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In June 2018, our industry gathered in Denver, Colorado, for the 121st Annual AOA Congress & 48th Annual American Optometric Student Association (AOSA) Conference. This event provided a forum for members of the AOA Contact Lens and Cornea Section (CLCS) to discuss dry eye, one of the profession’s most important topics. These experts explored the many factors triggering an increase in this disease, along with both the diagnosis and treatment options available for patients. Additionally, they discussed the future of the optometry profession’s focus on creating dry eye centers of excellence.

CLCS Council members participating in the discussion were:
- Dr. Edward Bennett (Moderator)
- Dr. Melissa Barnett*
- Dr. Jason Compton
- Dr. Pamela Lowe
- Dr. Shalu Pal
- Dr. Roxanna Potter
- Dr. Paul Velting

*Dr. Barnett is a paid consultant of Johnson & Johnson Vision, Inc.

THE PANEL EXPLORED THE MANY FACTORS TRIGGERING AN INCREASE IN DRY EYE DISEASE, ALONG WITH BOTH THE DIAGNOSIS AND TREATMENT OPTIONS AVAILABLE.
CLCS COUNCIL MEMBERS PARTICIPATING IN THE DISCUSSION WERE:

EDWARD S. BENNETT, O.D. (MODERATOR)

Dr. Bennett is currently Professor and Assistant Dean for Student Services and Alumni Relations at the University of Missouri-St. Louis College of Optometry. He is Executive Director of the Gas Permeable (GP) Lens Institute and also serves as Vice Chair of the Contact Lens and Cornea Section Council of the AOA. He is a Diplomate and past chair for the Cornea, Contact Lens and Refractive Technologies Section of the American Academy of Optometry and is also a Fellow in the Scleral Lens Education Society. He is a member of the education committee of the Global Specialty Lens Symposium and the Clinical Features Editor for Contact Lens Spectrum. He consults for the Contact Lens Manufacturers Association.

MELISSA BARNETT, O.D.

Dr. Melissa Barnett is the principal optometrist at the University of California, Davis Eye Center in Sacramento. She is an internationally recognized key opinion leader, specializing in anterior segment disease and specialty contact lenses. Dr. Barnett lectures and publishes extensively on topics including dry eye, anterior segment disease, contact lenses and creating a healthy balance between work and home life for women in optometry. She is a Fellow of the American Academy of Optometry, a Diplomate of the American Board of Certification in Medical Optometry (ABC_MO), a Fellow of the British Contact Lens Association (BCLA) and serves on the Board of the American Optometric Association (AOA) Cornea and Contact Lens Council, Women in Optometry and (WO) Women of Vision (WOV), Gas Permeable Lens Institute (GPLI), Ocular Surface Society of Optometry (OSSO) and is Past President of The Scleral Lens Education Society (SLS). Dr. Barnett is a spokesperson for the California Optometric Association and a guest lecturer for the STAPLE program.

DR. JASON COMPTON, O.D.

Jason E. Compton, O.D., graduated from the State University of New York State College of Optometry (SUNY) and completed his residency at the Wilmington Delaware VA Medical Center. Dr. Compton owns a private practice, Compton Eye Associates in the New York City area. Dr. Compton serves as Assistant Adjunct Faculty for the SUNY State College of Optometry. Dr. Compton is a member of the American Optometric Association’s Contact Lens and Cornea Section and a fellow in the American Academy of Optometry. Dr. Compton is the President/Founder of TheRightContact.com, a contact lens resource used by eye care professionals worldwide. He consults for Johnson & Johnson Vision Care, Inc.

DR. PAMELA A. LOWE, O.D.

Dr. Lowe is currently Director/President of Professional Eye Care Center, Incorporated, a full-scope primary care practice she founded in 1992 on Chicago’s Northwest Side. She is a 1988 graduate of the Illinois College of Optometry; the college named her the Alumnus of the Year in 2002. Dr. Lowe is active in organized optometry and is a Past President of the Illinois Optometric Association and a career long member of the American Optometric Association, currently serving as Vice Chair on the AOA Contact Lens and Cornea Section. She is a Fellow with the American Academy of Optometry and a Diplomate of the American Board of Optometry. She consults for Alcon; Bausch and Lomb; Diopsys; Johnson & Johnson Vision Care, Inc.; Maculogix, Visionix and Zeavision.
DR. SHALU PAL, O.D.

Dr. Shalu Pal graduated from the Southern California College of Optometry, completed her Contact Lens, Cornea and Disease residency at the Northeastern State University Oklahoma College of Optometry followed by her Fellowship with the American Academy of Optometry. She was a member of the faculty at NSUOCO and at the University of Waterloo, School of Optometry and is currently the owner of a group practice in Toronto, Canada specializing in specialty contact lens fitting and dry eye assessment and management. She is the Vice Chair of the AOA Contact Lens and Cornea Section Council, member of the CAO and sits on the Continuing Education Committee of the Ontario Association of Optometrists. Dr. Pal is a member of the Women’s Advisory Board for Alcon USA, a speaker for Allergan’s Dry Eye Faculty in Canada, a consultant for several companies and a facilitator of the STAPLE contact lenses program across North American Optometry Schools and Colleges.

DR. ROXANNA POTTER, O.D.

Dr. Roxanna T. Potter is a 2006 graduate of the Michigan College of Optometry. She graduated with a 4.0 GPA, and was honored with the Academic Recognition Award presented to the top student in the class. In addition to her optometric studies, Dr. Potter completed a one year post-graduate residency in the area of Cornea and Contact Lenses. She is a member of the American Optometric Association, Ohio Optometric Association and the Toledo Area Optometric Society, and is a fellow in the American Academy of Optometry and a Diplomate by the American Board of Optometry. She enjoys lecturing and writing articles on eye care and has been published in both the U.S. and internationally. She is also on the advisory board of the Gas Permeable Lens Institute and the editorial board of the Indian journal Optometry Today. Dr. Potter is particularly interested in the areas of specialty contact lenses, glaucoma, dry eye and myopia control. In her spare time she enjoys being with her husband and two children, vegan baking, playing piano and gardening.

DR. PAUL VELTING, O.D.

Dr. Velting is currently a partner in a primary care and specialty contact lens practice in Morton, Illinois. He graduated with honors from the Indiana University School of Optometry, and has held adjunct faculty positions at the Indiana University, University of Missouri-St. Louis, Illinois and Pennsylvania Colleges of Optometry. He serves as a council member of the Contact Lens and Cornea Section of the American Optometric Association (AOA), chair of the Contact Lens Watchdog Group of the American Optometric Association (AOA), and is also the co-chair of the Public Health Committee of the Illinois Optometric Association (IOA).
DEFINING DRY EYE DISEASE

DR. BENNETT: I want to thank you for taking time to participate in what’s become a really great annual event and a roundtable discussion on a topic important to cornea and contact lenses. And what topic could be more important than dry eye disease?

Let’s just start with the definition of dry eye disease from the Dry Eye Workshop (DEWS) II report from the Tear Film and Ocular Surface Society. Their definition: “A multifactorial disease of the ocular surface characterized by a loss of homeostasis of the tear film, and accompanied by ocular symptoms, in which tear film instability and hyperosmolarity, ocular surface inflammation and damage, and neurosensory abnormalities play etiological roles.” Anybody have any thoughts about this definition?

DR. BARNETT: One important thing for dry eye disease is when the quality or quantity of the tear film is impaired. The loss of homeostasis is accurate. And we also need to assess patient symptoms, since we know the signs and symptoms of dry eye do not correlate.

DR. VELTING: The neuropathic part of the definition is interesting. The corneal trigeminal nerves include sensory nerves called cold thermal receptors. These seem to be providing sensory information about the degree of lubrication at the ocular surface and control basal tear production. Normal fluctuations in ocular temperature seem to stimulate the basal tear production. Further stimulation of those cold thermal receptors does not appear to significantly increase that basal tear rate but only contributes to the sensation of dryness.

“WE TRADITIONALLY LABELED DRY EYE AS AQUEOUS DEFICIENT AND/OR EVAPORATIVE. DEWS II CAME OUT AND DECLARED THAT WE CAN’T SIMPLY PIGEONHOLE OUR PATIENTS INTO THESE CONDITIONS.”

— DR. BENNETT
DR. BENNETT: We traditionally labeled dry eye as aqueous deficient and/or evaporative. DEWS II came out and declared that we can’t simply pigeonhole our patients into these conditions. You may have at one extreme evaporative dry eye, and at the other extreme aqueous deficient dry eye. DED is more like a continuum. Has that been your experience in both diagnosis and treatment of eye disease?

DR. BARNETT: Most definitely. We know that Meibomian Gland Dysfunction is incredibly prevalent in dry eye, 86% of patients with dry eye have MGD. It’s often both aqueous deficient and evaporative. It might be more of one, less of the other, but it’s common that we see both together.

DR. PAL: I feel the exact same way. When I’m looking at the eye and trying to determine my treatment protocol, I’m looking at the signs to determine what I actually have in front of me. I start treatment based on what I see. I look at the individual structures of the eye one at a time, to look for complications and then base my treatment plan on what I see. If MGD and conjunctival staining are present, they should be addressed. I use what I see to drive my treatment options.

DR. POTTER: It’s even challenging to divide them into aqueous and evaporative. We now know there are so many other pathways to consider. You can’t just categorize patients to determine the best treatment options.

“WHETHER MEIBOMIAN GLAND DYSFUNCTION, WHETHER THERE’S BLEPHARITIS, WHETHER THE CORNEA IS STAINED OR NOT, I’M LOOKING AT THOSE INDIVIDUAL COMPONENTS AND FIGURING OUT HOW I NEED TO TREAT THOSE PARTS.” — DR. PAL
UNDERSTANDING RISK FACTORS

**DR. BENNETT:** What are the primary risk factors for dry eye?

**DR. PAL:** There was a time when not many people said they had dry eyes. Now, I would say it’s hard to find a single person who does not have some level of dry eye disease. Two significant realities of our world come to mind that impact a large portion of our patient population. The first is the potential result of wearing contact lenses, which we know creates dryness regardless of the contact lens design or plastic. The thickness of the contact lens is greater than the thickness of tearfilm. When we place a lens on the eye, we are submerging it into a small pool of tears that spreads above and below the contact. The division of the tear film may lead to elevated levels of dry eye symptoms. The second risk to our patients is the increased use of digital devices. Phones, laptops, monitors and tablets have significantly increased our daily accommodative demand. The increase in visual concentration with digital devices has lead to reduced blink rates. A decade ago we asked if our patients used a computer at work, today we ask if our patient is spending more than 10 hours on digital devices. Our world has completely changed.

**DR. BARNETT:** I completely agree with the increased time spent on all digital devices. Along with this, do patients take breaks, do they do blinking exercises? We must also consider everything else especially hormonal factors, autoimmune disease and medications. It constantly shocks me that people take oral antihistamines for their ocular symptoms only. They say, “Oh, yeah, I take this antihistamine and then my allergies are better,” but they could be using just a topical drug. Certainly, contact lens wear is part of this, as well as refractive surgery and diabetes.

**DR. POTTER:** What strikes me most is that the age of the average dry eye patient continues to get younger. I’ve noticed in my practice that teenagers come in that don’t wear contacts yet complain about dry eye. There must be something environmental or in our day-to-day activities driving this. Digital use is one consideration when looking at younger patients. But we need insight as to why it’s also worse in our older patients.

**DR. BARNETT:** Look at the studies of Meibomian Gland Dysfunction in children. You see it on a daily basis and then you see them on their digital devices as well coming into the office, not blinking, not taking breaks. This behavior concerns me because they may spend even more time on computers as they reach adulthood.

**DR. PAL:** I have changed the way I practice by starting a dryness conversation with all my patients regardless of the age. I am more proactive in discussing preventative dry eye strategies with healthy and asymptomatic patients. I also discuss lid hygiene, lash cleaning and hot compresses with most patients.

**DR. BARNETT:** I’m sure you also talk about daily breaks on the computer for children and all patients, as well as blinking.

**DR. PAL:** I agree 100 percent. I encourage limiting digital screen use, taking breaks and blinking. I also remind people to look for activities that can be done on a big
screen instead of a computer. It is so much more visually relaxing to watch a movie on a big screen TV that is across the room compared to a hand held phone or computer screen. 

**DR. VELTING:** All these risk factors make it more important to avoid pigeonholing people. You simply can’t categorize them as either evaporative disease or aqueous deficient disease. Environmental factors are a big part of it. As our awareness of this disease increases and as our population starts to age more, the economic burden will get even higher. We may be able to see a decrease in this economic burden, though, if we address issues before they get to the severe stage.

**DR. PAL:** Roxanna, you discussed other factors other than digital devices that can cause dryness. Do you think the increased time that people spend indoors with heating and air conditioning is a potential other factor as well?

**DR. POTTER:** Absolutely. I lecture my patients every day. Go play outside and get off your computer. We may need to reach outside the eye care field to convince patients to get off their devices since there's such a strong pull to use them. If a younger patient doesn’t have dry eye symptoms, it’s a tougher battle unless we show them other benefits to playing outside.

“Digital use is one consideration when looking at younger patients. But we need insight as to why it’s also worse in our older patients.” — Dr. Potter
DIAGNOSING DRY EYE

DR. BENNETT: With these two key factors - digital devices and contact lenses - in mind, how do we approach that with our patients? Do you ask your own questions or do you use a standardized questionnaire? What is Step One in diagnosing dry eye by extracting the symptoms?

DR. BARNETT: I routinely ask questions in my practice. You can quickly get an idea if the patient has dry eye. Questionnaires are also helpful. Whether it’s the OSDI or SPEED, use the same questionnaire at each visit.

DR. PAL: I do use a questionnaire with my dry eye protocols. There are questionnaires that are proven to be more accurate. The key is to be consistent with the one you use so you can track a patient’s progress, symptoms and improvements. It is invaluable to show patients that they have improved based on their own assessment reflected in the questionnaires.

DR. BARNETT: We use an iPad to make it a bit more fun. It’s not another form to fill out. It doesn’t take very long. They can do it while they’re waiting to come back to the exam room.

I USE A QUESTIONNAIRE IN MY DRY EYE PROTOCOLS. IT DOESN’T REALLY MATTER WHICH QUESTIONNAIRE YOU USE BUT USE THE SAME ONE. THIS CONSISTENCY PROVIDES A GREAT TOOL TO TRACK A PATIENT’S SYMPTOMS AND IMPROVEMENTS.” — DR. PAL
DR. BENNETT: Whether it’s a standardized questionnaire or your own modification, you just need to ask the right questions to know if you have a potential dry eye patient. That’s really Step One. Then it comes down to the tests that you perform. What are the minimum essential tests to perform when you’re trying to rule out dry eye?

DR. BARNETT: This question often gets asked: Do you perform the tests at the initial eye exam or do you see them back? It would be ideal to see a patient back since testing takes a little bit longer.

I especially like Lissamine green staining to evaluate the conjunctiva because we see conjunctival changes sooner than corneal changes. I’m looking to see a clear, olive oil like substance coming from the gland orifice to understand if the gland is functioning properly. If there’s not obvious Meibomian Gland Dysfunction, actually pressing the lower lid and looking for nonobvious Meibomian Gland Dysfunction is the next step. You look under the lid for any signs of allergies.

Looking at the lid wiper is really important, especially in contact lens wearers. A study that just came out in April 2018 that looked at the relationship of lid wiper epitheliopathy to ocular signs and symptoms. Lid wiper epitheliopathy was present in 45 percent of the study’s 287 subjects. It was twice as prevalent in Asians than non-Asians and associated with decreased tear film stability, contact lens wear and anatomy. Lid wiper epitheliopathy was not associated with symptoms in non-contact lens.

When I lecture about dry eye and in clinical practice, I’m looking at the lid wiper because it’s so important.

DR. PAL: I agree completely with you, Melissa. My exam is my discovery. I use that time to figure out how I can make the lives of my patients better with all the information, technology, skills and tools I have. I then present all of my recommendations and allow them to choose what they want to move forward with. I bring patients back for additional tests or procedures including dry eye evaluations and contact lens fittings. I don’t try to fit too much into my initial discovery exam.

Colleagues often ask how I started my dry eye practice. You can start very simply by asking questions. Use your slit lamp effectively to look at all the ocular structures including lids, lashes, and meibomian glands. Use various staining dyes to look at the conjunctiva and cornea. Look for lacrimal lake levels, TBUT, lid laxity, conjunctival laxity and lagophthalmos. To identify lagophthalmos turn off the lights, have the patient close his/her eyes in a resting state and shine a penlight on the lids. If light shines through the lid margins the patient has nocturnal lagophthalmos. Our slit lamp is a very powerful tool.

DR. BARNETT: We also need to evaluate for blepharitis and demodex. It’s more important to get a protocol in place before buying all this fancy equipment to start the dry eye practice. Take a step back, acknowledge the different disease states to look for, and identify the right questions to ask your patient.

I also spend time discussing and educating patients about the management of their dry eye. Dry eye is a chronic condition, that doesn’t resolve quickly, and will probably be something they manage for the rest of their lives. For patients with mild to moderate dry eye, getting their symptoms and disease state under control is helpful for their comfort and continued ocular surface health. For severe dry eye cases, like my Sjögren’s patients, I really need to explain the importance of daily management and routines for treatment recommendations. These patients tend to do quite well.

DR. VELTING: I definitely agree. You can cover two main categories of dry eye – aqueous deficient and evaporative - with some simple tests. If you have some Fluorescein, you can do a tear breakup time. You can look for any staining. Lissamine green is also important. Press on the meibomian glands to see what kind of expression you get, and look at the tear meniscus height. You can do that with “fancy equipment” or you can just do it under the slit lamp. It’s important to look at that type of thing before you start putting dyes in and expressing the meibomian glands.

Another important aspect is patient history. Talk with your patient before you even start the evaluation, so you can identify some of those other risk factors- medications, environmental components- that could contribute to their symptoms.
DR. BENNETT: As we discussed earlier, we have a couple of different tools necessary to diagnose dry eye. We start with the questionnaires to assess patient’s symptoms, then perform a non-invasive tear break up time test, osmolarity, staining with Lissamine green, and assess the function of the meibomian glands and lid wiper.

We are beginning to incorporate these tests on a more frequent basis to identify dry eye sooner and properly manage it. These are the tests we must do today as a minimum. But what about tomorrow? We’re facing new challenges in young people with increased digital device use. We know that 86% of patients with dry eye also have Meibomian Gland Dysfunction.¹ Are there tests out there today that we use either diagnostically or for management similar to procedures like corneal topography, OCT, and nonmydriatic fundus photography – that will become the standard of care for tear film evaluation and diagnosis?

DR. POTTER: I believe so. The drive is there; the evidence is there. It takes time for innovation to create efficiency and affordability. When I graduated, I didn’t think I’d ever have an OCT. Now, I can’t imagine practicing without it.

DR. BARNETT: According to DEWS II and based on studies, up to 75 percent of patients have dry eye based on signs not symptoms.¹ ³ ⁴ ⁵ ⁶ I can’t imagine practicing without an OCT.

DR. VELTING: You’ll always be able to treat dry eye without these tests. However, even right now the disparity in treating dry eye with or without testing greatly warrants looking into test equipment. Otherwise, you are doing your patients a disservice if you’re not utilizing some of this testing.

DR. POTTER: Testing also becomes key to the education process and helps drive patient compliance. It can help them understand the real root problem of their dry eye, and show them improvement in their tests based on recommended treatments. Many people think they’re just not making enough tears, and likely have never heard of meibomian glands. We want effective results and patient compliance with treatment plans, so we need to show our patients some technological evidence of their disease or condition.

DR. VELTING: The value of testing is almost as important or more important in the treatment vs. the diagnosis. The patient can see that and understands the importance of warm compresses. Compliance with warm compresses is significantly low, even though studies show that warm compresses can benefit the meibomian glands. It’s just hard to get patients to do that once a day but it changes their mindset when we can show them an image that lets them see how their glands are beginning to atrophy.

DR. BARNETT: Even photographs of staining are helpful. It helps with compliance when prescribing a warm compress vs. a warm wet washcloth.

DR. BENNETT: That brings us into the importance of meibomian gland evaluation. We know meibomian glands provide lipids to the tear film and then enhance tear film stability and a smoother ocular surface. There is a strong relationship between Meibomian Gland Dysfunction and dry eye. It starts with the meibomian gland. Ocular comfort is decreased if the glands are obstructed and dry eye increases. How do you evaluate meibomian glands?

DR. POTTER: We want to look at both the structure and function of the glands. You can take images of the gland structure with meibographers, like the LipiScan® System. You can also look at the structure of the glands by putting your thumb on the lower lid and pulling it down. To look at the function and quality of the meibum, apply a little pressure to the lid with your finger or a calibrated device, like the Meibomian Gland Evaluator, to see the volume and quality of the meibum itself.

“YOU’LL ALWAYS BE ABLE TO TREAT DRY EYE WITHOUT THESE TESTS. HOWEVER, EVEN RIGHT NOW THE DISPARITY IN TREATING DRY EYE WITH OR WITHOUT TESTING GREATLY WARRANTS LOOKING INTO TEST EQUIPMENT.”

– DR. VELTING
LOOKING AT LIFESTYLE CHANGES

DR. BENNETT: The annual Dry Eye Report in the July 2018 issue of Contact Lens Spectrum reports that 35 percent of practices actively express glands with dry eye patients, 47 percent with most patients, and 18 percent don’t at all in dry eye patients.

Let’s talk about management and begin with the home care. What are your methods and recommendations for what the patients can do?

DR. LOWE: We start with healthy habits. We take away things we know are going to contribute to the ocular surface’s health such as limiting caffeine. We increase things that contribute to a healthy ocular surface such as Omega 3s. We also look at their environment. Do they work in a dry place? We start with their lifestyle. We believe strongly in prevention. Healthy habits are very important, along with the dry eye workup, looking at the glands more closely and using the warm compresses. These are things they can change that will be impactful.

DR. BARNETT: Everyday changes make a difference, especially in my severe dry eye patients: overhead ceiling fans at night time, direct vents in the car.

Treatment depends on the type of dry eye. We have pharmaceutical agents. I’m also a big fan of preservative-free artificial tears and night time ointment. We have to consider sleep apnea, too. If there’s air blowing on the eyes, we can recommend goggles to use at night time, and lubricants, gels or ointments at night. For the severe cases, daytime moisture release eyewear, and then of course night time goggles, as well. For my Sjögren’s patients, I recommend humidifiers in the bedroom at night and at work if possible.

I may add liposome spray. I often will prescribe a specific eyelid cleaner, whether prescription or over the counter to use at night time. I remind patients to take off makeup at night, and let them know it’s important to apply creams and makeups after contact lenses are in and then removing contacts first before removing makeup and washing their faces.

“EVERYDAY CHANGES MAKE A DIFFERENCE.” — DR. BARNETT
TREATING MGD

DR. BENNETT: What do you recommend when treating Meibomian Gland Dysfunction (MGD)?

DR. VELTING: Omega 3s are certainly a staple of MGD treatment. It’s important, though, to tell your patients there aren’t quick fixes; otherwise, they feel they should see some results within a few days. It can take some time to start to improve the inflammation that’s going on within the lids and within the meibomian glands, and also improve the consistency of that oil.

We probably need to address the DREAM study that came out recently on Omega 3s. I don’t think it’s time to give up on Omega 3s yet. There were some issues with that study. I don’t think that olive oil was a great placebo, and didn’t really end up controlling a lot for other dry eye treatments. It certainly warrants looking into things a little bit further.

DR. BENNETT: Always keep in mind all Omega 3s are not alike. One great benefit of research is receiving more specific feedback about what type of treatments or medications we should recommend, which is helpful. Today, we have the ability and the instrumentation to manage Meibomian Gland Dysfunction. We have devices that can apply heat and pressure, and be beneficial for long time periods with patients. We know the one that’s been out the longest is the LipiFlow® System. It’s become the gold standard, showing sustained effect for as long as 12 months, maybe even more in recent research.7 We have several other devices for the treatment of MGD, both portable and non portable available. What are your thoughts about the importance of these instruments?

DR. VELTING: The technology behind the LipiFlow® System is fantastic. The idea of heating the glands while expressing them at the same time is obviously a tremendous benefit for those patients. Too many practitioners save that type of a treatment for more of that end stage, severe dry eye patients who may already have significant atrophy of their meibomian glands. At that point, they’re not going to see the same symptomatic relief as someone who still has active meibomian glands that may just be capped or plugged or just not functioning properly.

DR. BARNETT: We didn’t mention oral medications such as doxycycline and azithromycin or topical azithromycin that we also use commonly to treat MGD. The study from Hagen, Et al. that just came out looked at doxycycline compared to LipiFlow® treatment. The study demonstrated significant improvement with the LipiFlow® treatment among the 28 subjects.8 That’s a nice study that correlates with common practice in clinic: prescribing doxycycline for Meibomian Gland Dysfunction.

“THE LIPIFLOW® SYSTEM IS BACKED BY STUDIES THAT SHOW A REDUCTION IN DRY EYE SYMPTOMS, A SUSTAINED IMPROVEMENT IN MEIBOMIAN GLAND FUNCTION AND AN INCREASE IN CONTACT LENS WEARING TIME. IN ADDITION, PATIENTS CAN SUSTAIN THIS RESULT OVER A LONG PERIOD OF TIME. IF THIS IS AN ANNUAL TREATMENT AND KNOWING THE INCIDENCE OF MGD, IT HAS TO MAKE US THINK MORE. WHEN TREATING THE OCULAR SURFACE, A LIPIFLOW® SYSTEM WOULD BE A GREAT ADDITION TO ANY PRACTICE” — DR. BENNETT
**DR. PAL:** Just a caution to practitioners. A lot of Dr. Kelly Nichols’ work shows that expressions on cold glands may cause damage. She emphasizes the importance of heat before any expression. The LipiFlow® System first warms the glands by applying heat on the inner lid, and then simultaneously expresses the glands while still applying heat. I know some will use a hot compress or moist mask before they express. Once you finish expressing one gland, the second eye may not remain warm enough to express. You may want to consider re-heating the second eye prior to expression after you have finished the first eye.

**DR. BENNETT:** That’s a great point to emphasize. The LipiFlow® System is backed by studies that show a reduction in dry eye symptoms, an immediate improvement in meibomian gland function and an increase in comfortable contact lens wear time. In addition, patients can sustain this result over a long period of time. If this is an annual treatment and knowing the incidence of MGD, it has to make us think more. If you’re looking to increase your dry eye offerings to patients, a LipiFlow® System may be a great addition to your practice.

**ANY OTHER COMMENTS?**

**DR. BARNETT:** Just a few comments. Some 30 to 50 percent of contact lens wearers report dry eye symptoms, and this goes hand-in-hand with contact lens dropout and dry eye. We have to evaluate the ocular surface and the eyelids prior to contact lens fitting, whether for a normal or an irregular cornea. Second, up to 59% of contact lens wearers may have Meibomian Gland Dysfunction.

There are so many great studies out there that even in my specialty lens population, I am addressing meibomian glands as a priority in my practice. I want an ideal surface, for example, on a scleral lens. I want to reduce any fogging in the post-lens tear reservoir. A lot of the education about the fitting visit for the specialty contact lens group is really on Meibomian Gland Dysfunction.
IMPROVING WEAR TIME WITH LENSES

DR. BENNETT: Let’s talk about contact lenses. We’re all contact lens specialists, and we’ve seen all the problems with dry eyes and contact lenses. We know Meibomian Gland Dysfunction is a big part of that. We know that there is a high percentage of contact lens wearers who have discomfort. The survey in the July 2018 issue of Contact Lens Spectrum indicated that 55 percent of the practitioners who responded have contact lens wearers with MGD. A significant percentage of patients then discontinue wearing contact lenses. Discomfort is always the number one reason to discontinue wearing lenses and it’s often simply dry eye. But if you’re going to treat the problem, what can you do from a contact lens standpoint to help these people?

DR. BENNETT: Daily disposables definitely rank high. Maybe some daily disposables are better than others, but they rank high.

DR. PAL: Education is needed to change the school of thought and perception that wearing contact lenses implies your eyes should feel uncomfortable. This is a misconception that needs to be fixed. We should strive to improve and elevate the contact lens experience for each of our contact lens wearers at each and every visit they have with us. We need to be able to pull information from our patients that help us identify problems that we can fix. Product changes, moisturizing to prevent dryness and education on proper wear and use all need to be done on a regular basis to ensure a great wearing experience.

THE SURVEY IN THE JULY 2018 ISSUE OF CONTACT LENS SPECTRUM INDICATED THAT 55 PERCENT OF THE PRACTITIONERS WHO RESPONDED HAVE CONTACT LENS WEARERS WITH MGD. A SIGNIFICANT PERCENTAGE OF PATIENTS THEN DISCONTINUE WEARING CONTACT LENSES.” — DR. BENNETT
FINDING RELIEF

DR. BENNETT: We’ve talked a lot about the incidence of MGD in our patients. Let’s not forget about MGD in our contact lens patients. If you see reduced meibomian gland function in a contact lens patient, you may also want to consider treating that MGD with a LipiFlow® Treatment. It’s been proven to increase comfortable contact lens wear time by 4 hours on average. What are your favorite pharmaceutical agents for managing dry eye, and what do you use for the different root causes of dry eye?

DR. POTTER: The DEWS II workshop made it pretty clear that we need to be interrupting the inflammation cycle early on in the disease process.

DR. BARNETT: It is important to treat inflammation early. Pharmaceutical agents work well.

DR. LOWE: Those pharmacological agents are effective. Sometimes you just get the patient comfortable immediately, though. We use steroids. That’s still an important drop to consider, especially the softer steroids that have been very effective in getting the patient under control, and then initiating treatments with the cyclosporin.

DR. BARNETT: Basic but so important is seeing our patients back. If we start initiating a drug treatment, we need to see them back and monitor them. That’s especially true if we’re using a steroid to check for signs of infection. We must check the eye pressure. If we’re starting anti-inflammatory drops, we need to see the patient back. I’ve been pleasantly impressed with improvement in vision with contact lenses after starting these medications in the normal cornea group. Follow up and education are important management strategies.

DR. BENNETT: What about moisture goggles? Any thoughts about their effectiveness and if these will become popular?

DR. POTTER: These can be very effective, and I recommend them for two reasons. The first is that you might sleep in these at night, reducing the need for dry eye treatment during the day when patients are busier. I also present the goggles as an option since they’re affordable and simple to use.

IF YOU SEE REDUCED MEIBOMIAN GLAND FUNCTION IN A CONTACT LENS PATIENT, YOU MAY ALSO WANT TO CONSIDER TREATING THAT MGD WITH A LIPIFLOW® TREATMENT. IT’S BEEN PROVEN TO INCREASE COMFORTABLE CONTACT LENS WEAR TIME BY 4 HOURS ON AVERAGE.” — DR. BENNETT
MANAGING BLEPHARITIS

DR. BENNETT: Let us shift gears slightly and talk about dry eye blepharitis syndrome. Your thoughts on blepharitis and its management?

DR. PAL: I am a huge fan of in-office lid hygiene. I offer my blepharitis patients one of two options. They can do a month of at-home lid hygiene protocols twice a day or they can have an in-office treatment done. We spend almost an hour with our patients when we are doing an in-office lid hygiene treatment. We have a full spa routine with music, scents, pillows and blankets. The great part is that my staff do it all, and they love it. They get to spend time with patients and feel involved in our patient’s care.

DR. LOWE: We talk about demodex more than I remember 30 years ago in optometry school when it wasn’t a topic. Now, we know how to identify demodex because it is so prevalent. The in-office lid hygiene treatment is great, especially someone who’s been suffering a while, just clearing that whole lid surface off so that the at-home treatments can be more effective.

“I OFFER MY PATIENTS THE OPTION, DEPENDING ON THE SEVERITY OF THEIR BLEPHARITIS AND TYPE OF BLEPHARITIS I SEE, WHETHER TO DO AT-HOME TREATMENTS OR A QUICK IN-OFFICE TREATMENT.” — DR. PAL
PROVEN TREATMENT FOR MGD

LipiFlow® removes obstruction by treating MGD from the inner lid.¹²

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DEVELOPING A SPECIALTY CLINIC

DR. BENNETT: We have tools and abilities today that we didn’t have yesterday. And that brings us to the final question and topic. There’s a great ripple effect out there about practitioners wanting to set up a dry eye specialty practice or center for dry eye excellence and management. What do you need if you’re going to be a dry eye center, the minimum equipment? And then how would you market or promote it?

DR. LOWE: We’re just starting a dry eye center of excellence and as a private practice, there are a lot of disruptors out there, right? But dry eye affects everybody. If you’re going to invest in putting a shingle up and being more of an expert in dry eye, you need better ways to look at the lids and the meibomian glands. To do this in your office, especially if you are going to call yourself a center of excellence, you will need to utilize different treatments and invest in new technologies that may have a higher price tag.

It’s educating the patient and taking them through the chronic nature of a lifelong condition. You need technologies to follow them at each stage, whether it be aqueous deficient or evaporative. We have so many tools to help our patients so it’s really picking the technologies that can best address each stage.

DR. POTTER: Having had a dry eye clinic for a couple years now, I know you also need a dedicated and educated staff. They’re the ones the patients are going to be spending more time with in the office. They’re the ones that are going to be filing for their insurance, getting their products. The staff need to be on board and be supportive.

In a private office, it’s difficult to come up with an inventory management system for products. You don’t want to lose money by stocking things, but you need to be able to offer patients what they need.
DR. COMPTON: I see this as a bit of a challenge from a marketing standpoint. I’m curious as to what other practitioners are doing. I say that since dry eye covers the gamut: young kids to adults, contact lenses to age-related factors. How do you target these different audiences?

DR. LOWE: We just invested a fair amount in an electronic sign outside my building. It may sound a little cheesy but it’s tastefully done. It’s digital color imaging so we can show a scan of meibomian glands or give quick messages. It’s resonated well in our community. We also have experimented with social media. We have a dedicated marketing person in our practice to handle our sign and social media.

The staff has to be on board, so I think internally you have to do that before the external marketing.

DR. BARNETT: Internally, within a practice, staff training is critical.

Externally, we work with different primary care doctors. We work with rheumatologists, endocrinologists, oncologists, ENT doctors, pediatricians and more to let them know what we do. And we also work with our optometry colleagues, talking to them about our services. We need to be better at referring optometrists to optometrists. Dry eye is a great avenue to do this. We also work with ophthalmologist specialists. They send a lot of referrals for dry eye.

DR. BENNETT: We’ve got tools today. We have the ability to more easily diagnose and manage these patients. This is going to not only provide more comfort to patients, it’s going to increase the success of our contact lens wearers. I want to thank Johnson & Johnson Vision. They certainly have been kind enough to sponsor this. I also thank all of you for taking time out of your busy schedule to participate in this important forum.

“I WANT TO THANK JOHNSON & JOHNSON VISION. THEY CERTAINLY HAVE BEEN KIND ENOUGH TO SPONSOR THIS. I ALSO THANK ALL OF YOU FOR TAKING TIME OUT OF YOUR BUSY SCHEDULE TO PARTICIPATE IN THIS IMPORTANT FORUM.” — DR. BENNETT
WHAT CAN PATIENTS DO WITH 4 MORE HOURS?

In soft contact lens wearers with MGD, LipiFlow® increased average comfortable contact lens wear time by 4 hours per day.¹


Please see Indications and Important Safety Information on pages 24-25.

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IT’S A MATTER OF FUNCTION

- Nanometer dynamic lipid layer thickness
- Blink analysis
- High-definition gland imaging

All in one

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INDICATIONS AND IMPORTANT SAFETY INFORMATION FOR LIPIFLOW® THERMAL PULSATION SYSTEM
Rx Only

INDICATIONS
The LipiFlow® Thermal Pulsation System is intended for the application of localized heat and pressure therapy in adult patients with chronic cystic conditions of the eyelids, including meibomian gland dysfunction (MGD), also known as evaporative dry eye or lipid deficiency dry eye.

CONTRAINDICATIONS
Do not use the LipiFlow® System in patients with the following conditions. Use of the device in patients with these conditions may cause injury. Safety and effectiveness of the device have not been studied in patients with these conditions.
• Ocular surgery within prior 3 months, including intraocular, oculo-plastic, corneal or refractive surgery procedure
• Ocular injury within prior 3 months
• Ocular herpes of eye or eyelid within prior 3 months
• Active ocular infection
• Active ocular inflammation or history of chronic, recurrent ocular inflammation within prior 3 months
• Eyelid abnormalities that affect lid function
• Ocular surface abnormality that may compromise corneal integrity

PRECAUTIONS
The Activator or Activator II (Disposable) may not fit all eyes, such as eyes with small palpebral fornices. Use of the LipiFlow® System in patients with the following conditions may result in reduced treatment effectiveness because these conditions may cause ocular symptoms unrelated to cystic meibomian glands and require other medical management. Safety and effectiveness of the device have not been studied in patients with these conditions.
• Moderate to severe (Grade 2-4) allergic, vernal or giant papillary conjunctivitis
• Severe (Grade 3 or 4) eyelid inflammation. Patients with severe eyelid inflammation should be treated medically prior to device use.
• Systemic disease conditions that cause dry eye
• Taking medications known to cause dryness
• Esthetic eyelid and eyelash procedures

ADVERSE EFFECTS
Potential adverse effects that may occur as a result of the procedure include, but are not limited to, the onset or increase in:
• Eyelid/eye pain requiring discontinuation of the treatment procedure;
• Eyelid irritation or inflammation;
• Ocular surface irritation or inflammation; and
• Ocular symptoms (e.g., burning, stinging, tearing, itching, discharge, redness, foreign body sensation, visual disturbance, sensitivity to light).

Potential serious adverse events (defined as permanent impairment or damage to a body structure or function or necessitates medical or surgical intervention to preclude permanent impairment or damage to a body structure or function) that are not anticipated because of the device mitigations to prevent occurrence include:
• Thermal injury to the eyelid or eye, including conjunctiva, cornea or lens;
• Physical pressure-induced injury to the eyelid; and
• Ocular surface (corneal) infection.

ATTENTION
Reference the LipiFlow Thermal Pulsation System Instructions for Use for a complete listing of indications, warnings, and precautions.

INDICATIONS AND IMPORTANT SAFETY INFORMATION FOR LIPISCAN™ DYNAMIC MEIBOMIAN IMAGER
Rx Only

INDICATIONS
LipiScan™ Dynamic Meibomian Imager (DMI) is an ophthalmic imaging device intended for use by a physician in adult patients to capture, archive, manipulate and store digital images of the meibomian glands.

CONTRAINDICATIONS
No contraindications have been identified for the LipiScan™.

PRECAUTIONS
Caution: Disinfect the surfaces of the chin rest, forehead rest and Handheld Near Infrared (IR) Lid Everter with isopropyl alcohol immediately prior to use and prior to storage to prevent cross-contamination and patient infection.

ADVERSE EFFECTS
There are no known or anticipated adverse effects associated with use of this device.

ATTENTION
Reference the LipiScan Dynamic Meibomian Imager Instructions for Use for a complete listing of indications, warnings, and precautions.
INDICATIONS AND IMPORTANT SAFETY INFORMATION FOR LIPIVIEW® II OCULAR SURFACE INTERFEROMETER
Rx Only

INDICATIONS
The LipiView II Ocular Surface Interferometer is an ophthalmic imaging device that is intended for use by a physician in adult patients to capture, archive, manipulate and store digital images of:
- Specular (interferometric) observations of the tear film. Using these images, LipiView II measures the absolute thickness of the tear film lipid layer.
- Meibomian glands under near-infrared (NIR) illumination.
- The ocular surface and eyelids under white illumination.

CONTRAINDICATIONS
Contraindications are conditions in which the device should not be used because the risk of use clearly outweighs any benefit. No contraindications have been identified for LipiView II.

PRECAUTIONS
The following patient conditions may affect the interferometry assessment of a patient's tear film using LipiView II:
- Use of ophthalmic drops such as artificial tear lubricants, ointments, and medications. Advise patients not to instill oil-based ophthalmic drops (e.g., Soothe®, Restasis®, Systane Balance®) for at least 12 hours prior to device use and not to instil ointments for at least 24 hours prior to device use. Wait at least four (4) hours after the instillation of all other ophthalmic drops prior to device use.
- Soft or rigid contact lens wear. Advise patients to remove contact lenses at least four hours prior to device use.
- Use of oil-based facial cosmetics around the eye.
- Eye rubbing.
- Recent swimming in a chlorinated pool. Advise patients to not to swim for at least 12 hours prior to device use.
- Any ocular surface condition that affects the stability of the tear film. These conditions include disease, dystrophy, trauma, scarring, surgery, or abnormality.

ADVERSE EFFECTS
There are no known or anticipated adverse effects associated with use of this device.

ATTENTION
Reference the LipiView II Ocular Surface Interferometer Instructions for Use for a complete listing of indications, warnings, and precautions.

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INDICATIONS AND IMPORTANT SAFETY INFORMATION FOR MEIBOMIAN GLAND EVALUATOR (MGE)
Rx Only

INDICATIONS
The Meibomian Gland Evaluator is a hand held instrument used by a physician to evaluate Meibomian gland secretions in adult patients during a routine eye examination. The instrument provides a standardized method to apply consistent, gentle pressure to the outer skin of the lower eyelid while visualizing the secretions from the Meibomian gland orifices through a slit lamp biomicroscope.

CONTRAINDICATIONS
No contraindications are known.

PRECAUTIONS
- Do not depress the shaft to the endpoint of the spring. Do not apply any additional force after the shaft has been depressed approximately 6 mm. Applying additional force negates the benefit of using the instrument to apply standard force.
- Familiarity with use of a slit lamp biomicroscope is required to use Meibomian Gland Evaluator for assessment of the meibomian gland secretions.

ADVERSE EFFECTS
Potential adverse effects that are unlikely but may occur with use of the Meibomian Gland Evaluator include but are not limited to:
- Skin abrasion (e.g., from a rough surface on the device)
- Eye abrasion (e.g., from improper contact of the instrument with the eye)
- Infection of the skin or eye (e.g., from improper or lack of disinfection after use and between patients)
- Allergic or toxic reaction (e.g., from exposure to any residue on device during user handling)

ATTENTION
Reference the Meibomian Gland Evaluator Package Insert for a complete listing of indications, warnings, and precautions.
LEARN MORE ABOUT CONTACT LENS PRACTICES AND CLCS MEMBERSHIP: AOA.ORG/CLCS

TO ORDER CONTACT LENS MATERIALS FOR YOUR PRACTICE, GO TO AOA.ORG/MARKETPLACE

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2. Wing Li; Thao N. Yeh; Tiana Leung; Tiffany Yuen; Mariel Lerma; Meng C. Lin. The Relationship of Lid Wiper Epitheliopathy to Ocular Surface Signs and Symptoms. Invest Ophthalmol Vis Sci. 2018 Apr 1;59(5):1878-1887.


