Therapeutic solutions: Ocular surface disease and episodic flares of dry eye disease

EyeWorld recently gathered ocular surface disease (OSD) experts to discuss clinical recommendations for acute exacerbations of dry eye disease. Participants discussed evolving therapeutic solutions to improve understanding of the signs and symptoms associated with episodic flares of OSD, making therapeutic decisions for patients through variable stages of OSD, unmet needs, and the relevance and mechanism of action (MOA) of mucus-penetrating nanoparticles (MPP).

Eric Donnenfeld, MD, moderated the panel, which included Edward Holland, MD, Richard Lindstrom, MD, Elizabeth Yeu, MD, Preeya Gupta, MD, and Terry Kim, MD.
Examining the etiology and impact of dry eye flares

it is common knowledge that flares are a fundamental element of chronic inflammatory diseases, such as rheumatoid arthritis, Sjogren’s disease, and inflammatory bowel disease. What is less well known is that these acute episodic exacerbations are integral to dry eye disease (DED) as well. “Flares are part of the chronic inflammatory disease process, so it is important for eyecare providers and dry eye patients to understand that with respect to flares, DED is no different than other chronic inflammatory disease,” said Terry Kim, MD.

Dry eye flares are a rapid onset, inflammatory-driven response to a variety of triggers that typically cannot be adequately managed with a patient’s ongoing maintenance therapy. The vast majority of DED patients experience acute episodic exacerbations of signs and symptoms of the disease, as often as 4 to 6 times a year, and according to Eric Donnenfeld, MD, these flares often go undiagnosed and untreated. “Flares in inflammatory disease are the norm, and we in ophthalmology have not been diagnosing or treating flares, so we are leaving patients vulnerable and symptomatic. It is our obligation to be cognizant of their existence and to be aware of available treatments,” he said.

Edward Holland, MD, pointed out that approximately 80% of DED patients suffer from episodic flares as opposed to continuous symptoms, and Preeya Gupta, MD, noted that regardless of whether they are chronic dry eye patients on maintenance therapy or those who only experience flares, the commonality among these patients is that they want rapid relief.

Rapid relief
Richard Lindstrom, MD, noted that he understands the expectations and demands of these patients for several reasons including that he has firsthand experience with dry eye symptoms. “I have mild dry eye and I experience flares that are primarily a result of environmental influences. When these flares occur, I want a solution that produces a rapid response. I want something that is powerful and potent and works fast,” he said.

Although artificial tears may provide some palliative relief, they do not address the underlying inflammation that is the primary driver of a flare and thus are typically insufficient to provide adequate relief. Likewise, currently approved anti-inflammatory therapies may be appropriate for chronic management but not for episodic symptom flares, as the onset of relief is not rapid enough for acute symptom relief from a dry eye flare.

Dr. Donnenfeld said that addressing this need is paramount. “Dry eye flares are an extraordinarily common part of dry eye management. Although there are excellent dry eye therapies available, we haven’t had therapeutics specifically for managing dry eye flares. This opens up a new avenue for managing dry eye flares. This opens up a new avenue for managing dry eye because patients who are on maintenance therapy but still have flares are not happy with their treatment,” he said.

“The majority of dry eye patients are not on therapy and they may just have episodic dry eye that occasionally flares up, and a periodic short course of therapy might be adequate for them,” he continued. “However, most patients who are on maintenance therapy, whether it be artificial tears, immunomodulators, or

Lissamine green corneal staining in a patient after corneal surgery

“Flares are part of the chronic inflammatory disease process, so it is important for eyecare providers and dry eye patients to understand that with respect to flares, DED is no different than other chronic inflammatory disease.”

—Terry Kim, MD
oral medications, still experience flares throughout the year as well.”

**Triggers**

Environmental influences, such as climate/weather conditions and seasonal allergies, are among the triggers that result in dry eye flares. Screen time, which is ubiquitous throughout society—and perhaps even more rampant among young people—is another contributing factor.

“We are a digital-based society. Even young children are using laptop computers and smartboards during the school day, and I am increasingly seeing dry eye in children as young as 5 years old,” Dr. Gupta said. “It’s astounding how many young patients suffer from dry eye disease and meibomian gland dysfunction (MGD) today, and I think it’s partly due to our digital lifestyle.”

**Symptoms**

Often patients do not realize that what they are experiencing is a dry eye flare, and the way they describe their symptoms can be confusing. “It can be greater fluctuations or blurring of vision that is their main concern rather than classic symptoms associated with dry eye, such as epiphora, redness, and foreign body sensation,” said Elizabeth Yeu, MD. “Not only are they looking for acute onset of relief, they want a medication or a therapy that they don’t have to maintain. They want something that will provide resolution quickly without them having to be on additional medication long term.”

Dr. Holland pointed out that as far as dry eye flare symptoms go, many patients will complain of the classic dry eye symptoms such as irritation, foreign body sensation, and lacrimation, while many others have atypical complaints. “Younger patients tend to have the more symptomatic complaints, such as foreign body sensation and pain, whereas patients with chronic dry eye who then get a flare tend to be more neurotrophic. Their primary flare symptom may be decreasing vision. When we examine these patients, we see evaporative changes to their ocular surface and diffuse punctate epithelial keratitis (PEK) from their dry eye flare. Their eye is also going to be red, but they will not be experiencing as much pain as we see in the younger patients,” Dr. Holland said.

Visual fluctuations are a key aspect of episodic acute exacerbation of dry eye, as is asthenopia. “If they’re continuously blurry you might see PEK, particularly in the inferior third of the cornea, but often you’ll see a relatively rapid tear breakup time (TBUT),” Dr. Lindstrom said.

**Flares and surgery**

Chronic dry eye is seen among cataract and laser refractive surgery patients, and Dr. Yeu pointed out that the surgery can instigate flares. In these cases, staining of the cornea or conjunctiva and fluctuating and/or suboptimal vision may worsen as the day progresses, or they fatigue quickly when reading.

Dr. Lindstrom provided a simple explanation regarding this dry eye/surgery relationship. “Surgery is a meaningful surface insult,” he said. “Cataract surgery will probably induce a flare in any dry eye patient. Surgery will move a patient up at least one if not two levels on the DEWS metric.”

Ultimately, Dr. Holland said, it’s important to acknowledge that dry eye flares are a phenomenon that DED patients experience, and it is crucial to be prepared to recognize the signs and symptoms and treat these patients in a way that will produce rapid results.

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In your clinic, what percentage of your cataract patients have dry eye disease preoperatively?

- More than 75%: 33%
- 50–75%: 67%
- Less than 50%: 0%

The ocular surface disease experts who participated in this discussion think that more than 50% of their cataract patients have dry eye disease preoperatively.

Following their discussion, the physicians completed a survey on ocular surface disease. Their answers to the survey questions are located throughout this supplement.
Diagnostic considerations in dry eye flare evaluation

The signs and symptoms of dry eye often are not correlated. Patients who have the worst signs may have the least symptoms and vice versa. This contradiction is important to consider when diagnosing dry eye flares. Patient questionnaires, point of care (POC) testing, and osmolarity testing are useful methods of diagnosing dry eye flares, but not at the expense of a thorough eye exam and discussion where the eyecare provider takes the time to listen and engage in a dialogue about symptoms and associated concerns.

Screening suggestions
Screening for dry eye disease (DED) using a patient questionnaire is an effective and almost universal method of catching DED that otherwise might fall through the cracks. Preeya Gupta, MD, does this, and she describes it as an efficient way to assess the patient’s symptoms. Alternatively, she suggests that eyecare providers can direct their practice technician to ask patients key questions about vision fluctuation, redness, and irritation. Point of care (POC) testing, too, is particularly helpful, she said, in terms of identifying patients who might have DED and not realize it.

“Typical tests that we perform include osmolarity testing and matrix metalloproteinase-9 (MMP-9) testing, but meibography is also quite useful to identify potentially advanced gland disease,” she said.

Listen and learn
Edward Holland, MD, agreed that those methods are sound, but he added that initiating a dialogue with patients and listening to their description of their symptoms is critical.

“Eyecare professionals have been taught to put fluorescein in the eye and look for corneal staining. If we don’t see corneal staining, we tend to discount the patient’s symptoms,” Dr. Holland said. “However, early onset dry eye patients or patients with dry eye flare can be highly symptomatic with discomfort and fluctuating vision without corneal staining.” He added that the concept that punctate staining on the cornea only accompanies mild to moderate dry eye is incorrect. “If dry eye is bad enough and the patient has punctate staining, that’s moderate to severe dry eye, and we should diagnose and treat patients earlier. If a young patient comes to me and says, ‘My eyes are irritated’ or ‘I have fatigue syndrome,’ but I don’t see significant conjunctival injection or corneal staining, it does not mean that the patient does not have a dry eye flare. That’s why it is so important to listen to the patient,” he said.

Tear film testing
Similarly, Elizabeth Yeu, MD, said there are cases where the InflammaDry (Quidel) will turn positive in patients who have had some chronicity to their disease process. “I’ve noticed that tear osmolarity can indicate acute or chronic changes, while a positive InflammaDry often denotes more chronic disease. It is interesting to see someone who has been demonstrating stable tear osmolarity values who comes in with a flare.
Tear osmolarity values might then demonstrate dysfunction of the osmolarity itself, thus an imbalance of the tear film,” she said.

Dr. Yeu pointed out that when examining a dry eye patient, she is looking for any source that could lead to an acute onset of symptomatology. “Acute worsening of symptoms may occur from an actual breakdown of the ocular surface epithelium, such as an abrasion or a keratitis, thus the clinical correlation is essential. In the setting of subtle slit lamp differences in an established patient, overall symptom exacerbation may serve as the key difference in our diagnosis of that flare,” she said.

Preeya Gupta, MD, pointed out that it is particularly important to ask about symptoms when treating chronic dry eye patients who have been on an anti-inflammatory long term. “Sometimes we forget to listen to those patients. They have had dry eye for many years, so we expect them to have symptoms. However, there are opportunities to make those patients who are on maintenance therapy happier and less symptomatic during those acute flares,” she said. “When I talk to my patients about dry eye disease, I think it is important to make sure they understand that there is a chronic component and there is an episodic component, and as clinicians we need to listen not just for that chronic component, but also for that episodic component and intervene during those times.”

**Ask about flares**
Even more to the point, Terry Kim, MD, recommends asking specifically about flares. “I think we need to proactively ask them if they experience flares because a lot of these patients do not come to the office when they have a flare. In the case of a chronic dry eye, when the patient comes in for follow-up we should ask if they have had a flare in the past 1 to 3 months depending on the last time they were seen. Given that these flares occur 4 to 6 times a year, odds are that they experienced one since their last visit. This is among the reasons that I support adding a question about flares to whatever dry eye screening questionnaire is used in one’s practice,” he said.

**A thorough exam**
Eric Donnenfeld, MD, emphasized the importance of a thorough eye exam. “There are many diagnoses that can mimic dry eye, such as entropion, ektopion, floppy eyelid syndrome, lid imbrication syndrome, and conjunctival chalasis. Interestingly those diseases very rarely have flares associated with them. Flares associated with dry eye are much more episodic and much more symptomatic, whereas these other diseases tend to be steadier. In many ways, dry eye flares are easier to diagnose than regular dry eye because the symptoms are so well defined.”

Dr. Holland described diagnosing a flare through discussion as follows: “If a baseline exam of a patient who has been on maintenance therapy shows conjunctival injection and minimal inferior staining, and they come in to see me and we don’t see a change in their exam but they have a change in their symptoms, that is by definition a dry eye flare. We have to listen to the patient, and you should adjust the treatment.”

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**In your clinic, what percentage of your dry eye patients experience dry eye flares on a yearly basis?**

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<td>Less than 50%</td>
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Following their discussion, the physicians completed a survey on ocular surface disease. Their answers to the survey questions are located throughout this supplement.
Dry eye treatment: Decisions and need

Up until just a few years ago there was only one approved therapy for dry eye, topical cyclosporine, whereas today there are a variety of options. Despite this evolution, unmet needs remain in the dry eye treatment realm.

Elizabeth Yeu, MD, pointed out that there is an obvious unmet need for an anti-inflammatory with quicker onset of action. “In order to even start chronic dry eye therapy, whether with lifitegrast or cyclosporine, we often have to have a concomitant induction therapy with a topical steroid. While we have a growing number of options for meibomian gland dysfunction (MGD), there aren’t necessarily any insurance-reimbursed options, and that is also an unmet need that currently exists,” she said.

The inflammatory connection

In recognition of dry eye’s chronic inflammatory disease etiology, Richard Lindstrom, MD, suggested that when making dry eye treatment decisions it helps to think about dry eye flares as one would think about an iritis flare. “We would treat those patients very aggressively and try to knock out the inflammation with a strong topical steroid, then taper down. We would not use palliative therapy,” he said.

One of the shortcomings of current therapies is the amount of time it takes for them to go to work. Preeya Gupta, MD, explained that she usually tells patients to expect there to be a 3-month gap before experiencing symptom relief with cyclosporine, whereas with lifitegrast she explains to patients that they may experience improvement in as little as 2 weeks, but it can also take up to 3 months. “Immunomodulators are excellent for treating dry eye; they’re just not quick enough to treat flares,” she said. Having to wait that long for relief from a dry eye flare.

In your clinic, how many dry eye flares does the average patient experience on a yearly basis?

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The average patient experiences 2 to 7 dry eye flares on a yearly basis.

How strongly do you agree that:

- a dry eye flare is a rapid onset inflammation-driven response to environmental triggers?
- patients on maintenance therapy can also have frequent dry eye flares throughout the year?

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All respondents strongly agree that dry eye flare is a rapid onset inflammation-driven response to environmental triggers and that patients on maintenance therapy can also have frequent dry eye flares throughout the year.

Following their discussion, the physicians completed a survey on ocular surface disease. Their answers to the survey questions are located throughout this supplement.
is unacceptable, said Eric Donnenfeld, MD.

**Three-pronged approach**

When developing a treatment strategy for his dry eye patients, Edward Holland, MD, has a three-pronged approach. “I try to figure out the severity of the dry eye, figure out what maintenance therapy they need, and what therapy they would need for flares,” he explained. When developing a maintenance therapy, he considers if the patient’s DED is primarily aqueous tear deficiency, primarily MGD, or if it is a mixed pattern of dry eye. “Our maintenance therapy is different for those three types, but they all have episodic flares, so we also have to consider how to address that,” he said, adding that the answer is to treat them similarly to how he treats patients with severe allergic eye disease. “I have them on maintenance therapy all year, but in the spring and the fall their symptoms are much worse, and we change their treatment to deal with the episodic flares,” he said.

Chronic dry eye patients on maintenance therapy tend to be more accepting of medication-associated discomfort than dry eye flare patients because flare patients are already in a heightened state of distress. For instance, Dr. Yeu pointed out, there is a burning sensation that can be associated with immunomodulators, and instilling those medications in a relatively calm eye is a momentary annoyance, whereas instilling them in an acutely irritated eye could result in a significant amount of discomfort.

The ideal medication to treat dry eye flares would have rapid effect and be well tolerated, among other things. Dr. Holland suggested the medication should be safe, not raise IOP, and be in a formulation that is ocular surface-friendly. “Clearly the medication must be safe and effective, which is the case with both cyclosporine and lifitegrast, however, for a medication to be ideal for flares, it must also provide relief within a few hours,” he said.

An improved topical corticosteroid is what is needed for dry eye flares, Dr. Holland said. “For years, cornea specialists have realized this, and many of us have used induction therapy to get patients to take cyclosporine more effectively. Then we heard from our patients that periodically throughout the year they were using the steroid because of their dry eye flares,” he said.

“Ultimately, I would like an FDA-approved corticosteroid that is safe and effective for flares of dry eye—regardless of the type of dry eye—because all types of DED result in flares.”

Dr. Holland’s earliest understanding of dry eye flares followed his work on a study that evaluated the effect of loteprednol etabonate (LE) before the initiation of long-term tCsA therapy 2 weeks before the initiation of long-term tCsA provided more rapid relief of signs and symptoms with greater efficacy than tCsA and artificial tears alone. “At that point, we began to understand that even though they were using topical cyclosporine as maintenance therapy, they were having flares,” he said.

Dr. Yeu pointed out that the solution to a dry eye flare isn’t always additive medication, even if it’s an ideal formulation; post-surgical dry eye flares can present a unique consideration. “In our post-surgical patients, often times toxicity of the medications we are using is responsible for a flare. In those cases, taking away medications is the answer to quieting the flare in an acute dry eye,” she said.

Reference

1. Sheppard JD, et al. Effect of loteprednol etabonate 0.5% on initiation of dry eye treatment with topical cyclosporine 0.05%. *Eye Contact Lens*. 2014;40:289–96.
Corticosteroids are recognized as an effective therapeutic option for dry eye flares, but as with all medications, there are pluses and minuses. Meanwhile, as eyecare providers become more aware of the pervasive nature of flares among their dry eye patients, other exciting treatment options are emerging.

Treatment review
Corticosteroids have several characteristics that make them a good choice to treat dry eye flares. “Corticosteroids have a rapid onset and they attack all pathways of inflammation,” said Preeya Gupta, MD. “We get quick relief for the patient regardless of etiology.”

“The MPP technology allows the drug to get through the mucin layers of the tear film and ocular surface, to penetrate better, and have better efficacy and safety.”

—Terry Kim, MD

With respect to corticosteroids, the two intraocular complications that are a source of concern for clinicians are cataracts and glaucoma. These concerns are reduced in the case of loteprednol etabonate, a corticosteroid that is thought to have the greatest safety and efficacy combination. “I see loteprednol as the ideal steroid for dry eye therapy,” said Edward Holland, MD. “It is the only C-20 ester steroid that we have, and we know that ester steroids have a much better intraocular pressure elevation profile than all the other steroids, which are ketone steroids. In addition, we also know that loteprednol is as potent as the other topical steroids. The literature

How strongly do you agree that:
- artificial tears cannot adequately manage patients experiencing dry eye flares?
- the use of nanotechnology increases the efficacy and maintains the safety of traditional medications?

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<th>Strongly Agree</th>
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<th>Disagree</th>
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Five out of six respondents strongly agree that artificial tears cannot adequately manage patients experiencing dry eye flares and that the use of nanotechnology increases the efficacy and maintains the safety of traditional medications.

For dry eye patients, what do you primarily base your treatment decision on?

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<th>Signs</th>
<th>Symptoms</th>
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All respondents base dry eye patient treatment decisions on both signs and symptoms.
Emerging treatment trends illustrates that it is as effective as branded prednisolone in a postoperative cataract study.”

**MPP technology**

Meanwhile, there is exciting new technology, under review by the U.S. FDA, for treatment of dry eye. This investigational product (KPI-121 0.25% ophthalmic suspension, Kala Pharmaceuticals) uses loteprednol etabonate, but in a unique way. It uses mucus-penetrating nanoparticles (MPP) to enhance delivery to target tissues of the eye, which allows for better and even distribution of the corticosteroid.

MPPs allows for better penetration of the corticosteroid through mucus, which acts as a natural barrier in the tear film and works to prevent penetration of foreign particles, pathogens, etc., including topical therapeutics. “The aim has been to find a way to allow for better penetration,” said Elizabeth Yeu, MD. “If we could find a way to achieve better penetration, it would potentially lead to better efficacy with the medication,” she said. “We already know loteprednol is extremely effective as a steroid, so by being embedded within nanoparticles the corticosteroid can effectively penetrate through the mucus pores, thus potentially increasing its therapeutic effects.”

Dr. Gupta pointed out that loteprednol is a familiar and trusted therapeutic within the ophthalmic community, and this new nanoparticle vehicle enables this traditional drug to be just as safe but more effective.

Terry Kim, MD, sees the use of mucus-penetrating nanoparticles as an exciting development. “The MPP technology allows the drug to get through the mucin layers of the tear film and ocular surface to penetrate better and evenly,” Dr. Kim said. “We see breakthrough flares, despite patients being on maintenance therapy, so it makes sense that what we need in terms of the treatment gap is a corticosteroid that is not only effective but also safe, and in the Phase 2 and both STRIDE trials it was very effective in terms of meeting the primary endpoint of reduction in conjunctival hyperemia. Equally important, the IOP elevation profile is excellent with this molecule.”

Dr. Gupta suggested that this technology would benefit a dry eye flare management plan. “It will be something that patients will be able to use for a limited, short-term, 1- to 2-week period, on a one drop BID basis, and I think patients will be very receptive to this because they are looking for fast relief,” she said.

Dr. Holland said, “Dry eye patients have often been to multiple eyecare providers and they want something to manage their symptoms right away. No matter what maintenance therapy we’re considering, I’d like to immediately relieve their symptoms with a safe and effective topical steroid, then talk about using it periodically for dry eye flares as well.”

Dr. Lindstrom pointed out that corticosteroids have long been used off-label for these indications, but he suggested that eyecare providers would much prefer having a formulation approved and labeled for dry eye treatment.

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**References**

1. Lane SS, Holland EJ. Loteprednol etabonate 0.5% versus prednisolone acetate 1.0% for the treatment of inflammation after cataract surgery. *J Cataract Refract Surg.* 2013;39: 168–73.


**Case study 1**

- 40-year-old female
- Mild dry eye
- Travels frequently for work
- History of thyroid disease
- Meibomian gland = mild
- Fluorescein staining = 0
- Tear meniscus height = reduced
- Osmolarity = 307, 302 (borderline)

For the past year, this patient has been managed with artificial tears, and she has intermittent flares that limit her activities. Eric Donnenfeld, MD, reminded the panel that the patient has thyroid disease and suggested that because of this she may be at risk for immunologic disease. He posed this question: “What diagnostic strategy would you implement, and/or what extra test would you order?”

Elizabeth Yeu, MD, said she would initiate a two-tiered approach aimed at initially quiescing the flare, then implement maintenance strategy. “I would consider environmental control, such as moisture goggles, given her frequent travel, and I would also do whatever we could do from an ergonomic standpoint with respect to computer use. I would prescribe lifitegrast to address the meibomian glands if she demonstrated MGD or architectural dropout.”

Richard Lindstrom, MD, said he would prescribe an immunomodulator, lifitegrast or cyclosporine for maintenance therapy, but added that he would prescribe a short course of steroids to first get the patient comfortable and educate her about dry eye disease.

Similarly, Edward Holland, MD, said he would start the patient on a topical corticosteroid to get quick symptomatic relief and follow that with lifitegrast. “Then because of the thyroid disease, I would make sure there was no exposure,” he said.

Dr. Lindstrom stressed that it is critical to capture patients such as this one to be sure they are treated and followed. Dr. Holland said, “Unfortunately, these people are led to believe that their symptoms are an unavoidable side effect of aging; we don’t give dry eye the attention it deserves.”

Dr. Donnenfeld pointed out that patients such as the one in this case study have often already seen multiple eye doctors and have not been given the proper attention, and they feel as if they’ve been ignored. He reminded the panel, “If you can provide these patients with a therapeutic management program and solve their problem, it creates an opportunity for your practice to grow.”

**Case study 2**

- 20-year-old male
- Professional gamer, active lifestyle
- Significant irritation, uncontrollable blinking while gaming
- Lids = 2+ MGD on expression
- Lid closure = good
- Conjunctival staining = 2+ lissamine green
- Osmolarity = normal

A 20-year-old male who is a professional gamer has significant irritation and uncontrollable blinking while gaming. He has tried artificial tears but hasn’t gotten relief from them. His lids are normal, and his lid closure is good, but he has 2+ conjunctival staining.

Eric Donnenfeld, MD, asked the panel of ocular surface disease experts how they would diagnose and treat this patient. “This is a classic digital eye strain patient with secondary dry eye related to extended digital device use and a blink rate that is probably 8 when it should be 20,” said Richard Lindstrom, MD. “Besides impacting the patient’s ability to do what he does professionally, it’s also causing conjunctival staining. This is a patient who should be captured and treated, and he needs both acute and chronic therapy.”

Terry Kim, MD, said the idea of dry eye disease as the domain of peri/post-menopausal women is clearly changing. “We need to realize
that this disease is occurring earlier, across both genders, because of environmental triggers and lifestyles, and we also know that this population is very prone to flares because of the additional exacerbations associated with screen time.”

Preeya Gupta, MD, noted that the patient has exposure problems because of reduced blinking and pointed out that they should ascertain the effect of the reduced blink on the meibomian glands. “A normal blink is needed to express some of that meibum, so if he continues in the gaming world he’s going to have stasis in the glands, which eventually leads to obstruction and ultimately to atrophy of the meibomian glands,” Dr. Gupta said. She went on to describe the patient as very high risk and said she would manage him with a chronic anti-inflammatory topical therapy, blinking exercises, and a serious conversation about the disease to get him to appreciate its effects. The panel agreed that this is the type of patient who tends to ignore the disease until it has progressed much further along.

Edward Holland, MD, pointed out that patient education will be very important to convince this patient to take breaks and to learn how to blink. “Studies show that these patients will not give up their devices, so since they won’t change their behavior, we have to get them to understand the disease, get them to modify their behavior in terms of taking breaks and using artificial tears, and potentially treat their acute flares,” he said.

Dr. Donnenfeld suggested that there are simple environmental changes that can be implemented prior to therapies. “You can increase the humidity in the room with a humidifier, or you can have the patient lower the device screen, so they are looking down, which can help reduce symptoms,” he said, adding, “Of course, they may still need therapeutics.”

Elizabeth Yeu, MD, said any amount of staining in a patient this age is a major red flag. “When you see staining in a young patient oftentimes the surface is OK, but their osmolarity is quite elevated. Younger patients have a great compensatory mechanism with over-tearing to help protect the surface, but if there is any kind of architectural damage that will put them into a moderate or moderate/early severe stage,” she said.

As far as treatment, Dr. Holland said he would direct the patient to use artificial tears and to modify his behavior—change the angle of his screen and take breaks. If he is highly symptomatic, Dr. Holland might recommend a topical corticosteroid. “With a male patient this age, I would be sure to limit prescription refills to ensure that he returns for follow-up, and I would check in on this patient frequently,” he added.

The group agreed that meibomian gland imaging would be helpful, and Dr. Holland pointed out that even those eyecare providers who do not have the prerequisite imaging technology could simply look at the glands and perform expression to evaluate the quality of meibum.

With respect to potential MGD therapy, Dr. Yeu said she would choose something that would help the patient have better egress, such as an esterified omega or one that is rich in gamma-linolenic acid (GLA). “Depending on the level of disease, other types of in-office intervention such as motorized cleansing of the lid margin or thermal pulsatation could be helpful to get the patient started in the right direction,” she said.

Dr. Donnenfeld recommended blepharoeXfoliation to remove the biofilm that forms on the lid margins prior to initiating meibomian gland therapy, and the panel agreed that they would see this patient for follow-up at 3 to 4 weeks. Depending on how often and how severe the flares are they might initiate a course of corticosteroids.
Therapeutic Solutions:
Ocular surface disease and episodic flares of dry eye disease

Case study 3

- 65-year-old male presenting for cataract surgery
- On topical anti-inflammatory therapy
- Burning and irritation every month
- Vision fluctuates with burning/irritation
- Osmolarity = 316 and 305
- Lissamine green conjunctival staining = 2+
- Inferior corneal staining = 1+
  Meibomian gland dysfunction = 3+

A 65-year-old male presenting for cataract surgery evaluation has monthly episodes of burning, irritation, and vision fluctuation and is already on topical anti-inflammatory therapy. Osmolarity is elevated at 316 and 305, and he has 2+ lissamine green conjunctival staining, 1+ inferior corneal staining, and meibomian gland dysfunction (MGD).

The ocular surface disease panel agreed that the patient will undergo topography because he is being seen for a cataract evaluation, and Preeya Gupta, MD, pointed out that topography patterns will reveal the patient’s dry eye disease. Dr. Holland noted that in a patient like this, if the manual keratometry readings, the topography, and the biometry do not agree, it is almost certainly due to OSD.

Presence of OSD means the cataract surgery will be postponed until the ocular surface is restored to health. Elizabeth Yeu, MD, explained that she would take note of if the patient has other systemic comorbidities, what medications he is on, and what other risk factors may be contributing to the patient’s acute inflammation.

The panel agreed that quieting the eye should be the immediate goal and that once that is accomplished punctal occlusion might be the concomitant therapy needed for maintenance.

Terry Kim, MD, said that cataract surgery can be a flare trigger. “The patient is already on topical anti-inflammatory therapy, so he is obviously experiencing flare,” Dr. Kim said. “I think you need to control that flare prior to proceeding with cataract surgery because the surgery can exacerbate the flare and you want the patient comfortable.”

Dr. Gupta said she would start the patient on loteprednol because it is gentle on the ocular surface but very efficacious in terms of its ability to quiet inflammation and allow surface repair. Richard Lindstrom, MD, suggested everyone on the panel would treat with a topical steroid. “Some of us might use erythromycin or azithromycin at bedtime as well,” he said.

All concurred that it is important to have a conversation with the patient about his dry eye because of its potential impact on his postoperative cataract results. Dr. Donnenfeld said he would do hot compresses, lid hygiene, and micro-blepharoexfoliation, and perhaps thermal pulsation as well. “I would start the patient on omega-3s and a topical loteprednol steroid. By doing that, I would get the patient comfortable and have him return in 1 to 2 weeks hopefully ready for cataract surgery,” he said.