DEWS	DRY EYE: DIAGNOSTIC TEST TEMPLATE	
RAPPORTEUR	Eiki Goto	22nd Dec 2006
TEST	**Functional Visual Acuity (FVA) test**	
Reviewer	A J Bron	27th Dec 2006
TO DIAGNOSE	Optical aberrations and visual disturbances associated with dry eye	REFERENCES
VERSION	V 1	
DESCRIPTION	FVA is a measure of visual acuity during sustained eye opening without blinking.	Goto et al 2002; Ishida et al 2005; Goto et al 2006.
NATURE of STUDY	During a conventional visual acuity test, patients can blink as much as they like. Thus, frequent blinking compensates for any tear film instability. The FVA test simulates visual function changes which may occur for instance while reading, driving, or using a visual display terminal (VDT).	Goto et al 2002 ; Goto et al, 2003
CONDUCT of TEST	To permit the measurement of FVA over time, a continuous functional visual acuity measurement system (FVAM) was developed. The monocular acuity was measured continuously by the FVAM system over a 30-second, blink-free period, and defined as the FVA. First, a standard visual acuity is measured, with no restraint on blinking (the baseline FVA). Topical anesthesia is then administered, and patients are instructed not to blink for 30 seconds, during the measurement of the FVA. In order to measure changes in visual acuity rapidly over time, patients are asked to identify the gap position in the image of a Landolt C, presented on a video terminal. The break position is changed immediately following the patient's response. Initially, optotypes equivalent to the baseline FVA level are presented. The Landolt C ring size is then increased automatically when the answer is incorrect. If the Landolt C ring is recognized correctly, the same size ring is displayed again, with a randomly determined gap position. The result is recorded as a list of continuous FVA scores with decimal notations. The patient signals their response using a standard joy-stick, indicating with this whether the position of the Landolt break is to the left or right, or up or down.	Ishida et al 2005
RESULTS of STUDY	Compared to the conventional best-corrected visual acuity, FVA did not change in normal controls, but decreased in dry eye subjects. This decrease in FVA in dry eye subjects was improved after punctal plug insertion.	Goto et al 2002 ; Goto et al 2003 ; Ishida et al 2005.
Web video ne	Not available	
Materials:	Functional visual acuity measurement (FVAM) system Visual acuity examination chart (Landolt C chart)	Ishida et al 2005 ; Goto et al 2002.
Variations of technique	Ishida et al utilized space saving chart with algorithm. Goto et al used conventional Landolt C chart (5m).	Ishida et al 2005 Goto et al, 2002
Standardization	Time of day [ ] Temperature [x] Humidity [x] Air speed [x] Illumination [x]	

Value	-	
Repeatability	Intra-observer agreement. [+] Inter-observer agreement. [-]	
Sensitivity	**(true positives)** [N/A]	
Specificity	**(100 – false positives)** [N/A]	
Other Stats	-	
Levels of Evidence	Observational case-control study Interventional comparative trial Interventional case series	Goto et al, 2002 Goto et al, 2003 Ishida et al, 2005
Test problems	1. Visual acuity test is a subjective test and takes time to perform. 2. It is difficult to know the subjective visual acuity at the moment, as subjective visual acuity testing takes at least a few seconds and the reaction time of individual subjects may influence the result of the test.	
Test solutions	1. Use of objective point spread function (PSF) analyzer, however then it is not a subjective visual acuity test any more.	
FORWARD LOOK	To improve Ishida's system, FVA measurement system with 5 meter distance is expected.	
GLOSSARY	FVA: Functional Visual Acuity	

References

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Ishida R, Kojima T, Dogru M, Kaido M, Matsumoto Y, Tanaka M, Goto E, Tsubota K. The application of a new continuous functional visual acuity measurement system in dry eye syndromes. *Am J Ophthalmol* 2005;139:253-8.