MINA MASSARO-GIORDANO: I am Mina Massro-Giordano. I'm a comprehensive ophthalmologist at the Scheie Eye Institute, and today I will be talking about dry eye diagnosis and treatment. I have no financial interests.

Let's start with the definition. Dry eye is a multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance, and tear film instability with potential damage to the ocular surface.

It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface. This is the definition from the DEWS Group back in 2007. Dry eye, or sometimes you'll see the term tear dysfunction syndrome, because it's not always about the quantity of tears, but the quality of tears. It is a common ocular surface disorder with numerous etiologies.

20% percent of the US population is diagnosed, but the percent of individuals that experience symptoms is much greater. Unfortunately, it is often ignored. Dry eye and patients with dry eye will experience blurry and or changeable vision. They also experience irritation, burning, redness, light sensitivity, and an itchy sensation along the rims of the eyelid. Tearing can also court occur, and a sandy feeling.

Patients can also experience pain, and this comes from microabrasions, or epithelial cells coming off the surface of the cornea. Flourescein will also stain denuded or missing epithelium, as you can see here, with filaments that also develop along the inferior aspect of the cornea. A second test that can be used, which is helpful, is the Schirmer's test, and this is where a filter strip is placed in the lower aspect of the lid.

And over five minutes, this strip is wet, and it can be measured how many tears are made in that period of time. Other important tests for dry eye are the vital stains, which I use commonly in my practice-- either rose bangle or lissamine green. There are other objective measurements that can be used to diagnose dry eye. There are tear assays, such as looking at the osmolarity, measuring matrice metalloproteinases, lactoferrin, confocal microscopy can be also used to look at the surface of the eye.

So for dry eye treatment, the main idea is to replace the tears, possibly with artificial tear drops, conserve the tears-- and I will discuss using punctal plugs, and prevent the tears from evaporating off, either with various devices, or taping the eyelids closed. Next we'll move on to the treatment of posterior and anterior blepharitis, most specifically meibomian gland dysfunction.

The treatment for this is lid hygiene. Lid hygiene consists of using warm compresses to the eyelids, and a warm compress that is most useful is one that uses a commercially available gel pack or mask bead. This allows warm, moist heat to be applied to the surface of the eyelid for a period of five minutes. Many times patients will just use a washcloth, put it under the warm water, and bring it up to their eyes, but this will cool off after a few moments.

It's important to have warmth for at least five minutes. After the warm compress, lid scrubs are used to clean the debris at the base of the eyelashes, and also gentle pressure to help release the liquefied oils. In patients who have demodex blepharitis, where there might be mite infestation, it's important to use tea tree oil scrubs.

A study done by Scheffer Tseng noted that tea tree oil is really the only thing that will kill these mites. It's also important to use lubricating drops-- preservative free lubricating drops-- and sometimes drops that contain oil in them can be helpful with patients with meibomian gland dysfunction. In some situations it's important to use antibiotics to decrease the bacteria floor around the eyelids.

They can be topical or oral. Metronidazole on the lids and on the face has also been helpful for patients with acne rosacea, and it's important to identify any patients with acne rosacea, because many times these patients will also have severe posterior blepharitis. Just know that dry eye is a very common problem. We need to better understand the pathogenesis and the diagnosis.

Very important to have a comprehensive surface eye exam to identify the cause for dryness, and improve future treatments rather than management through short term symptomatic relief. Many times combination therapy is necessary, long discussions with patients about change in lifestyle and environment, and very important to individualized therapy, because dry eye for sure does affect quality of life.

And as patients are getting older, living into their 80s and 90s, many times dry eye is the reason that they cannot carry on their daily activities. And finding a reason for their dryness and treating these symptoms really does help their quality of life.