DEWS	**DRY EYE: DIAGNOSTIC TEST TEMPLATE**	
RAPPORTEUR	Michael A. Lemp	16th Oct 2004; 15th March 2006
TEST	**Tear osmolarity**	
TO DIAGNOSE	Global test for dry eye	Sullivan, 2004
VERSION of TEST	OcuSense Volume Independent Tear Osmometer	
DESCRIPTION	This "lab-on-a-chip" test uses a combination of impedance information with sophisticated mathematics to derive tear film osmolarity. A small nanoliter tear sample is obtained with a standard micropipette and is then automatically transferred to a chip surface. A precise readout in is obtained in seconds after the transfer.	
CONDUCT of TEST	1. Snap microchip in place 2. Touch lower lid with microcapillary 3. Let capillary action draw a few nL 4. Place capillary in machine 5. Read osmolarity	
Web Video	Not available	
Materials:	• 1-lambda microcapillary • microchip • Both available from OcuSense	
Variations		
Standardization	Time of day [√] Temperature [√] Humidity [√] Air speed [√] Illumination [√] .Assumed to influence Other:[Avoid reflex tearing] White et. al. Showed that use of a slit lamp has upwards of a 7 mOsm/kg effect on the value of osmolality due to the induction of reflex tearing. Overstimulation during collection is discouraged. Reflex tears have far lower osmolality (≈5%, Nelson, 1986) than basal tears.	White et al. 1993 Nelson et al. 1986
Repeatability	Intra-observer agreement. [ ] Inter-observer agreement. [< 2.6% 1st prototype]	Sullivan B, 2004
Sensitivity	**(true positives)** [projected 94%] ≥318 mOsm: - provisional	Sullivan B, 2004
Specificity	**(100 – false positives)** [projected 84%]	Sullivan B, 2004
Test problems	Limited availability	
Test solutions	Commercial development	
FORWARD LOOK	This is a high throughput test that can be performed by a technician, and currently carries a miscellaneous CPT.	

References

Farris RL. Tear osmolarity--a new gold standard? *Adv Exp Med Biol* 1994;350:495-503.

Nelson JD, Wright JC. Tear film osmolality determination: an evaluation of potential errors in measurement. *Curr Eye Res* 1986;5(9):677-81.

Sullivan B, et al: 4th International Conference on the Lacrimal Gland, Tear Film & Ocular Surface and Dry Eye Syndromes, November 17-20, 2004, Fajardo, Puerto Rico. *Ocul Surf 2005(Suppl 1)*

White KM, Benjamin WJ, Hill RM. Human basic tear fluid osmolality. I. Importance of sample collection strategy. *Acta Ophthalmol (Copenh)* 1993;71(4):524-9.