

Retinal imaging solution eliminates need to dilate

Real-world experience with *EasyScan* system confirms preliminary clinical results

By Alastair Bruce

A clinical trial of a new retinal imaging system that aims to make SLO-based scanning accessible for all patients has confirmed that it matches or outperforms fundus cameras while enabling optometrists and ophthalmologists to safely offer an alternative to pupil dilation as a step in routine eye examinations.

The DRIVE trial,¹ which looked at 100 people with diabetes, explored the effectiveness of *EasyScan*, a scanning laser ophthalmoscope (SLO) that aims to put high-end eye care within reach of the majority of eye specialists and their patients. The system has been developed by eyecare specialist i-Optics and was launched worldwide late last year.

In the comparator study, the performance of *EasyScan* was assessed head-to-head with a fundus camera for the early diagnosis of Diabetic Retinopathy. Partial top-line results showed that the fundus camera would require mydriasis in 33% of cases (n = 33) to achieve the minimum pupil diameter of 3.3 mm for imaging with a traditional non-mydriatic fundus camera. In contrast, *EasyScan*'s non-mydriatic, confocal SLO technology, which can capture images through pupils as small as 2 mm in diameter, enabled all 100 patients to be scanned successfully without pharmacological dilation (n = 100). In addition, the majority of patients (56%) could be imaged in under three minutes with a median of 174 seconds (50% range: 137–212 seconds).

The results, which will be presented at the ARVO Annual Meeting in Fort Lauderdale, Florida, USA, in May this year, adds to results from an earlier trial of the system's imaging performance — for its European CE marking — which confirmed that *EasyScan* performs at least as well as fundus on imaging ability and that all assessed pathologies were clearly identifiable, with

In short...

With diabetic retinopathy projected to increase, easy access to regular retinal exams for diabetic patients is increasingly important. This growing demand requires a faster, more accessible technology than fundus. Dr Squillace gives his opinion on a new SLO-based option — *EasyScan* — and the DRIVE trial preliminary results.

some, such as AMD, being identifiable at a very early stage compared with a fundus camera.

Figure 1: Zero-dilation *EasyScan* image OS central (green laser).



Figure 2: Zero-dilation *EasyScan* image OS nasal (green laser).



Opinion piece: Wide-angle view

Dr Steven Squillace is one of the first doctors in the US to use the system, having come across it at the American Academy of Optometry meeting in Boston, October 2011. "I had an old fundus camera that needed to be replaced" said Dr Squillace who is on staff at Johnson Memorial Medical Center and trained at Joslin Diabetes Center whilst attending the New England College of Optometry in Boston, Massachusetts, USA.

"I've worked with SLO technology for retinal evaluation over 10 years ago as part of a group practice. We saw the benefit of undilated fundus images, but also the drawback: ergonomics and economics. Patients needed to tilt their head to acquire an image, and costs for both the doctor and patient would be an issue in my current solo practice," he said. "When I heard there was a smaller version being launched, I thought it could be what I needed. Unfortunately it wasn't, because the price meant it wouldn't have worked out for my practice. Walking around the AAOPT meeting, I spotted i-Optics. I'd never heard of them but they had an SLO device that looked about the size of the HRT machine in my office. They were expecting to get FDA approval soon and I told them to get back to me when they had it. A few weeks later they called and said they had it!"

Dr Squillace has so far used the new technology on over 100 patients. "EasyScan is wonderful. It's better than a fundus camera — I can't think of an application for which a fundus is better except, maybe, for making hard copy print. It gives us a great view of the internal retina via a 532 nm green laser and choroid via a 780 nm infrared laser. This allows for early detection of maculopathies not typically seen by dilated fundus exam, and thus proper nutritional counseling and referral to an ophthalmologist if indicated. The ability to scan into a 2 mm pupil even if a patient has mild cataracts is an advantage over white light cameras. The instrument also images central vitreous floaters so that patients can see their anomaly by the vitreous movie feature. I've had three patients in which I saw changes in the macula that I would not have seen with a fundus camera, even if I had dilated the pupils. I take two pictures, one of each side, and that gives me a 60 to 65-degree view, allowing me to analyse the major eye structures."

Dr Squillace says his experience confirms that *EasyScan* eliminates the need to dilate but that his protocol remains to dilate on a first visit: "I want to be sure I'm getting the outer reaches of the retina." He also dilates trauma patients, but "I use *EasyScan* to document the central retina." For routine check-ups, however, he now uses it exclusively unless a patient asks to be dilated, which rarely happens. "Patients love *EasyScan* because it makes scheduling much easier," Dr Squillace explained. "They can schedule much closer to the examination time because we don't need to apply drops and so there is no waiting. Patients can insert contacts, if worn, and go back to work or school and see!"

1. DRIVE is a head-to-head clinical trial comparing the performance of the confocal *EasyScan* to a traditional fundus camera for the early diagnosis of Diabetic Retinopathy. Randomized and rater-blinded, this comparator study looked at 100 people with diabetes at the Eye Hospital Rotterdam, the Netherlands. Trial participants were 18 or older, with 58 being female and 42 male. Mean age (\pm standard deviation) was 60 \pm 11 years. All participating patients received retinal imaging with both the *EasyScan* confocal SLO system and a conventional fundus camera; they were first subject to retinal imaging using *EasyScan*. Endpoints included normalized sensitivity and specificity, referral rates for follow-up exams, false

positives and negatives, and the percentage of gradable images for both instruments. i-Optics is to present detailed findings at this year's ARVO Annual Meeting, in Fort Lauderdale, Florida, USA, in May.

Would you change from fundus to SLO?

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More information about the *EasyScan* can be found on the company's website at www.i-optics.com

