DEWS	**DRY EYE: DIAGNOSTIC TEST TEMPLATE**	
RAPPORTEUR	**John M. Tiffany**	12th Nov 2004
TEST	**Meibometry**	
TO DIAGNOSE	Meibomian Gland Dysfunction - (MGD)	REFERENCES
VERSION of TEST	[V1]	Komuro et al. 2002
DESCRIPTION	Lipid on the lower central lid margin is blotted onto a plastic tape and the amount taken up read by optical densitometry. This provides an indirect measure of the steady state level of meibomian lipid.	
CONDUCT of TEST	1.The subject is seated, with the head resting comfortably at the slit-lamp. 2.With the eyes in upgaze, the right lower lid is drawn down lightly without pressure on the tarsal plate. 3. A standard loop of plastic tape, held in an applanation or ultrasonography probe holder, is applied to the central third of the everted lid margin for 3 seconds, at 0 mmHg exerted pressure. 4.The tape is air dried for 3 minutes to allow tear evaporation if necessary. 5.The increase in transparency induced by the lipid blot, is read in the laser meibometer. 6. The Casual Lipid level (expressed as arbitrary optical density units) is calculated as (C-B), where C is the casual reading, B is the reading from the untouched tape (background).	Komuro et al. 2002
Web Video	Not available	
Materials:	• Plastic tape: 8 mm wide (Courage and Khazaka, Köln) • Tape Holder:(eg. NIDEK ultrasonographic probe holder. • Laser Meibometer. Window size (2.5 x 5.0 mm^2)	
Standardization	Time of day [x] Temperature [ ] Humidity [ ] Air speed [ ] Illumination [ ] Other:[The level is highest in the first hour after waking, but thereafter settles to a constant level through most of the day]	
Variations of technique	In the original version, [V2] optical density was read using an adaptation of the Courage and Khazaka sebumeter. A point reading was taken at the centre of the blot. Other methods exist in which the blot is scanned and the increase in transparency is integrated over the length of the blot . The spring-clip holding the loop of tape can be mounted with wax, modelling clay or "Blu-Tack" to the end of a thin wooden rod (e.g. a bamboo kitchen skewer) held upright by a lump of wax to the ultrasonography mounting-plate; this also exerts zero pressure on the eyelid. After blotting, the loop is opened and attached to a highly-reflective surface (mirror or polished metal) for scanning.	Chew et al. 1993a,b Yokoi et al 1999
Diagnostic value	This version : [ ] Other version: [2] Please cite statistics indicating the diagnostic value of the test.	Yokoi et al 1999
Repeatability	Intra-observer agreement. [-] Inter-observer agreement. [-]	

Sensitivity	**(true positives)** [-]	
Specificity	**(100 – false positives)** [-]	
Other Stats	If you have stats for related versions of the test, please add as many rows as necessary and cite the reference.	
Test problems	a. In normal subjects the lipid blot is uniform and results can be extrapolated to the total lid length. In MGD, focal gland obstruction may vary along the lid length so that central readings may not truly reflect the overall picture. b. Calibrations and assumptions are required to convert raw densitometry readings into meibomian lipid equivalent values.	
Test solutions	a. Measurement should be made along the whole of the lower lid length in order to reflect variation in MGD. b. If the scanning method is used, either a maximally-wide or a very narrow area across the blot should be integrated, to give either an averaged reading including regions with non-functional glands, or a reading only from a selected area of full blotting.	
FORWARD LOOK	a. Develop a system to integrate lipid along full lid length. b. Identify cut-off for MGD diagnosis. c. Incorporate MGD diagnosis into diagnosis of evaporative dry eye.	
Glossary		

References:

Chew CKS, Jansweijer C, Tiffany JM, et al. (1993a). An instrument for quantifying meibomian lipid on the lid margin: the Meibometer. *Curr Eye Res* 12:247-54.

Chew CKS, Hykin PG, Jansweijer C, et al. (1993b).The casual level of meibomian lipids in humans. *Curr Eye Res* 12:255-9.

Komuro A, Yokoi N, Kinoshita S, et al. (2002.Assessment of meibomian gland function by a newly developed laser meibometer. *Adv Exp Med Biol* 506:517-20

Yokoi N, Mossa F, Tiffany JM, et al. (1999). Assessment of meibomian gland function in dry eye using meibometry. *Arch Ophthalmol* 117:723-9.