

RETEVAL® DR SCORE

An objective indicator of diabetic retinopathy progression?

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The International Diabetes Federation (IDF) estimates that there are 425 million people living with diabetes in the world today and 58 million of those live in Europe. Sadly, 80% of those with diabetes will develop some level of diabetic retinopathy (DR) in their lifetime. The U.S. Centers for Disease Control (CDC) estimates that at any given time 33% of people with diabetes have some level of DR present, yet only about 5% of people with diabetes have sight-threatening DR at any point in time.

Currently, DR is monitored through annual photographic or dilated eye exam screenings of everyone with diabetes. Those with moderate non-proliferative DR (NPDR) or worse are

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screened more frequently. Various methods of DR detection are used to assess the risk of DR progression including photography, funduscopy, OCT-A, risk-based modeling, and artificial intelligence aided grading and prediction of progression. These practices are labor and cost intensive and require close patient monitoring, yet diabetic retinopathy still remains the most common or second most common (depending on the country) cause of blindness in working age adults.



**Comparing RETeval DR protocol score to ETDRS 7-field stereo fundus photography**

During ARVO this year, the results of a longitudinal study were presented which assessed the outcomes of 268 patients at two Veterans Administration Hospital sites in the U.S. three years after completion of a DR study

comparing the RETeval (LKC Technologies, Inc. Gaithersburg, MD) DR protocol score to ETDRS 7-field stereo fundus photography (Maa et al, 2016). The handheld RETeval device measures the flash evoked response including pupillary response to objectively assess retinal function without dilation and without anything touching

the eye which increases patient comfort and reduces the testing time. This simple yet objective test can be completed anywhere in under five minutes per patient and provides immediate quantitative results. But can RETeval really help to predict DR progression?

The results showed that if a patient had sight-threatening DR, as deter-

mined by the 7-field stereo fundus photograph assessment, and their RETeval DR score was above 23.5 they had a 54% chance of an intervention (Anti-VEGF, laser (focal or pan-retinal), or vitrectomy) within two years. Patients with sight-threatening DR and a RETeval DR score below 23.5 had only a 3% chance of an ocular intervention within two years. Patients without sight threatening DR having a RETeval-DR score above 23.5 had a 23% chance of an ocular intervention within two years, while those with a RETeval DR score below 23.5 had a 5% chance of an ocular intervention.

**Combination of RETeval and fundus imaging is significantly more predictive**

This study demonstrates that the combination of the retinal function obtained from RETeval and the structural information obtained from fundus imaging is significantly more predictive than either method alone.

For this reason, incorporating RETeval functional testing as a standard DR evaluation practice may play a key role in predicting which patients should be monitored closely due to a higher probability of needing an intervention within two years. This test could have a major impact on patient compliance, outcomes, and significantly reduce the healthcare burden of diabetic eye disease management.

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