

<b>DEW</b>	<b>DRY EYE: DIAGNOSTIC TEST</b>	
<b>RAPPORTEUR</b>	Donald R. Korb	15 March 2006
<b>TEST</b>	<b>Forceful blink test with tear film interferometry</b>	
<b>TO DIAGNOSE</b>	The forceful blink test with tear film interferometry provides a method for diagnosing meibomian gland obstruction and/or dysfunction.	Korb et al. 1994 Korb et al., 2004 (TFOS Poster)
<b>VERSION of TEST</b>	V1	
<b>DESCRIPTION</b>	Lipid layer thickness is observed and quantified before and after forceful blinking to provide an indirect measure of the flow of lipid from the meibomian glands under exaggerated conditions.	
<b>CONDUCT of TEST</b>	<ol style="list-style-type: none"> <li>1. The subject is seated with the head resting comfortably in the headrest of slit-lamp equipped with a Keeler Tearscope Plus, or in the headrest of other instrumentation designed to measure lipid layer thickness (LLT).</li> <li>2. The subject is instructed to blink normally while fixating on the target and to abstain from rubbing the eyes or face. If staring persisted for &gt;10 s, the subject is instructed to blink normally. The lipid layer is observed over a period of 30-60 secs and 5 or more blink cycles to ensure that the measurement of the baseline LLT is consistent and representative of the typical thickness of the lipid layer.</li> <li>3. The baseline LLT measurement is then graded and recorded. LLT measurements are graded according to the dominant colors of the interference patterns in the zone of specular reflection.</li> <li>3. The subject is then instructed to blink all the way down, squeeze hard 3 times, and then blink normally. Following the third squeeze, the lipid layer is observed over a period of 30-60 secs and 5 or more blink cycles. The LLT measurement following forceful blinking is then graded and recorded as described in Step 3.</li> <li>4. The baseline LLT measurement is compared to the LLT measurement following forceful blinking.</li> </ol>	
<b>Web video</b>	Not available. Video optimal method for instruction, color plates adequate.	
<b>Materials:</b>	<ul style="list-style-type: none"> <li>• Keeler Tearscope Plus mounted on slit lamp</li> <li>• Other lipid layer measuring device, usually involving a video display screen</li> <li>• Grading scale for specific instrumentation</li> </ul>	
<b>Variations of technique</b>	Any tear film interferometer may be used for this test.	
<b>Standardization</b>	Time of day [√] Temperature [√] Humidity [√] Air speed [√] Illumination [√]. Assumed to influence.	
<b>Diagnostic value</b>	This test allows the following possibilities: <ul style="list-style-type: none"> <li>• If forceful blinking increases LLT the implementation of improved blinking could improve</li> </ul>	Korb et al. 1994 Korb et al. 2004 (TFOS Poster)

	<p>LLT and dry eye states.</p> <ul style="list-style-type: none"> <li>• If forceful blinking cannot improve LLT, treatment of obstruction is indicated.</li> <li>• If forceful blinking cannot improve LLT, then treatments not directed to removing the physical obstruction of the meibomian glands preventing forceful blinking from increasing LLT is problematic.</li> </ul> <p>The increase in LLT as a consequence of three forceful blinks is highly significant (<math>p = 0.0001</math>)</p>	
<b>Sensitivity</b>	(true positives) [ ]	
<b>Specificity</b>	(100 – false positives) [ ]	
<b>FORWARD LOOK</b>	The forceful blink test with any tear film interferometer, as currently practiced with existing instrumentation, is desirable, if not a must, for the evaluation of whether meibomian gland obstruction or dysfunction prevents the secretion of sebum of a magnitude that will increase LLT.	
<b>Glossary</b>	LLT: Lipid Layer Thickness	

Korb DR, Baron DF, Herman JD, et al. Tear film lipid layer thickness as a function of blinking. *Cornea*. 1994 Jul;13(4):354-9.

Korb DR. Poster presentation at the 4<sup>th</sup> International Conference on the Lacrimal Gland, Tear Film, Ocular Surface and Dry Eye Syndromes. November 17-21, 2004, Fajardo, Puerto Rico.