How to diagnose a swollen optic nerve

Careful case history and thorough clinical exam point to next steps

By James F. Hill III, OD, FAAO

Optic nerve swelling or edema can be an intimidating finding in the primary eyecare clinic. The diagnosis of a swollen optic nerve is based on clinical diagnosis, but the importance of a comprehensive case history cannot be overstated.

Ocular history

During the history, many important questions should be asked to help determine the etiology of the optic nerve edema. The clinician should begin by questioning if the condition is a one or two eyeball problem.

Bilateral optic nerve edema is a medical emergency.

The onset and severity of vision loss and symptoms are important clues to consider. Rapid onset is characteristic of ischemic optic neuropathy, inflammatory and traumatic causes, and optic neuritis.

A gradual onset over time is typical of

See Optic nerve swelling on page 26

How air pollution affects the ocular surface

By Maria A. Pribus, OD, FAAO

Optometrists understand how a range of factors can impact vision and overall eye health. Often, patients come into our offices with dry eye complaints, and we point to factors such as age, dry air, increased digital device use, or systemic medications.

However, depending on where your practice is located, air pollution may be a cause of dry eye.

Air quality and vision

As someone who practices in the New York City area, I consider air quality as a significant risk factor when it comes to dry eye.

Over the course of a year, I am in contact

See Air pollution on page 16
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HR 6421 proposes novel way to fund research into ocular diseases

It is well known that millions of Americans suffer from visual impairment in some way, shape, or form. One would expect the number of Americans suffering from such to only rise as the population continues to age.

With that said, there is much research being conducted in the quest for cures for potentially blinding diseases, and there needs to be a lot more. However, proper and thorough research simply costs money—a lot of money.

HR 6421

A new bill, HR 6421: The Faster Treatments and Cures for Eye Diseases Act, may change that. Under this bill, the National Eye Institute, which is under the direction of the National Institutes of Health, would receive funding to conduct research on eye diseases, including glaucoma, age-related macular degenerations, sickle cell retinopathy, and combat-related blindness injuries.

HR 6421 was introduced in July 2018 with bipartisan support and has been referred to the House Committee on Energy and Commerce. The bill in its current form would enable private funding directly to the National Eye Institute in an interesting way—through the purchase and sale of “eye bonds.”

Eye bonds

Like traditional bonds, eye bonds would be able to be purchased as investments. The revenue from the sale of these bonds would go directly to the National Eye Institute for research on eye diseases selected by the National Institutes of Health.

The idea is that when the bonds come due, the research conducted by the National Eye Institute will have progressed enough to be eligible for other modes of funding. The bonds would have a limited backing from the federal government. According to www.eyebonds.com, taxpayer money is not expected to be a part of this process.

The research that would benefit most from HR 6421 is commonly referred to as translational research. It is known as such because it is intended to translate research conducted in vitro to novel therapies that may have potentially tangible results in humans. The financial bridge to that point in research can be difficult to overcome because investors prefer to invest in research which already holds significant promise. Of note, the amount of money allocated to scientific research from the sale of so-called eye bonds would be up to $1 billion over a period of four years, with no more than $250 million being allocated in a single year.

At the time this editorial was written, the bill had garnered 18 cosponsors splitting almost evenly across the party aisle. I contacted my U.S. Representative to ask for his support. Such bills tend to take time to gain momentum in the form of cosponsorship and passage out of committee, and this bill appears to be off to a good start.

Support NEI research with eye bonds

By Benjamin P. Casella, OD, FAAO

Chief Optometric Editor
Practices in Augusta, GA, with his father in his grandfather’s practice

Ben Gaddis, OD, FAAO – Gaddis Eye Centers
LONDON, KY

David L. Gefelman, OD, FAAO – Gordon Weiss Schaefer Vision Institute
SAN JOSE, CA

Jeffy D. Gerson, OD, FAAO – Westlogin Eyecare
DANBURY, CT

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MENLO PARK, IN

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ENWOOD, AL

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Chief Optometric Editor
Practices in Augusta, GA, with his father in his grandfather’s practice

See page 21 for info on legalities and myopia control
1. Why I changed what I tell patients about refractive surgery
https://bit.ly/2cIkRys

2. Why you should add upper lid eversion to your comprehensive exam

3. How the Japanese treat allergic conjunctivitis
https://bit.ly/2AeL0km

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Together we’ll go far
the College of Optometry, were terminated. AOA President Samuel D. Pierce, OD, thinks everyone is glad about how the situation resolved. “I don’t think anyone is upset over the end result of this,” he says. “There is now no concern about the integrity of [Nova’s] program and it moving in a different direction as a result of an outside entity donating money, renaming the institution, and having the appearance of that level of influence over the program.”

In a statement, NVI CEO Reade Fahs says, “We were saddened that the initiative was not received in the way that all involved had intended: to advance the profession of optometry and optometric education by providing opportunities to provide scholarships to future optometry students and to support the optometric research initiatives of NSU. National Vision remains committed to this goal, and we are working with NSU to regroup and see how we might best be able to do that in a way that the student body, alumni, faculty, and other NSU stakeholders agree with.”

A town hall meeting organized by Nova alumnus Brandon Cornish, OD, to bring interested parties to the table to discuss the situation took place even though it was scheduled the day after the agreement ended. Nova Vice Chancellor of Health Professions Irving Rosenbaum, DPA, EdD, says that Nova had a good outcome and believes the end result is better for Nova. “The students were terrific,” he says. “Faculty stepped up to the plate. Rather than pointing fingers and remaining angry, everyone had something productive to say. What came out of it is going to be very helpful to us. More people are engaged and promoting optometry and our message to students. We need to continue to communicate and listen to people’s opinions. This has been a good lesson for all of us in engaging each other.”

Dr. Pierce says that the AOA will continue to apply pressure to the ACOE to review its standards with an eye toward making sure this situation doesn’t happen again.

What happened
In late September, Nova announced that it accepted a donation from NVI, which included naming rights for the College of Optometry. It was planned to be renamed Nova Southeastern University National Vision College of Optometry for an initial term of 10 years. Nova had scheduled a naming ceremony for the College of Optometry on October 9. NVI is the parent company of optical retailers America’s Best Contacts & Eyeglasses, Eyeglass World, Vista Optical, and Walmart Vision Center.

ODs quickly spread word of the College of Optometry’s name change via social media, expressing shock and anger.

A Facebook group opposing the name change was created to organize ODs who were against the renaming. Dr. Cornish, who practices in Fort Lauderdale, FL, started the page and planned the town hall meeting.

An online petition was launched to stop the name change. At the time of agreement termination, the petition included more than 2,500 names.

Outrage was not limited to Nova alumni; ODs around the country were unhappy with Nova administration’s actions, and students at Nova and other schools were protesting.

Concern over NVI
Much of the anger over the name change stemmed from the participation of NVI. “The nature of this company is different,” says Alan Kabat, OD, FAAO, professor at

See ODs protest name change on page 8
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ODs protest name change

Continued from page 6

Salus University and in the past an associate professor at Nova. “It’s in competition with private practice, which is traditionally what optometry has been about and that’s why people are so upset.”

For example, America’s Best Contacts & Eyeglasses advertises two pairs of eyeglasses for $69.95 with a free eye exam.

Says Nova 2012 graduate Ernesto Cepero, OD: “It’s not the changing of the name, it’s the corporation Nova chose. NVI does not employ a single OD in the state of Florida. The company hired an ophthalmologist in order to hire the ODs they need for their opticals.”

Dr. Cepero practices in Coral Gables, FL. He says Kim Reed, OD, FAAO: “This model of eye care flies in the face of all of that optometry has accomplished when often the professional fees for the OD are so low.”

Dr. Reed is director of medical affairs ophthalmology at Regeneron Pharmaceuticals and previously was a professor at Nova. Vincent Sorgentoni, OD, Nova 2011 gradu-

ate who practices in Las Vegas, says many ODs think NVI’s business practices are not favorable to optometrists’ professional services and products.

“NVI’s marketing ploys feature two pairs of glasses for $69 with a free exam,” he says. “That tells me the company doesn’t value optometry’s services.”

He says that the company’s marketing practices blurs the lines between charity and undervaluing professional services.

“I have a hard time seeing free eye exams and two pairs of glasses for $69 as the same values as Nova,” says Dr. Cornish. Richardson, TX, OD Ed Makler says he’s furious and it’s not even his school.

“I think it’s wrong that a corporation that is not friendly to ODs has a school named after it,” he says, speaking prior to the deal ending. “Will there be an America’s Best in there? Name an auditorium, name a floor, but don’t change the name of the school.”

Dr. Cornish is adamant that the objection to NVI’s gift is not an attack on corporate optometry.

“I do believe that corporate optometry has its place and that it’s a necessity for our profession in that it does allow students a way to get into the market and serve the underserved,” he says. “But its place is not in academia.”

Revoking endowment to NSU

Prior to the agreement’s termination, former Nova College of Optometry professor and assistant dean for clinical affairs N. Scott Gorman, OD, FAAO, rescinded an endowed scholarship in his name as well as a living trust slated for NSU.

He says he can’t support an institution that plans to align itself with a corporate entity.

“I think the optics are very poor,” he says. Dr. Gorman informed Nova administrators and posted publicly on Facebook that he rescinded the N. Scott Gorman and Sarah R. Gorman Endowed Scholarship Fund and Residuary Trust Estate.

Dr. Gorman, who practices in Lady Lake, FL, spent 20 years as a professor at Nova College of Optometry and three years as associate dean for clinical education.

Dr. Gorman says he chose to publicly share news of revoking his endowment because he needed to make a statement.

“I felt I needed to do something,” he says. “I wanted to support the faculty, students, and graduates by showing them I am willing to step forward and take action in my own small way.”

About the gift

Although a Nova “naming opportunities” pricing grid dated March 28, 2018, lists the price for naming rights for the College of Optometry at $5M, the amount of the NVI gift was not confirmed.

“We haven’t released the amount,” says Dr. Rosenbaum. “[$5M] is the beginning point of negotiation.”

Dr. Rosenbaum says that the NVI gift was not $5M and declined to say if the number was higher.

Nova’s press release says the gift would have been “used toward student scholarships, faculty, research, and increased community service.”

When asked if other organizations were interested in purchasing naming rights for the College of Optometry, Dr. Rosenbaum says, “No one else seriously came forward.”

Dr. Rosenbaum says that much of the upset over NVI’s gift and renaming was caused by misinformation.

“There has been a lot of misinformation going out,” he says. “I’ve been on the phone with parents. Perhaps we needed to be more emphatic about getting information out. Students have a right to have their point of view. I understand some of the misconceptions. People have a view of this, and it’s not an accurate view. We need to get the facts out and talk about NVI.”

Conflict of interest?

Many ODs asked questions about a potential conflict of interest in a corporation’s name appearing on an academic institution.

In fact, Dr. Rosenbaum points out another part of Nova has a corporate name: AutoNation Institute For Breast And Solid Tumor Cancer Research. The gift from AutoNation was given in November 2015.

However, AutoNation, unlike NVI, does not conduct business in the same field as the institution it named.

In addition, ODs wondered how much influence NVI would have had on the College of Optometry.

Dr. Rosenbaum says that NVI’s gift was not contingent on influence or control within the College of Optometry.

“Look at our track record with other donations,” he says. “In every instance, the donor has not had an influence on coursework, administration, or anything. We are not doing anything different here except accepting a name for 10 years on a building. We keep a wall between the academic and the philanthropy. Education is not negotiable.”

Dr. Kabat says there was the appearance of impropriety.

“When a company puts its name on a college, it has the appearance of an affiliation,” he says, speaking prior to the deal’s end. “Hopefully Nova won’t be churning out doctors for America’s Best, but that’s what people fear it looks like.”

NVI response

NVI CEO Reade Fahs said his company entered into the discussion with Nova about a philanthropic gift with the knowledge that optometric education is expensive to provide and expensive for students.

“We thought our gift would be one of

We’re surprised that our gift wasn’t seen in the light in which we approached it

—Reade Fahs, CEO of National Vision, Inc.
Are dry, itchy eyes caused by contact lenses?

It’s not complicated.

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ODs protest name change
Continued from page 8

the most significant gifts in years and was something that might help defray costs,” he says. “We went into this thinking we were being helpful. We’re surprised that it wasn’t seen in the light in which we approached it.”

Fahs, who sits on the board of trustees for Salus University Pennsylvania College of Optometry (PCO), says the size of the gift was linked to the naming of the College of Optometry, but NVI would not be involved with the running of the school.

Fahs acknowledges that the company works through ophthalmologists, depending on location.

“In states where it’s impossible to operate our model without contracting with ophthalmology, we contract with ophthalmology,” he says. “However, we always prefer to contract with optometry or employ ODs directly.”

Fahs says that America’s Best’s entry level offer is two pairs of glasses for $69.95 with the eye exam included, and the company has been marketing that offer for 15 to 20 years.

“We serve people who are uninsured, blue collar, low income, and budget conscious,” he says. “We’re the low-cost provider of medical necessity. Because if you’re uninsured, you’re looking for value. We’re on the front line of health care for people who might not have it if it weren’t for people like us who have found a lower cost way to serve them. I’m siding with the patient.”

National Vision is pro optometry to the core, says Fahs, and the company wants to be known as the most optometrist-centered organization in America.

“We won’t be successful unless we’re a great place to practice optometry,” he says. “We’ve been the fastest-growing optical chain in America for the past dozen years. Why? We are a great place to practice, and people see that.”

Fahs says NVI has a high retention level of ODs and has strived to be an optometric-centric company among optical retail chains.

“Patients and customers who really count have been choosing us,” he says. “Doctors tend to come and stick around our environment.”

Fahs estimates that NVI recruits 7 percent of U.S. graduating optometry students each year. At some schools, the number can be twice that. In addition, Fahs points out that the percentage of students is higher if students going to residency are excluded.

“We have over 2,000 ODs practicing next our stores and about 5 percent of ODs are practicing alongside NVI stores,” he says.

“To me, the naming is recognition of the important role those 2,000 ODs have come to play in the optometric community.”

Student involvement
Second-year Nova student Corey Forbes organized Nova students in protest of the College of Optometry’s name change. He was also in touch with supportive students at other optometry schools.

He says Nova President George L. Hanbury II, PhD, informed faculty first, word slowly leaked out to fourth-year students, then Dean David S. Loshin, OD, PhD, FAAO, notified other students via email on September 17.

“The dean told us to expect a short outcry, that some ODs would be upset,” Forbes says. “I don’t think they expected it to go this long or this big. They didn’t expect other schools to get involved. I don’t think President Hanbury understands what is going on here and how important this is.”

Many students at Nova College of Optometry wore black armbands to protest the name change and used social media to spread the word.

“I put up an initial Facebook post, and someone from The Ohio State University (OSU) College of Optometry commented,” Forbes says. “He said students are supporting us. Another one said University of Missouri-St. Louis (UMSL) College of Optometry is behind us. I heard from PCO and State University of New York (SUNY) College of Optometry.”

When a company puts its name on a college, it has the appearance of an affiliation —Alan G. Kabat, OD, FAAO

IN BRIEF

RightEye Eye-Tracking System receives FDA 510(k) clearance

BETHESDA, MD—RightEye LLC, a company that uses eye tracking to improve vision performance, announced that the company’s vision system has received 510(k) clearance from the U.S. Food and Drug Administration (FDA).

The FDA has cleared the RightEye system for recording, viewing, and analyzing eye movements in support of identifying visual tracking impairment in patients.

Using advanced eye-tracking technology and analytics, the RightEye system is the first portable, all-in-one solution for vision-derived health screening, tracking eye movements, and correlating them to health concerns. The system, which includes RightEye EyeQ tests, reports, and training tools, has several applications, including:

- Functional vision screening: RightEye functional vision test helps to quickly and objectively identify functional vision concerns that affect quality of life and automatically recommends computer-based exercises for patients to do at home.

- Reading assessments: RightEye Reading EyeQ tracks reading proficiency in real time, identifying hidden vision challenges associated with learning difficulties.

- Sports vision assessment and training: RightEye Sports Vision EyeQ identifies opportunities to strengthen performance-related aspects of vision, while Sports Vision Trainer offers personalized exercises to athletes looking to improve coordination and reaction times.

- Brain health: RightEye Brain Health EyeQ showcases the severity levels of vision skill problems and how this may relate to brain performance. It also provides computer-based vision exercises to help address oculomotor issues.

“RightEye is committed to providing innovative, proven eye-tracking solutions that empower doctors to differentiate and expand their practices while transforming the lives of their patients through improved health and wellness,” says says Adam Gross, RightEye co-founder and CEO.
How to know if a professional employer organization can help you

Outsourcing administrative and HR tasks may make sense for ODs

One of the biggest challenges a practice owner faces is the administrative side of small business. ODs are well trained in clinical care, but many feel overwhelmed with the business management of a practice.

About PEOs
A professional employer organization (PEO) provides human resource solutions for small to mid-size businesses by allowing owners to outsource tasks such as:¹
- Human resources (HR)
- Benefits administration
- Payroll processing
- COBRA and worker’s compensation
- Tax administration/compliance
- State unemployment insurance
- Recruiting support
- Risk/safety management
- Staff training and development
- Regulatory compliance

By handling paperwork and providing regulatory compliance assistance, PEOs can help practices focus more on their primary mission while simultaneously improving productivity and profitability.

According to the National Association of PEOs (NAPEO), staff can gain access to employee benefits traditionally reserved for large corporations, such as 401(k) plans, insurance (health, dental, life), worker’s compensation, and dependent care.²

Roughly 175,000 U.S. businesses have determined the benefits outweigh these risks and costs.³ This means that PEOs in the U.S. cover a collective annual payroll of $176 billion, representing 3.7 million workers.⁴

Companies working with a PEO grow 7 to 9 percent faster, have 10 to 14 percent lower employee turnover, and are 50 percent less likely to go out of business.

PEOs are able to offer their services by establishing a contractual arrangement in which they “co-employ” a business’s staff, thereby assuming certain employer rights, risks, responsibilities, and obligations, including becoming the employer of record for tax purposes.

Thus, the PEO would file employees’ W2s, but the practice would retain control and oversight of its staff. This differentiates a PEO from employee leasing or temporary staffing. PEO contracts can be tailored to meet the individual needs of the practice.

Annual administrative costs are on average $450 lower per employee for businesses that utilize a PEO.⁴

Pricing and more
PEOs charge a fee based on a percentage of the employee’s salary. Fees range between 3 to 15 percent of gross payroll (averaging out to $500 to $1500 per employee per year).⁵

Other PEOs charge a flat rate per employee, which can start as low as $49 per employee per month for basic services.⁶

Keep in mind that transitioning HR to the PEO disrupts the status quo and could appear less personal to your employees, but the practice owner or a designated staff member will continue to serve as the link between employees and the PEO.

If the practice offers health insurance through the government’s health insurance exchange (SHOP Exchange), contracting with a PEO may eliminate some current tax savings.⁷ In addition, moving to a PEO may also lead to future changes in insurance coverage if the PEO decides to adjust coverage and/or change providers.

Additionally, depending on the terms of the PEO contract, the practice may need to consult the PEO before firing an employee; however, such a requirement may prevent mistakes in doing so.

Finally, look to contract with an IRS-certified PEO because if it fails to properly remit or file taxes on the practice’s behalf, the PEO—not the practice—is liable.⁸

To determine if a PEO is right for you:⁹
- Calculate current employee benefit needs and costs (including worker’s compensation and unemployment insurance)
- Estimate how much time and financial resources are annually spent on administrative duties by the owner(s), staff, and ancillary personnel
- Contact certified PEOs to compare fees and services
- Ask an attorney to review the contract for responsibilities and liabilities, guarantees, and cancellation terms

REFERENCES

Dr. Wroten serves as the practice’s chief operating officer and residency supervisor. He has twice been elected president of the Optometry Association of Louisiana, has been appointed to the Louisiana State Board of Optometry Examiners, and sits on the Board of Trustees for SCO. He enjoys playing golf, fishing, and coaching youth sports. He serves as a consultant to Alcon. cwroten@od.sco.edu
Applying precision medication to glaucoma and genomics

Genomic advancements will alter future of optometric patient care

Technology is rapidly changing the way optometrists manage patients. For the profession to progress as an integral part of interprofessional healthcare teams, it must embrace important key advancements in eye care.

Precision medicine is an innovative approach that uses individual differences in genomics, the environment, and patient lifestyles. It tailors treatment or management strategies to individuals based on their genome and susceptibility to conditions and disease states.

Advances in precision medicine are creating new insights and enhancing our knowledge of cancer and other complex disease processes.

Therapies for disease have varied greatly in their success rate. In most cases, ODs and other healthcare providers follow the same treatment protocol for all patients.

Tailoring health care to patients

In 2015 during President Barack Obama’s State of the Union address, he announced the launch of the Precision Medicine Initiative: an innovative and novel research effort to reinvent how ODs improve health and treat disease.

The White House, working with the Department of Health and Human Services, privacy advocates, and bioethicists to identify and address privacy and data security, as well as legal and technical concerns related to precision medicine.

The White House initiative gave $130 million to the National Institutes of Health (NIH) for development of a voluntary national research cohort.

- $70 million to the National Cancer Institute (NCI) to scale up efforts to identify genomic drivers in cancer
- $10 million to the Food and Drug Administration (FDA) to develop high quality, curated databases advancing innovation in precision medicine
- $5 million to the Office of the National Coordinator for Health Information Technology (ONC) to support the development of interoperability standards addressing privacy concerns arising from patient data exchange.

What is the future of precision medicine and patient health?

In 2016, Columbia University delivered its Inaugural Precision Ophthalmology Conference. With the incidence of preventable blindness due to an aging world-wide population predicted to double by the year 2020, it is important for optometrists to understand and apply clinical applications of precision medicine.

An understanding of the disease’s epidemiology and pathophysiology could influence the future of glaucoma treatment and management.

Precision medicine and genomics

In eye care, precision medicine is already applied in age-related macular degeneration (AMD). Genetic screening kits are readily available to assess patients’ risk of developing AMD and what types of supplements may be beneficial at slowing progression.

Research is underway, however, to apply precision medicine to the management and treatment of glaucoma.

The National Eye Institute recently published research identifying 133 genetic variants that predict, with 75 percent accuracy, individuals’ risk for developing glaucoma relative to their intraocular pressures (IOP).

IOP readings and genotype data from 139,555 subjects of European ancestry were analyzed for correlation. These loci were then further researched into their link to primary open-angle glaucoma (POAG); 62 of them were associated with glaucoma specifically—and not just elevated IOP.

While many of the genetic loci identified to have an association with elevated IOP were already known, 68 were novel.

Genomic studies help decipher the complex processes involved in elevated IOP at the cellular physiological level, allowing for the development of novel treatments.

For example, two genetic loci uncovered by this study were genes coding for proteins and enzymes associated with angiopoietin and tyrosine kinase, suggesting that biochemical pathways involving these proteins could be regulating IOP. This pathway could present a new therapeutic target for IOP regulation.

Such research also helps ODs tailor management strategies with existing therapeutic target for IOP.

Optical coherence tomography (OCT) has changed the landscape of glaucoma management, allowing for early detection of structural changes and often before functional change occurs.

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In most cases, ODs and other healthcare providers follow the same treatment protocol for all patients.

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Optical coherence tomography (OCT) has changed the landscape of glaucoma management, allowing for early detection of structural changes and often before functional change occurs.
Focus On

Gene editing today
Gene editing currently focuses on IOP lowering and neuroprotection. Gene delivery methods include viral and non-viral vectors and, most recently, CRISPR-Cas9. Gene editing allows ODs to target mutated genes and correct the mutations in vivo. Current animal studies focusing on the trabecular meshwork involve editing the mutant myocilin (MYOC) gene, which leads to endoplasmic reticulum (ER) stress within the trabecular meshwork.

Gene sequencing is also used to understand the patient’s metabolism profile to know which medications would have a better response and longer half-life in the eye.1

Development of targeted approaches
In recent years, doctors have been gene sequencing tumor cells to determine what types of cancer therapy would be most effective.8

An example of this is the Epidermal Growth Factor Receptor (EGFR) genes that show mutation in some forms of lung cancer. By sequencing the tumor’s DNA, physicians can see if there is an EGFR mutation present and recommend EGFR inhibitors like cetuximab or gefitinib.3

Animal studies are also being conducted on conjunctival tissue sequencing to determine wound healing characteristics and prevention of fibro proliferation in filtering procedures—increasing success in these surgeries.7

Knockout mice whose MYOC was downregulated showed reduced ER stress and lower IOP.4 The downregulation of the metalloproteinase 1 (MMP1) expression in the trabecular meshwork and ciliary body is also being studied with stimulating results.7

Another approach is neuroprotection. Injected intravitreal neurotrophins have reduced retinal ganglion cell (RGC) damage after axonal injury. By upregulating neurotrophins such as brain-derived neurotrophic factor (BDNF) and ciliary neurotrophic factor (CNTF), a reduction of apoptotic cell death in rat models was observed.3

Lastly, with the recent clinical trials of RPE65 gene replacement in Leber’s congenital amaurosis, regenerating RGCs might be a possibility soon.1

Future of glaucoma patient
New technologies have altered the way glaucoma is monitored. Optical coherence tomography (OCT) has entirely changed the landscape of glaucoma management, often allowing for early detection of structural changes, before functional change occurs.4

Genomic advancements may promise similar changes in glaucoma management because each patient’s genetic risk for glaucoma is individual, allowing for tailor-made treatment and management strategies.

Companies offering genetic testing received approval from regulators in 2017 to sell genetic reports on an individual’s risk for 10 diseases, most prominently Alzheimer’s disease and Parkinson’s disease.5

Will companies like 23andMe or Family Tree DNA become integral to the optometric care of patients?

REFERENCES

Dr. Wong is a Diplomate of the American Board of Optometry and a member of the ADA Ethics committee and ASCO Ethics SIG. He is a past president of the Maryland Optometric Association, and an appointee to the American Medical Association’s Physician’s Consortium for Performance Improvement-PCPI’s Technical Advisory Panel for Eye Care Metrics. He lectures on the topics of medical ethics, technology and innovations in eye care, ocular disease, mobile health apps, and contact lenses. Email: twaw@georgetown.edu

IN BRIEF

CooperVision’s Best Practices reveal EYEdea Lab findings
LAS VEGAS— CooperVision presented findings from its inaugural Best Practices EYEdea Lab.

Designed to help eyecare professionals (ECPs) improve patient experiences and remain competitive amid disruptive healthcare trends, the EYEdea Lab combined qualitative research on the floor of Optometry’s Meeting with quantitative consumer and ECP research.

Two primary insights emerged:

● The doctor-patient relationship remains essential to consumers with technology viewed as enhancing, but not replacing, the in-person experience.
● Consumers are wary of in-office experiences that place too much focus on ancillary products and amenities, creating opportunities for ECPs to focus on personalized eye care.

“Navigating the rapid changes in the industry is a common topic of discussion among ECPs” says Michele Andrews, OD, senior director of professional and academic affairs, North America, CooperVision.

“Best Practices celebrates practices that continue to grow and succeed in this environment. As part of that commitment, we wanted to give honorees an opportunity to help their peers and advance the profession, giving rise to the EYEdea Lab.”

Three Best Practices honorees joined Dr. Andrews on the panel: Carrie Alfieri, OD; Roxanna Potter, OD, FAAO; and Shauna Thornhill, OD.
Proliferative retinopathy leads to risk of sight loss

Diabetic macular edema requires urgent treatment to preserve vision

A 68-year-old black male patient with diabetes was referred from his primary-care physician for evaluation of reduced vision involving the right eye more than the left eye. He had been diagnosed with diabetes for more than 12 years. Medication to modulate blood sugar was Actos (pioglitazone, Takeda) 45 mg/day. A1C values were not available. Best-corrected visual acuity was 20/200 OD, 20/40 OS.

Clinical results
Evaluation was performed using optical coherence tomography (OCT) as well as OCT-angiography (OCT-A) while the patient’s pupils dilated. The results are shown in the figures.

The right eye demonstrates center-involving macular edema (Figure 1). This depiction is consistent with the patient’s visual acuity as well as the need for urgent consideration for treatment.1 Other vascular abnormalities were seen in both the OCT and OCT-A scans (Figures 2-5).

The OCT-A of the left eye (Figure 1) shows retinal thickening as well as cystic spaces representing fluid accumulation temporal to the center of the macula, also eligible for treatment.1 Prior to dilated stereoscopic evaluation, OCT-A revealed proliferative disease inferior temporal to the macula in the left eye (Figure 4). The neovascularization was subtle on clinical examination and perhaps easily overlooked without advanced information. Interestingly, the OCT-A showed the vascularity (activity) of this elevated tuft (Figure 4).

Treatment options
This case presents a patient who is at risk for both vision loss (in the right eye) due to center-involving macular edema and sight loss (in the left eye) due to the presence of high-risk proliferative retinopathy. The patient was administered aflibercept (Eylea, Regeneron) injection.2 He was scheduled for follow-up at one week but failed to attend.

The OCT-A reveals a number of features in this patient with diabetes. Consistent with the vasculopathic nature of diabetes, we see ischemia as reflected in the attenuated capillary density in the macula. Ischemia leads to neovascularization as is also illustrated. Finally, not visible clinically an enlarged foveal avascular zone enlargement is seen.

REFERENCES

Dr. Semes is a founding member of the Optometric Glaucoma Society and a founding fellow of the Optometric Retina Society.
Hidradenitis suppurativa masquerades as blepharitis

Lash line evaluation during examination critical to diagnosis

A recent patient’s medical history revealed that he suffered from hidradenitis suppurativa (HS). This was not the first time that I encountered a patient with this unusual dermatologic pathology. My first patient with hidradenitis suppurativa presented with ulcerative-like lesions along her lid margins resembling herpetic blepharitis. This was my initial diagnosis until I learned more.

Learning more
HS, also known as acne inversa, is a chronic, recurrent, and debilitating skin condition. It is a relapsing inflammatory disease resulting in subcutaneous abscesses, sinus tracts (a narrow opening underneath the skin that can extend in any direction through soft tissue, resulting in dead space with potential for abscess formation) and scarring, arising predominantly in apocrine gland-bearing skin.

The sites affected, in order of frequency, are the axillae, groin, perianal and perineal region, mammary and submammary skin, buttocks, and pubic region. Other sites that may be affected include the chest, scalp, retroauricular and preauricular skin, thighs, abdomen, and eyelids. As the disease advances, areas exposed to repetitive mechanical stress—such as the nape of the neck, trunk, and waistband area—can be affected. Secondary bacterial infection of lesions can occur. Recall that apocrine glands release sebum, with a female-to-male ratio of 4:1. Age of onset is usually after puberty and before age 40, peaking in the second and third decades of life.

HS commonly starts with mild skin discomfort, erythema, burning, pruritus, and hyperhidrosis. It progresses to form tender or deep-seated nodules that expand and coalesce to form large, painful abscesses. The rupture of these abscesses releases malodorous and purulent discharge. The psychosocial effect of HS is devastating because of the associated pain, malodorous discharge, and scarring. Prompt recognition and initiation of treatment can reduce the risk of HS progression to debilitating end-stage disease. Treatment options, depending on disease presentation and severity, include topically with a female-to-male ratio of 4:1.

Prominent recognition and initiation of treatment can reduce the risk of HS progression to debilitating end-stage disease

Chest, scalp, retroauricular and preauricular skin, thighs, abdomen, and eyelids. As the disease advances, areas exposed to repetitive mechanical stress—such as the nape of the neck, trunk, and waistband area—can be affected. Secondary bacterial infection of lesions can occur.

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References

with several patients who travel to areas with better air quality for days, weeks, or months at a time. Shortly after coming home, many of them report an increase in dry eye symptoms including burning, stinging, tearing, and fluctuations in vision.

On the opposite end, I see several patients who travel to places around the world that are far more polluted than New York City, and they come home with those same symptoms—sometimes even worse.

Air pollution overview

Air pollution can be described as a complex mixture of pollutants, including particulate matter, chemical substances, and biological materials. Its adverse effects are difficult to avoid because, unlike the food we eat or the water we drink, people cannot choose what type of air to inhale.

The most recent “State of Air” report released by the American Lung Association indicates at least 125 million Americans live in counties with an unhealthy quality of air.

The six common air pollutants acknowledged by the United States Environmental Protection Agency (EPA) include:
- Ground-level ozone
- Particulate matter
- Carbon monoxide
- Lead
- Sulfur dioxide
- Nitrogen dioxide

Health risks accompany both chronic and acute exposure to air pollution, such as respiratory infections, cardiovascular problems, and pulmonary disease.

People who assume the most risk from its dangers are infants, pregnant women, those who work outdoors (especially in cities), and the elderly.

In addition, it can be supposed that the economic consequences of illnesses caused by air pollution are far reaching.

The main overall health problems typically associated with air pollution include:
- Asthma attacks
- Wheezing, coughing, and shortness of breath
- Cardiovascular disease
- Chronic obstructive pulmonary disease
- Lung cancer
- Premature death

Air pollution and the eyes

Several international studies have attempted to detail the impact of air pollution on the ocular surface.

One study suggests that high ozone levels and low humidity levels are associated with dry eye in the Korean population.

Another study found evidence that outpatient visits for conjunctivitis increased significantly with higher levels of air pollution in Hangzhou, China.

The results of these studies are interesting because not only is dry eye disease linked with air pollution but also with eye infections.

Additional research implies that particulate matter on the ocular surface is more harmful in dry eyes as compared to normal eyes, which indicates that dry eye patients may be more vulnerable in places where air quality is low.

Furthermore, increased levels of nitrogen dioxide (NO2) in the air is associated with nosebleeds, dry cough, and ocular irritation, which makes the case for a correlation between air pollution and dry eye disease (DED) even stronger.

The main ocular health problems associated with air pollution stem from increased levels of dry eye, which includes the following symptoms:
- Burning or stinging
- Increased hyperemia
- Itching
- Photophobia
- Epiphora
- Fluctuations in vision
- Foreign body sensation
- Contact lens intolerance

Who is at risk

In comparison, those of us who live in North America enjoy cleaner air than people in growing regions of the world.

Larger cities in the United States, Canada, Central America, and most of the Caribbean barely make a dent on the global air pollution scale. However, this is not to suggest that action is not necessary to improve air quality.

The top 10 cities in the United States with the highest levels of air pollution (ground-level ozone) are:
1. Los Angeles-Long Beach, CA
2. Bakersfield, CA
3. Fresno-Madera, CA
4. Visalia-Porterville-Hanford, CA
5. Phoenix-Mesa-Scottsdale, AZ
6. Modesto-Merced, CA
7. San Diego-Carlsbad, CA
8. Sacramento-Roseville, CA
9. New York-Newark, NY-NJ-CT-PA

Figure 1. Acute conjunctivitis occurs at a higher rate in areas with high levels of air pollution.
People who live in these growing cities are more likely to suffer from the consequences of air pollution on respiratory and ocular health, and patients who travel to these places may experience more symptoms than usual.

What we can do
Healthcare providers will not know more until additional large-scale studies are put into place. However, from the data that already exists, it may be useful to start educating patients about the risks of elevated air pollution levels.

Not only is dry eye disease linked with air pollution but also with eye infections

on the ocular surface—whether in the form of dry eye or acute conjunctivitis.

It would also be wise to inform traveling patients going to more heavily polluted areas about the reality of what their eyes may be facing when they get there. If nothing else, patients can start by consulting one of several air quality index maps to track air pollution in real time across the globe (airnow.gov or waqi.com).

The best way to alleviate the effects of air pollution on the eyes is avoid it, but this is not always possible.

A reasonable approach would be to keep the eyes lubricated with preservative-free artificial tears and be mindful of cleaning lids and lashes after a lengthy amount of time outdoors when pollution levels are highest.

Patients could invest in a pair of wraparound sunglasses to wear outdoors in heavily polluted areas.

If severe exacerbations occur, patients may need a short course of topical corticosteroids to reduce inflammation and provide relief for the already fragile ocular surface.

Looking ahead
In today’s eye health climate in which dry eye disease is at the forefront of the conversation for doctors and patients alike, the more information we have at our disposal, the better the likely outcome.

If your practice is in a region with higher levels of air pollution, communication about this subject between doctor and patient is a positive step in preventing flare-ups on the already fragile ocular surface.

REFERENCES

Dr. Pribis is a 2009 graduate of the Pennsylvania College of Optometry at Salus University. She specializes in anterior segment disease with a focus on the ocular surface. She is also an instructor for KMK Educational Services and the founder of OcularPrime, an eye health website focused on patient education. In 2015, she was named Connecticut’s Young OD of the Year. Dr. Pribis is a huge Yankees fan, and she enjoys reading and sipping lattes at her favorite craft coffee shops in New York City. ocularprime@gmail.com
Our group practice serves rural and suburban areas surrounding Louisville, Kentucky, with patients representing a broad mix of demographic, socioeconomic, and ethnic groups. Of this diverse patient population, at least one quarter are diagnosed with dry eye disease (DED). Many who attribute their eye dryness and fluctuating visual acuity to aging or fatigue turn out to be experiencing symptoms of DED. DED is a disease of the ocular surface that involves discomfort and visual disturbance and represents an interplay of tear film instability and hyperosmolarity, as well as inflammation, damage, and neurosensory abnormalities on the ocular surface.1

DED is multifactorial, so not everyone experiences it the same way, and it may be caused by different factors in different patients. There may also be a poor correlation between the signs of DED and the symptoms that patients report.2 Patients with DED are typically not aware of this discordance, and we consider patient education on this point a key component of treatment.

Identifying DED

The majority of our patients fill out the SPEED (Standard Patient Evaluation of Eye Dryness) survey in the waiting room at every visit. This brief, validated questionnaire asks patients to rate symptoms such as dryness, grittiness, soreness, burning, and eye fatigue. Symptoms are scored according to frequency and tolerability; with an overall score ranging from 0 (no DED symptoms) to 28 (severe symptoms).3 In our practice, if a patient’s score is greater than 8, we will look more closely for signs of DED. Other symptom surveys are also useful—the key to effective screening and longitudinal evaluation is to choose one and apply it consistently.

When we suspect DED, the clinical examination focuses on measures of corneal and conjunctival integrity (eg, staining with vital dyes), and tear film quality (eg, meniscus height or meibomian gland secretions). Because DED is multifactorial, there is no single diagnostic test for it.4 Instead, each test provides a distinct bit of information about the health of the tears and ocular surface.4

Depending on the results of the clinical exam, we may follow up by bringing the patient in for a complete dry eye evaluation, which would include imaging of the tear film and meibomian glands. We use meibography to assess the meibomian gland architecture and the extent of gland dropout.

To evaluate inflammation, which is considered a key driver of DED pathogenesis, we look at osmolarity and matrix metalloproteinase-9 (MMP-9) activity, in addition to ocular surface staining.5 MMP-9 is a marker for inflammation, but is not specific to DED.5

High osmolarity, as well as a significant difference in osmolarity between the two eyes, suggest a DED diagnosis.6,7 Abnormal osmolarity and a positive MMP-9 test signal to me that inflammation may be the overriding component in a patient’s DED. On the other hand, if osmolarity is abnormal but the MMP-9 test is negative, I look for other causes of tear film disruption, such as basement membrane dystrophy, recurrent corneal erosion, or conjunctivochalasis, any of which may produce symptoms that mimic DED.

Just as the signs and symptoms of DED often appear to be at odds with each other, the presentation of DED is
heterogeneous from patient to patient, and treatment must be individualized.

Options for Treatment

Controversy remains about whether and how to treat either the asymptomatic patient with signs of DED, or the patient with symptoms but no signs. However, DED may be a progressive disease. Treating only symptomatic patients risks missing cases, especially of mild DED.6

There is evidence that advanced DED reduces corneal sensitivity.7 Since in my experience, the most difficult DED patients to treat are those with more advanced disease, I try to identify and treat DED as early as possible.

Options for treatment include starting the patient on an oil-based artificial tear preparation to reduce ocular surface stress.8 If there is concomitant blepharitis, we may suggest eyelid hygiene and some kind of lid-warming strategy. For the majority of patients, addressing the inflammation associated with DED should be a part of the treatment plan. Corticosteroids reduce inflammation effectively; when I use them, I do so in short pulses.9,10 Restasis® (cyclosporine ophthalmic emulsion 0.05%) is a topical immunomodulator indicated to increase tear production in patients whose tear production is presumed to be suppressed due to ocular inflammation.11 Since its approval in 2016, we have also embraced the option of Xiidra® (lifitegrast ophthalmic solution) 5%, which is designed to target a specific T cell-mediated pathway implicated in DED pathogenesis.11

Xiidra® in Action

Xiidra® is thought to work by binding to lymphocyte function-associated antigen 1 (LFA-1), thereby blocking the interaction of LFA-1 and its ligand intercellular adhesion molecule 1 (ICAM-1) (Figure 1).11 In vitro studies have shown that blocking this interaction may inhibit the activation and recruitment of T cells and the release of pro-inflammatory cytokines on the ocular surface in DED pathogenesis.11 The exact mechanism of Xiidra® in DED is not known.

REFERENCES

FIGURE 1 Xiidra® is designed to bind to LFA-1 and block its interaction with ICAM-1 on the ocular surface.11

Four 12-week, randomized, multicenter, double-masked, vehicle controlled trials (N=2133) were conducted to evaluate the efficacy and safety of Xiidra®. At 6 and 12 weeks, Xiidra® provided greater improvement in the symptom of eye dryness compared with vehicle, with improvement seen as early as 2 weeks in two of the studies.11 In three of the four trials, Xiidra®-treated patients showed improvement in inferior corneal staining score at 12 weeks.11

In general, this timeframe of sign and symptom improvement has been reflected in our own patients. Following up within 6 to 12 weeks after an initial trial of Xiidra® allows us to assess and make any necessary adjustments to the treatment plan.

When prescribing Xiidra®, as with any medication, it is important to discuss possible side effects and contraindication. In the clinical trials, the most common adverse reactions, occurring in 5% to 25% of patients, were instillation site irritation, reduced visual acuity, and dysgeusia.11 Patients who know to expect these side effects may be less concerned if they experience any of them.

Accessing Xiidra®

It can often take some time before prescription medications are widely available through managed care plans. But Shire has developed a multi-faceted patient assistance program, dedicated to ensuring that patients have access to Xiidra®. For example, their prescription cost-savings program allows eligible commercially insured patients to obtain their first 30-day Xiidra® prescription for free, and refills for $10 every month thereafter (up to $250 each month in savings).

In summary, since its approval, Xiidra® has not only provided doctors with an additional tool to address DED, its presence has also helped to further increase awareness of this condition among patients and practitioners. I am pleased to have an agent approved to treat both the signs and the symptoms of DED—and that optometrists are continuing to take the lead in identifying and managing this important condition.

Ian Benjamin Gaddie, OD

is the owner and director of Gaddie Eye Centers in Louisville, KY. Dr. Gaddie is a consultant for Allergan, Alcon, Abbot Medical Optics, Johnson & Johnson, Aerie Pharmaceuticals, Akorn Pharmaceuticals, TearLab Corp, and TearScience. The content of this article is sponsored by Shire.
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).

DOSAGE 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 with 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, dryness, 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. In 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.

For more information, go to www.Xiidra.com or call 1-800-828-2088.
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Know the legal aspects of myopia control

ODs are responsible for discussing potential treatments with their patients

By Pamela J. Miller, OD, FAAO, JD, FNAP

The incidence of progressive myopia and degenerative myopia is increasing by epidemic proportions and has been increasing over the past several decades. Estimates show myopia has increased 40 to 50 percent over the past 30 years in the U.S., and 75 to 90 percent in East Asia. The level of myopia >5.00 D is increasing dramatically as well, with resulting sight-threatening risks, including:

- Retinal detachment, tears, holes
- Macular degeneration (maculopathy)
- Posterior vitreous detachment (PVD)

More frightening is the prediction that by 2050, myopia in North America could affect 50 percent of the population—with its progression unchecked.

Optometrists in Asia, Australia, and Europe are reported to be more active in intervention, according to the Contact Lens and Anterior Eye 2016 study.4

Myopia risk factors

A number of factors enter into the evaluation of the development and progression of myopia, including the patient’s age at onset, ethnicity, the amount of time spent on close work as well as outdoors, binocular status, and family history.

These factors should be documented as part of the myopia work-up and baseline in addition to documentation of historical vision changes.

Choosing one’s parents and family would be ideal; however, having both parents who are myopic appears to increase the risk of having myopic offspring as well as a higher incidence of high myopia and progressive myopia. Of course, parentage is not a factor that can be modified or eliminated.

There appears to be correlation among those individuals born during the summer months, females, diet, close work, higher IQ, and level of educational attainment. These may be risk factors only and are not easily modified.

Further study is required to determine concrete relationships as well as how to best modify the risks.

Patients who are categorized as progressive myopes should be closely monitored for other complications, including glaucoma, detached retinas (or retinal holes) and earlier incidence of cataracts. As such, patients should be told of these potential problems and warned of what to expect and available treatment options.

Discretion should be used when educating patients so that they are not overwhelmed with information or feelings of impending doom and conclusions of ultimate blindness. Most high and progressive myopes are deeply concerned about the likelihood of blindness.

It is optometrists’ responsibility to make certain that they monitor patients, offer the best options for control, and work to assure them that blindness is an unlikely result. It is also important to let them know of ongoing research and potential advances that may work well for them.

Current options

A number of available options may benefit our patients. All come with risks; none come with guarantees—and some are more easily implemented than others.

Costs always play into the patient’s decision of what path to follow. For some patients, the choices may simply be out of reach financially. Nonetheless, ODs must ensure that patients are aware of their viable options.

Options include:
- Gas permeable (GP) lenses
- Bifocal (or progressive) spectacle lenses
- Spectacle under correction
- 0.01% atropine therapy
- Dual focus or multifocal soft contact lenses
- Dual focus or multifocal RGP contact lenses
- Orthokeratology (ortho-k) or corneal reshaping contact lenses

Behavior modification options include:
- Reducing near work, including vision breaks
- Increased distance from monitors and screens
- Increasing time spent outdoors

When advising patients about behavioral modifications, an easy method that can be implemented without cost or side effects is to ensure adequate time outdoors. This can assist in reducing eyestrain imposed by increased use of digital devices.

Forty minutes outdoors, which can be broken into 20-minute increments, while working or playing at a distance of 20 feet or more works well.

Another option for patients includes phakic interocular lenses (IOL), although no studies document this alternative for the

TAKE-HOME MESSAGE

Myopia is increasing, and patients have the right to know that options exist to control it. ODs should educate patients about possible progression and communicate what treatments—from time outdoors, bifocal lenses, atropine, and ortho-k lenses—are available to slow or stop increases in myopia and its associated risks.
Myopia control
Continued from page 21

progressive myope. All prescriptions should include high index lenses with an anti-reflection coating, as well as utilization of photochromic lenses.

These options may not be covered for patients with insurance limitations and may not even be available as an upgrade, but they should be discussed and/or recommended when appropriate.

Currently, refractive surgery is not considered a solution for myopia control, despite its widespread use for myopia correction when the vision is stable.

Looking ahead

Thus far research is unable to validate any control or cure of myopia, although the body of evidence is growing. Of these options, several stand out as being more effective in slowing myopic progression, including atropine, ortho-K and soft bifocal contact lenses.

Several contact lens companies are conducting investigations with soft lenses and myopia control. Currently, the U.S. Food & Drug Administration (FDA), in cooperation with the American Optometric Association (AOA), is moving forward with guidelines for myopia control devices.

Today, ortho-k is the only approved contact lens for myopia control up to -6.00 D. Consent from the parent or guardian, as well as the patient.

Let’s approach myopia control and possible legal aspects or repercussions by using the reporter’s guideline to explore the topic: who, what, when, where, and why.

Who

The first question is who are we talking about—a school-aged child or an adult? How fast is the patient’s myopia progressing?

If the patient progresses <1.00 D per year over a short time span, that not the same as a patient who has a change of 1.00 D every three to six months or several diopters from one annual visit to another.

What are the corneal topographies, keratometry readings and spectacle corrections with best corrected acuities?

Is there a family history of high myopia? Are other risk factors present?

What

What is the environment in which the patient lives and works, and what are the patient’s visual needs?

What is the patient’s end goal and is it realistic?

Patient expectations are an essential element of the legal aspects with which you will be faced. Is the patient accepting of a minimal annual change or will he feel betrayed when the changes are more than he expects?

When

How often will you follow the patient and her increasing myopia?

For the patient with a lower level of myopia, an annual visit may be appropriate.

For the patient who is experiencing a rapid progression, every three to four months may be more in line.

If the patient hasn’t been seen for the past two years and the correction has tripled or quadrupled, that could be a potential concern.

Where

Do you have access to the patient’s history, including family history, past prescriptions, and frequency of change?

Have you documented corneal readings or changes?

Are there underlying medical or environmental concerns?

What is the patient’s financial situation? Is she covered by insurance, are there insurance restrictions, or is she financially unable to cover treatments?

Legally, patients have a right (and doctors have an obligation to disclose) all viable options so patients make an informed decision

All other techniques or methods fall under the “off-label” uses.

As always, it is appropriate to obtain informed consent from the patient as well as parent or guardian if the patient is a minor. Sarah Kochik, OD, FAAO, and Yue (Maria) Liu, OD, PhD, at UC Berkeley College of Optometry have made available an informed consent form.

Remember that with all off-label therapies, it is appropriate to obtain informed consent from the parent or guardian, as well as the patient.

Let’s approach myopia control and possible legal aspects or repercussions by using the reporter’s guideline to explore the topic: who, what, when, where, and why.

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What is the patient’s financial situation? Is she covered by insurance, are there insurance restrictions, or is she financially unable to cover treatments?
It is never too early to start the discussion when ODs see myopia is progressing, and the discussion should be conducted by the doctor, not a staff member. Not only does the doctor discussion carry greater weight, but it signals the importance of ongoing care and management within the doctor-patient relationship.

Even if a patient is financially indisposed, ODs are able to recommend high-index photochromatic lenses; decreased time with handheld devices, computers, and TV; a minimum of 45 minutes of outdoor activity; and return office visits as the doctor deems appropriate.

It is critical that the doctor explain the importance of these recommendations, including scheduling follow-up visits. Patient counseling may even cover how to handle bullying at school, if appropriate. Children who wear spectacles are more likely to be bullied at a time when compliance is most crucial. Consider closer follow-up of female patients because myopia appears earlier and evolves more quickly for these patients.4,5,9

When possible, a baseline evaluation should be part of the patient’s record, covering the risk factors, binocularity, topography, axial measurement, ocular health examination, uncorrected and best corrected acuity at distance and near, pupil diameter, cycloplegic examination, and a detailed case history.

ODs are not under a legal duty to prevent myopia or even to control it. We are, however, responsible for educating patients, offering them viable options, and monitoring them whenever possible. Even under the best of conditions, ODs may not be able to slow down or stop progressive myopia, and ODs are not expected to offer their services and care at no charge. Recognize that myopia is a major worldwide epidemic, and ODs have a critical role to play in educating patients and caring for their visual needs. To do otherwise may result in severe patient harm that can extend years into the future, seriously affecting patient needs as well as healthcare system.●

REFERENCES


Dr. Miller is a graduate of the Southern California College of Optometry and Loma Linda College of Law. She is a Fellow and Distinguished Practitioner in the National Academies of Practice in Optometry. Dr. Miller served as the first woman on the California Optometric Association Board of Trustees and the first female optometrist on the California State Board of Optometry. She is the president of Optometric CE and is the president of the American Optometric Society. drpam@omnivision.com

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Visual haze leads to diagnosing unknown corneal dystrophy

Case shows deposits and differential key for rare presentation

By Emily Hutchins, OD

Corneal dystrophies are often inherited, bilateral, and progressive disorders in which abnormal material collects in the layers of the corneal structure. Accurate diagnosis of corneal dystrophies can be difficult due to their rarity and variable clinical presentation. Valuable factors that can aid in proper diagnosis include:

- The patient’s family history
- Pinpointing affected corneal layers
- The clinical characteristics of the corneal deposits/opacities

Case report

A 56-year-old white male presented with a chief complaint of gradually increasing visual haze over the past 10 years OU.

The patient reported being diagnosed with an unknown corneal dystrophy for which he had undergone two previous phototherapeutic keratectomy (PTK) procedures OS.

He also reported that his mother, brother, and possibly his maternal grandfather have had bilateral corneal abnormalities.

The patient’s medical history was significant for hyperlipidemia that was well controlled with simvastatin (Zocor, Merck).

Clinical findings included best-corrected visual acuities (BCVA) of 20/25 OD and 20/50 OS with entrance testing within normal limits.

Upon biomicroscopic evaluation, corneal findings were significant for dense arcus 360 degrees, central stromal haze, and crystallization at the level of the epithelium/anterior stroma (Figure 1).

Dilated fundus exam yielded unremarkable posterior segment findings.

Corneal topography indicated diffuse corneal irregularity and distortion in both eyes.

Pachymetry measured 589 μm and 346 μm OD and OS, respectively. The thin pachymetry reading OS is likely due to two previous PTK procedures.

Corneal sensitivity with cotton wisp revealed no intact sensitivity in the right eye and intact, but low sensitivity, in the left eye.

Differential diagnosis

Differential diagnoses with similar crystalline corneal findings that needed to be considered when diagnosing this patient included the following:

- Fluoroquinolone/chlorpromazine use. This patient had no history of using these medications, excluding this as a diagnosis.
- Bietti crystalline dystrophy. This patient had no history of using these medications, excluding this as a diagnosis.
- Cystinosis. Often, cystinosis results in kidney failure at an early age. This patient had no known kidney problems, making a diagnosis of cystinosis highly unlikely.
- Infectious crystalline keratopathy. Microbial in etiology, infectious crystalline keratopathy typically causes a branching crystalline pattern, which was not present in this patient.
- Lymphoproliferative disorders (monoclonal gammopathy, multiple myeloma). These conditions rarely result in corneal findings, but the patient would have a history of bone pain, multiple bone fractures, or bruising. This patient did not have these symptoms.

Diagnosis

After careful consideration, this patient was diagnosed with Schnyder corneal dystrophy (SCD) based upon clinical presentation and family history with autosomal dominant inheritance pattern.

SCD is a rare and autosomal dominant condition. This dystrophy is rooted in an inherited mutation of the UBIAD1 gene that is involved in the local metabolism of cholesterol within the corneal environment. It is hypothesized that mutation of the UBIAD1 gene causes overproduction of cholesterol within the cornea.

Therefore, by age 40, SCD patients typically present with dense corneal arcus, stromal haze, and corneal crystallization at the subepithelial layer.

Clinical presentation of SCD is predict-
able by patient age. It is important to note that at any point in SCD progression, corneal crystals may or may not be present because only about 54 percent of SCD patients have been found to present with subepithelial crystals.

Typical corneal findings of SCD based upon patient age:
- <23 years: Central stromal haze (with or without crystals)
- 23–39 years: Central stromal haze and arcus (with or without crystals)
- >39 years: Central stromal haze, arcus, and midperipheral panstromal haze (with or without crystals)

Along with these hallmark corneal findings, visual acuity and corneal sensitivity tend to decrease with SCD progression.

Treatment

There is no available treatment to stop the progression of SCD. Although penetrating keratoplasty (PKP) and deep anterior lamellar keratectomy (DALK) can be successfully performed in these patients, SCD can recur within the corneal graft.

Patients should be referred for PTK as needed to remove subepithelial crystals that may be causing bothersome glare.

Due to the diffuse corneal irregularity often seen in SCD patients, scleral contact lenses often allow for better acuity.

Genetic counseling is warranted because SCD is an autosomal dominant condition that can easily be passed on to offspring.

Conclusion

Because SCD rare and may present in a variety of ways, it can be easily misdiagnosed or even overlooked in its early stages. While crystalline deposits are often thought to be one of the landmark clinical findings for patients with SCD, only about half of cases present with them.

It is important to understand the presentations to educate, manage, and appropriately refer SCD patients as the dystrophy progresses.

REFERENCES:
How to diagnose a swollen optic nerve

Continued from page 1

Important exam elements include:
- Subjective and objective visual acuity
- Pupils
- Extra-ocular muscles
- Color vision
- Contrast sensitivity
- Visual field testing
- Anterior and posterior chamber observation
- Optic nerve observation

Visual acuity can be normal or impaired, and subjectively a patient may complain of blurry letters or shadows around letters and an overall decrease in clarity.

Pupil testing is extremely important in assessing optic nerve disease. A relative afferent pupillary defect (RAPD) can be detected performing the swinging penlight test conducted in a dark room to assess full amplitude of pupillary response.

Color vision and color desaturation testing can be performed with Ishihara color plates and red-capped bottle. Dyschromatopsia, or the ability to perceive colors as abnormal, is a sensitive indicator of optic nerve disease.

During the dilated fundus exam, the clinician should look for evidence of cells in the anterior chamber and vitreous. This would indicate that the disc swelling is secondary to a uveitic process.

When assessing the optic nerve, stereoscopic views of the disc provide the quality and detail needed to determine disc edema from elevation. The optic nerve will appear elevated and hyperemic with blurred margins obscuring peripapillary vessels as they leave the disc.

Systemic history

A detailed history of systemic health is important. Diabetes, hypertension, high cholesterol, and a history for being treated for or having malignancy or autoimmune disease is critical to understand potential risks associated with optic nerve edema.

Current and previous medications can be clues because many can be directly or indirectly toxic to the optic nerve. These drugs include tetracycline, cyclosporine, methotrexate, ethambutol, amiodarone, alcohol, and tobacco, to name a few.

Finally, reviewing the patient’s general health, including weight, eating habits, and social activities such as drinking, smoking, and illegal drugs will help provide an overall health picture, knowing that toxic and nutritional causes are in the differential diagnosis paradigm.

Clinical exam

The clinical eye exam is the second step of process. With any optic nerve disease, ODs should pay close attention to several exam elements.

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Papilledema vs. pseudopapilledema differentials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papilledema</td>
<td>Pseudopapilledema</td>
</tr>
<tr>
<td>Malignant hypertensive</td>
<td>Optic nerve head drusen</td>
</tr>
<tr>
<td>Mass or compressing lesion</td>
<td>Congenitally crowded disc</td>
</tr>
<tr>
<td>Idiopathic intracranial hypertension</td>
<td>Tilted disc syndrome</td>
</tr>
<tr>
<td>Intracranial hypertension secondary to:</td>
<td>Optic nerve hypoplasia</td>
</tr>
<tr>
<td>- Meningitis/encephalitis</td>
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<td>- Ateriovenous malformation</td>
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<td>- Cerebral venous thrombosis</td>
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It is important to assess the spontaneous venous pulsation (20 percent of normal population)—it will not be seen if swelling is present.

Another clinical sign to look for is buckling or retinal folds of the temporal aspect of the disc, also known as Paton’s lines.

If optic nerve edema is suspected, the standard method of grading disc edema by ophthalmoscopy is the Modified Frisén Scale. It is an ordinal scale with subjective evaluation and grades ranging from 0 (no edema) to 5 (severe degree of edema) with characteristic findings for each grade.

Additional testing crucial to accurately diagnosing optic nerve swelling are visual field (VF) testing and optical coherence tomography (OCT).

VF testing can be confrontation, kinetic (Goldmann), or automated static perimetry (Humphrey). VF defects take several patterns: central, arcuate, altitudinal, and generalized. Specific patterns can help the clinician correlate to specific diagnoses.

OCT uses light to provide images to the micron level and is an objective, noninvasive alternative to analyze the optic nerve head and quantify the status of the retinal nerve fiber layer (RNFL). Elevation of the RNFL is compared to age-related normative values to help confirm the already visualized ophthalmoscopy Frisén Scale findings.

Bilateral optic nerve swelling

Papilledema is acquired bilateral optic nerve swelling due to increased intracranial pres-
sure secondary to increased cerebral spinal fluid (CSF), which has specific etiologic implications. Papilledema is a true ocular emergency because it can occur from structural space occupying lesions such as large tumors, hydrocephalus, vascular abnormalities, cerebral venous sinus thrombosis, and arteriovenous fistulae.

Due to these pathologies, it is imperative to begin the process of neuroimaging, including magnetic resonance imaging (MRI) with contrast of the brain, orbit, and optic nerve, and magnetic resonance venography (MRV) of the brain. A referral to neuroophthalmology is warranted to evaluate and manage findings from the results of neuroimaging. If neuroimaging is negative, it is important to follow up with lumbar puncture to measure opening pressure and biochemistry, microbiology, and cytology of the CSF.

Note papilledema in the pediatric population may include but not limited to Guillain-Barre syndrome, spina bifida, hydrocephalus, trauma/subdural hemorrhage, and meningitis.

See Optic nerve swelling on page 28
Optic nerve swelling

Continued from page 27

After exclusion of potentially life-threatening conditions and a normal CSF, determine if the opening pressure on lumbar puncture is elevated (>20 cm H₂O).

It is also important to note that the modified Dandy criteria are still not met. This diagnostic criteria mandate identifying other potential causes is necessary—idiopathic intracranial hypertension (IIH) is a diagnosis of exclusion once all other potential causes have been ruled out.  

The most common presenting symptoms are headache, occurring in more than 90 percent of patients, as well as pulsatile tinnitus, photopsia, and retrobulbar pain. First-line treatment for IIH should concentrate on weight loss and management with a neuro ophthalmologist to lower CSF with an oral carbonic anhydrase inhibitor such as acetazolamide combined with a low-sodium diet as described in the IIHTT.  

In patients with sudden and severe papilledema who may be at risk for irreversible vision loss, surgical intervention such as optic nerve sheath fenestration and cerebrospinal fluid shunting may be urgently needed.  

It is key to rule out pseudo papilledema, a benign elevation of the optic nerve head with an underlying anomalous condition (see Table 1). These anomalies include optic nerve head drusen (ONHD), congenital crowded discs, and malinserted discs. ONHD is the most common cause, accounting for 75 percent of clinically diagnostic disc anomalies. The scleral canal and optic disc of eyes with drusen are much smaller than average, thus showing elevated appearance.  

OCT can aid in differentiating disc drusen from edema. Disc edema has a smooth internal disc contour and demonstrates a V-shaped hypo reflective space between sensory retina and RPE compared to the lumpy appearance found with disc drusen. Congenital crowded discs are the result of a normal number of retinal axons pass-
ing through a small posterior scleral foramen with the resulting appearance of a densely packed optic nerve head as axons exit the globe. A malinserted disc is due to oblique insertion of the nerve to the globe; primarily the nasal portion is elevated with the temporal portion depressed, giving it a swollen-like appearance.\textsuperscript{14}

**Unilateral optic nerve swelling**

Unilateral optic nerve swelling can be caused by different pathogenic processes, including demyelinating, vascular, compressive, inflammatory, infectious, infiltrative, toxic, nutritional, and hereditary causes. (see Figure 4)

Demyelinating or optic neuritis (ON): History of sudden vision loss in one eye and pain associated with eye movement, prior history of neurological symptoms such as paresthesia, limb weakness, ataxia, chronic arm paresthesia, and diminution of vision following a rise in body temperature such as after exercise or a hot shower (Uhthoff’s phenomenon) is very common. ON improves in 90 percent of cases over several weeks to near normal acuity. A brain MRI is needed to identify the presence of white matter lesions to confirm diagnosis.\textsuperscript{15}

Arteritic ischemic optic neuropathy (AION): The presence of preceding transient visual loss, diplopia, temporal pain, jaw claudication, fatigue, weight loss, and myalgias is strongly suggestive of AION due to giant cell arteritis (GCA).

GCA causes only 6 percent of ischemic optic neuropathy, but it is visually devastating—a quick diagnosis can initiate treatment and prevent vision loss in the lateral eye. Other causes include polyarteritis nodosa, Wegener’s granulomatosis, and connective tissues disorders.\textsuperscript{15}

Non-arteritic AION is usually less severe and the most common cause of unilateral optic nerve edema in those >50 years. Usually associated with poor blood circulation to the optic nerve and associated with diabetes mellitus, glaucoma, hypercholesterolemia, and history of drug use.\textsuperscript{16}

Compressive: Lesions of the orbit and, less commonly, the optic canal can lead to optic nerve damage, and the visual loss is

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**Step by step workup**

1. Comprehensive case history
2. Eye exam: Visual acuity, pupils, EOMs, color vision, contrast sensitivity, visual field testing, OCT findings, careful observation of the optic nerve
3. Bilateral or unilateral swelling?
4. Bilateral papilledema workup
5. Unilateral following flow chart
6. Referral for neuroimaging, laboratory testing, treatment, management

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**90% The percentage of cases of optic neuritis that improves over several weeks to near normal acuity**

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See Optic nerve swelling on page 30

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Optic nerve swelling

Continued from page 29

usually gradual and progressive. Common causes include optic glioma, meningioma, lymphangiomas, pituitary adenomas, craniofacial anomalies, and Grave’s orbitopathy. MRI and CT of brain and orbit are crucial for diagnosis.17,18

Inflammatory: A variety of systemic auto-immune disorders can cause optic nerve swelling. These include sarcoidosis, Bechet’s disease, systemic lupus erythematosus, Sjögren’s syndrome, Wegener’s granulomatosis, and syphilis. Laboratory for each diagnosis should be included in the workup on these patients.19,20

Infiltrative: The optic nerve can be infiltrated by secondary tumors and malignancies, including metastasis, carcinomas, leukemia, lymphoma, and multiple myeloma. Patients with a history of cancer and acquired optic nerve edema should be considered cancerous until proven otherwise. Neuroimaging should be ordered to help determine the correct diagnosis.17,22

Infectious: Bacterial, viral, and fungal infections can lead to optic nerve disease and edema. The most common causes are toxoplasmosis, Bartonella (Cat-scratch disease) and Lyme disease. Laboratory testing and good case history is important in isolating the causative pathogen.19,20

Nutritious/toxic: Various drugs, toxins, and nutritional deficiencies can lead to optic nerve disease. These typically mimic and cause a secondary IIH. These include tetracyclines, Vitamin A, amiodarone, and lithium.

Hereditary: The hereditary optic neuropathy that causes discs to appear swollen is Leber’s hereditary optic neuropathy and typically occurs between ages of 15 and 35.22 Genetic testing and counseling should be considered if this is the suspected cause of optic neuropathy.

REFERENCES

See Optic nerve swelling on page 32
GENE THERAPY FOR INHERITED RETINAL DISEASE

- Diagnostic Challenges
- Referral Patterns
- Current & Emerging Treatment Options

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What is Inherited Retinal Disease (IRD)?

IRD is a class of single-gene disorders that represent the major cause of familial blindness in the Western world, and until recently, have been untreatable.

This website hosts a series of CME/CE-accredited educational activities that present updated guidelines for diagnosis, referral patterns, and treatment, all of which have changed dramatically in the past year. It is also where busy clinicians can find valuable resources, which will include video interviews from the 2018 AAO Conference with the leading subject matter experts on gene therapy for IRD.

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DALLAS—Myopia is one of the most prevalent global vision challenges, especially in children. Essilor recognizes that myopia is an urgent concern and prevalence is increasing dramatically worldwide.

The Essilor Group has made a global commitment to address this growing problem, with Essilor of America taking a leadership role in addressing myopia in the U.S. through a new campaign targeted at consumers and the eyecare industry.

The integrated campaign will educate and drive awareness around the rise of myopia; including a movie trailer in theaters nationwide that urges parents to take a proactive role in their child’s eye health and sight by visiting an eyecare professional for a comprehensive eye exam to identify myopia before it impacts their everyday life.

“Essilor understands the alarming growth of myopia around the world, especially in East Asian countries where the rates have increased dramatically with more than 85 percent of the population between ages 15-25 being myopic,” says Millicent Knight, OD, FAAO, FAARM, senior vice president of customer development at Essilor of America.

“Many parents are unaware of the lifelong issues associated with myopia, which is why we are taking action in the U.S. to educate consumers and ask parents to schedule an eye exam for their children,” she says.

To give parents a look at a child’s experience and teach them how to identify the signs of myopia, Essilor launched the “Out of Focus” movie trailer showing in select theaters September 14 through November 1.

The trailer offers a perspective of the children who struggle in life because they live life out of focus and ends with a call to action for parents to schedule a comprehensive exam with their eyecare professional.

Essilor is reaching eyecare professionals through social media and trade media efforts and partnering with ophthalmic thought leaders to create a recommended path to becoming a myopia expert.

Research of more than 1,000 parents of children who have myopia and over 600 children with myopia conducted by MetrixLab and on behalf of Essilor found myopia does impact myopia does impact children’s lives:

- 49 percent of children with myopia experience difficulty in the classroom
- 41 percent of parents with myopic children claim their children struggle with everyday activities
- 35 percent of myopic children report not enjoying school
- 38 percent of parents of myopic children report children have difficulty playing sports
- Only 41 percent of parents noticed their children were suffering from myopia
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Optometry Times
Casablanca, dry eye, and throwing axes

**What’s something your colleagues don’t know about you?** I was born in Casablanca, Morocco. I left when I was 5 years old. My parents were born in Casablanca, things became unstable, and they wanted opportunities. My dad was able to transfer with his company, so we came to Montréal. My parents both spoke French, and it was an easier transition for them. They moved to Montréal when they were about 35 years old. It was a hard decision, and they made me realize how much they sacrificed later in life. I wouldn’t have had the opportunities back there that I’ve had in a Canadian environment.

**Why academia?** I was in practice for about 10 years and started to slow that down as I got an opportunity in academics. I don’t regret being in academia. It’s offered me opportunities that I otherwise wouldn’t have had in clinical practice—to meet colleagues from around the world and to go to conferences to share my knowledge or get knowledge at a teaching level.

**How did you get interested in demodex mites?** I went to a conference and they threw up a lot of pictures of demodex. I sat there going, “Wow! I don’t think I’ve ever seen this!” Yet, when they showed pictures of lids, I said, “But I’ve seen this.” We don’t typically pull out a lash and look at it under a microscope. What made the difference for me is if you have patients over 70, the likelihood of having demodex as a cause of blepharitis is nearly 100 percent. I may have missed this for a long time—I felt guilty as a practitioner but also curious.

Monday morning, I got a microscope and started pulling lashes. To my astonishment, I could not believe how many people demodex. I like to see the little bugs under the microscope move. I think it makes patients be 100 percent compliant when they see them. [Laughs]

**Why is it important for ODs to have a strategy for a dry eye work up?**

You need to show the evidence and how to educate the patient. One example is the warm compress. But we’ve shown now that it is inefficient at providing the heat necessary to help. That proof has trickled down to get the word out to the optometrist. Another is lid hygiene. Everyone says just use baby shampoo. Now it’s potentially harmful to the tear film. Now we have to be more evidence-based. Do I have data to back this up, and has this data changed over the years? It’s my job as a clinician to be at the forefront of that change. I need to educate myself to make sure I know the latest thing that I’m recommending to my patients.

**What’s something you would change about optometry?** Politically, optometry has come a long way, but it hasn’t been taken as seriously as another health profession. I think the individual patient sees our value, but as you move up the healthcare scale, we have work to do. We need to be better represented at the higher levels of health care.

**What’s the craziest thing you ever did?**

Last year, we had a group of women colleagues come to Montréal, and I looked for something fun-crazy to do. We went axe-throwing. [Laughs] I thought it would be absolutely hysterical with this group of women. We had an absolute riot. They tell you a bit of history of axe throwing and the mechanics of how an axe spins, and you get a chance to throw axes. Were we all academic ODs or in industry, and we needed to relieve a lot of pressure. You would love the name because it is called Rage. [Laughs]

—Vernon Trollinger

Associate professor and Director of Externships and Director of the Dry Eye Clinic at the School of Optometry, University of Montréal, Canada

Etty Bitton, OD, MSc, FAAO, FBCLA

**Why is it important for ODs to have a strategy for a dry eye work up?** To hear the full interview with Etty Bitton listen online: optometrytimes.com/ EttyBitton

**Casablanca, dry eye, and throwing axes**
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Technician plays key role in ophthalmic exam

Some components of the ophthalmic exam are performed by technicians, requiring adequate knowledge of eye to diagnose appropriately

By Michael W. Stewart, MD

The ocular surface and adnexa, and the clear view of the retina and choroid obtained through transparent ocular media in most patients, are conducive to making ophthalmologic diagnoses based solely on the visual examination. A thorough ocular and systemic history, however, will suggest the correct diagnosis in most cases.

When parts of the complete examination—uncorrected and corrected visual acuity, pupillary examination, confrontation visual fields, ocular motility, and intraocular pressure—are added to the history, most diagnoses can be correctly made without the use of a slit lamp, ophthalmoscope, or ancillary testing.

The unofficial rule of thumb that "80 percent of diagnoses are made based on the history, 10 percent on the physical examination, and 10 percent by ancillary testing" holds true not only for internal medicine but also for ophthalmology.
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. 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.

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. It is estimated that 30-70% of patients experience mixed dry eye. 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.

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 and long-lasting relief. In addition, SYSTANE Complete is designed to minimize blur on instillation due to its nano-droplet formulation.

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.

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

**SYSTANE Complete Has You Covered When It Comes to Your Dry Eye Patients**
Competently perform parts of the exam | CLINICAL KNOWLEDGE

Tech role
Continued from page 1

A word of caution should be made though, because some patients relate an unreliable history or one filled with extraneous facts, which can lead to the inability to arrive at a proper diagnosis.

When dealing with challenging patients, experience and expertise are required to “weed through” histories to identify relevant facts.

This article will discuss important components of the ophthalmic examination that are usually performed by technicians.

Adequate knowledge of the eye, ocular adnexa, sensory inputs, and visual pathways are critical to arriving at some of the important diagnoses discussed as follows.

Cases were extracted from the author’s practice to illustrate principles and to emphasize the importance of thoughtful, complete adherence to the correct examination sequence.

Anatomy
The eye is situated within the bony orbit and is covered and protected by the eyelids. Fibers that transmit visual signals leave the eyes within the optic nerves (cranial nerve II), pass through the optic foramen in the posterior orbital wall and the cavernous sinuses, before converging at the optic chiasm.

Nasal fibers of the optic nerves—those that perceive the temporal visual fields—cross through the chiasm to the contralateral side where they converge with temporal fibers from the other nerve to form the optic tracts.

These terminate in cell bodies within the lateral geniculate bodies of the thalamus. Optic radiations connect these cells to the visual cortex in the occipital lobe—the area of the brain that perceives vision.

Other cranial nerves integral to the visual system include III (oculomotor), IV (trochlear), V (trigeminal), VI (abducens), and VII (facial). These nerves provide motor input to the muscles in the orbit, face, ciliary body, iris, and eyelids, as well as sensation to the eyelids, eyes, and orbital tissue.

Examination
The complete ophthalmic examination consists of assessments and measurements of the following:

1. Visual acuity
2. Motility
3. Visual fields
4. Pupils
5. Eyelids and adnexa
6. Anterior segment
7. Intraocular pressure
8. Fundus

The technician should approach each patient systematically with careful attention to data gathering according to the aforementioned list. This approach is particularly significant when faced with complex patients for which a diagnosis is not readily apparent; in these patients, careful performance of each step is vital.

The balance of this article will use case presentations to illustrate the importance of several components of the ophthalmic exam.

Visual acuity measurements
Visual acuity is usually measured by having patients read Snellen eye charts. Some acuity numbers have particular significance.

1. A visual acuity of 20/40 is generally needed to read standard newspapers. Having 20/40 in one eye usually qualifies one to obtain a driver’s license in any state.

2. A visual acuity of 20/200 defines blindness in most cases. Legal blindness is defined as a patient who has one of the following deficits:
   - Best corrected visual acuity of 20/200 or worse in the better eye, or
   - A visual field of 10 degrees or less regardless of the visual acuity.

   Note that patients frequently express the following misconceptions:
   - “I’m legally blind in my right eye.” Remember that legal blindness is a patient definition, not an eye definition.
   - “I’m legally blind without my glasses.” Remember that legal blindness is based on the best corrected visual acuity.

   Never assume that patients are capable of reading the letters on the eye chart. Illiterate patients may identify the big “E” but may not recognize any other letters, and such a patient is unlikely to admit to not being able to read.

   If one suspects that a patient with 20/400 visual acuity should be able to see better, the examiner should test visual acuity with the “tumbling E” chart or children’s charts that contain drawings.

TECH ROLE CONTINUED ON PAGE 4
CLINICAL KNOWLEDGE

Tech role
Continued from page 3

CASE 1
A 75-year-old woman who had previously undergone successful bilateral cataract surgery awoke with painless, significant vision loss in her left eye. She saw her cataract surgeon who could not make a diagnosis; he sent her to a retina specialist who also was unable to determine the cause.

A neuro-ophthalmology consult was requested, but the patient ended up on my schedule instead.

My technician began to methodically collect data and emerged from her room in 5 minutes with the correct diagnosis.

Here is what she had found:
Visual acuity:
OD: 20/20 OS: counting fingers at 4 feet
Automated refraction:
OD: -0.25 + 0.50 x 90
OS: +12.50 D
Visual acuity OS with AR and pinhole: 20/40
Pupils: No afferent pupillary defect
Certain data in this case contribute to making the correct diagnosis:
- The AR (+12.50 D) is more suggestive of aphakia than pseudophakia.
- The visual acuity when measured with the AR and pinhole establishes the fact that this eye still can see well.
- The absence of an afferent pupillary defect rules out optic nerve and widespread retinal disease.

With these data my technician diagnosed a dislocated intraocular lens (IOL). The slit lamp photographs taken after pupillary dilation are shown in Figures 1A and 1B.

Fibrotic capsular remnants can obscure the edges of implants and confuse examiners regarding the presence or absence of a lens. The silicone plate/haptic IOL in this eye had dislocated through a previously opened (by YAG laser capsulotomy) posterior capsule and settled against the inferior ciliary body in a difficult-to-visualize position.

Following vitrectomy surgery with IOL exchange and the implantation of an anterior chamber IOL, the patient achieved a visual acuity of 20/20.

CASE 2
A 75-year-old man complained of a spot in the left side of his vision for four days. This was unaccompanied by other symptoms, was unchanging, and was present in both eyes.

On examination his best corrected visual acuity measured 20/20 OU, but on confrontation visual field testing he had a left-sided defect approximately 45 degrees from fixation in both eyes. A Humphrey 24-2 visual field was normal in each eye.

Because of the concern that his history and confrontation field defects suggested the presence of a lesion that may not have been detected on Humphrey field testing, magnetic resonance imaging (MRI) of the brain was obtained.

It showed damage in the visual cortex of the right occipital lobe due to a cerebrovascular accident (stroke) (Figure 2).

The patient was referred to his primary care physician for further evaluation and initiation of antplatelet or anticoagulant therapy.

CASE 3
A 44-year-old man complained of the worst headaches of his life and double vision for one day. His visual acuities were 20/20 OU, but he had a left exotropia and left ptosis. The left eye could not adduct, and there were severe deficiencies in supraduction and infraduction.

The pupillary diameters measured 3 mm OD and 5 mm OS, the left pupil reacted sluggishly to light, but there was no afferent pupillary defect.

This constellation of symptoms (exotropia with gaze restrictions, ptosis, and mydriasis) is characteristic of a pupil-involving third nerve palsy.

Though pupil-sparing third nerve palsies are usually vascular (due to diabetes or systemic arterial hypertension), a pupil-involving third nerve palsy is due to compression of the third nerve by a posterior communicating artery within the brain (Figure 3).

This constitutes a neurosurgical emergency that requires immediate referral of the patient to the emergency room (ER).

The patient needs emergent neuroimaging with magnetic resonance angiography or cerebral angiography, followed by clipping or coiling of the aneurysm, because rupture of the aneurysm produces a 50 percent mortality rate.

Critical to making this diagnosis is the identification of the mydriasis. If the pupil is normal, the patient is diagnosed with a vascular third nerve palsy, does not require referral to the ER, and can be followed as an outpatient. Pupillary involvement (mydriasis), however, necessitates an emergent referral to the ER.

Conclusion
These three cases illustrate the relevance of key steps in the patient workup that are usually conducted by the technician. Performing these accurately means making the correct diagnosis, even when other technicians and physicians failed to do so. In some cases this may even mean saving the patient’s life.

Remember that examinations need to be performed methodically and completely to not overlook important findings. Therefore, the technician must learn proper technique for each step of the examination to recognize significant abnormalities, because some of these will not be recognizable later in the examination.
Tapping technician’s expertise in averting claim denials

Knowledge is power: know the top reasons why claims get denied and be proactive in prevention

By Matt Baugh

Exceptional patient care and valuable protected revenue can be achieved when we, as ophthalmic technicians, assist ophthalmologists by performing at our best. Taking patient histories, performing delegated ancillary testing, and scribing with the physician all proved opportunities to ensure that patients have a rewarding experience while we are with them in the office.

In addition to quality medical care, how can you help avoid claim denials, which are costly to the practice and confusing for the patient?

Claim denials are costly for any ophthalmology practice. It takes a team of committed individuals to help prevent these mistakes through a process of education, application, and communication. Technicians are critical members of the team who help bridge the gaps between the front and back office and between physicians and patients. This article addresses three pertinent questions about claim denials and the technicians’ role in how to avoid them.

1. **WHY DO CLAIM DENIALS MATTER?**

   Ophthalmic practices are always seeking ways to increase efficiency. Every practice has processes in place to deal with claim denials, but how about a process that helps avoid the majority of these denials? Claim denials create inefficiencies by causing unnecessary work or rework.

   By avoiding and preventing claim denials, technicians can dramatically increase the overall efficiency of the practice by decreasing the amount of work done on the back end with correcting and resubmitting claims.

   Why should the technician want to be involved? Learning how to avoid claim denials supports ophthalmic technicians’ ultimate goal of caring for patients.

   When a claim is denied, patients are often notified by their insurance, which creates unnecessary stress and worry for the patient, in addition to more work for them. Techs can help by recognizing common claim denial reasons and working to prevent them.

2. **WHAT ARE SOME TYPICAL DENIALS?**

   There are many reasons why claims are denied. Some of the top reasons include insufficient documentation, inappropriate CPT or ICD-10 codes, missing or wrong modifiers, correct coding initiative (CCI) edits, prior authorization not obtained, and medical vs. vision. Following is an overview of common claim denials and how technicians can help patients steer clear of them.

   **Insufficient documentation**

   Sufficient and appropriate documentation is needed to help establish medical necessity for all billable services: exams, testing, minor and major surgeries, etc. As technicians, we can help ensure that all documentation is complete and appropriate by knowing the requirements.

   How many elements of the exam are needed for a new patient level 4 E/M code? How many elements of the history of present illness are present? What are the different requirements for intermediate and comprehensive eye visit codes? Does this test require an interpretation or report?

   Knowing the answers to these questions allows the tech to appropriately assist in fulfilling the necessary document requirements and prevent these types of claim denials.

   **CLAIM DENIALS CONTINUED ON PAGE 6**
Claim denials
Continued from page 5

Inappropriate codes
“As gas is to a car and electricity is to a light bulb, so are diagnosis codes (ICD-10) to procedure (CPT) codes.” You need to have the correct CPT code for the procedure, test, or surgery associated with the correct diagnosis for the claim to be accepted by insurance.

Once we know the medical necessity requirements for specific services, we can actively look over the chart documentation to make sure the test and diagnosis are correctly linked. A necessary step is appropriately identifying laterality, coding to the highest level of specificity (avoid using unspecified codes), using the correct CPT code and modifier. “Scrubbing” documentation in this way by reviewing the documentation before the claims are sent to insurance can significantly decrease the amount of denials.

Missing or wrong modifiers
Did you know that certain tests and or surgeries are always bundled together? Sometimes a modifier allows these tests to be billed out, and sometimes they don’t. Modifiers tell the whole story to the payer and indicate that the test, surgery, or exam has been changed in some way.

The incorrect use or absence of a required modifier is one of the top five reasons claims are denied. Knowing how to use modifiers appropriately will help technicians understand some billing nuances and limitations.

Modifiers can be appended to office visits (-24, -25, -57), diagnostic testing services (-RT, -LT, -TC, -26, -50, -59), and surgeries (-50, -54, -55, -58, -59, -78, -79, -RT, -LT).

Following is a helpful summary of how and when to use the most common office and surgery modifiers.

CCI edits
CCI edits are a list of services that are “bundled” or not individually payable when performed the same day. CCI edits affect the following in various combinations:
- Exams can be bundled with other exams.
- Exams can be bundled with tests.
- Tests are often bundled with other tests.
- Tests can be included with surgery bundles.
- Surgery can be combined with other same day/same session surgery.

The next chart is a grid of which
testing services are bundled together. The description “mutually exclusive” is used to describe a combination of tests that should never be unbundled (by using a modifier) unless a payer has a written policy that states it is OK to do so. Billing for a combination of tests that are bundled can be unbundled in specific situations (using a modifier).

Billable same-day combinations do not require the use of a modifier to be billed out. For example, when fluorescein angiography and indocyanine green chorioangiography are performed by two separate machines on the same patient, is only one of the tests billable? Which test? The answer: The one that gives the physician the information needed for diagnosis and or treatment.

**Prior authorization not obtained**

Prior authorizations are becoming a more common requirement for commercial insurance and Medicare Advantage plans. Although a prior authorization does not guarantee payment, no prior authorization guarantees no payment.

Technicians play a critical role in making sure prior authorizations are in place for tests and minor procedures that are performed in the clinic and minor rooms. Make a list of these common tests and procedures that require a prior authorization.

**Medical vs. vision**

Patients can have vision insurance coverage, which covers routine eye exams usually once per year and requires a “vision” diagnosis as the primary diagnosis, or medical insurance coverage, which covers medical eye problems and requires a medical diagnosis as a primary diagnosis.

What are vision diagnoses? Refractive diagnoses such as myopia, hyperopia, and presbyopia are typically billed for vision exams.

Some vision insurance plans also require the use of a Z code:

- **Z01.00** — encounter for examination of eyes and vision without abnormal findings

  or

- **Z01.0** — encounter for examination of eyes and vision without abnormal findings

Medical diagnoses are anything pathologically occurring with the eyes: glaucoma, cataracts, macular degeneration, to name a select few. How many times do you hear this from a patient in response to your question of, “How can we help you,” or “What brings you in today?” “I am here for my yearly checkup” or “my annual eye exam” (or maybe even “I don’t know!”)?

These are not appropriate chief complaints and phrases that indicate that the patient would like to use his vision insurance. Technicians can communicate with physicians when patients want their vision insurance billed for this particular visit and if a medical concern is revealed during the exam, explain to the patient what the next step may be (consider billing medical insurance, returning for another visit to address the medical concern, potential out-of-pocket expenses if the patient has only vision coverage).

If the claim is sent to the wrong insurance or the correct primary diagnosis is not listed, this can be difficult and time-consuming to fix on the back end.

**Claim denials continued on page 10**
Neurostimulation in the treatment of dry eye disease

Inducing a basal tear response has potential to counteract the progressive nature of dry eye

By Marc Bloomenstein, OD, FAAO

In addition to symptoms that may compromise vision, dry eye disease (DED) discomfort can be potentially detrimental to patients’ quality of life. Interventions designed to treat signs and symptoms of DED can be burdensome, especially if a multitiued approach is used.

Regimens involving any combinations of pharmacotherapy, warm compresses, supplemental tears, and omega-3 supplementation require diligence for what may seem like modest improvement. Yet, current treatment approaches can be highly effective when employed correctly. At the same time, patients and providers welcome approaches to simplify treatment.

A recent innovation in DED is said to be an effective treatment with potential to reduce reliance on pharmacotherapy. The TrueTear device (Allergan) uses neurostimulation to induce the production of basal tears, or more simply, a “real tear.”

The patient-administered device is inserted into the nose so that two prongs at the distal end approach the ophthalmic branch of the trigeminal nerve. A short electrical pulse—its strength can be attenuated by the

power settings—stimulates activity within the trigeminal nerve (5V1), with additional activity to cranial nerve VII, thus innervating the lacrimal glands.

How it works
Although it might seem that using TrueTear would induce reflex tears, the resulting response is the induction of a basal tear response. The mechanism by which patients begin to produce natural tears is not yet understood. Two theories regarding the mechanism of action have surfaced:

- Stimulation of the trigeminal afferent nerve fibers in the nasal cavity via the anterior ethmoidal nerve may initiate the nasolacrimal reflex, thereby leading to “an increase in activity in the superior salivary nucleus region of the brain, which is responsible for control of natural lacrimation.”

- The electrical stimulus to the trigeminal afferent nerve fibers may cross over to the pterygopalatine ganglion, in turn shifting to the parasympathetic pathway to stimulate facial nerve VII that connects to goblet cells and meibomian glands.

These two theories are not mutually exclusive, and it may be that each mechanism is partly accurate.

In the prospective, single-arm, multicenter, open-label OCUN-010 study, patients exhibited improvement on Schirmer’s testing on days 0, 7, 30, 90, and 180 compared with baseline.

Anecdotaly, I can confirm these results in patients in my clinic, with some saying they experience longer-lasting relief from symptoms related to the use of artificial tears.

Neurostimulation history
Many may recognize the concept of neurostimulation in medicine. For example, studies have described the use of neurostimulation in the management of chronic migraine pain, in rehabilitative settings, and for the treatment of post-traumatic stress disorder and cognitive neurologic conditions, such as Alzheimer’s disease. Neurostimulation has been used successfully for over 30 years.

The U.S. Food & Drug Administration has approved neurostimulation devices, including pacemakers, defibrillators, cochlear implants, and implantable devices intended to treat pain, essential tremors, refractory epilepsy, Parkinson’s disease, obsessive-compulsive disorder, obesity, and even retinitis pigmentosa.

Why this approach?
The science behind TrueTear provides strong rationale for its use and supports its clinical applicability. However, there may be more reasons to consider adding this device to one's dry eye practice—especially for patients using supplemental tears.

The plethora of supplemental tear...
options means that each patient can likely be matched with a formulation that will provide some benefit. At the same time, artificial tears are inherently palliative. In this regard, using the TrueTear device has potential to replace artificial tears with real ones.

TrueTear can potentially be complementary to other treatments. The device is disruptive in the sense that it offers a fundamentally different mechanism of action (or perhaps multiple mechanisms), but it does not change the overall approach.

There will still be patients with underlying inflammation who will benefit from pharmacotherapy. Anything we can do to liberate patients from multiple forms of therapy is beneficial. We need only evaluate experience in treating glaucoma to note that as the regimen’s complexity increases, adherence tends to decline. Plus, patients may realize cost benefit from avoiding drops.

Many patients may be candidates for this device. The potential to reduce neurostimulation continued on page 10

**INTRODUCING TRUETEAR TO THE PRACTICE**

By Patti Barkey, COE

Introducing any new product or service to one’s practice should be thoughtful and purposeful. The TrueTear device is no exception.

Given that this device is relatively new to market and based on its distinctive mechanism for relieving dry eye, it is understandable that there is no rulebook, per se, on how to roll it out. Each provider and clinic operation will need to determine on their own whether TrueTear is something to which they want to dedicate time and resources and then how to introduce it to patients.

For our practice, TrueTear has been very successful. Patients have been receptive, and our clinicians have reported encouraging early results using the device. At the same time, we think that our careful process of rollout and introduction contributed to our success.

Following is a summary of our perspective on how we introduced TrueTear to the practice and lessons we learned along the way.

**INITIAL ROLLOUT:** When we first decided to introduce TrueTear, we chose to offer it to any patient taking supplemental tears as part of her regular dry eye therapy regimen. (This is a huge group of people in our practice.) By specifically targeting this group, we allowed our staff to hone in on early education to these patients.

New patients who might be considered for supplemental drops were added to the list—by doing so we think we are hitting the lion’s share of candidates.

**30-DAY FOLLOW-UP VISIT:** We require patients to schedule a follow-up appointment 30 days later. At first, this was in the interest of due diligence—the device was new and we wanted to see how patients were doing. As we learned, the re-check is a good opportunity to support the education provided during the initial visit. We found that while most patients used the device properly, some hadn’t mastered their technique. Some had dialed up the power and reached a level of success and confidence with use. The re-check appointment qualifies as a billable office appointment because it is a valuable touch point in ensuring the patient is using the device properly, deriving benefit, and is satisfied with the treatment plan.

**STAFF TRAINING:** Before offering TrueTear, all clinicians who would be using the device received training. Most staff participated in training, including using the device themselves (if appropriate). We understood that everyone would be more effective at training patients if they had experience themselves. This relates to my belief that anyone who would encounter a patient who is a potential candidate or already using the device should be able to answer questions from the patient.

**CONSENT AND DOCUMENTATION:** Another reason training staff about TrueTear is crucial is to ensure proper documentation protocols. In our case, we prepared a consent form with contraindications and instructions for use so that patients were fully aware. We also created a purchasing agreement that relayed conditions for returning the device if it was unsuccessful.

**PATIENT EDUCATION:** Every practice will have its own style for educating patients. However, fundamental aspects to training might be helpful. For example, it helps to train patients in a quiet place away from distractions. While that is implicitly logical, there is a less appreciated reason for performing training in this manner: using the TrueTear device may cause the patient to sneeze. Keeping tissues on hand in the training area and training away from other patients might avoid concerns about spreading germs. We also position patients in front of a mirror while they are trialing the device so they can see for themselves what a properly inserted device will look like. In a similar vein, we instruct our counselors to be careful with their word choice. Action words like “buzz,” “shock,” “vibrate,” “flutter,” “zap,” or “stimulate” might imply movement and induce undue anxiety. Instead, we prefer to describe the sensation as a “gentle pulse.” This may seem like a minor point, but anything we can do to make patients comfortable with using TrueTear will help them have a good experience with the device.

Patti Barkey is practice administrator, chief executive officer, and certified ophthalmic executive in Jacksonville, FL. She is also creator and executive director of Dry Eye University and executive director for Dry Eye Access. She speaks on behalf of Allergan, Johnson & Johnson Vision, and ScienceBased Health.
Neurostimulation

Continued from page 9

dependence on other forms of therapy suggests that True Tear may be useful for a range of patients across nearly the spectrum of DED severity. I am educating my patients with signs of DED that True Tear may reduce or eliminate the need for supplemental tears by inducing a physiologic, natural tear.

Introducing to patients

It is worth the time to educate patients about and demonstrate its proper use. DED patients are motivated to learn about modalities that might offer symptomatic relief.

It’s important to have a device in the office to show patients its basic principles and to assuage anxieties or apprehension. Using True Tear is similar to using a nasal spray.

Convey to patients before they start using True Tear:

- True Tear has been proven safe and effective in clinical trials.
- The intensity of the electrical stimulation can be modulated.
- Stimulation can be sustained for as long as the patient feels comfortable.
- True Tear is Bluetooth-enabled; the accompanying smartphone app provides information about how often the device is used—but more importantly, it tracks the battery life (Note: the app is currently supported only on Apple devices; Allergan plans to release an Android version soon).
- It may be that using neurostimulation with patients experiencing mild DED can provide long-term benefit in slowing or stopping progression. Equally as promising, stimulating the basal tear response might affect long-term remodeling, delivering on the promise of restoring homeostasis to the ocular surface.

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2 SIMPLE STEPS TO FITTING MULTIFOCAL CONTACT LENSES THAT HELP PATIENTS SEE, LOOK AND FEEL THEIR BEST

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Dr. Resnick was compensated by Alcon for her participation in this advertisement.

Today’s presbyopes do not want to be slowed down by their vision.1 Multifocal contact lenses are a great option for many presbyopes, and yet the proportion of presbyopic patients wearing multifocal contact lenses remains surprisingly low.2 This suggests that many eye care professionals are missing out on a big opportunity. The good news is that with Alcon’s multifocal contact lenses, there are just two simple steps to successfully fitting patients with multifocal contact lenses that can help them see, look and feel their best!3

With DAILIES TOTAL1® Multifocal, DAILIES AquaComfort Plus Multifocal, and the newest addition to the Alcon portfolio, AIR OPTIX® plus HydraGlyde® Multifocal contact lenses, I can offer my patients lenses with daily disposable and monthly replacement schedules that promote compliance and provide all-day comfort and seamless vision at all distances.4-8 All Alcon multifocal contact lenses feature Alcon’s unique Precision Profile® Design and are fit using the same simple 2-step process.9

STEP 1 of Alcon’s fitting process is selection of the initial lens. Initial lens power is determined using the vertex-corrected, refraction for each eye. After lens selection, I encourage my patients to spend 5–10 minutes walking around the office and outside while performing everyday activities (e.g., reading, using smartphone, viewing objects at distance) in order to experience real-world vision with the lenses.

STEP 2 is to perform a distance over-refraction for each eye separately, using hand-held lenses, with both eyes open. Plus power is added in 0.25D steps until the patient reports a decline in distance vision. If, for example, a plano and +0.25D have the same visual results, with no decline in distance vision, add another +0.25D. In the case that this over-refraction with +0.50D results in blurred distance vision, then use the +0.25D endpoint and keep the ADD the same. After verifying results binocularly and confirming that the patient’s distance and near vision are functional, the new lenses are dispensed, and the patient schedules a one-week follow-up visit to evaluate their response, address any vision concerns, and confirm or adjust the prescription.3

Studies demonstrate that this simple multifocal fitting process leads to high rates of fit success, with an 80% fit rate with one lens per eye, and a 96% fit success rate with 2 lenses or less per eye, when the Alcon multifocal fitting guide is followed.11 Further, more than 9 out of 10 surveyed eye care professionals who fit patients with DAILIES TOTAL1® Multifocal contact lenses agree that they are easy and efficient to fit.12 I use the fitting guide for every patient I fit with Alcon multifocal contact lenses, including those switching from one Alcon multifocal lens material to another, with tremendous success. Fitting presbyopic patients with contact lenses is a priority for me. A few minutes invested in discussing the benefits of contact lens wear with each patient is rewarded many times over in loyalty and referrals. Lifestyle prescribing, whether it be for full-time or part-time wear, offers patients the visual freedom and flexibility they desire. I consider all patients as candidates for Alcon Multifocal contact lenses – new wearers, current monovision wearers, and

EXCEPTIONAL COMFORT FOR A BETTER CONTACT LENS–WEARING EXPERIENCE

With the Alcon 3:2:1 Multifocal Advantage, eye care professionals can offer three different materials and two convenient replacement schedules, all with the same industry-leading multifocal optical design2 to help address the varying needs of our presbyopic patients. Presbyopes are among the most challenging contact lens patients I encounter daily. In addition to their frustration with reduced accommodation, age-related ocular changes in this population often contribute to decreased lens wearing comfort. Given presbyopic patients’ needs for sustained near activities and their desire to maintain the comfort and vision of their youth, Alcon multifocal contact lenses are my lenses of choice. By fitting Alcon multifocal lenses, I can customize material and wear schedule for each patient, as well as deliver the quality of vision they have come to expect.

For daily wear or extended wear up to 6 nights for near/far-sightedness and/or presbyopia. Risk of serious eye problems (i.e., corneal ulcer) is greater for extended wear. In rare cases, loss of vision may result. Side effects like discomfort, mild burning or stinging may occur.

References

ADVERTORIAL

P A T I E N T S  S E E ,  L O O K  A N D  F E E L  T H E I R  B E S T

People with Multifocal Contact Lenses that Help Patients See, Look and Feel Their Best

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References

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

Dr. Crooker was compensated by Alcon for her participation in this testimonial.

One recent afternoon, I met with a college student who enjoys wearing monthly replacement contact lenses, but who was also having a common problem: her lenses felt great at the beginning of the month, but by week three, her days were being disrupted by ocular itchiness and discomfort. She often found herself replacing her lenses before the end of the month, and as someone looking to get the most out of her vision correction, this was not ideal. When the topic of her lens care routine came up, another issue was apparent: she was not consistently following the directions for use of her multipurpose lens care solution (MPS), only occasionally taking the time to rub her lenses before soaking them. Despite the best efforts of practitioners, this remains a problem that many of us encounter all too often.

Good lens care habits are key to a successful lens-wearing experience, so the recommendation I gave my patient was simple: switch to CLEAR CARE® PLUS for your daily lens care. CLEAR CARE® PLUS is a 3% hydrogen peroxide solution that, in addition to providing excellent disinfection and outstanding comfort (thanks to Alcon’s HydraGlyde Moisture Matrix), simplifies lens care by eliminating the rubbing step. For these reasons, CLEAR CARE® PLUS is a lot more than a ‘problem-solver.’ The same features that benefit the not-always-compliant college student also make CLEAR CARE® PLUS my first choice for any new lens wearer looking to start off on the right foot.

When introducing CLEAR CARE® PLUS to my patients, I take the solution and case out of the box and show it to them. They are always impressed when I walk them through how easy CLEAR CARE® PLUS is to use, and are excited to make it part of their routine. There is no rubbing with CLEAR CARE® PLUS, which is the step that my patient, like many others, often forgot when using MPS. Five simple steps are all it takes to effectively clean and disinfect lenses with CLEAR CARE® PLUS, and patients love the solution’s bubbling action, which lets them see it working, while also helping to reinforce good lens care habits. After demonstrating how to use CLEAR CARE® PLUS, I make sure that they take the CLEAR CARE® PLUS Patient Tip Card home with them to help ensure compliance. Making CLEAR CARE® PLUS my first-line lens care recommendation has had an undeniably positive impact on my patients’ lens care compliance, and study data agree with my experience — surveys show that 93% of habitual MPS users who try CLEAR CARE® PLUS agree that it is easy to use, and CLEAR CARE® PLUS’ design promotes significantly greater compliance with directions for use than MPS.

I want all of my reusable contact lens wearers to have an excellent lens-wearing experience. I recommend CLEAR CARE® PLUS because it makes lens care easy for patients, and when compliant lens care is easy, patients can enjoy their lenses. For all of my patients in reusable lenses, using CLEAR CARE® PLUS means a simple daily lens care routine and outstanding disinfection and comfort — all month long.