

# The Matossian Eye Associates Tear Osmolarity Protocol

By: **Cynthia Matossian, MD, FACS**



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Tear osmolarity is an essential component of the patient work up in our offices. I incorporate the information gathered from the TearLab® Osmolarity Test to help me customize the treatment plan for each patient.

## DRY EYE SYMPTOMS:

**Tear Osmolarity is performed when any patient complains of dry eye related symptoms to include:**

- Gritty grainy feeling in eyes
- Intermittent tearing
- Sandy sensation in eyes
- Tired eyes
- Scratchy feeling
- Excessive tearing
- Fluctuating vision
- Increased blinking
- Difficulty with vision after a few hours of using a computer, monitor, iPad or tablet
- Inability to wear Contact Lenses for as long as they wish

**Cataract Consults:** All patients scheduled for a cataract consult get tear osmolarity prior to seeing the surgeon. Based on the osmolarity outcome and lissamine green staining pattern of the conjunctiva and cornea, I implement a treatment plan to optimize the ocular surface. Patients are scheduled for their pre-operative keratometry, topography, tomography and biometry testing several weeks later allowing time for the tear film and cornea to improve.

**Contact lens wearers:** All patients who wear contact lenses and mention discomfort with their contacts by day's end or complain of their inability to wear them for as long as they would like, get tear osmolarity testing before our optometrists see the patients.

**Dissatisfied patients:** With their post operative vision after cataract surgery done elsewhere who come to me for a 2nd opinion, get tear osmolarity testing. Often, some component of the dissatisfaction is associated with ocular surface disease.

**The silent group:** Because a high percent of dry eye patients are asymptomatic early in the disease process, we perform tear osmolarity on all patients 40 years and older at the time of their annual eye exam.

With the above outlined comprehensive approach, we are able to diagnose ocular surface disease earlier and implement treatment modalities before disease progression.

# How to Implement Tear Osmolarity Testing in a Practice

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The implementation of any new process into a busy ophthalmology practice is never easy. To succeed, an organized approach with a timeline has to be prepared. Even with a 'perfect looking' plan on paper, it will take some time to work out the details and overcome the unforeseen hurdles.

## How to start Tear Osmolarity implementation?

**Physician education:** Start by educating both the MDs and the ODs in your group. Without their support and understanding of tear osmolarity and its importance in the diagnosis of ocular surface disease, the plan will not succeed. It is key for the physicians to understand how to interpret the osmolarity data and how to use it to optimize their treatment plans.

**Staff education:** The staff needs training on how to perform the test. We invited our TearLab® reps to do an in-service on two different occasions a few months apart for all of our staff after patient hours. The staff was able to

practice on each other and ask all the questions they could think of.

**Set-up and calibration:** We realized that one unit for a busy practice created a bottleneck in the patient work up process. Therefore, we quickly expanded the number of TearLab units we use in our offices. The calibration is key for the temperature sensitive test cards to ensure accurate results. The systems, test cards, and calibration supplies should be stored at room temperature. The tear osmolarity results may not be accurate if the temperature between the components varies or if they are exposed to excessive heat. We check each unit for function and calibration using an electronic check card every day before the start of patient hours. We also use control solutions to check every batch of test cards for accuracy anytime we receive a new shipment. If the results from any of these quality control checks are not within the accepted range, we do not use the test cards until the issue is resolved. Following recommended laboratory protocols, we record all of our calibration data in quality control logs.

**Tear Osmolarity Protocol:** The staff needs a directive on when to perform the test and on whom to perform the test since tear osmolarity has to be done prior to the instillation of any drops into the eyes. We came up with a tear osmolarity protocol which we distributed to all staff and discussed at length during staff meetings.

With the above outlined plan, we were very successful in quickly integrating tear osmolarity into our practice.

# What Do We Do with the Information We Obtain from Tear Osmolarity Testing

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Just ordering a test is never enough. It is key to use the gathered information to help shape the treatment plan for each patient for enhanced outcomes. Moreover, the better patients understand about their chronic disease process, the more they may grasp the importance of adhering to a prescribed treatment regimen.

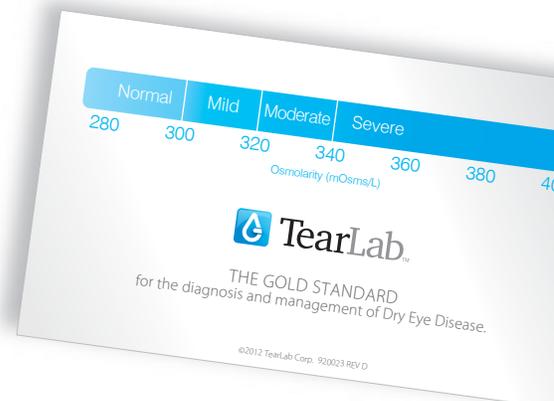
## We use the information we gather from TearLab® osmolarity testing in the following manner:

**We educate our patients:** We let our patients know their tear osmolarity number which we document on an osmolarity tracker that looks similar to a business card and is provided by TearLab. We discuss the normal values and let the patients know where they stand in the spectrum of ocular surface disease. We refer our patients to our website where we have information on Dry Eye Disease.

**We recommend our patients look at the back of the osmolarity tracker card** where the scale of Dry Eye Disease is outlined according to the osmolarity results. We help our patients understand where they fall in the continuum of ocular surface disease.

**We explain inter-ocular variability to our patients** and let them know a difference of  $>8$  mOsm/L between eyes is considered abnormal.

**We perform InflammADry®** at times in conjunction with tear osmolarity to assess the presence of MMP-9 inflammatory markers and accordingly, design a more aggressive treatment plan if the InflammADry® test is positive.



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**We email our patients a comprehensive video from Eyemagination** on Dry Eye Disease by stringing together short vignettes on the topic.

**We have learned to intervene earlier rather than later to treat OSD.** We are able to turn around the disease process more quickly and have our patients experience faster relief by earlier diagnosis and sooner implementation of treatment options.

**We start with preservative-free artificial tear solutions,** which we have available at Matossian Eye Associates for patient convenience but rarely use them as a stand-alone option. Most patients have tried multiple brands of tears on their own without relief before making an appointment with an eye physician. Therefore, additional treatments are often required besides artificial tear solutions.

**We recommend Omega 3 oral supplements** which we have available at Matossian Eye Associates through PRN. We recommend PRN's health coach model where, with the patient's agreement, trained omega 3 health coaches call the patients to explain the benefits of omega 3 for dry eye disease. It is an educational call. I let my patients know that once they are an educated consumer, they will better understand what to look for in an oral omega 3 fish oil supplement.

**We prescribe cyclosporin ophthalmic emulsion 0.05% BID when needed.** We clearly explain to our patients that these are medication drops and they must be used twice daily and not on an as needed basis.

**We recommend a microwaveable re-usable moisturizing mask from Bruder** which we have available at Matossian Eye Associates for our patients' convenience. This mask provides the sustained heat at the proper temperature for the meibomian glands. Our patients love this mask and find it to be inordinately helpful.

**We perform Omega index finger prick blood test** 6 months to one year after the initiation of omega 3 therapy to make sure our patients are in the therapeutic range. If their omega level is not within the therapeutic range, then, we investigate the quantity, brand, and type of O3 the patient is taking. Accordingly, we recommend to either increase the O3 intake or to change the type of omega 3 from the ethyl ester to the triglyceride variety for better absorption.

**We offer Intense Pulsed Light (IPL)** if all steps listed above have been tried or implemented yet the patient remains symptomatic, then I recommend IPL - a series of 4 to start then a customized maintenance treatment averaging one treatment every 6 months. I have found the IPL to be very helpful for my patients with evaporative Dry Eye Disease from meibomian gland dysfunction.

# Tracking Tear Osmolarity Numbers from Visit to Visit and the Importance of This Information for Our Patients

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*“Patients greatly appreciate me helping them connect the dots.”*

An isolated test result may be helpful but, for the treatment of a chronic condition such as Dry Eye Disease, one needs to review the sequence of test results over time. It is by seeing a trend that one can assess the success of an implemented treatment plan for the patient.

If there is a sudden rise in a patient’s tear osmolarity number after multiple visits of rather stable osmolarity outcomes, I bring this abnormal result to the patient’s attention and ask if any new changes have occurred in their environment or life and ask very specific questions such as:

**Have you just turned the air conditioning on? Are the AC vents blowing into your eyes in the car or at work?**

**Have you just turned the heat on? Are the heat vents blowing into your eyes in the car or at work?**

**Have you just turned a fan on above your bed or have you just started to use a fan near your face while sleeping or at work?**

**Have you just started to use a diuretic or was your diuretic recently increased by your primary physician?**

**Have you just started to use or increased the use of systemic anti-allergy medications?**

**Have you just started to use or increased the use of topical ophthalmic anti-allergy drops?**

**Have you just started any new medication that can cause dry eyes or the worsening of dry eye symptoms?**

Often, it is like a light bulb going off when the patient correlates an environmental change with the worsening of their dry eye symptoms. All of a sudden, they ‘get it’ and see how one of their actions now affects their dry eyes. Then, the patient is able to associate these acts with the changes in his/her tear osmolarity numbers. Patients greatly appreciate me helping them connect the dots.