DEWS	**DRY EYE: DIAGNOSTIC TEST TEMPLATE**	
RAPPORTEUR	Mark Willcox	*10th Jan 2006*
TEST	**Tear meniscus height and cross sectional area**	
TO DIAGNOSE	Aqueous tear deficiency (ATD).	REFERENCES
VERSION of TEST	[V 1]	Yokoi and Komuro, 2004
DESCRIPTION	A rotatable projection system with a target comprising black and white stripes is projected onto the lower central tear film meniscus. Images are recorded and transferred to computer in order to calculate radius of curvature	
CONDUCT of TEST	*1.* The subject is seated at a slit lamp *2.* A rotatable projection system with a target comprising a series of black and white stripes (4 black and 5 white; each 4mm wide), is introduced coaxially using a half-silvered mirror *3.* Images of the tear meniscus (of either or both eyes) are recorded with a digital video recorder *4.* Images are transferred to a computer and image analysis software used to calculate the radius of curvature of the meniscus by applying the concave mirror formula	
Web Video	Not available	
Materials:	• Slit lamp • Rotatable projection system (see above) with half silvered mirror • Digital video recorder plus TV monitor • Computer plus software • Colour printer	Oguz et al., 2000
Variations of technique	Several alternative methods have been published including: 1. Use of variable beam height on a slit lamp 2. Measurement and grading of meniscus integrity using slit lamp 3. Using a video slit lamp biomicroscope but no projected stripes 4. Measurement after instillation of fluorescein	Nichols et al., 2004a Cermak et al., 2003; Glasson et al., 2003 Farrell et al., 2003 Oguz et al., 2000
Standardization	Time of day [X] Temperature [ ] Humidity [ ] Air speed [ ] Illumination [x] Other:[ ]	
Diagnostic value	This version : [x] Other version: [ ]	
Repeatability	Intra-observer agreement. [Not recorded for V1 – but poor in Nichols et al system] Inter-observer agreement. [Not recorded]	
Sensitivity	**Tear meniscus height: cut off of: < 0.18 mm** **(true positives)** Farrell et al's technique = [72.8%]	Farrell et al., 2003
Specificity	**(100 – false positives) F**arrell's technique = [66.6%]	
Sensitivity	**Tear Meniscus Height: Small vol. fluorescein: cut off < 0.35mm**	Mainstone et al., 1996

	(true positives) Mainstone et al. = [93.3%]	
Specificity	**(100 – false positives)** Mainstone et al. = [66.7%]	
Other Stats	For V1 – significantly lower meniscus height in dry eye subjects. Plugging puncta significantly increased meniscus height. Significant correlation between meniscus height and Schirmer test	Yokoi and Komuro, 2004
	Cermak et al. – significantly lower meniscus height in androgen insensitive female subjects who demonstrated dry eyes	Cermak et al., 2003
	Farrell et al. – significant decrease in dry eye subjects compared with controls; significant increase in dry eye subjects with puncta occluded	Farrell et al., 2003
	Correlations noted between meniscus curvature and meniscus height in presence or absence of fluorescein	Oguz et al., 2000
	Tear meniscus height and area reduced in subjects intolerant to contact lens wear compared with tolerant subjects	Glasson et al., 2003
	Nichols et al (2004b) demonstrated lack of association between tear meniscus height and symptoms of dry eye.	Nichols et al., 2004b
Test problems	Positioning of subject etc and use of specialise equipment	
Test solutions		
FORWARD LOOK	Likely the V1 method can be readily adapted for use in practice	

References:

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