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COVER FEATURE

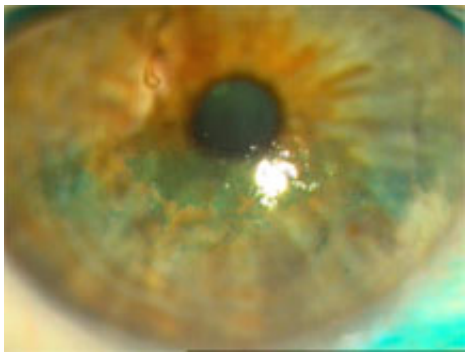
OCULAR SURFACE

Leveling the ocular surface disease playing field

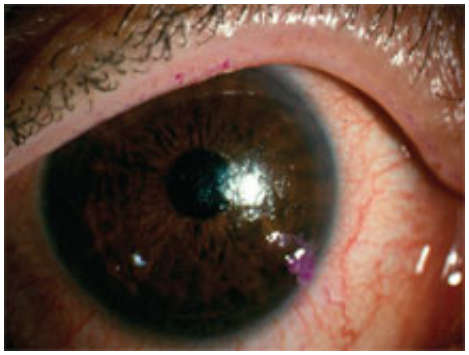
by Maxine Lipner Senior EyeWorld Contributing Editor

The DEWS grading scheme takes practitioners through dry eye disease

When it comes to grading and progression of ocular surface disease, in recent years the standard has become the Delphi and the International Dry Eye Workshop (DEWS) report, according to Deepinder K. Dhaliwal, M.D., associate professor of ophthalmology and director of cornea and refractive surgery service, University of Pittsburg School of Medicine. The panel updated the thinking on dry eye and instituted a progressive series of levels to stage and ultimately treat the disease. "The world's experts in dry eye and meibomian disease got together," Dr. Dhaliwal said. The Delphi panel members started from the ground up. "They renamed dry eye disease dysfunctional tear syndrome because people who have dry eyes sometimes have overflow tearing as a symptom," Dr. Dhaliwal said. "It's very confusing for patients who have an uncomfortable ocular surface with tearing to find out that their diagnosis is dry eye—they look at you like you have two heads."



In recent years, the DEWS report has become the standard for understanding dry eye disease (pictured here)
Source: Peter J. McDonnell, M.D., and the Delphi Task Force



The Delphi panel categorizes dry eye (pictured here) into four levels in order to stage and treat the

Now that is no longer a problem. Dr. Dhaliwal tells them that they have dysfunctional tear syndrome and finds that this encompasses the whole category.

DEWS classifications

Among the other DEWS recommendations was a classification of disease based on severity. The disease is currently categorized into four levels. "Level 1 is where patients have only symptoms and no signs, which is a lot of patients," Dr. Dhaliwal said. Symptoms may come and go with environmental stresses. However, clinical signs such as conjunctival injection and staining or corneal staining and tearing are either missing or mild. Meibomian gland dysfunction may be present in some cases but not in others. In addition, tear film break-up time and Schirmer's scores tend to be variable. While many of these patients are in an early stage, this is not always the case. "In patients who are complaining severely but don't have a lot of signs, there might be neuropathic pain involved," Dr. Dhaliwal said. "I think that in this category, all practitioners deal with patients who have severe symptoms but don't have a lot of signs." This can be frustrating because practitioners end up treating the patient's symptoms without any signs to corroborate the need for it. If after treatment the patients are not better, Dr. Dhaliwal said that perhaps another approach is needed. "Practitioners should think about oral medications such as Neurontin (gabapentin, Pfizer, New York) or Lyrica (pregabalin, Pfizer)," she said.

With level 2 disease, patients' discomfort becomes moderate and can be episodic or chronic, and patients may complain of annoying visual symptoms. There can also be variable corneal or conjunctival signs. "In category 2 there is mild staining," Dr. Dhaliwal said. There is also mild corneal debris and a decreased tear meniscus. Meibomian gland disease

disease
Source: Peter J. McDonnell, M.D., and the Delphi Task Force

AT A GLANCE

- The DEWS system categorizes dry eye disease into four levels
- Level 1 patients are the least severe and have only symptoms and no signs
- In level 2, patients have moderate discomfort and may complain of annoying visual symptoms and show mild staining and debris
- By level 3, discomfort is severe and patients' visual complaints can be constant. There can also be marked central staining and visual compromise
- When they reach level 4, the disease is severe and can be visually disabling. Patients can have filaments, scarring, corneal ulceration, and more

remains variably present, tear break-up time is at the stage where it is less than or equal to 10 seconds, and Schirmer's scores are less than or equal to 10 mm in 5 minutes.

By level 3 dry eye, discomfort has become severe for patients and is constant. Patients complain about annoying, chronic visual symptoms that can in some cases be constant and can limit activities. There's also moderate to marked conjunctival and corneal staining. "In category 3 there is more central staining and possible visual compromise," Dr. Dhaliwal said. This level is also marked by corneal and tear signs such as filamentary keratitis, mucus clumping, and increased tear debris. Level 3 patients frequently have lid and meibomian gland disease with a tear film break-up time of less
than or equal to 5 seconds and a Schirmer's score of less than or equal to 5 mm in 5 minutes.

For patients who have reached level 4, the disease has become severe, with constant and possibly disabling visual symptoms with marked conjunctival staining. "They could have filaments and even scarring," Dr. Dhaliwal said. These patients may also have increased tear debris and even corneal ulceration. Their Schirmer's score is less than or equal to 2 mm in 5 minutes and their tear film break-up time is immediate.

Dr. Dhaliwal thinks that the good thing about the DEWS system is the stepwise approach. "The system breaks it down and gives us tables," she said. "It's spelled out how to treat these patients and how to go along with the progression of the disease."

John D. Sheppard, M.D., professor of ophthalmology, microbiology, and molecular biology, Eastern Virginia Medical School, Norfolk, thinks that the DEWS system has altered the way that practitioners view the disease. "In terms of dry eye disease, this has changed a lot for us because we were used to mild, moderate, and severe, and now there are four levels," he said. "The DEWS system acknowledges the different levels and the variability and classifies things by symptomatology such
as mild, moderate, and severe, frequent, and disabling."

While the categories are distinct, there are instances where there is some repetition. "We understand that there may be significant overlap between these categories," Dr. Sheppard said. "But the visual symptoms vary proportionately such as they're episodic for mild disease or constant and disabling for severe or level 4 disease."

For the specialist, he thinks that all of this may be second nature. "It's instinctual to experienced cornea specialists and ophthalmologists who perform surgery on patients and treat a lot of dry eye to know to what degree the patient is suffering," Dr. Sheppard said. "But even for experienced doctors it's useful to write down a grading scheme. For less experienced doctors or for those who are just not sure, it's helpful to refer to the different levels and allow themselves to judge the aggressiveness of therapy based on the level of disease."

Following the system

Dr. Sheppard makes it clear to patients that it's important that they stop the disease at whatever level it is at. "What I tell patients who have mild disease is, 'All of my patients with severe disabling disease used to be mild like you—do you want to get there?'" he said. "That motivates patients to be compliant with their medications or therapeutic interventions, or to stop smoking, turn the fan off, get the dog out of the bed, or whatever it takes."

He finds that it's pretty straightforward to determine what level the patient is currently at. "A brief slit lamp examination by an experienced practitioner is all that it takes," Dr. Sheppard said. "It isn't difficult to identify the depressed meniscus or punctate keratopathy of the aqueous deficient patient or to identify a red, thickened lid margin with malfunctioning meibomian glands, as well as a classic superficial punctuate keratopathy distribution seen more at the limbus and inferiorly, where the lower lid is juxtaposed on the cornea." While there is a wide variation and overlap in both, he thinks that experienced clinicians can easily figure this out.

Dr. Dhaliwal likewise thinks the four-level dry eye grading system is easy to follow. "Just look for the signs—it's very clear," she said. "The staining pattern of the cornea and other signs on the ocular surface are indicative of what stage patients are at." She described the approach as a stepwise one. "We know in level 1 we can treat with artificial tears four times a day," Dr. Dhaliwal said. "If that isn't working, in level 2 we keep adding therapy."

One new element of the DEWS system is the recommendation for earlier use of Restasis (cyclosporine, Allergan, Irvine, Calif.). "Don't wait for severe dry eyes to start Restasis," Dr. Dhaliwal said. "It's recommended in

stage 2 even." This is important because otherwise patients may fall into the trap of abusing artificial tears. "If they use artificial tears every hour, basically they get dishpan eyes," she said. "They're washing away all of the natural oils that exist and making it worse."

She thinks that it's important to not only give patients Restasis but to educate them. "It will sting when they use it for the first few weeks," Dr. Dhaliwal said. "I tell patients to refrigerate it because then it stings less." Practitioners can also use a steroid initially to help to calm the ocular surface. "Once the Restasis starts kicking in you can stop the steroid," Dr. Dhaliwal said.

Eyeing progression

Dr. Sheppard thinks that age is the primary reason that patients progress from one DEWS level to another. "Age is the number one reason," he said. "I think the addition of environmental, medicinal, or occupational hazards is important, and clearly the seasons of the year have an impact on the nature of the disease as well as the severity," he said. "Looking for concomitant allergic disease will simplify the regimen by eliminating environmental antigens to which the patient has been hypersensitized, and we tend to forget that."

In addition to age, Dr. Dhaliwal stressed that hormonal influence can play a big role here, particularly for post-menopausal women. "That's huge," she said. "Another factor is the ancillary medications that they're taking." She pointed out that a patient may start out on an antidepressant then perhaps go on a diuretic, or start to take an anti-allergy medication such as Claritin (loratadine, Merck, Whitehouse Station, N.J.) or Zyrtec (cetirizine, McNeil Consumer Healthcare, Fort Washington, Pa). "These have incredible effects on the ocular surface—they really dry it out," she said. "When patients take over-the-counter medications, they don't even think about that."

Considering chronic cases

In every practitioner's office there are many chronic dry eye patients. With the DEWS system, Dr.

Sheppard finds that by definition these patients fall into the level 2 and above slots. "Level 1 is mild or episodic under environmental stress," he said. "Level 2 is moderate

episodic or chronic, stress or no stress—that may be someone who is symptomatic 9 months of the year." Levels 3 and 4 involve cases that are chronic and severe.

The centerpiece of Dr. Sheppard's recommendations in such patients is prevention with the introduction of anti-inflammatory medication, including steroids and cyclosporine, early on at level 2. "If I can prevent additional inflammation and additional permanent damage, loss of lacrimal glands, lacrimal ductal function, goblet cells, and integrity of the ocular surface, and decreased limbal cell density, I'm doing this patient a favor," Dr. Sheppard said. "My job is to prevent problems, and that requires early aggressive intervention that is appropriate to the patient's condition."

For those who are already at an advanced level, Dr. Sheppard relies on chronic use of medication. "If a level 4 presents, I know that the patient will be on intense anti-inflammatory therapy forever," he said. "If a patient is level 2, I know that the patient will be on temporary induction intense anti-inflammatory therapy with the hope of reducing that once the patient is normalized to a lower level of maintenance lacrimal therapy."

Dr. Sheppard has a large number of patients who have been on such therapy for many years. "I have literally thousands of patients taking chronic topical Restasis twice a day," he said. "The majority of those patients are extremely happy and are able to wear their contact lenses again, engage in reading activities for prolonged periods, work later into the night, and basically stop thinking about their eyes," he said.

Overall, from a clinical standpoint Dr. Dhaliwal sees the DEWS level system as very helpful. "Before we had these classifications it was a shot in the dark," she said. Practitioners were more random in their choice of treatment for patients. "We would see a patient who was complaining and say, 'Take some Restasis or use these artificial tears,'" Dr. Dhaliwal said. "Now it's very stepwise—we can figure out what stage the patient is at and look at that."

Dr. Sheppard views the classifications as more helpful from an academic and research perspective. "I think that the classifications are extremely useful for clinical research for teaching and for analysis of the response to a medication in a large population," he said.

***Editors' note**: Dr. Dhaliwal has no financial interests related to his comments. Dr. Sheppard has financial*

interests with Alcon (Fort Worth, Texas), Allergan, Bausch & Lomb (Rochester, N.Y.), EyeGate (Waltham, Mass.), and Inspire Pharmaceuticals (Raleigh, N.C.).

Contact information

Dhaliwal: 412-647-2257, dhaliwaldk@upmc.edu
Sheppard: 757-622-2200, docshep@hotmail.com