notwithstanding the vitriol that patients have for this paper in the eye.

For a patient with aqueous deficiency or an underlying systemic disease such as Sjögren’s syndrome, the Schirmer’s test could be beneficial to demonstrate the basal tear rate. However, we know that dry eye disease is multifactorial, so tear volume limits our ability to understand what is going on. Osmolarity is more definitive of the homeostatic nature of the tear and disease state.

Tear break-up time (TBUT) is somewhat informative, but it is not precise and lacks a strong predictive value. If I know that my patient’s tears are breaking up, I do not know the severity or underlying cause of the problem. Frankly, I can look at the meibomian glands and note what is going on. Osmolarity is more definitive of the homeostatic nature of dry eye disease that is most likely occurring. In addition, although low TBUT implies a problem, patients with poor tear quality can have a high TBUT. #but2long

Measuring for inflammatory mediators is a nice compliment to osmolarity. The inflammatory nature of dry eye disease means that there is an increase in osmolarity—then inflammation is also likely. Conversely, because inflammation is not exclusive to dry eye, a positive test may not indicate dry eye. Tear osmolarity offers a higher level of diagnostic accuracy and thus a device that would give both at the same time would be a great complement to our diagnostic tests.

When screening all patients for tear-related disease, I think it is a mistake to begin with redness and discomfort. One of the best metrics for early dry eye disease is fluctuating vision, which is one of the first signs of a decrease or change in tear quality. I ask patients if their eyes get watery—can they see better if they blink? With the increased use of monitors, phones, and streaming videos, we see more and more symptoms at younger ages. #screenresponsibly

Testing osmolarity
Rather than relating vision problems to dryness or irritation, I check the tear osmolarity (TearLab Osmolarity System, TearLab). If the osmolarity is below 308 mOsm/L or there is an inter-eye difference above 8 mOsm/L, then I know that the patient may have dry eye disease, even in the absence of symptoms.

This is a call-to-action to do something now before the patient becomes symptomatic and uncomfortable—especially if the patient is a contact lens wearer. The patient may have allergies, lid structure problems, or other pathologies. When osmolarity is normal, I look for other causes of discomfort or vision changes.

Testing tear osmolarity does not require special skill or long-term training.

When ODs are diagnosing changes to the tear quality, we may see alterations that precede the traditional symptoms patients and doctors associate with dry eye

When osmolarity is normal, I look for other causes of discomfort or vision changes

Anyone in my practice can use the device. We hover over the lid margin for a few seconds, where the device absorbs tears, and it gives us a value in less than 10 seconds. We have the results in the pretesting room before we move on to the next test. There could be reflex tearing if the tester accidentally rubbed the device on the eye, but that is easy to avoid.

If patients are advised not to use any eye drops for two hours prior to testing and there has been no dilation, anesthesia, or staining, clinicians can conduct osmolarity testing at any time. If a patient requires an artificial tear to obtain accurate topography or auto refraction, it is a good idea to pause briefly and check tear osmolarity first because there may be a problem.

With such a fast, simple test at my fingertips, dry eye diagnostic testing is commonplace. Managing the tear film should be a regular practice within the optometric armamentarium. And with early treatment of dry eye, patients are more successful in controlling the disease and better prepared for surgery, contact lenses, and Fortnite. #hidebehindthetreese
The TRS-5100 offers a split prism Jackson Cross cylinder with simultaneous target comparisons, for faster, more accurate and more positive exam experiences. Maximize exam efficiency, patient flow, and overall practice revenue.

AND DESIRED OUTCOMES

Steve Chander, OD
Chicago, Illinois

The Marco TRS systems enabled us to see 4 more patients a day and rapidly paid for themselves in efficiency cost savings, additional exam revenue, and sales of multiple eyewear. These workflow and profitability enhancements compelled us to purchase 3 additional TRS systems for our clinic.

April Jasper, OD
West Palm Beach, Florida

I truly appreciate the seamless EMR integration of the Marco system. More than 50 mouse clicks are eliminated by this seamless data transfer with the push of one button. The time saved in the exam room is priceless.

Scot Morris, OD
Conifer, Colorado

Our favorite refractor is the Marco TRS-5100. Because it is quiet, fast, efficient and comfortable, it also has earned the “cool” factor. Since patients can instantly compare their old and new Rx and decide if they value the difference, satisfaction is greatly enhanced.

Dori Carlson, OD
Park River, North Dakota

Our revenue per patient has risen- in part because the TRS-5100 allows me to show people the changes in the Rx with a push of a button. They can quickly see for themselves how minor shifts can impact their overall vision.
View patients as missed opportunity, not lost cause

A question-and-answer session provides insight into patient beliefs

It’s easy to get disheartened while trying to create better long-term outcomes for contact lens patients. It’s also easy to blame the patient. However, look at both sides of the problem. First, patients will almost always predict future success according to their past track record. Further, they may not have been properly motivated by another doctor to believe any differently. How can we understand patients better and speak to them in a way that resonates and changes behavior?

One of my favorite articles to write—and apparently to read—was a summation of habits and beliefs reported by random contact lens wearers I connected with during my travels. Recently, in conversation my Wayfair business consultant “Brad” mentioned the he was scheduled for his annual contact lens exam the next day. Brad seemed to be both smart and sensible, so I didn’t want to pass up an opportunity to learn from such a patient. So, I had a few questions for him.

Getting to know Brad

Brad, where do you get your eye exam and why—is it the technology?

“It’s XYZ Eye. They are ‘real.’ The technology is debatable. They have a puff test and a push-button test that I rock! They have a chart where I read DGFTZ, and they turn the dials. I’ve been there once, she’s cute. I don’t actually like her that much, but she’s super cute, it’s close to work and close to one of my favorite places to eat.”

If there is new technology in contact lenses, do you expect your doctor to tell you? What would your response be?

“Yes! And it depends. I switched a couple years ago, from Oasys to Bausch + Lomb. She said it was a better fit. I have big corneas, so it felt better. But I had lenses in that were two to three weeks old, so of course new ones would feel better!”

Lost cause: Super cute and conveniently located?

Opportunity: Even a cynic wants to know about new things. In the end, it was the fit that convinced him, not the technology. It often takes both. Make the effort to confidently present the technology, but also trial it before assuming anything. Comfort is king. Even if a patient does not complain or realize comfort can be improved, do not hesitate to trial him in a better material if it’s available. After all, it is our job.

Finding out why

Why do you have an appointment tomorrow?

“I go once a year, whether I need to or not. And I’m getting glasses. I haven’t had any since I was 19 years old. I’m getting progressives.”

So why now?

“I’ve been sleeping in my lenses way, way too long—for about five years.”

Is this a “perspective with age” thing?

“No. My friend has some Ray Bans. I tried them on, and I like the way they looked! It would be cool to be outside and see without contacts.”

What about inside?

“They are Transitions.”

Lost cause: No one has been convincing enough to sell him glasses in 24 years.

Opportunity: Deep inside, he wants to take care of himself and do “right.” He believes in the need for yearly eye care, or he believes his prescription is being held hostage; I didn’t have time to ask, but I desperately want to give him the benefit of the doubt. He does have an eye exam every year.

Contact lens safety

So, what is “way, way too long”?

“I sleep in them about four days at a time and keep them two months instead of two weeks.”

What do you think is a safe time and why?

“Three weeks, definitely! No, four weeks.”

Why?

“Because the past is a good predictor of the future. Based on my experience, after three weeks they get a little weird.”

Lost cause: This is our biggest challenge. Past behavior without consequences may be dumb luck instead of a proven track record.

Opportunity: It’s up to ODs to educate patients about the odds of risky behavior.

Contact lens overwear

So, why do you wear them longer? Do you forget, or is it the perception of wastefulness or expense?

“Wasteful, yes. But no, for me it’s laziness. I fall asleep on the couch over and over. Don’t yell at me.”

Why would you say that; do you think it’s wrong?

“No! I don’t. They just want to sell me more contacts to make more money!! Everyone wants to make more money!”

Lost cause: His perspective is there is no consequence to overextending the life or indication for his lenses. Is it his fault, or has no one taught him better?

Opportunity: He says it is laziness, but
Are dry, itchy eyes caused by contact lenses?

It’s not complicated.

Your contact lens wearing patient presents with dry, itchy eyes. It’s easy for doctor and patient to assume that this is a complication associated with lens wear, but that’s not always the case. With similarities in lens related and inflammatory related dry eye symptoms it’s critical to perform the proper diagnostics.

If elevated MMP-9, a key inflammatory biomarker for dry eye, is tested for and detected you’ll know that it’s more than just their contact lenses. You’ll have an opportunity to create a more comprehensive treatment plan, aimed at alleviating symptoms and improving comfort while mitigating potential complications of lens wear with the presence of inflammatory dry eye disease.

InflammaDry is the only rapid, CLIA-waived, in-office, point-of-care test that detects MMP-9. InflammaDry provides results in minutes, is easily performed in 4 simple steps, is minimally invasive and requires no special equipment.

To find out how testing for MMP-9 with InflammaDry can take the complication out of your dry itchy eye treatment therapies before there are complications, visit us at Vision Expo West, Booth #MS2053 or contact your Quidel Account Manager at 800.874.1517.
Missed opportunity
Continued from page 8
his deep-rooted cynicism seems to revolve around money. But is it a perspective of not wanting to spend his money, or is it a feeling of being manipulated due to disbelief that there is any risk to his behavior?

Value of vision
Tell me, Brad, what is your most valued sense?
“Vision. I know what you’re getting at!”

So, you know what you would sacrifice without it then, but what would you be sacrificing to throw your contact lenses away sooner?
(He didn’t answer, but he’s still not convinced).

What do you spend your money on?
“Bills, cars.”

What else?
“Fishing.”
Lost cause: Okay, this is not the approach to reach Brad. He sees it as further manipulation of a vulnerable point because the trust has not been established. (Hopefully, I’m more convincing in person!)

So, what could your doctor say or do to change your perspective?
“I don’t know...maybe after going a few years and knowing it’s not just for

“You don’t know; maybe she’s on the take.”
Lost cause: The cynicism is thick here, but perhaps not all is lost.
Opportunity: Brad associates dryness and risk with discomfort, nothing more. The presumed solution is to induce tearors. ODs tend to see these behaviors and beliefs more in contact lens patients—but why?
Was it like this before online contact lens retailers convinced them that ODs greedily manipulate and overcharge for

There is an immense amount ODs can learn from a 15-minute conversation with a patient—even someone else’s patient

When trust is established in a population that typically doubts, that patient will be loyal for reasons more compelling than convenience

her Mercedes. It’s like when they say that you have dry eye to try to get you to buy drops! If I’m dry, I’ll yawn or stick my head out the window.”

They have said that?
“Yeah, a couple times. But I’m fine.”

Then why would she say you were dry if you’re not?

the tear film and what’s actually happening? Would that make a difference?
“Absolutely!” (Brad said this more emphatically than any other word in our conversation.)

Takeaways from Brad
Brad, like many patients, has a built-in cynicism and distrust toward eye doc-

Dr. Brimer has special interests in contact lenses and dry eye. She has received study or sponsor support from Alcon, Aliden, Allergan, Bio-Tissue, BlephEx, iCare, and PRN. 
drbrimer@crystalvisionservices.com
IN A CLASS OF ITS OWN

Xiidra is the only lymphocyte function-associated antigen-1 (LFA-1) antagonist treatment for Dry Eye Disease\textsuperscript{1,2}

Xiidra, the first in a class of LFA-1 antagonists for Dry Eye Disease, is a prescription eye drop FDA-approved to treat both signs and symptoms of the disease.\textsuperscript{1,3}

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Check out patient resources, insurance coverage, and more at Xiidra-ECP.com

Indication
Xiidra\textsuperscript{®} (lifitegrast ophthalmic solution) 5\% is indicated for the treatment of signs and symptoms of dry eye disease (DED).

Important Safety Information
Xiidra is contraindicated in patients with known hypersensitivity to lifitegrast or to any of the other ingredients.

In clinical trials, the most common adverse reactions reported in 5-25\% of patients were instillation site irritation, dysgeusia and reduced visual acuity. Other adverse reactions reported in 1\% to 5\% of the patients were blurred vision, conjunctival hyperemia, eye irritation, headache, increased lacrimation, eye discharge, eye discomfort, eye pruritus and sinusitis.

To avoid the potential for eye injury or contamination of the solution, patients should not touch the tip of the single-use container to their eye or to any surface.

Contact lenses should be removed prior to the administration of Xiidra and may be reinserted 15 minutes following administration.

Safety and efficacy in pediatric patients below the age of 17 years have not been established.

References:
1. Xiidra [Prescribing Information]. Lexington, MA: Shire US.

For additional safety information, see accompanying Brief Summary of Safety Information on the adjacent page and Full Prescribing Information on Xiidra-ECP.com.

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BRIEF SUMMARY:
Consult the Full Prescribing Information for complete product information.

INDICATIONS AND USAGE
Xiidra® (lifitegrast ophthalmic solution) 5% is indicated for the treatment of the signs and symptoms of dry eye disease (DED).

DOSE AND ADMINISTRATION
Instill one drop of Xiidra twice daily (approximately 12 hours apart) into each eye using a single-use container. Discard the single-use container immediately after using in each eye. Contact lenses should be removed prior to the administration of Xiidra and may be reinserted 15 minutes following administration.

CONTRAINDICATIONS
Xiidra is contraindicated in patients who have known hypersensitivity to lifitegrast or to any of the other ingredients in the formulation.

ADVERSE REACTIONS
Clinical Trials Experience
Because clinical studies are conducted under widely varying conditions, adverse reaction rates observed in clinical studies of a drug cannot be directly compared to rates in the clinical trials of another drug and may not reflect the rates observed in practice. In five clinical studies of dry eye disease conducted with lifitegrast ophthalmic solution, 1401 patients received at least 1 dose of lifitegrast (1287 of which received lifitegrast 5%). The majority of patients (84%) had ≤3 months of treatment exposure. 170 patients were exposed to lifitegrast for approximately 12 months. The majority of the treated patients were female (77%). The most common adverse reactions reported in 5-25% of patients were instillation site irritation, dysgeusia and reduced visual acuity. Other adverse reactions reported in 1% to 5% of the patients were blurred vision, conjunctival hyperemia, eye irritation, headache, increased lacrimation, eye discharge, eye discomfort, eye pruritus and sinusitis.

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

Rare cases of hypersensitivity, including anaphylactic reaction, bronchospasm, respiratory distress, pharyngeal edema, swollen tongue, and urticaria have been reported. Eye swelling and rash have been reported.

USE IN SPECIFIC POPULATIONS
Pregnancy
There are no available data on Xiidra use in pregnant women to inform any drug associated risks. Intravenous (IV) administration of lifitegrast to pregnant rats, from pre-mating through gestation day 17, did not produce teratogenicity at clinically relevant systemic exposures. Intravenous administration of lifitegrast to pregnant rabbits during organogenesis produced an increased incidence of omphalocele at the lowest dose tested, 3 mg/kg/day (400-fold the human plasma exposure at the recommended human ophthalmic dose [RHOD], based on the area under the curve [AUC] level). Since human systemic exposure to lifitegrast following ocular administration of Xiidra at the RHOD is low, the applicability of animal findings to the risk of Xiidra use in humans during pregnancy is unclear.

Animal Data
Lifitegrast administered daily by intravenous (IV) injection to rats, from pre-mating through gestation day 17, caused an increase in mean preimplantation loss and an increased incidence of several minor skeletal anomalies at 30 mg/kg/day, representing 5,400-fold the human plasma exposure at the RHOD of Xiidra, based on AUC. No teratogenicity was observed in the rat at 10 mg/kg/day (460-fold the human plasma exposure at the RHOD, based on AUC). In the rabbit, an increased incidence of omphalocele was observed at the lowest dose tested, 3 mg/kg/day (400-fold the human plasma exposure at the RHOD, based on AUC), when administered by IV injection daily from gestation days 7 through 19. A fetal No Observed Adverse Effect Level (NOAEL) was not identified in the rabbit.

Lactation
There are no data on the presence of lifitegrast in human milk, the effects on the breastfed infant, or the effects on milk production. However, systemic exposure to lifitegrast from ocular administration is low. The developmental and health benefits of breastfeeding should be considered, along with the mother’s clinical need for Xiidra and any potential adverse effects on the breastfed child from Xiidra.

Pediatric Use
Safety and efficacy in pediatric patients below the age of 17 years have not been established.

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

NONCLINICAL TOXICOLOGY
Carcinogenesis, Mutagenesis, Impairment of Fertility
Carcinogenesis: Animal studies have not been conducted to determine the carcinogenic potential of lifitegrast.

Mutagenesis: Lifitegrast was not mutagenic in the in vitro Ames assay. Lifitegrast was not clastogenic in the in vivo mouse micronucleus assay. An in vitro chromosomal aberration assay using mammalian cells (Chinese hamster ovary cells), lifitegrast was positive at the highest concentration tested, without metabolic activation.

Impairment of fertility: Lifitegrast administered at intravenous (IV) doses of up to 30 mg/kg/day (5400-fold the human plasma exposure at the recommended human ophthalmic dose [RHOD] of lifitegrast ophthalmic solution, 5%) had no effect on fertility and reproductive performance in male and female treated rats.

Manufactured for: Shire US Inc., 300 Shire Way, Lexington, MA 02421. For more information, go to www.Xiidra.com or call 1-800-828-2088. Marks designated © and ™ are owned by Shire or an affiliated company. ©2018 Shire US Inc. SHIRE and the Shire Logo are trademarks or registered trademarks of Shire Pharmaceutical Holdings Ireland Limited or its affiliates. Patented: please see https://www.shire.com/legal-notice/product-patents. Last Modified: 01/2018 533769
GLAUCOMA Focus On

OCT helps diagnose retinoschisis in glaucoma patients

More studies needed to link peripapillary retinoschisis with faster progression

There has recently been much discussion regarding optical coherence tomography (OCT) imaging studies with respect to neurodegenerative disease.1 The retinal nerve fiber layer (RNFL) is, after all, part of the central nervous system.

OCT studies have become commonplace in the contemporary glaucoma evaluation, and clinicians have relied on OCT for years, both qualitatively and through use normative databases, to diagnose glaucoma and measure its progression.

The peripapillary retina

A recent study by Fortune and colleagues provides an intriguing aspect of OCT studies with respect to glaucoma that may give the clinician another aspect of the eye to consider: the peripapillary retina.2 Parapapillary atrophy has been linked to the presence of glaucoma.3

Investigators in this study describe the presence of peripapillary retinoschisis as having a potential relationship with faster RNFL and visual field deterioration in glaucoma patients.

Retinoschisis, a condition in which the neurosensory retina splits, has various forms. Areas of peripheral retinoschisis may have little or no symptoms, whereas retinoschisis involving the macula may be visually devastating. Peripapillary retinoschisis, which is around the optic nerve head, would likely be asymptomatic and discovered incidentally by direct visualization or OCT.

Studies have demonstrated a relationship between peripapillary retinoschisis and glaucoma.4 Investigators in the Fortune study used a case control design to analyze longitudinal data from 166 subjects who had been classified as having glaucoma or being glaucoma suspect. Because investigators measured functional markers, patients who were unable to complete visual field studies were excluded.

Of the 166 subjects, 12 eyes were found to have peripapillary retinoschisis, with two eyes exhibiting multiple locations of this finding, giving a total of 15 “retinoschisis events.” The eyes with peripapillary retinoschisis tended to have larger cup-to-disc ratios. These eyes tended to have thinner RNFL measurements as measured by OCT and worse visual fields, as measured by mean deviation. Of significance, age, sex, central corneal thickness, visual acuity, intraocular pressure (IOP), and the presence of vitreous adhesion all failed to predict disparities among those subjects with and without peripapillary retinoschisis.

Müller cell activity

The investigators go further to describe what they purport to be Müller cell activity within the areas of retinoschisis. Müller cells are the glial cells of the retina and exhibit reactive gliosis in the presence of glaucoma.5 This response is an attempt to repair injured neurons and occurs elsewhere in the central nervous system. Such an association makes sense because glaucoma “injures” retinal ganglion cells.

Researchers do well to point out the fact that peripapillary retinoschisis may resolve spontaneously. This is important to consider with respect to RNFL thinning and glaucoma progression. If an area of retinoschisis involving the RNFL were to resolve, then the measured thickness of the RNFL in that affected area would decrease in value. By relying on the number of an OCT study, it could be falsely assumed that such a decrease in measured thickness is due to glaucoma progression when it may be due to tissue simply returning to its pre-retinoschisis state.

Along those same lines, actual RNFL thinning could be missed if a patient subsequently develops an area of peripapillary retinoschisis (or any condition that may thicken tissue, for that matter).

These potential scenarios are two of many numerous reasons why it is important to analyze the entire OCT study and not just “go by the numbers.” Looking at the tomogram itself can yield important qualitative information that may have been otherwise overlooked.

Additional studies are needed to confirm what the investigators of this study have concluded: that peripapillary retinoschisis is associated with a faster glaucoma progression rate and that Müller cells are involved in the pathogenesis of this clinical finding.

The Fortune study points to yet another potential biomarker in the arena of glaucoma progression, and it also does well to instill upon clinicians the importance of paying close attention and using scrutiny when examining OCT studies. All clinicians should avoid mistaking a spontaneously resolving retinal disorder as RNFL thinning. Taking those extra few seconds could potentially change the management of a patient.

REFERENCES
Researchers in countless labs and clinics around the globe work hard to expand the knowledge base of eye care. Sometime in the future, the results of this research will enhance our patient care.

There is no better place to glean the results of this research than the annual Association for Research in Vision and Ophthalmology (ARVO) meeting.

I highlight some of the many posters presented during this year’s meeting (April 29-May 3, 2018, in Honolulu), concentrating on anterior segment reports of clinical relevance to practicing optometrists.

Dry eye risk factors

Researchers for a large-scale study in London of almost 80,000 participants investigated the association between dry eye disease (DED) and medication classes and individual drugs. The study revealed the highest risk for DED lies with these classes of drugs: anti-glaucoma drugs, drugs for functional gastrointestinal disorders, psychostimulants for attention deficit hyperactivity disorder (ADHD), drugs for a peptic ulcer, constipation, and urologicals.

Individual drugs showing the highest risk of DED were mebeverine, methylphenidate, pantoprazole, omeprazole, isphagula, and risedronic acid.

Diabetes and dry eye

Diabetes significantly impacts the body as a whole and can compromise organ systems, including the eye. Does diabetes make a difference in dry eye?

A group of optometrists conducted a multicenter study from seven different sites. The group concluded that while there is a strong overlap in signs and symptoms of diabetes associated with DED, differences exist in staining and self-reported redness. The study also showed a large percentage (51.3 percent) of dry eye in patients with diabetes goes undiagnosed based on Dry Eye Workshop (DEWS) II criteria. The authors acknowledge dry eye diabetes. DED symptoms were noted in 58.8 percent of subjects with diabetes. The severity of DED was significantly higher in those with diabetes vs. controls.

In this study, DED was not associated with duration of diabetes, HbA1C level, or diabetic retinopathy; however, there was a strong positive association between the severity of the DED and its effect on quality of life of diabetic study participants.

The authors recommended that those with diabetes should be routinely checked for dry eye during routine eye examinations.

Meibomian gland dysfunction and diabetes

Meibomian gland dysfunction (MGD) has been observed in Type 2 diabetics. Several posters attempted to quantify this association.

A prospective study of 76 subjects found that 76 percent of diabetics presented with MGD. Using the Ocular Surface Disease Index (OSDI) questionnaire, researchers found that symptoms were significantly higher in the diabetic group. The diabetic group showed major changes in lids and tear function, accounting for evaporative dry eye and presenting a high degree of correlation with meibomian gland inflammation and obstruction.

A study in China found that MGD was a major cause of DED and Type 2 diabetics without obvious aqueous tear deficiency. Unlike the previous study, this group found tear function and MGD parameters were correlated with HbA1C levels and diabetic duration. They conclude that MGD, which appears before the development of ocular discomfort, may be an early sign and the critical factor of dry eye in Type 2 diabetics.

MGD, which appears before the development of ocular discomfort, may be an early sign and the critical factor of dry eye in Type 2 diabetics

Interestingly, hydrochlorothiazide and the oral contraceptive ethinyl estradiol were associated with fewer dry symptoms. Another study conducted by optometrists updated the risk factors for DED. New risk factors were identified, including seeing a doctor regularly, sinus problems, migraines, and use of eye drops. A dry risk assessment (DERA) was used to determine the degree of agreement between clinical investigators and the model. Some 72.8 percent of agreement occurred between what investigators and DERTA determined was dry eye. The authors concluded this dry risk calculator “can help assess which individuals in the population might require testing and treatment.”

A study from Australia explored the interactions between lifestyle factors and menstrual cycle on the ocular surface of healthy young women. Researchers concluded that the effect appeared to be more pronounced during the ovulation phase as compared to the follicular and luteal phases of the menstrual cycle.
I recently saw a patient who was an experienced monthly replacement contact lens wearer. She loved her lenses because of the visual freedom that they provide as she balances work, family, and her dedication to running. Contact lens wear has, for a long time, been a part of her life. She was not ready for a switch to daily disposable lenses, and so I kept her in a monthly replacement lens. Because of the need for her to clean her lenses, I wanted to be sure that she did not have to worry about steps that most patients, unfortunately, do not follow. I also did not want her to experience any ocular surface issues that could impact her ability to enjoy her lenses. After her comprehensive exam, I immediately told her about CLEAR CARE® PLUS, which offers, among many other benefits, truly outstanding disinfection efficacy.1

CLEAR CARE® PLUS is a 3% H₂O₂ solution, with a mechanism of disinfection that is fundamentally different from that of multipurpose solutions (MPS).2,3 H₂O₂ disinfects contact lenses by producing free radicals that interact with microorganism cell membranes to cause leakage of cellular components.2,3 Multipurpose solutions often combine two or more biocides and a preservative,4 but this approach increases preservative exposure at the ocular surface.

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References

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Smartphone use
ODs have heard much discussion lately about smartphone use and dry eye. One group attempted to determine if smartphone usage affected dry eye.

Using a novel open-field binocular tear film analyzer, designed to enable real-time measures of non-invasive tear break-up time (NIBUT) and blink rate (BR), the group studied 33 participants reading a novel on four different platforms: Apple iPhone 6, Apple iPhone 6S, Samsung Galaxy S6, and printed paper.

The study found that BR was reduced when subjects read on all three smartphones compared to reading paper. In addition, the results were indicative of a possible influence of smartphones on NIBUT changes, but those were isolated numbers. Tear film osmolarity values were similar when reading on all four platforms.

A study from The University of New South Wales studied the effects of 60 minutes of smartphone use in ocular symptoms, tear function, blinking, and binocular vision in 12 teenagers.

Eye strain and discomfort were reported after reading on a smartphone for 60 minutes. These eye symptoms were accompanied by an increased blink rate and reduced ability to easily change focus. Such signs differ from those occurring with desktop computer use. The distance at which the study participants held the smartphone from their eyes was closer than the viewing distance usually adopted when reading from a book or desktop computer.

The authors concluded “eye symptoms which occur due to smartphone use may have a different basis than eye symptoms experienced with using a desktop computer.”

Clinical signs in dry eye
Clinical signs of dry eye may be found using minimally invasive tests, yet their clinical use is limited by a lack of knowledge of their diagnostic value and by poor association with the symptoms of dry eye.

A group of Italian researchers performed a multicenter cross-sectional study of 397 patients to investigate low-tech clinical sign profiles in dry eye patients. Burning and foreign body sensation were the most frequently reported symptoms.

The most frequent eyelid abnormalities were hyperemia, bridge vessels across the eyelid margin, and lid notching. The most frequent conjunctival abnormalities were nasal staining, hyperemia, and conjunctivochalasis. The most frequent corneal abnormality was inferior staining. While the most frequent tear film abnormalities were reduced tear break-up time, a reduced tear meniscus, an irregular tear meniscus, a dirty tear film, and reduced tear secretion.

Authors of the many posters about the Dry Eye Assessment and Management (DREAM) study set out to determine the degree of correlation between clinical signs and patient symptoms of dry eye disease when assessed using standard procedures.

Some 535 DED patients at 27 clinical centers were included in the study. The authors concluded that the measurable, objective signs of DED do not correlate with the subjective symptoms that cause DED and the reason people go to the doctor seeking relief.

Demodex prevalence was studied in patients with dry eye disease. Researchers studied 73 patients with mild to severe dry eye and found Demodex to be present in 43.8 percent of those patients. They also found that Demodex became more frequent with increasing age, the lower lid was more often affected, male patients were more often infected than female patients.

The authors concluded that “patients with meibomian gland dysfunction, posterior blepharitis, increased loss of eyelashes, or the occurrence of asymmetrical cylinders should be investigated for Demodex infestation.”

Warm compresses and MGD
Eyelid warming treatments have become popular therapies for MGD. Several posters examined warm compress therapies.

One study compared the ability of four commercially available lid heating devices to increase eyelid temperature and tear film lipid layer thickness. The researchers found that all devices tested raised the temperature of the inner eyelids, but not by equal amounts.

LipiFlow heated the inner eyelid more than the other devices. The post treatment increase in lipid layer thickness was similar with the Bruder device, Blephasteam and LipiFlow, while the MiBo ThermoFlo had the smallest lipid layer thickness increase. Neither of the devices altered corneal topography.

Beaded mass or less expensive option and more convenient than face cloth compresses, hands are more commonly recommended by eye care practitioners.

Another study determined how the temperature of the Bruder Moist Heat Eye Compress device varied as a function of time in the microwave. In this study the Bruder mask did not reach a consistent temperature even when using the same microwave, mask, and heating times. This study showed that heating a beaded mask according to manufacturer’s directions resulted in inconsistent temperatures and may heat the masks to the point to cause thermal damage to eyelid tissues.

The authors concluded that “the popularity of beaded masks is increasing, but practitioners and consumers alike should be aware that their use could be harmful.”

Intranasal tear stimulation
Several posters addressed TrueTear, Allergan’s intranasal tear neurostimulator (ITN) device.

A study evaluated the durability of dry eye symptom relief following daily use of the device in 54 subjects completing the study. The eye dryness score, ocular discomfort score, and Schirmer tear test showed statistically significant improvement with the device use. In addition, a statistically significant improvement in dry eye disease symptoms was found after 45 days of ITN use.

The authors concluded, “the sustained ability to increase tear production and reduce dry eye symptoms positions the ITN as a promising new management strategy for dry eye disease.”

Other researchers studied the effect of TrueTear on dry eye symptoms during exposure to a controlled adverse environment in 143 subjects. They found that during controlled adverse environment exposure, a single application of the ITN device produced a statistically significant improvement in dry eye disease symptoms.

In both studies the device was well tolerated.

Cataract surgery
Most optometrists comanage cataract patients. Several posters addressed questions...
Mild or greater PPP occurred in about a third of patients following cataract surgery

no symptoms. Mild or greater PPP occurred in about a third of patients following cataract surgery.

The prevalence of severe PPP is in line with that of refractive surgery, dental implants, and genitourinary procedures.

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IV sedation resulted in less pain and more patient comfort compared to non-IV sedation

I had about cataract surgery.

Having undergone the procedure myself in both eyes over the last year, one of my questions was about sedation. I had intravenous (IV) sedation for both procedures, but I wondered if I might have gone without it. Evidently, I’m not alone.

A group of Canadian researchers assessed the effectiveness of IV vs. non-IV sedation methods in phacoemulsification.7 Some 10 studies of 985 subjects were included in their data analysis.

Their research indicated that IV sedation resulted in less pain and more patient comfort compared to non-IV sedation, yet a subgroup analysis of a small number of studies indicated that oral sedation and IV sedation techniques may be equivalent in controlling patient pain.

The results of this study have a potential to impact cataract surgery costs because switching from IV sedation to oral sedation may result in immense cost savings.

Dry eye following cataract surgery is a concern for patients. A study evaluated the frequency and risk factors for persistent postsurgical pain (PPP) after cataract surgery, defined as mild or greater dry eye-like symptoms six months after surgery.8 Some 32 percent of subjects reported PPP. Ten percent reported severe symptoms.

Patients with dry eye-like symptoms after cataract surgery also exhibited higher ocular pain scores and specific ocular complaints (including ocular burning and sensitivity to light and wind) compared to controls with no symptoms. Mild or greater PPP occurred in about a third of patients following cataract surgery.

The prevalence of severe PPP is in line with that of refractive surgery, dental implants, and genitourinary procedures.

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New thoughts on managing anterior segment disease are prompting opportunities for a healthier ocular surface. The eyelid margin has been the focus of much research, and clinically we are appreciating the delicate balance that a healthy lid margin provides for the ocular surface. This has implications for both contact lens and non-contact lens wearers.

Rynerson and Perry proposed a new theory regarding blepharitis and its long-term effects to the health of the ocular surface called “dry eye blepharitis syndrome” (DEBS).<sup>1</sup>

Clinically, we refer to a patient as having blepharitis by the presence of collarettes or deposits at the base of the lashes (Figure 1). Interestingly, they are a manifestation of blepharitis; ODs are at times guilty of not diagnosing based on the inflammatory state. Blepharitis, by definition, is an inflammation of the eyelid margin, and, therefore, using lid debris as an identifier of blepharitis falls short.

Rynerson and Perry discuss the overpopulation of bacteria creating biofilms over the lid margin surface as the major contributor to much of the downstream inflammation and, therefore, dry eye.

**Bacteria and biofilms**

Our lid margins are naturally populated with bacteria that naturally live within biofilms. All bacteria living in a natural environment live within biofilms as means of survival. As these bacterial populations within a biofilm increase above certain threshold populations, they undergo quorum-sensing gene activation and begin to produce toxins known as virulence factors.

It is these virulence factors, such as lipases, cytolytic toxins, and super antigens, that directly cause the inflammation that leads to blepharitis and, in some, the long-term sequelae of dry eye disease.<sup>2</sup>

This inflammation affects the ocular surface in phases based on the anatomical relationship of the structures within the lid. Logic would presume that smaller structures of the lid would initially be affected by the accumulation of biofilm within, and larger structures—or structures more distant to the lid margin—would be affected later.

Rynerson and Perry describe four stages of DEBS. These stages of DEBS are proposed as chronic long-term changes that occur over decades and manifest into the signs and symptoms that we know as dry eye disease.

Let’s review the order of the affected ocular structures along with the clinical manifestations that are evident at these phases.

### 1 Lash follicles

Not long after the entire lid margin is covered with biofilm, the lash follicle becomes the first structure to be affected by excess bacterial biofilms and associated toxins because of the follicle’s easy access and small size. When the biofilm progresses into the lash follicles, folliculitis ensues. This is a subtle clinical finding that can be easily missed on cursory anterior segment examination if not appropriately assessed.

The lash follicle manifests a volcano sign in which the skin surrounding the lash follicle is elevated with edema (Figures 2A and 2B). Many times pallor is noted as well, especially in darker-skinned patients. This is due to an “activated” toxin-producing bacterial biofilm that is present within the follicle.

As the biofilm thickens around the base of the lash, small pieces begin pull loose from the main layer due to the growing

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**TAKE-HOME MESSAGE**

Dry eye blepharitis syndrome involves the overpopulation of bacteria creating biofilms over the lid margin surface, contributing to inflammation and dry eye. It affects lash follicles, meibomian glands, and glands of Krause and Wolfring, in that order, over time. Microblepharoexfoliation effectively cleans the lid and provides practitioners with an opportunity to treat blepharitis.

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By Mile Brujic, OD, FAAO
lash. The main layer of biofilm extends back across the entire lid margin, but it is nearly invisible due to its translucence and tight adherence to the lid margin.

Once air gets under the biofilm, it becomes visible. This is typically when ODs are able to clinically identify blepharitis, but the process starts much sooner than visible biofilm at the base of the lashes.

It is critical to closely examine the lid margin for early volcano signs at the base of the lashes. Treatment now will prevent further damage and protect the meibomian glands.

2 Meibomian glands

Years after follicular involvement, the slow “lava flow” of biofilm will extend into the meibomian gland orifices. As this occurs, the biofilm will slowly alter the fluidity of the meibum and cause it to thicken. Obstruction at the gland orifices will initially lead to non-obvious meibomian gland dysfunction. Later, as the biofilm accumulates within the meibomian gland, it causes impaction and can lead to chalazions or hordeola.

When quorum-sensing occurs within the biofilm, clinicians will see obvious meibomian gland disease with redness of the lid margin. Unchecked, atrophy and loss of the glands will occur.

3 Glands of Krause and Wolfring

Decades later, the biofilm can extend in an attenuated state along the palpebral conjunctiva, eventually reaching the glands of Krause and Wolfring. It may also reach these glands by continuously “seeding” the tear film with small bits of biofilm, known as dispersal progression.

4 Eyelid architectural changes

Lid inflammation caused by a thickened biofilm is non-selective in its slow chronic destruction, eventually affecting the medial and lateral lid tendons and sensory nerves and causing meibomian gland involution, anterior migration of the line of Marx and eyelid margin thickening. Ectropion and loss of sensation can be the long-term effect.

Challenges of biofilm removal

Identifying signs of blepharitis early is critical to promote a healthy ocular surface. According to Rynerson and Perry, these changes occur over decades. So, it is critical to identify the signs early because the ramifications of excessive bacterial biofilm can eventually manifest as irreversible dry eye disease.

Decreasing the bacterial bioload and mitigating the inflammation and damage associated with excessive bacterial populations should be the goal. Lid hygiene has been utilized for decades, but lid hygiene requires good patient compliance in order to be even marginally effective.

The challenge is that bacteria protect their decades of work by “supergluing” their biofilm to the lid margin with an adhesion molecule. Therefore, the most compliant patients will still come up short on effective biofilm removal. Antibiotics can temporarily reduce excessive biofilms on lid surfaces but biofilms return quickly and antibiotics can cause resistance if used long term.

See DEBS on page 20

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Dry Eye

Exfoliating lids

Some clinicians are turning to microblepharoexfoliation (MBE) as a procedure that effectively cleans the lid and provides practitioners with an opportunity to actively treat blepharitis. During the procedure, a small medical-grade microsponge is spun along the edge of the eyelid and lashes, removing years of biofilm, bacteria overload, and toxins.

This procedure has been shown to provide significant improvements in both signs and symptoms in patients with dry eye.

In an open-label study, 20 patients with meibomian gland dysfunction and dry eye symptoms underwent the MBE procedure. Prior to treatment, patients’ level of meibomian gland dysfunction (MGD) and blepharitis using the Efron scale was graded. Tear film break-up time (TBUT) and ocular surface disease index (OSDI) scores were taken.

Four weeks later, patients’ signs and symptoms were reassessed. Signs of MGD, TBUT, and blepharitis were significantly improved. Subjective symptoms of dryness measured with OSDI were nearly cut in half.

In a separate retrospective study, more than 170 patients at multiple practices had MBE performed. Researchers measured TBUT, OSDI, and standardized patient evaluation of eye dryness (SPEED) questionnaire prior to treatment and again, on average, 3.8 weeks after the procedure was performed. TBUT improved by 66 percent, SPEED improved by 49 percent, and OSDI improved by 36 percent after the procedure was performed.

A poster at the 2017 Association for Research in Vision and Ophthalmology (ARVO) meeting summarized results from a study that examined MBE. Ten MGD patients who had positive InflammaDry (Quidel) test results were enrolled in the study. Prior to the procedure being performed, patients also underwent non-invasive TBUT and OSDI.

These measurements were again taken four weeks after the procedure. Consistent with the previous studies, all measurements improved when measured four weeks after the procedure. Additionally, 100 percent of patients tested negative with InflammaDry four weeks after the procedure, indicating normal levels of matrix metalloproteinase-9 (MMP-9) levels on the ocular surface.

Contact lens wearers require a healthy ocular surface to optimize lens wear. In one study, symptomatic lens wearers experienced MBE. Thirty patients were enrolled in the study; 17 were symptomatic lens wearers. After a single MBE procedure, 10 of the 17 were converted to asymptomatic. This represents a success rate in treating contact lens intolerance of 59 percent. These results can have huge implications in ODs’ everyday care of contact lens patients.

Wrapping up

DEBS provides insights into the influence of biofilms on the long-term health of the ocular surface. Early identification of blepharitis is critical to preserve the ocular surface, protect meibomian glands and, in contact lens wearers, promote comfortable wear.

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Dry eye protocol for any practice

Continued from page 1

To bridge the gap between traditional practices and tech-heavy dry eye clinics, I created a new protocol—a logical, easy-to-digest framework that fits all types of practices.

The protocol is arranged in three tiers according to the level of dry eye care optometrists want to offer. At every tier, patients get the diagnosis and treatment they need, either inside the practice or through trusted referral.

Here, I would like to share a high-level overview of that framework.

TIER 1
Basic Dry Eye Care Without New Investment
- A dry eye survey
- Simple testing
- Educational materials
- Basic treatments

TIER 2
Diagnostic Devices and Staff Participation
- Point-of-care testing
- Staff time
- More advanced treatment

TIER 3
Regional Leader with Advanced Treatments
- Some new testing
- Advanced treatments
- Point-of-care testing

TAKE-HOME MESSAGE This dry eye protocol outlines three tier levels for practices involved in dry eye. Tier 1 includes basic care that is part of a routine examination. Tier 2 builds on Tier 1’s basic care without significant investment of time or resources. Tier 3 practices accept referrals from other practitioners, invest time and resources into equipment and training, and offer advanced therapeutic options.

Tier 1: Basic care without new investment
At Tier 1, practitioners screen the general population for dry eye, as well as seeing dry eye as a primary complaint. Most eyecare practitioners are already practicing at Tier 1, although they may not acknowledge it as part of their assessment.

If practitioners want to expand their approach to dry eye, they can move to Tier 2. If this level fits best with practitioners’ practice goals, they can stay at Tier 1 and refer moderate to severe patients for tertiary care.

At Tier 1, diagnosis relies on the tools already on hand with no new purchases or additional exam time. These are the basic components:
- **Dry eye survey.** Using a standardized survey for all patients helps identify who is symptomatic for dry eye as well as how well dry eye treatments are working. Surveys like Standardized Patient Evaluation of Eye Dryness (SPEED) and the Dry Eye Questionnaire 5 (DEQ-5) offer quick completion by the patient and scoring by doctors or staff.
- **Simple testing.** In the exam room, doctors perform fluorescein staining as part of the traditional slit lamp exam, check the appearance of the meibomian glands and eyelids, and note the quality and expressability of the meibum.

These are parts of a routine exam, but doctors combine the observations with survey results to draw initial conclusions about dry eye disease. In addition to fluorescein staining, lissamine green can be utilized to assess the eye for conjunctival staining as well lid wiper epitheliopathy and the positioning of the line of Marx. Lid hygiene, lid closure, and presence of telangiectasias may be noted on examination. Also, the tear prism height can be quickly assessed during slit lamp examination.

- **Educational materials.** Patient education not only provides a greater understanding of dry eye disease, but it also aids in compliance and understanding of the condition. Discussions can be accompanied by patient education sheets to help teach patients how to perform home care.

- **Basic treatments.** If the dry eye disease is evaporative, a lipid-based tear and warm compress may be warranted. The inflammatory component of dry eye disease can be treated by the use of omega nutritional supplements and prescription ophthalmic medications such as cyclosporine (Restasis, Allergan) or lifitegrast (Xiidra, Shire), as well as lifestyle changes. If the patient’s dry eye isn’t controlled, adjustments may be made within the regimen of Tier 1, but if patients fail to make marked improvement, further intervention may be required.

Tier 2: Diagnostic devices and staff participation
As practitioners move from Tier 1 to Tier 2, it is time to make additional financial commitments, adding new testing technologies and prioritizing staff engagement for ocular surface disease.

A Tier 2 practice has all the dry eye offerings of Tier 1, plus these features:
- **Point-of-care testing.** At this level, doctors consider adding tear osmolarity testing (TearLab Osmolarity Test, TearLab), an MMP-9 inflammatory mediator test (InflammaDry, Quidel), and/or meibography (LipiView II, Johnson & Johnson Vision; Keratograph 5M, Oculus; and SL-D701 slit lamp attachments, Topcon). They can perform ocular photography as well.

A complaint of dry eye disease symptoms or a diagnosis of ocular surface disease may dictate additional diagnostic tests. A physician’s order for the test is made, and once the test is executed, appropriate interpretation of the testing must be completed. The evaluation may be charged with an appropriate diagnosis and medical necessity.

- **Staff time.** Staff take an active role in patient education at this level, and staff require
training by practitioners. They initiate education before patients see the doctor, or efficiency will drag. In my experience, I recommend choosing empathetic people who are well suited to dry eye patients’ higher level of anxiety.

- **More advanced treatment.** Moderate additions to treatment include in-office lid debridement such as microblepharoexfoliation (BlephEx, RySurg). Practices may add additional diagnostic and therapeutic pieces over time. Thermal pulsation, amniotic membranes, and other options are often integrated incrementally.

**Tier 3: Regional leader with advanced treatments**

Tier 3 is a dry eye center. The doctor makes a solid commitment to treating dry eye, becoming a thought leader in the city or region. Optometrists and ophthalmologists refer their dry eye patients to this practice.

Tier 3 offers the same benefits as Tier 2, as well as these additions:

- **New testing.** One of Tier 3 practices’ greatest services is to act as referral destinations for other eyecare practitioners in their markets. Not all doctors share an interest in managing dry eye at an advanced level, preferring instead to rely on a colleague for that care. Being a trusted resource is an important role.

- **Advanced treatments.** Tier 3 practices utilize diagnostic testing and advanced therapeutic options. At this level, advanced therapeutic options are engaged frequently. Doctors can use thermal pulsation for meibomian gland dysfunction (MGD) and intense pulsed light (IPL) (M22 OPT, Lumenis) therapy to address underlying inflammation. Amniotic membrane promotes healing of the ocular surface, while serum tears provide relief in advanced cases. Patients can be referred for treatment of punctal stenosis or conjunctivochalasis.

- **Staffing and scheduling changes.** In most dry eye clinics, a doctor and staff have dedicated time on certain days or at least parts of the day to only dry eye.

**Low threshold for adoption**

As dry eye knowledge and capabilities continue to evolve, I frequently update this protocol on my website (www.dryeyecoach.com). It is not designed to be a substitute for the comprehensive research of exceptional protocols such as TFOS DEWS II, but rather to provide practical, accessible guidance for how to apply knowledge of dry eye in daily practice with the tools at our disposal.

I hope this framework for adoption lays out how practices can get started, regardless of the level of dry eye interest and commitment.

**REFERENCE**


Dr. Hauser is also founder and senior consultant for Signal Ophthalmic Consulting, which designs premier care plans for optometry and ophthalmology practices. She received her Doctor of Optometry degree in 2001 from Southern College of Optometry and completed a residency in primary care at SCO in 2003. Dr. Hauser previously served as clinical director and research coordinator at an ophthalmology referral center in Memphis. She enjoys spending time with her family and fitness activities.

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modify the definition of hypertensive crises, the healthcare field still refers to the old definition given by the seventh JNC report. This report considers a blood pressure reading that is greater than 180 mm Hg (systolic) or 120 mm Hg (diastolic) as severely elevated. Patients with severely elevated blood pressure are considered to be at risk of hypertensive crisis.

About 1 to 2 percent of patients with hypertension experience hypertensive crisis at one point in their lives.

**Emergency vs. urgency**

There are two stages of hypertensive crisis:

- **Emergency**
  - Hypertensive emergency is a true life-threatening emergency with impending target-organ-damage (TOD) in the heart, brain, kidney, and large blood vessels.
  - Serious conditions, such as ischemic heart failure, acute renal failure, and aorta rupture, are suspected in such patients. Emergency admission to intensive care unit is mandatory for prompt reduction of blood pressure by approximately 20 to 25 percent, depending on suspected conditions.

- **Urgency**
  - While hypertensive emergency is considered a true life-threatening condition, its appearance in optometric offices is relatively uncommon. Because of their manifested systemic signs and symptoms, patients tend to seek care at the ER.
  - Patients with hypertensive urgency may be completely asymptomatic and more likely make a visit to an optometric office. The dilemma lies in how to assess the risk of immediate TODs.

- Hypertensive urgency is lacking definitive consensus in its spectrum. While some patients may hold relatively lower risk, a certain degree of hypertensive urgency can pose an immediate threat. Thus, it is critical to have clear standards on when to send hypertensive patients to the ER.

**Triaging patients**

It is tempting to create an oversimplified numerical cutoff for triaging hypertension. For example, how about referring patients with systolic pressure >180 mm Hg or diastolic pressure >120 mm Hg?

This “number approach” has a potential flaw: you may end up referring patients who don’t truly need care at ER and would receive better care by primary-care physicians (PCPs). After ER visits, the rate of follow-up at PCP offices is often poor. Optometrists should also be sentient of the fact that hypertension is a chronic disease, and long-term success for patients is built by continuous follow-up with PCPs.

A better approach is to assess the risk based on clinical features and tailor the referral. The following three steps ensure the proper risk assessment of patients who are in danger of hypertensive crises in your optometric offices:

- **Symptomatology check**
Step 1. Symptomatology check
First, attention should be directed to the patient’s systemic signs and symptoms.
Zampaglione and colleagues formulated the list of signs and symptoms that 449 hypertensive crisis patients presented with to the ER.7 Of those, nearly one-fourth of the patients had hypertensive emergency.
The study highlights clear differences between the presenting symptoms of the two conditions. Patients with hypertensive emergency were more likely to present with chest pain and difficulty breathing (dyspnea); patients with hypertensive urgency more often present with headache and nose bleeding (epistaxis).
How should optometrists utilize this information?
The best advice is to refer all symptomatic patients. While it is useful to be aware of the difference in characteristic symptoms between emergency and urgency, it is not practical or possible to differentiate the two conditions in an optometric office. Thus, all symptomatic hypertensive patients with severely elevated blood pressure should be considered potential hypertensive emergencies and referred to the ER.
Meanwhile, this study outcome implies the questions optometrists should ask when facing patients with severely elevated blood pressure.
Are you having difficulty breathing? How about chest pain, vertigo, tingling, feeling faint, irregular heartbeat, or headache?
Before the patient is considered “asymptomatic,” these conversations need to take place in OD’s exam room.

Step 2. Fundus examination
For asymptomatic patients with severely elevated blood pressure, fundus examination is necessary to assess immediate and long-term risk of TODs.
Hypertensive retinopathy often first manifests as “attenuation” of the arterioles. This is an autoregulatory response in which the lumen of the arteriole decreases in size to maintain the same perfusion pressure to the tissue.
As hypertensive status becomes chronic, the blood vessel wall becomes damaged.

A blood pressure reading >180 mm Hg (systolic) or 120 mm Hg (diastolic) is severely elevated
Hypertension
Continued from page 25

through the process called hyalinization, and becomes sclerotic. As the sclerosis advances, it clinically manifests as copper wiring (Figure 1) or silver wiring.

Community studies, such as the Atherosclerosis Risk in Communities Study (ARIC), suggest that patients with retinal atherosclerosis have an association with long-term cardiovascular and cerebrovascular incidents, but its implication does not appear to be immediate.2,11

As hypertension in the retina manifests to the next level of retinopathy, its implication of TODs changes.

In moderate retinopathy, hemorrhages and both soft and hard exudates appear in the retina. At this stage, the blood-retinal barrier (BRB) is compromised, leaking blood and inducing local ischemia.

Optometrists should be aware of the functional and anatomical similarities of the BRB and two other blood-barrier systems: glomerular-filtration barrier in the kidney and blood-brain barrier in the brain.

All three blood-barriers share the same function via tight junction between the endothelial cells of the vessels. It is no surprise that a compromise in the BRB correlates with a breach of the other two barriers.

The ARIC study investigated glomerular filtration function in varying degrees of retinopathies. Patients with compromised BRB were more likely to have compromised glomerular filtration function concurrently (odds ratio: retinal hemorrhage = 2.6, soft exudates = 2.7) when compared to no retinopathy.13 This strongly suggests that a compromise in the BRB correlates with a breach of the other two barriers.

Furthermore, an alarming fact from the ARIC study concerned the risk of stroke. Patients with compromised BRB had a significantly higher risk of stroke in the initial three-year follow-up as compared to patients who had no retinopathy at baseline.17 This strong correlation between moderate retinopathy and stroke was further confirmed in the 13-year follow-up study.14

The ARIC findings put ODs in an uncomfortable position. What if your asymptomatic patient has severely elevated blood pressure and concurrent moderate retinopathy? In this instance, there is no consensus on how quickly such a patient converts into a hypertensive emergency. If the patient’s PCP is not available for management consultation within 24 to 48 hours, the patient should be referred to the ER.

Once hypertension reaches severely elevated level, the blood vessel may undergo the final pathological process called fibrinoid necrosis. Fibrinoid necrosis obliterates the vessel lumen and induces severe ischemia. This would manifest in the retina as chorioidopathy, optic disc edema, macular star exudates, and focal intraretinal peri-arteriolar transudates (FIPTs).

FIPTs are unique to this severe stage of retinopathy. FIPTs are a sign of leakage from dilated pre-capillary retinal arterioles.15 If autoregulation is still effective at severely elevated blood pressure, retinal arterioles should continue to constrict to provide the same perfusion pressure to the tissue. FIPTs represent the breakdown of autoregulation called “autoregulation breakthrough” in which perfusion is no longer controlled, and the system reaches “hyperperfusion” status.

When the retina reaches autoregulation breakthrough, the brain is likely to reach the same alarming status. Optic disc swelling, seen in severe retinopathy, appears to represent autoregulation breakthrough in the brain.16 This hyperperfusion status in the brain is considered a hypertensive emergency. Without proper treatment, the survival rate is extremely low: 1 percent in five years.17 However, proper antihypertensive management can improve the survival rate to 91 percent in five years.17 Admission to the ER is mandatory for severe hypertensive retinopathy.

It is critical to have clear standards on when to send hypertensive patients to the ER

TABLE 1 Signs and symptoms of hypertensive crises

<table>
<thead>
<tr>
<th>Signs and Symptoms</th>
<th>Emergencies (%)</th>
<th>Urgencies (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>3.0</td>
<td>22.0</td>
</tr>
<tr>
<td>Epistaxis</td>
<td>0.0</td>
<td>17.0</td>
</tr>
<tr>
<td>Chest pain</td>
<td>27.0</td>
<td>9.0</td>
</tr>
<tr>
<td>Dyspnea</td>
<td>22.0</td>
<td>9.0</td>
</tr>
<tr>
<td>Faintness</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>Psychomotor agitation</td>
<td>0.0</td>
<td>10.0</td>
</tr>
<tr>
<td>Neurological deficit</td>
<td>21.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Vertigo</td>
<td>3.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Paresthesia</td>
<td>8.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Vomitus</td>
<td>3.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Arthritia</td>
<td>0.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Other</td>
<td>3.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>


TABLE 2 History risk assessment4,18,19

<table>
<thead>
<tr>
<th>From pertinent medical history</th>
<th>From chronicity of hypertension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established diseases in vital organs (heart, kidney, brain, aorta)</td>
<td>No prior diagnosis of hypertension</td>
</tr>
<tr>
<td>Example: Congestive heart failure, coronary artery disease, unstable angina, renal insufficiency, transient ischemic attack, and stroke</td>
<td>Young age</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>Pregnant or two weeks postpartum</td>
</tr>
<tr>
<td>Metabolic syndrome</td>
<td>Current drug abuse</td>
</tr>
</tbody>
</table>

See Hypertension on page 28
MANAGING BIOBURDEN

AVENOVA IS THE MISSING PIECE IN ANY MGD DRY EYE OR BLEPHARITIS REGIMEN

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Step 3. Review of history

A patient’s medical history gives insight into the risk of immediate TODs.

Experts believe that asymptomatic patients with severely elevated blood pressure should be divided into two categories, hypertensive urgency and “severe uncontrolled hypertension,” based on the risk factors for progressive TODs.1,18 Those risk factors include pre-existing damages in vital organs (Table 2).

Besides medical diagnosis, the chronicity of hypertension also dictates the risk of TODs.

Autoregulation provides protection to vital organs by maintaining the same perfusion pressure. When facing patients with severely elevated blood pressure, a clinician may intuitively fear that blood pressure has exceeded the limit protected by autoregulation. A remarkable truth of autoregulation is its incredible ability of adapting to chronically elevated blood pressure and continuously providing protection by shifting to the “right” (Figure 2).

This right shift occurs through many years of hypertension, and chronically elevated patients may temporarily be protected by it.

Conversely, patients who acquired severely elevated blood pressure within a short period of time can manifest TODs at much lower blood pressure than chronically elevated patients. For example, certain recreational drugs (amphetamine and cocaine) are known to cause hypertensive crisis by acutely raising blood pressure.19

For asymptomatic patients, medical history should be reviewed thoroughly. Patients with notable risks should be considered “severe uncontrolled hypertension.” Those are asymptomatic patients with severely elevated blood pressure whose fundi show minimum retinopathy, whose medical histories appear unremarkable, and return to the ER regardless of whether he received treatment at his initial ER visit.22 More importantly, there was no difference in mortality at one month.

Patel and colleagues confirm the ACEP consensus in their retrospective study in 2016.21 In their cohort of 59,836 patients with hypertensive urgency, 387 patients underwent investigative studies in the ER, such as echocardiogram and CT scan. Only 2.1 percent of tested patients showed evidence of TODs, creating questions about the validity of routine testing in the ER.

In general, patients with a low risk of severe uncontrolled hypertension can be followed by PCPs in non-emergent basis, within the week.4 Those patients often do not strictly follow an anti-hypertensive medication regimen. Adherence should be strongly encouraged before sending them home.

Conclusion

Sending a hypertensive patient to the ER should not be based on a mere numerical approach but rather on thoughtful evaluation of a patient’s risk of TODs. By paying an attention to the symptomatology, history, and fundus, optometrists can systematically guide their patients to proper medical care to ensure long-term success.

All symptomatic hypertensive patients with severely elevated blood pressure should be considered potential hypertensive emergencies and referred to the ER

Hypertension

Continued from page 26

Low-risk patients with elevated blood pressure

Going through the previous three steps should filter out patients who should be evaluated emergently in the ER or urgently by PCPs, and the remaining low-risk patients should be completely asymptomatic and more likely make a visit to an optometric office

Patients with hypertensive urgency may be

who have a long history of hypertension. ODs may wonder if these patients should be referred to the ER as well.

Because the ER encounters a significant percentage of hypertensive crisis patients, the American College of Emergency Physicians (ACEP) addressed this specific topic in its clinical policy in 2013.22 While experts acknowledged that there was insufficient data to support a definitive evidence-based management guideline, they reached a consensus that routine work-ups and lowering blood pressure in the ER was not required for patients with elevated blood pressure.

It may be perplexing that aggressive lowering of blood pressure is not beneficial for many patients. The answer lies in the autoregulation shift that long-term hypertensive patients experience (Figure 2). An abrupt drop in blood pressure in a long-term hypertensive patient may result in insufficient perfusion pressures and induce organ dam-

All symptomatic hypertensive patients with severely elevated blood pressure should be considered potential hypertensive emergencies and referred to the ER

ered true hypertensive urgency, and referral to the ER should be considered.

1-2% of patients with hypertension experience hypertensive crisis at one point in their lives

REFERENCES


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5 tips to impress contact lens patients

Educating patients about new technology and upgrading their lenses are vital

By Mark Toelle, OD

Optometrists should not only provide eye care service, but share information and educate patients about new technologies and products in eye care and related products, such as contact lenses, frames, lenses, and more.

If patients are not learning about the latest innovations in contact lens and lens care products by their optometrists, they may not see a reason to continue to visit the office any longer.

Upgrade your patients to the latest contact lens technology, and impress them in the process.

These five tips can help you do that.

**TIP 1**

First impressions count, so make it great

In most cities, patients have many offices to choose from for their eye care needs. Making a good first impression is very important and a perfect reason to upgrade the patient into an innovative contact lens technology.

A good first impression starts the moment a patient walks through the door. Having a welcoming and friendly office environment is key for making a good first impression and important for retaining patients.

The first thing our staff does when checking in a patient is thank him for choosing our office for his visit. At the same time, the staff obtains basic information about the patient and his eye health to make his first visit as easy and efficient as possible.

When meeting a patient for the first time, shake hands and make eye contact. Take the time to explain the importance of her visit and reinforce good contact lens care and eye health practices. If her last doctor did not educate her about innovative technologies, she will likely be impressed with your service and return for future eye care.

Our office also offers a referral program. When patients refer their friends and family, they receive a 10 percent discount on their next visit and products. By offering this program, our team can reward our patients for their loyalty and leverage word of mouth to grow our patient base.

**TIP 2**

Take time to educate your patients on innovative technologies

When I reflect on my own personal buying habits, it’s easy to see that my purchases were made based on how educated I was on that product or service. I find if someone takes the time to educate me on the benefits of an upgraded

Dompé receives FDA approval of Oxervate

**IN BRIEF**

Dompé has received U.S. Food and Drug Administration (FDA) approval for Oxervate (cenegermin-bkbj ophthalmic solution), a therapy for neurotrophic keratitis.

Neurotrophic keratitis is a rare orphan condition that affects fewer than 65,000 persons in the U.S., according to the company. It results from impaired function of corneal nerves, which can be caused by herpetic or other infections, ocular surface injuries, ocular or neurologic surgeries, and systemic conditions that can impair corneal sensation.

If unchecked, the disease can progress in severity, leading to persistent epithelial defects, corneal ulcers, melting, perforation and vision loss.

Until now, treatment options for neurotrophic keratitis were limited to symptomatic treatments which do not target the underlying disease pathology: artificial tears, antibiotics, autologous serum-derived eye drops, tarsorrhaphy, and botulinum-induced ptosis. Surgical interventions include conjunctival flap surgeries and corneal transplants.

Oxervate is based on cenegermin-bkbj, a recombinant human nerve growth factor that is structurally identical to the nerve growth factor (NGF) protein made in the human body, including in ocular tissues.

The endogenous protein supports corneal integrity though several mechanisms. NGF acts directly on corneal epithelial cells to stimulate their growth and survival.

According to the company, NGF is known to bind receptors on lacrimal glands to promote tear production, which may provide the eye with lubrication and natural protection from pathogens and injury. The protein also has been shown experimentally to support corneal innervation, which is lost in neurotrophic keratitis.

The most common adverse reaction was eye pain (16 percent of patients). Other adverse reactions included corneal deposits, foreign body sensations in the eye, ocular hyperemia, swelling of the eye, and increase of tears (1 to 0 percent of patients).

Oxervate is approved for use in adults and in children 2 years of age and older. The drug is taken over an eight-week period in which patients can self-administer the treatment at home.

Oxervate will be available in the United States by early 2019.

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**TAKE-HOME MESSAGE**

Optometrists need to ensure they are continuing to educate and share new advancements with their contact lens patients. The five best practices to keep in mind when upgrading and impressing patients include making a great first impression, educating patients on new technologies, offering upgrades, including taking the time to explain the features of those that may be costlier, and tapping into your colleagues and sales representatives as valuable resources.
product and it fits my needs, I will most likely choose the new technology over the old.

When a patient comes in with contact lenses with old technology, walk her through the features of the new lens and how this technology can provide excellent vision and comfort in the changing world of digital and visual demands. You will likely discover that by going beyond simply describing the features of a new product, patients will be able to understand that their choices can impact their vision and comfort with contact lenses in the future.

**TIP 3** Always offer the “the next big thing”

Most patients will wait in line for the next smart phone upgrade and thus generally accept the costs associated with the upgrade because it is what they’re used to.

But for some reason, optometrists assume that patients do not expect or want the same when it comes to contact lenses. Many of our patients are very accustomed to “the next big thing,” and we should be proud to share the latest technology that our contact lens manufacturers bring to market for our industry.

By educating patients on newer technologies and advancements in contact lenses, patients will see you as an expert resource for “the next big thing,” which can also increase retention rate.

**TIP 4** Don’t hesitate to bring up costlier options

Upgrading your patients into a new contact lens alternative may include a more expensive vision care option, and because of this, some doctors are hesitant to present these options because of these cost concerns.

I have found that once I explain to patients the upgraded features of the lens technology and any related rebates to the product, such as multifocal or premium contact lenses, the cost difference is minimal. Once fit into the new product, patients comment on the excellent vision and comfort they have with the lenses.

For example, one of our monthly contact lens wearers was suffering from seasonal allergies. I recommended that he not only switch to daily disposable lenses to help minimize daily debris buildup, but by switching to daily disposables, he saved on the costs of contact lens solution.

**TIP 5** Colleagues and sales reps can be your best resource

Don’t forget to tap your colleagues for help or take the time to partner with your sales reps. Both can be incredible resources for advice on sharing new products with patients or fitting new lenses, especially when fitting specialty lenses. Without fully understanding the product or the fitting guide for the lens, you will be unable to provide the best vision care option to your patients.

Also, collaboration shouldn’t stop with colleagues. An often-missed opportunity and highly valuable resource are your sales representatives. Reach out to them during state and regional meetings, and invite your local representative to speak to your team about fitting tips and new innovations.

**Impress your patients**

I hope these strategies will assist you in providing the very best care possible for contact lens-wearing patients. At your next weekly staff meeting, incorporate one or two of these suggestions into your daily practice and continue to track how these changes make an impact on your staff, practice, and patients.

In my experience, nothing is better than a happy patient who looks to you and your staff for their knowledge and advice on their eyecare needs.
Three strategies to grow your practice

As optometrists, finding noteworthy ways to grow the practice and attract more patients can sometimes be a challenge. ODs are so busy seeing patients and juggling the everyday challenges of owning a practice that they overlook creative ways to attract more patients.

Most ODs don’t have thousands of dollars available for marketing. ODs ask for referrals, but sometimes this is not enough to fill schedules. There are ways ODs can welcome more patients into their practices that surprisingly will not break the bank or put a hole in the marketing budget.

In my experience, creating a rapport and relating to patients is the number-one way to bring more loyal patients into the practice. But ODs are busy seeing patients all day—how to find the time to do this?

Here are three easy tips to help ODs create that rapport and bring more patients into their practice.

1. Present at Career Day

Connecting with your community is a great way to educate people and expand the list of potential patients. Career Day at the local school does just that: Students come home from school excited after career day, and they tell their parents. Parents will not only appreciate the information you shared, but they will remember you as the expert when they need an eye doctor.

Career Day is not the place to show off and use complicated lingo if the audience is second-graders.

For example, I love introducing myself in a way that is memorable and a little humorous: “Hello! My name is Dr. Diana Canto-Sims, and I am your friendly neighborhood eyeball doctor.” Such an introduction makes even the teacher giggle, and you establish yourself as the “go-to” eye doctor for the teacher.

Another efficient way to tackle Career Day and take advantage of your captive audience of students (and households) is to prepare a tray with a select group of diverse frames. I include specialty frames like sports frames, safety frames (with the side shields attached), swimming goggles, cute colorful frames, sparkly frames, kids’ sunglasses, and branded frames that kids like.

The kids absolutely love it, but how to reach the rest of the household? Bring all the students a meaningful gift. I mention the gift during the talk because I want their attention. The cost of the gift is not high—it runs me only pennies each.

For example, I give a branded folder that students can reuse for school and branded pencils and erasers that they will see and use on a daily basis in class and at home. Inside the folder, I insert a brochure designed for the parent to read about the importance of vision in learning, checking for signs that their child may need an eye exam, and a call to action such as, “Call us to make an appointment today.” (See Figures 1 and 2.)

Make sure you give students something meaningful and relatable to them. A business card with a flyer is just not going cut it.

What happens after career day is glorious. Children come home excited about their new branded folders and tell their parents about how awesome it was to hear their local eye doctor talk about eyeballs and how eyes are important when learning.

They repeat everything, I say including the importance of a yearly eye exam, how school vision screenings are not eye exams, and how essential it is for everyone in their family to have a yearly eye exam.

Remember to be fun and use words children understand. Above all, remember to smile, smile, and smile—no one wants to see a grim eye doctor.

You may think it’s a waste of time to spend two hours with second-graders. However, in two hours you can reach more than 25+ families.

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You may think it’s a waste of time to spend two hours with second-graders. However, in two hours you can reach more than 25+ families.
Visit your local pediatrician or MD

Fostering relationships with other physicians in your area is another way to grow your practice. Asking them to refer their patients to your practice as the primary eyecare provider is key.

Remember that referrals are a two-way street. Other doctors will be interested in referring patients to you if they have been referring patients to them.

I suggest using a philosophy called “give, give, get.” You give something without expecting anything in return. Then, give again without expecting anything in return, and eventually, you will get. If you do not get, do not offer a third give.

After 12 months, run referral statistics. Move on if a particular practitioner has not referred any patients after two gives. Don’t expect everyone to give back every time you give. Shift that mentality, and the energy behind your give will be fruitful.

Taking other doctors to lunch or dinner to exchange business cards likely is not the most time effective or economical way to connect. A lunch meeting will not be as impactful or memorable.

However, physicians’ staff plays an important role when it comes to referring patients. Instead of sending pizza to the office staff, our office sends practical and promotional gifts.

We purchase high-end promotional items such as Yeti stainless steel, double-insulated bottles, high-end coffee mugs, ergonomic mouse pads, colorful Post-it note blocks, and elegant pens.

All items are beautifully branded with practice name, phone number, and website. The goal is for your practice’s name to be everywhere in their office every day of the year. When a staffer gets coffee, when she hydrates between patients, when she enters data in the computer, they see and remember your practice information so when a patient asks for a referral for a primary eyecare doctor, they will remember you.

Create mailings to “sneezer” patients

“Sneezers” are patients who talk about how amazing you are to everyone and refer you to friends and family for nothing in return.

Seth Godin uses this term in his book *Ideavirus* to describe the incredible power of social media in the hands of those who influence others. “Sneezers are at the core of an ideavirus. Sneezers are the ones who, when they tell 10 or 20 or 100 people about an idea—people believe them,” he writes.

Sneezer patients come in every year—sometimes more often—and purchase multiple pairs of eyewear and sun wear. Then, they tell everyone about you.

These are the patients to whom you send a special mailing. Our office alternates between a postcard mailing and a beautiful invitation with an offer inside.

The elegant invite is more expensive, but we use these for elite patients. One patient purchases 13 to 15 pairs of complete eyeglasses and sunglasses every time she comes in. We began sending her invites more often, and now she comes three to four times a year.

Design postcards at sites such as Canva or Vistaprint. I like postcards because they are easy to read when patients get their mail. Postcards tend to linger around the house, and family and friends see them.

In the era of digital notifications, a postcard carries weight. People will delete text messages, voicemails, and emails, but a mailing is a physical piece of cardstock that lingers in the household for at least 24 hours.

Every time a patient sees the mailing, she remembers the practice and the offer. Include a call-to-action on the postcard, such as, “Call us today for a special styling session” or “Stop by to see our new styles from XYZ.”

Plant the seeds

It is important to see these tips as seeds you are planting to grow your practice. The more seeds you plant daily, the more will sprout.

Career Day is an hour or two and an opportunity to plant many seeds. Connecting with another physician is another seed. Every mailing delivered to your target patient is also a seed.

Don’t expect every seed to sprout. Some seeds will scatter, and some will flourish. Keep planting and nurturing to help your practice grow.

Dr. Canto-Sims is CEO and founder of La Vida Eyewear, designed for Latinos by a Latina. She is a member of Transition Optical’s advisory board and Change Agent group. dianacanto@hotmail.com

Instead of sending pizza to the office staff, our office sends practical and promotional gifts

Figure 2. I packaged the gifts in a colorful, eyecare-themed bag.

2

3

Dr. Canto-Sims is CEO and founder of La Vida Eyewear, designed for Latinos by a Latina. She is a member of Transition Optical’s advisory board and Change Agent group. dianacanto@hotmail.com
Bold colors for FYSH fall 2018 collection

FYSH’S FALL 2018 collection features an array of bold colors and intricate detailing. Current shapes exhibit gradient, translucent, or iridescent tones; patterns; and design elements.

▶ Modified cat-eye style F-3615 features Mazzucchelli animal print acetate with iridescent colors that shifts shades as it moves in the light. A polished metal inlay along the browline adds a finishing touch of sophistication. This style is available in hues of leopard, chameleon, and purple leopard.

▶ Rounded rectangle shape of style F-3616 is a large-fit frame that comes in soft feminine shades in gradient acetate. Beveling along the browline provides dimension to the design. Featuring OBE spring hinges, this style is available in hues of aubergine rose, brown nude, grey smoke, and burgundy red.

▶ Classic cat-eye style F-3611 showcases a sophisticated color palette achieved by custom lamination that enriches the translucent crystal acetate and accents the browline. Finished by color coordinated metal temples and OBE spring hinges, this style comes in nude crystal, grey crystal, purple crystal, and rose crystal.

▶ A metal frame plays with color blocking and finishes in style F-3617. A semi-rimless frame with a modified cat-eye shape and a mono-block front, its thin profile is highlighted by two-tone coloring and end pieces that feature a jigsaw puzzle design wrapping to temples. This style is available in color combinations of black gold, sapphire rose, brown emerald, and burgundy eggplant.

▶ Style F-3613 will light up any look with the mix of solid and glitter epoxy that creates a color blocked effect on end pieces and the temples. High-gloss finishes in hues of black silver, ink black, burgundy rose, and brown gold are featured for this frame.

▶ Style F-3617 gives a modern twist to the classic aviator with a honeycomb pressed pattern along the rim. The temple features a linear metal detail accented by two-tone color block effect. A discreet custom integrated spring hinge is worked into the frame without disrupting the design. Available hues are burgundy ink, brown gold, rose black, and purple teal.
INVU launches ‘90s retro fashion styles

ZURICH, Switzerland—Today’s latest fashion draws on trends from the 1990s. Cargo pants, platform sneakers, overalls, and bandanas are all making a comeback, according to Swiss Eyewear Group. The company’s designers took inspiration from this period when they designed a series of small INVU ovals, squares, and hexagonal stainless steel sunglasses. The fashionable candy colored lenses along with matching mirror coatings complete a trendy ‘90s retro look.

While the styling inspiration is from the 1990s, the technology that went into manufacturing these sunglasses is state-of-the-art. The latest frame materials and Swiss Eyewear Group’s ultra polarized lenses are featured.
Minimalist design highlights EVATIK’s fall collection

MINIMALISTIC DESIGN, fine detailing, and subtle pops of color provide a polished and refined look to the new EVATIK frames for fall 2018. Drawing inspiration from European eyewear trends, the new collection features high-end materials and architectural design elements.

E-9175 features a square eye shape, drop bridge, and a mono-block front for a lightweight and minimalistic design. Laser-cut pattern inspired by carbon fiber texture is showcased on the temple for subtle detailing. The two-tone coloring creates contrast between the neutral base tones and the strong accent color, available in black blue, brown taupe, and charcoal red.

Beveled edges along the browline and bridge create added dimension for E-9176. A laser cutout design on the temples is inspired by the concept of positive vs. negative space that is accentuated in contrasting colors offered in brown black, charcoal red, and black blue.

Handmade acetate wraps along the browbar for sporty rectangular style E-9177. Featuring spring hinges for comfort and durability, this large-fit combination frame comes in tortoise black, black gun, and matte black grey.

Another large-fit frame is E-9178 in a semi-rimless construction. This style showcases lightweight and flexible rubber temples with a wood overlay providing different textures and finishes to a classic design. E-9178 is available in charcoal, black, and brown.
Dry eye is one of the most frequent causes of patient visits to eye care practitioners, affecting an estimated 30 million people in the US. Dry eye symptoms may adversely affect visual function, potentially resulting in reduced quality of life and productivity. 2, 4

Determining the major etiology behind the dry eye is essential to optimal management. In aqueous deficient dry eye, hyperosmolarity results when lacrimal secretion is reduced. In evaporative dry eye, tear hyperosmolarity is caused by excessive evaporation from the exposed tear film due to insufficient production of protective lipids. 5

Diagnosing the underlying cause of dry eye symptoms can be complex. The 2017 Tear Film and Ocular Surface Society Dry Eye Workshop recommends a systematic approach that starts with symptom screening, using validated questionnaires, followed by diagnostic tests intended to accurately classify the condition as aqueous deficient, evaporative, or mixed. 6 It is estimated that 30-70% of patients experience mixed dry eye. 7 If only aqueous deficient or evaporative dry eye is addressed in these patients, they may be unable to derive adequate relief. A simple way to help relieve patient symptoms is to recommend a dry eye solution designed for all major types of dry eye, such as SYSTANE® Complete. SYSTANE® Complete is designed to supplement all layers and stabilize the tear film, providing relief for all major types of dry eye. 5, 8-13

SYSTANE® Complete contains HP-guar, a non-ionic polymer that becomes a gel upon instillation and is known to enhance the effect of the active ingredient. SYSTANE® Complete uses Alcon’s advanced lipid nanotechnology which allows for an increased concentration of HP-guar resulting in better coverage* 14, 15 and long-lasting relief. 16

In addition, SYSTANE® Complete is designed to minimize blur on instillation due to its nano-droplet formulation. 16 Patients using SYSTANE® Complete in my practice report experiencing long-lasting relief.

Patients approach their eye care providers seeking our recommendation for what we feel is going to be best for them. SYSTANE® Complete helps simplify this choice because it is suited for all major types of dry eye, providing patients with better coverage of the ocular surface,* fast-acting hydration, and long-lasting relief—it’s one simple choice for optimal relief of dry eye symptoms. 10, 12, 14, 16

It is essential that ECPs make a recommendation to ensure patients use the best product for their dry eye symptoms* 12

One of the reasons I like to recommend SYSTANE® Complete to my patients is that it addresses all major types of dry eye* 10

“Comparative to SYSTANE® Balance Lubricant Eye Drops.”

References:

13. Lane S, Reigh J, Webb J, Christensen M. An evaluation of the in vivo retention time of a novel artificial tear as compared to a placebo control. Poster presented at: The Annual Meeting of the Association for Research in Vision and Ophthalmology (ARVO); May 1-4, 2007; Fort Lauderdale, Florida.
Rich color combinations, laser-cut detailing, and innovative materials are elements that highlight the KLiiK Denmark collection for fall 2018. Inspired by Scandinavian design and key fashion influences, the new styles offer custom design elements for men and women requiring smaller eye sizes with a minimalistic and modern aesthetic.

For ladies, three new styles featuring exclusive patterns and colors are released this fall.

**Metal K-625** has a modified square shape and a keyhole bridge for a vintage appeal. It features a monoblock front and a laser-cut design on the temples highlighted by two-tone coloring. This style is offered in blueberry fuchsia, black gold, brown mint, and wine tangerine.

**An eye-catching style in handmade acetate of gradient glitter highlights the rectangular shape in K-629.** The metal decor showcased on the end pieces and the temples adds a touch of refinement to this frame that is available in hues of rose, seafoam, blush, and midnight.

**The modified cat-eye shape of K-626 comes in patterned and translucent acetates.** The mix of neutral tones and patterns is enriched by a subtle metal end cap on the temple. Brown medley, black spec, blush, and nude are available colors.
The three new releases for men combine thin metal profiles with subtle pops of color and laser-cut detailing.

Rectangular **K-622** features a monoblock front with a laser-cut linear detail at the end pieces, highlighted by two-tone coloring. This style is available in black red white, brown green cream, and grey blue taupe.

**K-627** features a cutout on the end pieces with a step-down molded temple, accented with a pop of color. Charcoal red, black blue, and brown forest are color options.

Vintage-inspired **K-630** features a metal rim wrapped in genuine leather and finished with clear protective coating. The polished metal bridge, end pieces, and temples complete the minimalistic look. This style is available in colors brown black, grey silver, and black gun.

The new KLiiK Denmark collection is rounded out by two unisex frames.

With an ultra-thin profile, lightweight and with a retro round shape, style **K-631** features real leather wrapped around the metal rim and sealed with a clear protective coating. The metal bridge and end pieces have a polished finish. A subtle laser engraved pattern is found along the temples. Available colors include brown gold, black light gun and blue dark gun.

A modern twist on the timeless aviator shape, style **K-632**. Featuring a double metal bridge bar with a monoblock front that has a laser cut groove along the rim to be finished in contrasting color. K-632 is available in hues of black palladium, brown black and black dark gun.
Translucent color in new Xavier Garcia frames

BARCELONA, SPAIN—Xavier Garcia hits the refresh button on heritage and iconic styles with its new collection. The new frames feature a palette of translucent single-colors in the temples. The wire-framed fronts combine with warm and vibrant colors in the temples.

**Gilda** features a feminine octagonal shape with a 1970s retro style. The steel frame is combined with translucent acetate temples to showcase its trendy feel.

**Gisela**'s classic cat-eye shape accentuates a retro style. The steel frame with feminine lines is paired with sophisticated color combinations for the acetate temple tips.

**Grace** exhibits a round shape with a classic yet youthful spirit. The pure lines are created by the stainless steel and nylon frame, combined with an array of single-color acetate temples.

**Pau** is a classic square shape with a masculine and retro feel. The steel frame is paired with sophisticated color combinations for the acetate temple tips.

**Peris** showcases a hexagonal shape with a 1970s retro style. The steel frame is combined with acetate temples in an array of bright colors.

**Petrus** is a square shape with a classic, elegant style. The steel frame is paired with a range of color combinations for the acetate temples.

**Peret** features an oversized square shape. Bold, synthetic lines define the shape. It is available in classic color combinations with a gloss or matte finish with a defined low bridge and nylon material.
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Optometry Times
Laura Chonko, OD
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Nutrition and eye care, dark organic chocolate, and walking across hot coals

Q Did your daughter’s cataract surgery impact you as an OD? It did. I was already an optometrist. It was ironic when her pediatrician at the hospital on day one came in and said, “I think your daughter may have a cataract.” Once you get over the shock of it, it’s good and bad because she was definitely born to the right mom. I learned a lot. She developed an esotropia, she has had three eye muscle surgeries, and it’s been an interesting journey. But she does great, and she’s about to turn 16.

Q What’s something your colleagues don’t know about you? I am an information junkie. [Laughs] I love to read and learn a ton. In the morning when I’m getting ready, I’ll listen to podcasts or something informational.

Q How did you get interested in ocular nutrition? It’s been an interesting journey. I became interested well over a decade ago when I read Kevin Trudeau’s Natural Cures They Don’t Want You to Know About. He said some interesting things in that book, and at the time I wasn’t sure if he was crazy or if these things were true. That led me down a path of doing more research. I then got a booklet from the AAO meeting and in it was advertising from the Ocular Nutrition Society, so I went to that meeting. I just started learning and it was fascinating. A lot of it we didn’t learn anything about in school, so I was like a whole new world opened up. I didn’t know what pesticides might be on my vegetables, I never really thought about that before. Of course I was looking at labels, but what is actually in this? If you can’t pronounce things, maybe you shouldn’t be eating that. I became interested and saw the research about the eye and nutrition, in particular ocular diseases.

Q Why become a certified holistic health coach? At the time it was something my inner being told me I needed to do. So, I trusted my gut. I did learn a lot, and it wasn’t so much academics and research but more listening to people and their story.

Q What is your guilty pleasure food? Chocolate, of course. [Laughs] If it’s dark, organic chocolate, even better. I’d feel less guilty. [Laughs]

Q Do you have any regrets? I don’t have any regrets. I’m not going to say, “Oh, I wish I hadn’t done this or that,” but it’s life, it’s learning. I think of one of my favorite movies, It’s a Wonderful Life. If you didn’t do this, that, or the other, then you wouldn’t be in the same place. Yeah, you can’t have any regrets.

Q What is the craziest thing you’ve ever done? I was at a Tony Robbins event called “Unleash the Power Within,” and I walked across hot coals. That was pretty intense. You have to see yourself at the other side having successfully done it. You have to use that imagery so you can just do it. Yeah, it was amazing. It was probably about eight feet. [Laughs] It was a few steps, it wasn’t just two.

—Vernon Trollinger

Most of my patients are very open. As optometrists, we are seeing more diabetic patients, so if we are not talking about nutrition, we are leaving out part of the equation. Eyes don’t exist in a separate space—they are connected to the body, so we need to talk about the whole body. We ask about patients’ blood sugar levels and A1Cs but I find it important to find out about their diet. Sometimes you have to get specific and ask, “What did you have for lunch today?” You get a better feel for what they are eating, or they’ll say, “Well…” and then they will tell you the real story. I had a patient who was diabetic, and we were talking about her food and drink; she told me she had eight Pepsis a day. I said, “You realize that if you didn’t drink eight Pepsis a day, you might not be diabetic.” She said, “Yes, but that’s my joy. Don’t take that away from me.” So, I think we need to move the discussion to where else can you find joy in your life.

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