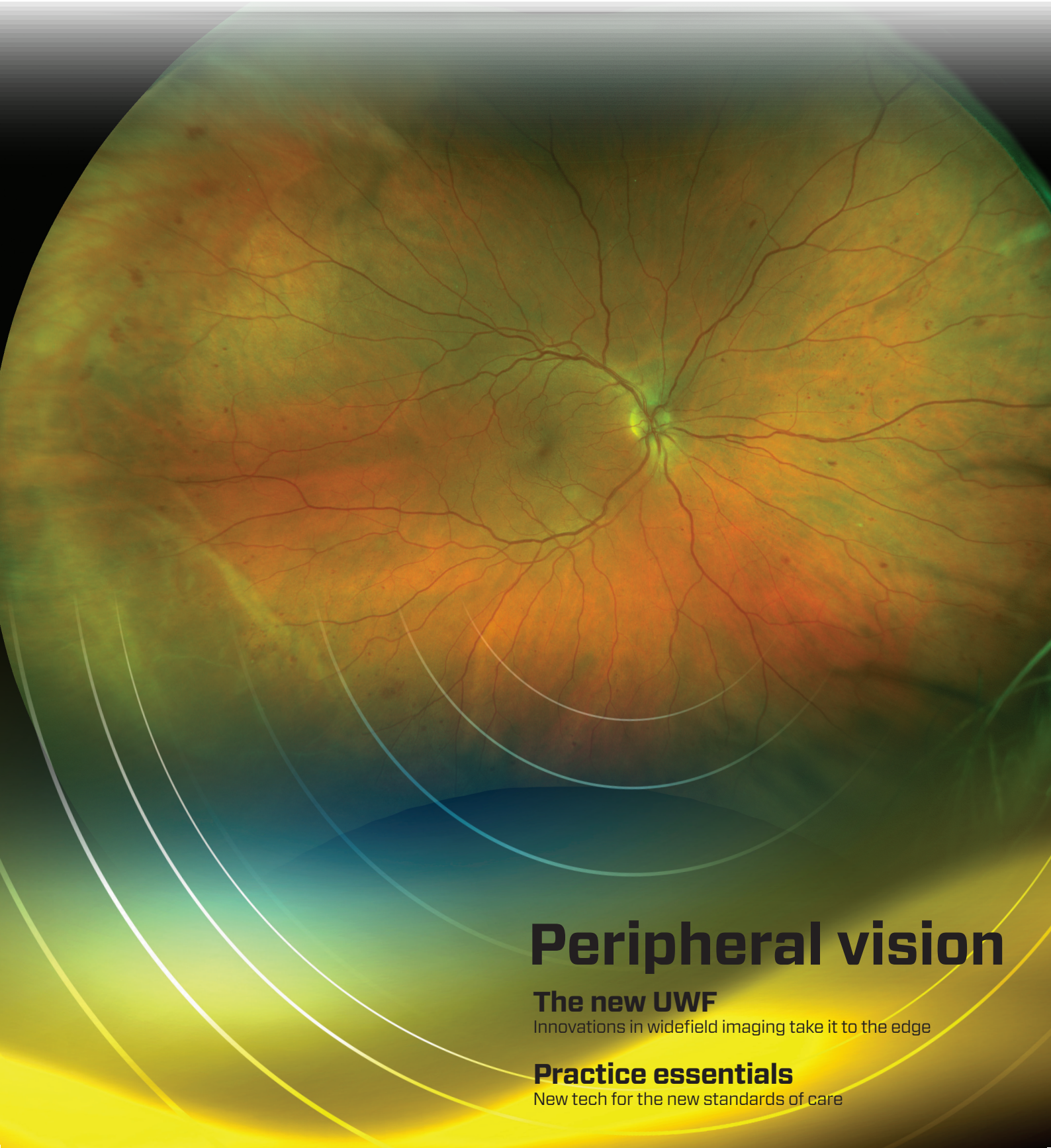
equipment
June 2020
Optometry AUSTRALIA

New technologies and treatments in eye care



Peripheral vision

The new UWF
Innovations in widefield imaging take it to the edge

Practice essentials
New tech for the new standards of care

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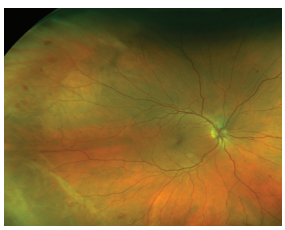

Cover: OPTOS MONACO ULTRA WIDE FIELD SCAN reveals moderate NPDR with peripheral lesions and no DME. IMAGE MICHAEL SINGER MD.

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Monaco takes pride of place

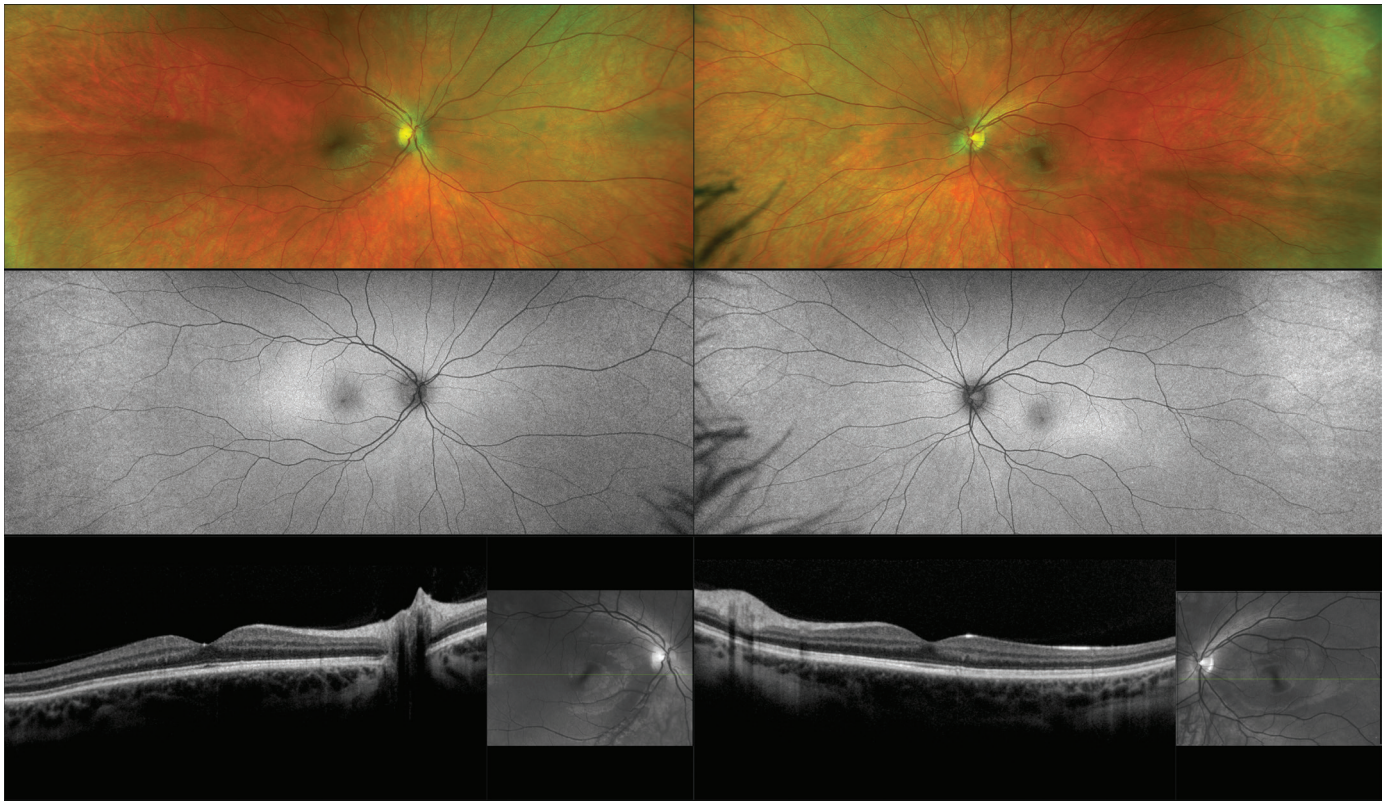

Figure 1. Scan image from Monaco UWF imaging device with integrated OCT

Michael Hare
Dip App Sc OptFAAO DPA Grad Cert (Ocular Therapeutics)

Eyecare Plus
Benowa, Stockland and
Burleigh Heads QLD

Equipment
Monaco UWF with integrated OCT

Supplier
Optos

My team of optometrists and I have been providing optometry services on the Gold Coast since the 1970s.

We have always taken pride in our state-of-the-art equipment at our Benowa and Stockland locations, where we provide retinal and slit lamp biomicroscope photography, optical coherence tomography (OCT), Optos ultra-wide field retinal scanning, visual field analysis, corneal topography and pachymetry.

When I decided to open my third practice at Burleigh Heads on the Gold Coast, I wanted to set the practice apart. Given the level of care my team and I provide to our patients in the other two locations, it was only natural to expect that they would expect this in the new location but we only had room for one device.

I decided to purchase Monaco from Optos – the first combination ultra-wide field retinal scanner, autofluorescence and OCT.

It has always been intriguing to me—in fact mystifying—that optometry hides away some of its most incredible assets. In our Burleigh practice, Monaco has pride of place; it's featured in an 'Eye Max Eye Scan Theatre' in the front window, demonstrating to patients that this practice values and provides quality clinical care.

The room features glass that turns opaque with a flick of the switch to give patients privacy during their scans. The Eye Max Eye Scan Theatre also displays the images on a big screen.

Monaco

Monaco produces a 200-degree, single-capture optomap image in less than half a second and also provides cross-sectional 40-degree OCT views of retinal structures. The unique nature of the compact two-in-one model improves practice efficiency and generates increased clinical data.

Optomap images and OCT scans are also correlated to allow for an in-depth pathology exam, meaning practitioners can perform a comprehensive examination that tests for ocular disease and various potential retinal issues. Additionally, its compact

Figure 2. In the Burleigh practice, Monaco is on display at the 'Eye Max Eye Scan Theatre,' which features glass that turns opaque with a flick of the switch to give patients privacy during their scans.

size means it occupies less clinical space than multiple devices would have, while also minimising patient movement.

Monaco improves patient care by offering us the ability to perform an assessment of the macular and the peripheral retina speedily. It's an immense step forward in optometry's ability to offer its services as the gatekeeper for primary eye care.

Monaco is the first in its category, being able to perform ultra-wide field retinal scans, autofluorescence and OCT.

The three-in-one technology, associated space saving footprint and amazing automation makes it so easy to use.

Practice protocol

Imaging is generally performed as a pre-test, requiring an assistant only to enter patient details and position the patient. This, in itself, is a massive time saving measure, a huge advantage in a busy optometry practice.

At our practices, we offer an Optos scan to all new patients, which provides a base line for future comparison. For regular returning patients, this is every two years, increasing to yearly over the age of 65. There are, of course, many variations to these protocols based on a patient's clinical situation.

Our practice is seen as different, invested in the technology and training that defines our deeper focus on eye health. Such technology offers an additional revenue stream and allows for long-term patient follow up care when working in co-management with ophthalmology.

We never stop learning in optometry and half the fun of these new technologies is the truly amazing array of features that assist in interpretation and assessment of the scans taken. I believe that the standard of optometry care will soon be ultra-widefield retinal imaging with autofluorescence and OCT, and there is only one device that can do that: Monaco. ◆

SITA Faster 24-2C

A new paradigm in automated perimetry

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GradCertOcTher

OKKO Eye Specialist Centre
Clinical Optometrist

Supervising Clinician
Queensland University of Technology
(QUT) Optometry Clinic

Equipment
Humphrey Field Analyzer (HFA) 3
SITA Faster 24-2C testing strategy

Supplier
ZEISS

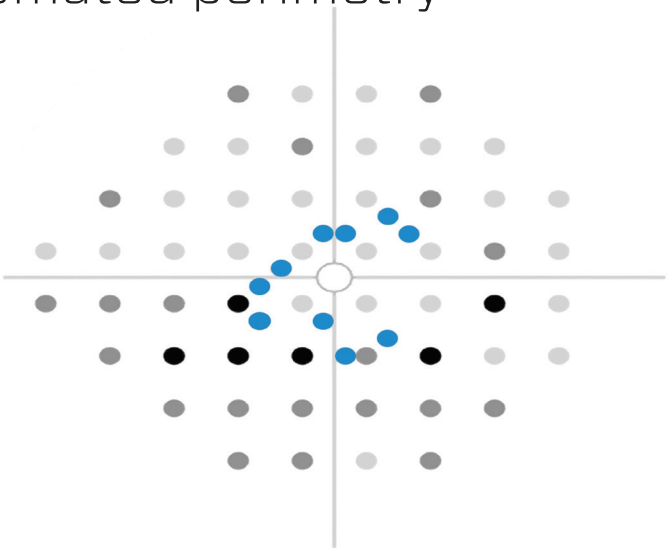

Figure 1. The 24-2C test pattern. The blue dots represent the additional 10 points from the 10-2 field, which have been selected based on their correlation to the parts of the papillo-macular bundle most sensitive to glaucomatous damage.

Historically, automated perimetry has been perceived by both patients and practitioners as a somewhat arduous test in the detection and monitoring of glaucoma. The importance of the visual field testing is indisputable, particularly as it is one of the only ways to quantify the functional impact of glaucomatous disease. However, performance and interpretation of results have long been plagued by subjective factors such as poor patient concentration.

The SITA Faster strategy on the Humphrey Field Analyzer (HFA) 3 offers faster testing times than its SITA Fast and SITA Standard counterparts – mean test times were reduced by 30.4 per cent and 53.5 per cent respectively, in a validity analysis conducted by Heijl et al.[1] These reductions have been achieved through a series of modifications, including removal of false negative trials and blind spot monitoring (although these can be turned on at a practitioner's discretion); commencing field testing at age-expected normal threshold stimulus intensities (as opposed to the standard 25 dB) and therefore requiring only one staircase reversal; and removal of a second check of a missed suprathreshold presentation.

Results between SITA Faster and SITA Fast were highly comparable, indicating that SITA Faster was a suitable replacement for SITA Fast.[1] There were mild differences between SITA Fast and SITA Standard. However, the reduced testing time with SITA Faster overall lends itself to increasing the frequency of automated perimetry which may ultimately be more useful in a clinical situation – it has been well-established that the more visual fields that can be performed within a given time, the more power we have in detecting early glaucoma and progression rates.[2]

The newly-available SITA Faster 24-2C on the HFA has adopted the SITA Faster testing strategy while offering more information in the central field. The SITA Faster 24-2C has been estimated to be around 20 per cent faster than SITA Fast 24-2, depending on the presence and/or severity of field loss.[3]

Practitioners are growing increasingly aware that certain patients develop visual field defects within their central 10 degrees that correspond with the parts of the papillo-macular bundle most susceptible to glaucoma damage. Identification of these central and paracentral defects is particularly important, given that this is likely to have a greater and more rapid impact on quality of life compared to peripheral changes.

The 24-2C test pattern takes 10 points from the 10-2 field known to be most vulnerable to glaucoma, and overlays this on the standard 24-2 test pattern (Figure 1). This subsequently offers the practitioner insight into the integrity of a patient's central field, without having to run an additional visual field test which would be more time-consuming in clinical practice.

The SITA Faster 24-2C has rapidly become the routine testing strategy in my practice which sees a significant number of patients who are either glaucoma suspects or have established glaucoma.

The combination of faster testing time while providing additional clinical information, improved patient concentration and increased test reliability and repeatability have enhanced the experience both for me and my patients. They report increased confidence in performing the visual field, especially compared to previous tests that they may have undergone, and are therefore more receptive to returning for repeat field testing.

The reduced test time has also led to improvements in clinic workflow through the day. The HFA3 provides

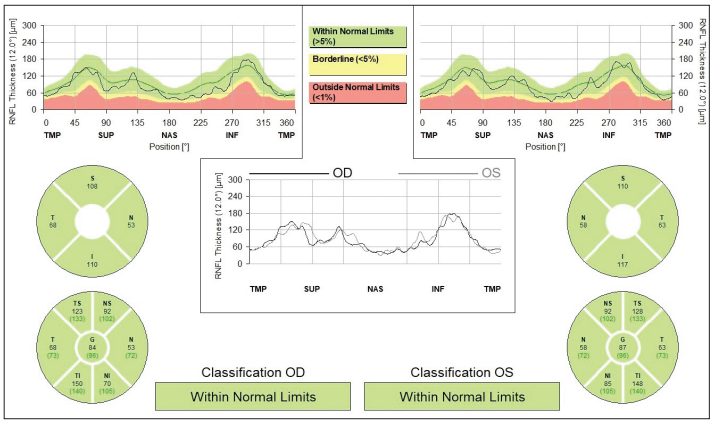

Figure 2. Patient is within normal limits in each eye for past few years.

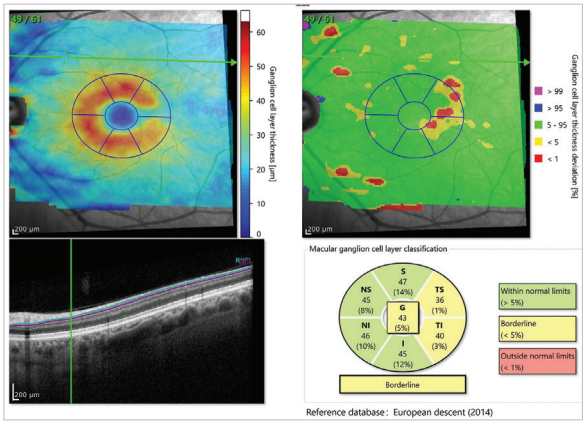

Figure 3. On patient's recent visit, ganglion cell analysis shows temporal and inferotemporal thinning in the left eye.

detailed step-by-step instructions for patients, so that a clinical assistant can be entrusted with running and supervising the field tests.

The practitioner can be confident that patients are provided uniform and accurate directions every visit. Given that an average SITA Faster 24-2C takes two-to-three minutes to run, assistants are also more likely to stay with the patient for the entirety of the visual field test, and can therefore provide real-time encouragement and feedback regarding fixation and positioning. The field results can then be easily printed or electronically transferred into FORUM Data Management Software for practitioner viewing.

Using the Glaucoma Workplace module within FORUM, it is a simple matter to navigate between the visual field results of each visit or to bring up the guided progression analysis (GPA) of any given patient. The GPA provides trend-based analysis of the rate of progression and can be generated for any and all of the SITA testing strategies on the HFA3. Thus, it has been a seamless transition to incorporate SITA Faster 24-2C into practice, as we can retain the baseline results of patients who have previously undergone SITA Fast or SITA Standard 24-2 testing. Already, the SITA Faster 24-2C has provided invaluable additional clinical information for a number of patients with established glaucoma and who were previously glaucoma suspects, as demonstrated in the following case report.

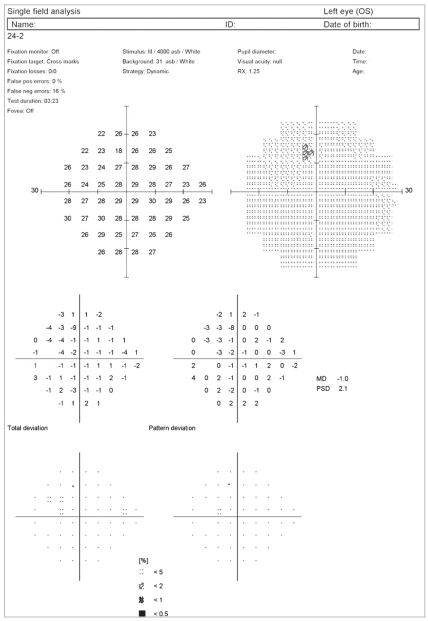

Figure 4. SITA STANDARD 24-2 shows patient within normal limits.

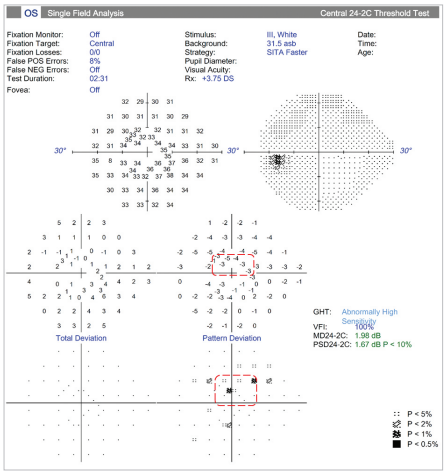

Figure 5. At most recent visit, 24-2C SITA-Faster shows superior defects in the additional 10 central points (denoted by the red dashed box).

CASE REPORT 1

A 54-year-old female had been monitored in the practice for the past three years as a primary open angle glaucoma (POAG) suspect, left eye more so than right. Intraocular pressures were mildly asymmetric and elevated in the left eye (right eye 15-17 mmHg, left eye 19-21 mmHg). There was a known maternal family history of glaucoma (mother and aunt). Retinal nerve fibre layer (RNFL) analysis (Figure 2) and SITA Standard 24-2 automated perimetry (Figure 3) were both within normal limits in each eye for the past few years.

At this patient's most recent visit, ganglion cell analysis (GCA) showed subtle temporal and inferotemporal thinning in the left eye (Figure 4), and 24-2C SITA-Faster showed corresponding superior defects in the additional 10 central points (denoted by the red dashed box) (Figure 5). In light of the family history, the patient's young age and the results from the SITA Faster 24-2C about the early GCA thinning, topical hypotensive medication treatment in for the left eye was commenced. ◆

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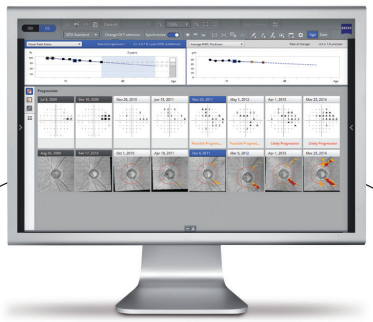

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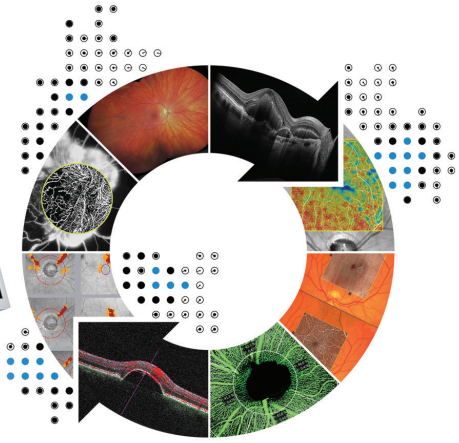
Eye Care Data Management

FORUM® from ZEISS is a scalable and flexible eye care data management solution that streamlines practice workflow, providing access to all patient examinations, and integrates with existing IT landscapes and diagnostic instruments.



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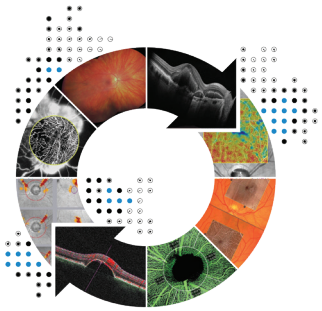

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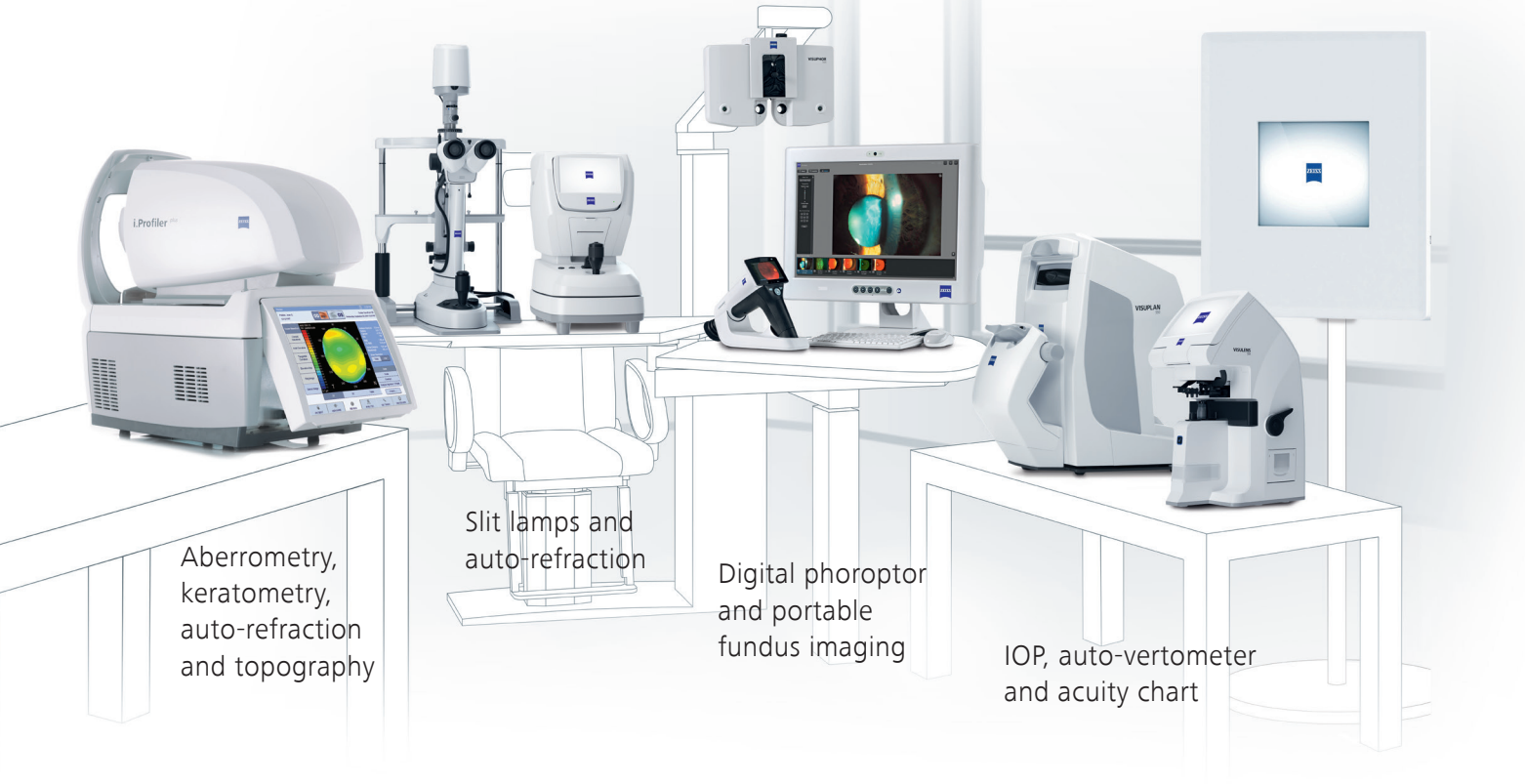

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Seeing beyond

Photography of the meibomian glands

Building patient education and compliance with slit-lamp imagery

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Eyes@Narangba QLD

Equipment
Topcon SL-D701 LED digital slit-lamp
DC4 digital camera with Infrared

Supplier
Device Technologies

Working in a diverse practice, we see a wide array of patients every day. Our interests are in neurological conditions and contact lenses, so dry eye is a common and overlapping condition we often see in our patients.

We typically encounter dry eye patients every day, yet facilitating treatment can be difficult in situations where signs exceed symptoms, such as in those with high pain tolerance or those with reduced corneal sensation. This is where having access to a wide array of equipment and technology is invaluable in facilitating patient education and compliance with treatment.

Our latest addition at work has proven instrumental in both detection/monitoring and in explaining/compliance of patients: the Topcon SL-D701 LED digital slit-lamp with DC4 camera with infrared (IR), which allows effective photography of the meibomian glands.

CASE REPORT

Mrs X presented with itchy and irritated eyes for the past four weeks. She also reported fluctuating vision and occasional foreign body sensation–these symptoms were worse on waking and in air conditioning.

There was no significant discharge. Cylindrical dandruff was evident at the base of her lashes.

Figure 1. Demodex blepharitis: cylindrical dandruff as seen above is pathognomonic for demodex blepharitis.

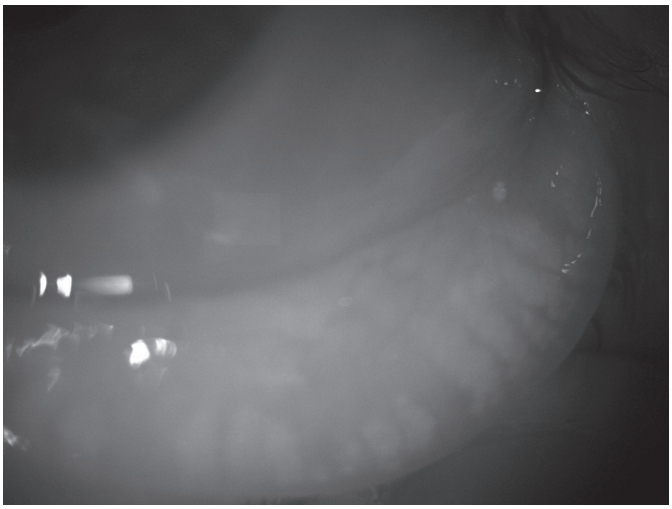

Figure 2. Meibography showing shortened, dilated and distorted meibomian glands.

Diagnosis

Visual acuity (corrected) was R6/6 L6/6 as previously noted, however she needed to blink to gain this level of vision.

As indicated in Figures 1 and 2, Demodex were clearly visible with slit-lamp biomicroscopy. The Topcon SL-D701 photography was instrumental in explaining Demodex to Mrs X, enabling her to completely understand and allowing us to initiate a response at the first appointment (which is a huge advantage to compliance and treatment).

Methods for assessing meibomian gland function

Tear film break-up time (TBUT): < 10s is indicative of poor tear film stability, often due to an imbalance between the muco-aqueous and lipid layers. While this imbalance is frequently due to compromised lipid layer secondary to MGD, a deficient aqueous layer can also be causative of this.[1]

Surface staining: tear film instability often leads to ocular surface damage (loss of the protective glycocalyx barrier) and staining with sodium fluorescein demonstrates this.[1]

Eyelid morphology/meibomian gland expression: assessment to quantify and qualify meibum secretions and their expressibility.

Meibography: newer techniques that utilise infrared light and slit-lamp biomocroscopy camera allow for detection and photo-documentation of meibomian gland morphology (shortening, dilation and distortion) and quantification of meibomian gland drop out *in vivo*. This is an invaluable tool in monitoring treatment progress and patient involvement in their care.

Schirmer: Ideally utilised as the last test in our diagnostic repertoire so as to not influence other results such as surface staining. <5mm in 5 minutes is indicative of dry eye levels 2-3.

Treatment Stages

The primary goal of all treatments of dry eye is to increase the quality and quantity of meibomian expression, reduce adnexal bacterial load and ultimately improve patient symptoms.

With Mrs X, initial treatment was aimed at targeting the Demodex in office (we used Oust Demodex Swab sticks). To coincide with the life cycle of the mite, lid cleaning was prescribed twice per day with Oust/Ocusoft plus for three weeks, followed by once per day for three weeks.

Other preparations include Cliradex and blephadex, all with the common key ingredient Tea Tree oil, or its derivative Terpinen-4-ol which is the main derivative in tea tree oil that provides the demodex killing effect.[2] Mrs X was keen to comply after seeing the slit-lamp photography and explanations.

A week later, Mrs X had a Blephasteam and lid expression, which was repeated every two weeks for the next four weeks. She was given warm compresses and lid massages to do at home. Again, her willingness to comply was greater after seeing the meibography. In six months of continuing with her 'homework,' the meibomian glands will be photographed again to ensure the treatment is effective.

These treatments were all that Mrs X required to relieve signs and symptoms at this stage. Other patients may require further treatments. As inflammation and low-grade infection are commonly associated with meibomian gland dysfunction (MGD), treatment algorithms recommend a staged approach in accordance with the severity of the disease.

Initial treatment stages are suitable for mild-to-moderate cases and include conservative measures such as blephasteam and expression accompanied by a lid hygiene routine of warm compress and commercial solutions to reduce bacterial load. Diluted baby shampoo is no longer first line treatment in lid hygiene as it has been shown to cause saponification of the glands.

For more recalcitrant cases, therapeutics may be required to help in reducing the adnexal bacterial load and return the meibum and surrounding blood vessels to their normal cellular structure.[3] Steroids and mast cell stabilisers may be required to reduce associated inflammation, while antibiotics and IPL have been shown to reduce inflammatory markers at a cytological level.[4] Severe cases can require more aggressive treatment and may require ophthalmology referral for autologous serum and cyclosporine.

Discussion

Dry eyes are a growing and insidious condition affecting the quality of life for many Australians. Many cases of dry eye disease are recalcitrant and multi-factorial, so patient education about the chronicity of the condition is important for long-term results. As with many chronic conditions, compliance to treatment is a constant battle for practitioners.

With the expression 'a picture is worth a thousand words,' equipment such as the Topcon SL D701 slit-lamp and DC4 are fast becoming essential tools in the education and compliance of patients, along with the monitoring of anterior ocular health. Cost and ease of use makes such equipment relatively easily accessible. We have only had the photography aspect to slit-lamp biomicroscopy for six months and we rely on it daily. ◆

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An asymptomatic Hollenhorst plaque

Adam Barron
B App Sc (Optom), BSc (Hons) (Physiology)
Heron Eyecare, Toowoomba, QLD

Equipment
Clarus 500 Ultrawide retinal camera

Supplier
ZEISS

Heron Eyecare is a full-scope practice in Toowoomba, Queensland which is the major service centre for the state's Darling Downs farming region. As such, we see a diverse range of ocular pathology, involving both the anterior and posterior segments. Because of the strong demand for high-precision and accuracy, Hugh Bradshaw (Director of Heron Eyecare) has invested heavily in Zeiss instrumentation. In particular, the Zeiss Clarus 500 Ultrawide retinal camera, which is a powerful tool for posterior segment diagnosis and management. It offers high speed and ease of acquisition, high-resolution imaging and the capability to penetrate dense media opacification and still provide meaningful data.

CASE REPORT

Patient RA, a 76-year-old male presented for a routine eye examination. There were no symptoms of vision loss or amaurosis fugax, transient ischaemic attacks or any neurological symptoms. RA's hypercholesterolaemia was medicated with oral rosuvastatin and there was no other past medical or ocular history of note.

Best corrected vision was stable at R 6/6 L 6/6 with mild hyperopic astigmatic optical correction. Pupil reactions were within normal limits bilaterally.

Slit-lamp examination showed early bilateral anterior cortical cataracts. Corneas were clear and anterior chambers were quiet bilaterally.

Intra-ocular pressures were R 14 L 14 mmHg at 12:00pm.

Then, Clarus widefield retinal photography revealed a 100 µm bright yellow lesion located at the bifurcation of a right superotemporal retinal arteriole. Red-free separation demonstrated that this lesion was inside the lumen of the retinal arteriole (Figures 1-4). This lesion was diagnosed as a Hollenhorst plaque.

RA's general practitioner was contacted immediately, and the patient was referred for urgent carotid duplex doppler ultrasound which showed carotid arteriolar stenosis of right 50-69 per cent, left 15 per cent due to arteriosclerosis. RA was subsequently referred to a vascular surgeon for an opinion on right carotid endarterectomy. The patient is awaiting surgical evaluation at the time of writing this report.

Discussion

Hollenhorst plaques are cholesterol emboli which obstruct the retinal arteriolar vasculature, which can cause symptoms of amaurosis fugax, visual field lesions which correspond to the area of retinal ischaemia, and transient ischaemic attacks.[1] Hollenhorst plaques are associated with ipsilateral carotid arteriosclerosis and aortic arteriosclerosis, which precede stroke.[1]

Stroke is a leading cause of mortality and morbidity in Australia, with 30 per cent of stroke survivors under 65 years of age and 65 per cent of stroke survivors dependent on another individual for their daily needs.[2,3] The

detected by Clarus Ultrawide

Figure 1. Clarus UWF retinal photography revealed a 100 µm bright yellow lesion

Figure 2. Red-free separation reveals location in the retinal arteriole.

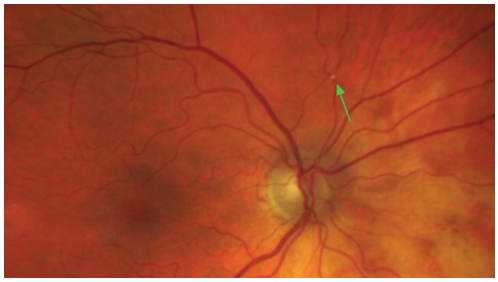

Figure 3. Hollenhorst Plaque (OD) colour

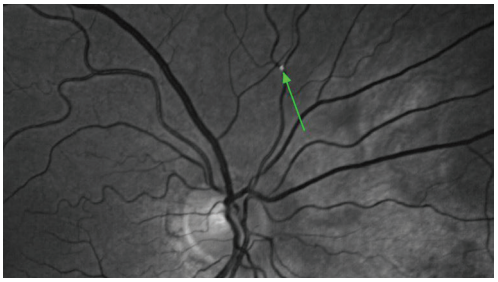

Figure 4. Hollenhorst Plaque (OD) red-free

significance of this 100 µm retinal embolus is that it is a precursor to stroke, which gives clinicians the opportunity for proactive medical or surgical intervention such as carotid endarterectomy which aims to prevent an imminent stroke.[5]

Fortunately, RA's embolus was not directly sight-threatening since it was located superonasal to the optic disc and therefore sparing the entire posterior pole, although paradoxically, RA was treated as a risk of imminent cerebrovascular accident until proven otherwise. It has been shown that carotid endarterectomy can reduce the long-term risk of stroke if carotid stenosis is greater than 50 per cent, however RA requires comprehensive surgical evaluation to determine whether or not he is an appropriate candidate for an endarterectomy.[5]

The Clarus 500 provided a wide field of view with high resolution, and with the assistance of red-free separation, which facilitated the diagnosis of Hollenhorst plaque beyond all doubt. The lesion was located within the lumen of the vessel at a retinal arteriolar bifurcation; it was yellow in colour and highly reflective.[1]

Image quality and patient comfort are also enhanced by the chin rest, rapid acquisition speed (< 0.2 seconds) and autofocus. The Clarus 500 minimises artefacts associated with movement and blinking while maintaining patient comfort. In fact, the Clarus 500 rarely shows artefacts of any description–movement, eyelid malposition, media opacities or otherwise.

The Clarus 500 provides the clinician a fast, easy and high-quality view of the retina with high resolution, convenient colour separation and minimal artefacts. This subtle cholesterol embolus was an incidental finding which has given medical practitioners the opportunity to prevent a potentially life-threatening event: a stroke. ◆

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OPTICARE: Modern diagnostics solutions for eye care

By focusing on quality service and top-notch products for over three decades, Opticare has become one of Australia's most trusted optical lens providers. Opticare delivers a world-class diagnostics approach that builds lasting relationships with independent optometrists nationwide. Today, Opticare clients are pleased to share their own perspective on some of our stand-out consulting room equipment and treatment tools that not only added value to their optical clinic and practice, but also made the diagnostic experience for patients better.

A complete strategy for dry eye treatment

Dr Jennifer Rayner
BAppSc(Optom) GradCertOcTher

Alleve Eye Clinic
Adelaide SA

Equipment
Eye Light and My Mask

Supplier
Opticare

Eye Light is the first known complete strategy for dry eye treatment. Intense Pulsed Light (IPL) technology alone has proven insufficient for meibomian gland dysfunction, but through Eye Light innovation, a powerful synergy between Light Modulation /low-level light therapy (LLLT) and optimal power energy (OPE)/IPL technologies, Eye Light now enables full dry eye treatment. Additionally, treatments for other related pathologies can be successfully done using Eye Light including blepharitis, chalazion, Demodex, dry eye caused by refractive and cataract surgery, post-blepharoplasty, and sty, as demonstrated by more recent clinical findings.

The My Mask treatment option serves as an economical introduction, only involving gentle stimulation of the meibomian glands. Light Modulation/LLLT technology stimulates cell ATP production and endogenous heating of the upper and lower eyelids. Overall, the LLLT results in a more stabilised tear lipid layer. You can always upgrade to Eye Light

'I run a dedicated dry eye clinic just outside the Adelaide CBD – we are about to celebrate our fourth birthday and the research into and management of dry eye just continues to grow.

An important tool in our "dry eye toolbox" is IPL – intense pulsed light. As part of a strategic management plan, the therapeutic use of this device to help manage the ocular inflammatory response often associated with dry eye cannot be underestimated. While there are several comparable units on the market, the deciding factor for choosing the Eye-Light from Espansione was two-fold.

First: ease of use. As the cooling fan system is in the head of the handle, there is no need for cooling gels. This means OPE /IPL can be done in the comfort of a massage chair in a matter of a couple of minutes–there is no clean-up of messy gel for the patient.

Second: the use of the red photo modulation mask offers 15-minute extrinsic heating of both upper and lower lids, making meibomian gland expression post-session much easier. Low-level light therapy is also thought to stimulate the mitochondria of damaged cells, offering an intrinsic form of decreasing inflammation and promoting healing.

Our experience so far is that most patients are only returning at around 12 months for their follow-up management session–meaning patients are saving both time and money on their dry eye maintenance. I am more than happy to recommend Opticare for more information about, and the supply of, the Eye Light.' ◆

VisionFit SC and 2Win-S: a great bit of kit

Rory Dowdall
BSc BVisSci MOptom

My Eye Care Centre
Hamilton QLD

Equipment
VisionFit SC refractor

2Win-S mobile binocular video refractometer and vision analyser

Supplier
Opticare

Adaptica's VisionFit SC is a wearable, wireless adaptive refractor; an all-in-one system of lenses that performs subjective sight examination, effectively replacing both the trial glasses and either manual or electronic phoropter functionality.

The VisionFit SC conveniently fits on the patient's head, is 100 per cent wireless and helps increase peripheral vision. The 2WIN-S enables the rapid measurement of binocular objective refraction in natural visual conditions for infants from two months up, seniors, those with physical impairments, even non-cooperative patients.

Together, the 2WIN-S and VisionFit SC make up the mobile wireless refraction system that comes in a convenient combo carrying-case serving all outdoor eye-care activities.

'When we opened "My Eye Care Centre" in Hamilton, we wanted to stand out for having the latest and greatest in technology, but we also wanted equipment that was easy-to-use, and also portable as we have a large client base in the local nursing home nearby.

The hand-held 2Win auto-refractor makes for a great screening tool for every patient and a good starting point for any refraction, and it connects seamlessly with the VisionFit SC over our practice Wi-Fi network, making for a smoother and quicker process with refraction and leaving more time to investigate ocular health and dry eye for our patients.

The 2Win has many great features that come as standard like pupil size measurements and pupillary distance measurements, as well as add-on features like dynamic pupillometry, lens-centering and corneal reflex testing for estimating phorias and tropias under a modified cover test scenario.

The wearable VisionFit SC makes the whole journey behind a phoropter less cumbersome for the patient and is an impressive change to the usual refraction set-ups that most clinics have; it allows seamless transition between lenses and has an in-built JCC with axis finder. However, the main advantage is the ability to have your patient walk around straight away in the refraction you have found, and use it in a real-life setting in our clinic.

It's a great bit of kit and I'd definitely recommend it to any practice that's interested in having that "wow factor" in the clinic and the added benefit of having a portable system you can take on the road with you as well.' ◆

An essential piece of equipment

May Phuan
BAppSc(Optom) GradCertOcTher

Optical Connect Optometrist
Brisbane QLD

Equipment
Visuscience Hidden LED Array Perimeter IVS-201A

Supplier
Opticare

The Hidden LED Array Perimeter IVS strictly conforms to the latest perimetry standard. It offers a wide range of test patterns and strategies including T30-2, T24-2, T10-2 for glaucoma diagnosis and T-Macula for macula function assessment.

Special test patterns are also included such as driver feasibility and monocular/binocular social security disability. The IVS series comes in a super silent design of chin rest and a fan-free power system that allows for a quiet and comfortable test. Its accessible user interface and operation process enables easy accessibility to the system without any instructions.

IVS' Blink Control enables patients to avoid dry eye,

Continued page 14

Opticare essentials

From page 13

relax and stay focused. It automatically measures the patient's pupil diameter and prints it out.

This provides information on the correlation between pupil size and perimetry result, helping to avoid any errors in interpretation with very small pupil size. IVS provides more than just a comfortable, quick and accurate perimetry test, the device is economical, and, most importantly, very reliable for optometrists.

'A Visual Field Analyser has become essential equipment in most optometry practices over the last decade. As more optometrists become therapeutically-endorsed, monitoring the progression of glaucoma has become a major part of co-management with ophthalmologists.

Having worked at a number of different practices, I have had the opportunity to work with a variety of different visual field perimeters such as the Humphrey Field Analyser 3, Humphrey Matrix, Medmont, Octopus 300 and Henson.

When I became a new business owner (on a tight budget) and found myself faced with a faulty device, I started to get a back-log of patients waiting for field tests. I was very fortunate to be recommended the Visuscience IVS-201A visual field perimeter from Opticare.

Initially, I was sceptical; the equipment claims to be comparable to other models at half the price, but I was pleasantly surprised at how well it delivered on those claims. IVS is a standalone machine with a touchscreen. It's very user-friendly, allowing me to navigate and perform tests with ease. The eye-gaze tracking is easily viewed and centred on the user screen. Patient centration is easy to adjust, the chin rest controls are on the touchscreen.

The 24-2 test, when performed on a healthy eye, can be completed in just under two minutes. The report analysis, including the glaucoma progression analysis, can be viewed on the screen, printed or exported to Optomate Touch with ease. I'm very happy with the wide choice of tests including short-wavelength automated perimetry (SWAP) and Esterman Binocular test. There is an icon tab on the testing screen with a lady explaining to the patients how to proceed with the test, which I find very helpful.

I am very happy with my purchase of the Visuscience IVS-201A from Opticare and would recommend this visual field analyser to all my colleagues.' ◆

A very good machine at a very good price

Dion Stanbury
BOptom GradCert OcTher

Salisbury Optometrist
Salisbury SA

Equipment
Huvitz HOCT-1/1F

Supplier
Opticare

The Huvitz OCT (optical coherence tomography) is a fully-integrated system combining OCT, full-colour fundus camera and PC in one system. It provides OCT and fundus data in one screen, and its built-in computer delivers direct printouts. With just a click of one button, it creates a high-speed scans at HD image quality, providing extensive information such as the retina's 3D structure or macula's thickness and separation in a single image.

It provides multi-purpose functions for diagnosis and

enables automatic data analysis, including all modes of measuring: radial, raster, grid, 3D and macular line. With the Huvitz HOCT-1/1F, patients get efficient and detailed results through acquiring the anterior and posterior measurements in one place. All these powerful features come in an easy and intuitive interface.

Huvitz OCT ushers in the new era of retinal diagnosis with integration with Altris, a collaboration aimed at developing customised AI solutions for higher-level detection of retinal diseases. This integration enables the detection of up to 50 retinal diseases including age-related macular

OptiMed product showcase

Ocular Instruments ophthalmic lenses

Optimed is proud to have a well-established relationship with Ocular Instruments, a USA-based designer, producer and manufacturer of ophthalmic lenses of unparalleled sharpness and clarity. Ocular Instruments offers an innovative range of diagnostic, treatment and surgical lenses which are continuously improving and developing with the changing needs of the industry. Many ophthalmologists–and a growing number of optometrists–choose Ocular Instruments lenses within their practices as a testament to this dedication to innovation.

Ocular Instrument's growth within the Australian market is due to the increased exposure and availability of the product range in recent years, along with a better understanding of the quality and value of the product. The clarity and quality of materials and coatings, along with great value for money, help practitioners decide to make the switch to Ocular.

Ocular's extensive range of indirect lenses offers the choice of various ring colours for ease of reference, the option of polymer or glass materials and Ocular's patented LaserLight AR coating. This high-quality LaserLight antireflective coating gives not only indirect, but laser lenses, minimised reflection and maximised image brightness. Its unique hydrophobic properties make it extremely easy to keep clean and provides low reflectivity.

The gonio lenses available in the Ocular range, like the Indirect lenses, have a number of designs and sizes, such as various fissure sizes, flanges, lens angles, materials and magnifications. From your standard Universal Three Mirror Gonio, to your wide field MagnaView lenses, all your gonio needs are covered.

Dr Ashish Agar, a leading glaucoma specialist in Sydney says: 'As the name suggests, the "Ocular Magnaview" two-mirror gonio lens provides the highest magnification and clearest view of any gonioprism I have used. As a glaucoma specialist, I can say that it is an essential tool for diagnosis and management and is the only thing I take for my Outback Eye Service clinics in the bush.'

OptiMed offers optional engraving and a complimentary trial of any lens in the range, a 30-day money-back guarantee and one year manufacturer's warranty on all lenses. ◆

Huvitz HOCT-1/1F (cont)

degeneration, degenerative myopia, retinitis pigmentosa and diabetic retinopathy. The Huvitz HOCT-1/1F is exclusively distributed by Opticare.

'The Huvitz OCT is a very good machine, at a very good price. A single unit, it has been placed right next to my slit lamp on my chair and stand bench. It is quite intuitive and therefore easy to get started with measuring. It arrived tested and set up to use.

The built-in touch screen is excellent. The reporting features are also excellent and so I sit the patient next to me and we go through the results together.

It needed one video conference to join my Wi-Fi via an ethernet connection. Now the information goes to my laptop via a web browser and then the reports can be easily looked at and saved to files if need be. Another feature is a link to a macular database that uses artificial intelligence to analyse the results.'

To receive more information about the products mentioned in this article and to know more about our wide range of modern diagnostics solutions, visit www.opticare.com.au. You may also call 1800 251 852 or send an email at info@opticare.com.au. ◆

Set apart from the competition

Alison Steer
B.Optom Cert Oc Ther Adv Cert Glauc

Principle optometrist and owner
Alison Steer Optometrist
Albany WA

Equipment
Essilor Vision-R 800 digital refractor

Essilor Wave Analyzer Medica 700 (WAM700) wavefront aberrometer

Supplier
OptiMed

Like most busy optometrists, I hadn't thought much about the background of our refraction process since university. For many years, refraction never changed, it just was 'what you did.'

Essilor's Vision R-800 (VR-800) digital refraction device turned this idea totally on its head. Many years of research has produced a digital refractor that is 10-20 times more accurate than anything we have had to date. The VR-800 takes refracting down to 0.01 dioptres, which takes prescribing the best solutions for my patients to the next level.

New predictive algorithms make the whole testing protocol much quicker and I can spend more of my chair time on discussing ocular health and vision care options with my patients.

The VR-800 is a compact device that is easy to manoeuvre. It's also very comfortable for my patients, who say that they like the increased viewing angle which makes them feel less claustrophobic. The VR-800 fits easily onto existing chair and stand configurations.

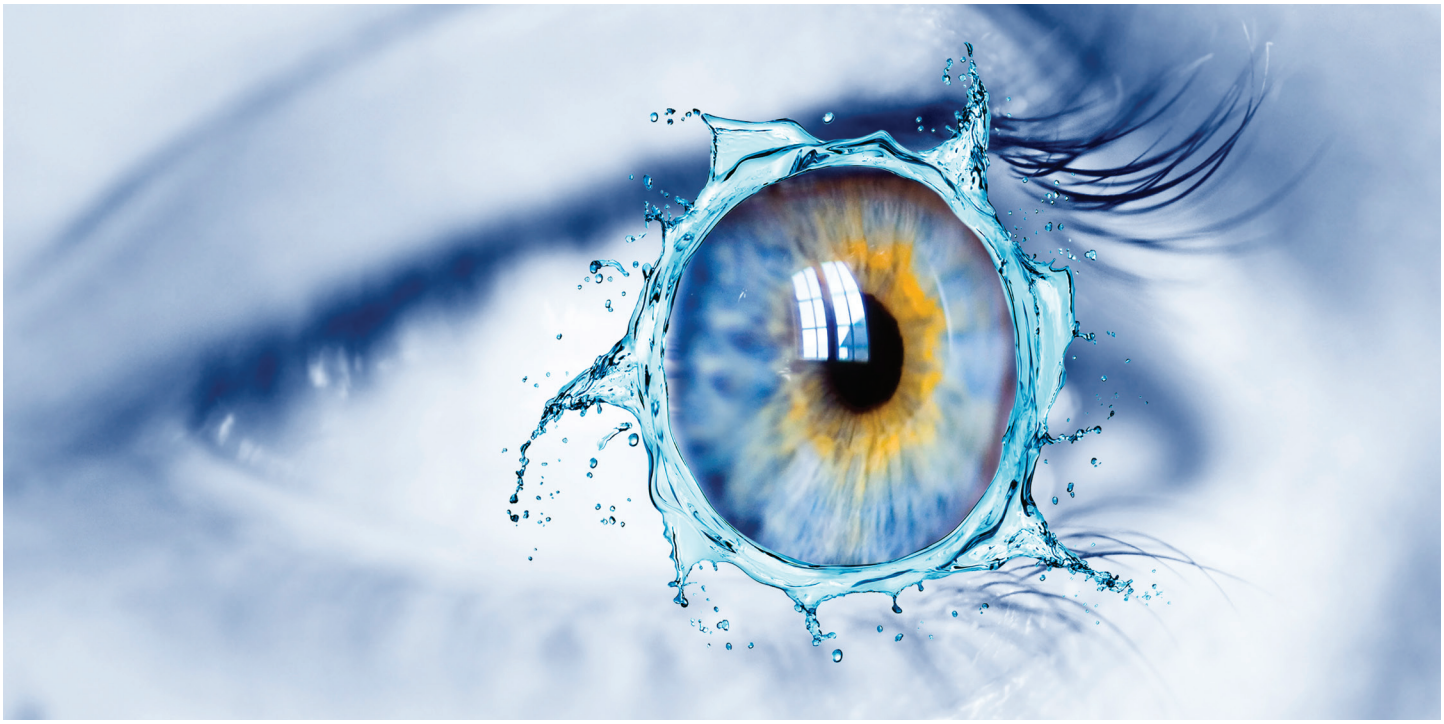
After I purchased the VR-800, I found the whole instillation process as streamlined and non-disruptive as possible. The OptiMed team were a dream to work with. As it is a totally new install–the first in Australia–OptiMed had the whole layout set up in their workshop and everything tested before they brought the new equipment to my practice. They worked around my schedule and we managed to keep one exam lane fully operational and the practice busy while we installed the new exam lane.

Our pre-testing procedure has also been brought into the 21st century (and beyond) with the addition of the Wave Analyzer Medica 700 (WAM700) wavefront aberrometer. This compact machine does a complete 'wellness' visual analysis in around 90 seconds by combining wavefront analysis, pachymeter, topographer, autorefractor, NCT and anterior chamber analysis. My staff finds it extremely easy to use and it has been easily slotted into our pre-testing protocol and patient flow. The results from the WAM700 are then showed to the patients on a large display screen and their total ocular health assessment can be easily displayed and discussed.

Coupled with the revolutionary refracting process, Essilor has developed the ECP Companion and Consultation Suite. Far from being the 'little brother' of the process, this management system is an equal contender for being a significant game changer. It has revolutionised the practice workflow and has significantly improved the patient journey. It uses all the data collected to present easy recommendations to the patients and makes offering individualised solutions a simple and easy process. Using the Consultation Suite provides an amazing visual demonstration of the consultation results for the patients and has greatly elevated the patient experience.

Taken together, the VR-800, WAM700 and the ECP really produce the 'WOW' that we are always striving to achieve and that sets us apart from our competitors. ◆

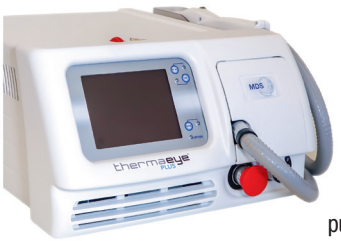
Thermaeye Plus.
Next generation IPL for MGD.



IPL has been shown to be a safe and efficient treatment for MGD and with the advanced technology of Thermaeye Plus you can take treatment even further. The compact device comes with a host of ground breaking features and it's versatility allows you to increase the scope of treatment for your patients.

Maximum comfort for the patient

With Thermaeye Plus inbuilt Fractionated Pulse Technology, we see all the clinical benefits of IPL treatment for MGD delivered to a higher degree of safety and efficacy. By breaking up each pulse of light into multiple pulses, creating Thermal Relaxation Time, the device can provide a greater range of energy and treat all skin types (Fitzpatrick I-VI) reducing the risk of thermal damage.

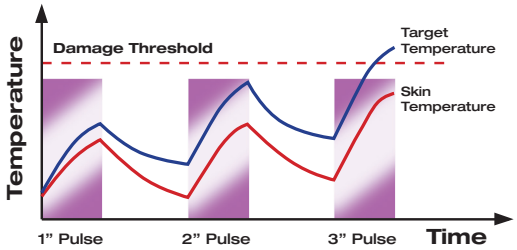


Power Control

The device continually monitors the number of pulses emitted and the effectiveness of every light pulse, assuring the operator of the efficiency and accuracy of the energy emitted during treatment.

Advanced Cooling System

The advanced integrated skin cooling system of the device's handpiece prevents excessive temperature increases to the epidermis, assisting with patient tolerance and safety. Interchangeable filters allow you to easily select the appropriate wavelength to match the application.



Advanced IPL Technology with cost savings

The next generation technology of Thermeye Plus even saves you money. It comes with the first 30,000 shots included allowing you to treat over 2000 patients before you need to replace the flash cartridge. Over time this can save your practice up to $100,000* in expensive consumables costs.

* Based on 4 shots per eye per treatment

Available exclusively from OptiMed.
Call 1300 657 720 or go to optimed.com.au

OptiMed
MAKES YOUR PRACTICE PERFECT

BOC Instruments

Profiles in excellence

Henson 9000 Visual Field Analyser

Henson Perimeters are the first choice of UK optometrists and have a rapidly-growing install base worldwide. The Henson 9000 requires no maintenance and has an ergonomic, compact design ideal for space-constrained environments.

The intelligent 'Zippy Adaptive Threshold algorithm' (ZATA) uses the efficient Bayesian method to derive threshold values and it includes powerful tools for analysing progression. Where patients have been tested previously, ZATA will build on this prior data for subsequent tests, rather than starting a new test from age norm data, as is common with other perimeters.

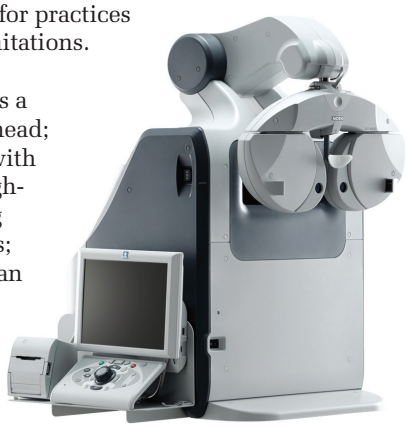
Time duration between test stimuli automatically adjusts to each patient's responses and a 24-2 ZATA threshold test can typically be completed with high sensitivity in as little as two minutes per eye, reducing patient fatigue and optimising test reliability and accuracy.

ZATA uses the standard printout for universal compatibility and comparison with data from other perimeters.

Nidek TS-610 workstation

The TS-610 is a tabletop subjective refraction workstation that integrates a chart and a refractor into a single unit. It redefines conventional refraction systems and significantly minimises the examination footprint. The compact design enables easy installation and office assimilation, while the stylish design complements the progressive image.

The TS-610 series is a remarkably flexible workstation, especially for practices with confined space limitations.



The TS-610 incorporates a sophisticated refractor head; operation-rich control with colour touch screen; high-resolution, space-saving distance and near charts; and built-in printer. It can also interface with the Nidek Autorefractor, Tonoref and Lensmeter models.

Aurora portable camera

BOC Instruments is the Australian distributor for Optomed Oy (Ltd.) Finland, a market leader specialising in hand-held fundus imaging.

The Optomed Aurora is an innovative, non-mydriatic retinal camera, which introduces a totally new concept in fundus imaging and design where high quality imaging and sleek design meets simple ease of use.

The Aurora is the only hand-held fundus camera on the market that features a 50-degree field of view; a clear, high-quality screen display; state-of-the art practical and elegant modern design; exceptional lens system; dual charger; eye surface imaging module; and an intuitive graphical interface with simple icons.

Its versatile compact size, with nine internal fixation targets for peripheral imaging, internal image storage and WLAN or USB connectivity, makes the Aurora ideal for hand-held or slit-lamp-mounted use for colour and red-free fundus imaging and anterior eye imaging anytime and anywhere.

Optovue SOLIX OCT

Built upon 27 years of experience in OCT technology advancement, Optovue's new SOLIX takes OCT to an unprecedented level with new capabilities, visualisations and applications that empower practitioners to identify and manage numerous pathologies from the front of the eye to the back.

SOLIX delivers pristine images of retinal structures with the 16 mm wide x 6 mm deep 'FullRange' retina scan. Full Range anterior segment imaging captures the entire anterior chamber in a single scan with 18 mm wide scans for comprehensive assessment of cataract patients and refractive surgery candidates. Proven glaucoma analytics combine structural and 3D AngioDisc Analysis and trend reports.

SOLIX delivers multiple tools for disease management that improve throughput and enable superior patient care, including wide-field anterior and posterior OCT; non-invasive 3D OCT angiography with AngioAnalytics; quantification of epithelial, stromal and total corneal thickness with the 10mm Corneal Layer Map; fundus and external eye photography as well as imaging of the meibomian gland structure.

NIDEK

NEW TS-610 Tabletop Refraction System

- Chart and refractor in a single unit
- Compact footprint and efficient workflow

NEW RT-6100 Intelligent Refractor

- Streamlined Refractor Head
- Comprehensive testing with intuitive interface

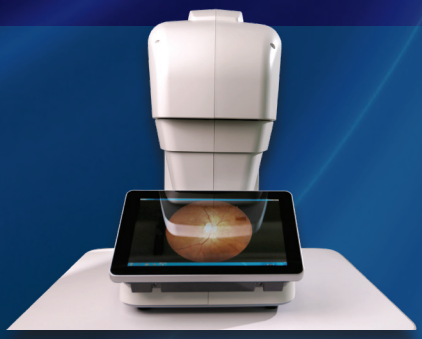
NEW LEXCE Trend Edging System

- Unique design all in a compact footprint
- Integrated versatile Drill unit, Digital Blocker, Tracer and Shape Imager

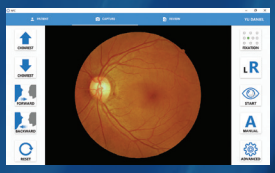
TONOREF III
AUTO REF/KERATO/TONO/PACHYMETER

A Masterpiece of Combination

Auto Refractor – Keratometer - Tonometer - Pachymeter

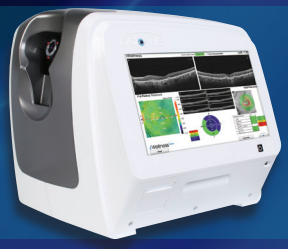


NFC-700



Non-Mydriatic LEDRetinal Camera

- Fully Automated with 3D Tracking, Auto focus and Auto Capture
- Compact - integrated Tablet PC with HD touch screen, Win 10 OS
- Sharp consistent HD Retinal and Anterior Eye imaging



optovue

iScan™ OCT

Elevating eye health care with the touch of a button

- Fully automated operation with a simple touch of a button
- Easy as 1,2,3... enter patient information, position patient & touch to start
- iScan vocally guides the patient through the entire scan process

SBM Sistemi

idra

3D Meibography

NEW upgraded model with additional automated features

- Multi-functional compact device for evaluation of dry eye
- Slit lamp mountable or stand alone
- Auto evaluation of Lipid Layer, tear BUT, Tear meniscus & Eye Blink detection

Righton

NEW Retinomax ScrEEEn Series

- Hand–held Auto Refractor/Keratometer
- Low-reflection 100 degree tilting screen
- 180 minute battery capacity now twice that of conventional models
- Automated Axis Compensation feature and expanded measurement range

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TOPCON
Healthcare Solutions

MAESTRO2

Fully Automated OCT & True Colour Fundus Photography
...**now with OCT-Angiography!**

OCT-Angiography

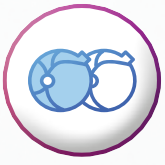
At the touch of a button, the Maestro2 provides instantaneous vascular structure information in an easy to interpret simple format, together with comprehensive segmentation manipulation to enable advanced diagnosis.

The Hood Report for Glaucoma and Probability Maps

Widefield OCT (12mm x 9mm)

Follow-Up Scan Mode to facilitate repeat scans of the exact same area

Anterior Segment Caliper/Angle Analysis



True Colour Fundus Photography, with Red-Free and Peripheral Mosaic mode

Contact your Device Technologies representative to receive a **$20K discount when you Trade-in** your old OCT or Fundus Camera.

Offer ends June 30, 2020.

OPHTHALMIC DIAGNOSTIC SOLUTIONS

TOPCON Healthcare Solutions

Topcon TRK-2P

Completely automated alignment, focus and measurement acquisition. Flexible colour touch-screen for versatile positioning. Integration with Practice Management Software.

All four measurements, in both eyes, in less than 60 seconds!

- Auto-Refraction
- Auto-Keratometry
- Non-contact Tonometry
- Non-contact Pachymetry

Topcon CV-5000

Computerised Vision Tester - optional integration with PC-50s LCD Visual Acuity Chart.

- Automated Refractor Head controlled by KB-50 colour touch screen & dial controller
- Advanced integration – pull through previous script and/or auto-refraction. Export final subjective data to practice management software

Topcon SL-D701

Topcon's state of the art digital ready Slit Lamp with tower style illumination column.

- Homogeneous LED illumination
- 5-step magnification up to 40x
- 14mm Slit illumination
- DC-4 Digital Camera option
- Optional enhanced filter system for Meibomian gland observation and improved Fluorescein observation

Topcon CA-800

Corneal Analyser with Infra-Red Placido disk topography.

- Automated alignment, focus and capture – controlled by colour touchscreen or digital control stick
- Includes Meibomian Gland imaging, tear film breakup time, and Zernike Analysis reports

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Clarus Ultrawide broadens the field of view

Dr James Armitage
BOptom CertOcTher (ACO) MOptom PhD FAAO FACO

Professor of Optometry
Optometry Course Director
Head of Vision Science School of Medicine, Faculty of Health
Deakin University

Equipment
Clarus 500 Ultrawide retinal camera

Supplier
ZEISS

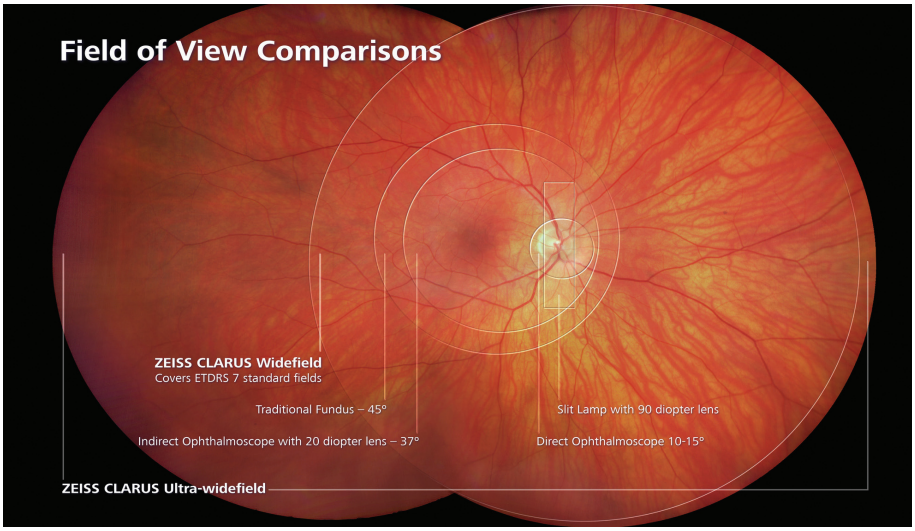

Figure 1. Approximate field of view for various imaging modalities. Image courtesy Zeiss.

Examination of the ocular fundus is a key aspect of optometric practice, however, single images from traditional cameras are limited to the central 45 degrees of a retina which extends past 200 degrees from the fovea.[1] Slit-lamp biomicroscopy provides approximately 97 degree field of view with scanning (through dilated pupils), however photo-documentation in the periphery is limited. Binocular indirect ophthalmoscopy typically allows for approximately 40-degree dynamic field of view[2] however this requires pupil dilation (not favoured by some patients) and again, photo-documentation of peripheral lesions poses technical challenges. (Figure 1).

Numerous ultra-wide fundus imaging systems now enable capture of over 200 degrees of fundus, without the need for pupil dilation. Original devices were limited to two channels (red and green) effectively rendering the operator blue/yellow colour-deficient, however the recent incorporation of three-channel images with resolution in the range of 7-10 microns in the Clarus 500 overcomes these limitations (Figure 1).

Here we describe two case reports of retinal findings documented with the Clarus 500 ultrawide camera. The first: an observation of previously undiagnosed retinal signs in a patient with no other risk factors for the condition. The second features the use of multimodal imaging to monitor recovery from a known event and rule out emergent pathology.

CASE REPORT 1

A 25-year-old male had ultrawide field imaging performed through undilated pupils with the Clarus 500 camera. During the capture of an ultrawide montage image, the edge of a peripheral retinal lesion was noticed by the operator. The images were automatically montaged (Figure 2 shows an example of images from the right eye with undilated pupils) and the lesions were then viewed with BIO through dilated pupils to confirm the extent of the lattice. No further lattice was noted with BIO.

Given the patient's demographics (young, low hyperope with no risk factors that might prompt dilation other than as a routine DFE for a new patient) this finding has a beneficial impact on patient care as he has now been counselled about the need for regular review and to present urgently for optometric or ophthalmological review in the event that he notices any photopsia. Moreover, as lattice can have an autosomal dominant mode of transmission, this discovery allows for family members to be screened and counselled appropriately.

CASE REPORT 2

The second case is an example of how multimodal imaging can be used to monitor retinal signs to rule out further pathology. This case shows the retina of a 64-year-old male with a resolving branch retinal vein occlusion (BRVO) and a large choroidal naevus superior temporal to the disc. By combining OCT and Angioplex data with the Clarus ultrawide field imaging the area of capillary dropout (Figure 3A) and retinal thickening (Figure 3B) can be seen but by examining the Angioplex B scan (Figure 3C) and the clinician can be satisfied that there is no neovascularisation present.

The advent of widefield/ultra-widefield imaging allows optometrists to rapidly screen the peripheral fundus without dilation. Moreover, the Clarus 500 has three channels to provide true colour and the partial confocal design largely

The importance of true colour in the detection of peripheral ocular pathology

removes shadows from lashes.

High resolution and true colour are important. Detection rates of pathology on previous ultrawide field instruments may have close to 100 per cent sensitivity for detecting benign factors such as white without pressure but not necessarily allow detection of more subtle but serious risk factors including retinal tears (only 43 per cent detection and 67 per cent of retinal detachments). Moreover, large pathological features located in superior and inferior fields can be missed on some devices unless superior and inferior steering are used.[3]

While field of view are high for all devices, we must consider whether artefacts within the field of view limit the ability to detect pathology. For example, a recent study suggests that artefacts may obscure areas within the Early Treatment of Diabetic Retinopathy Study (ETDRS) field in seven per cent of Clarus widefield images, this figure may be up to 85 per cent in other devices.[4]

When coupled with Forum and the Cirrus OCT with Angioplex, Clarus offers optometrists the opportunity to detect, photo document and accurately follow lesions in the far periphery as well as using multimodal imaging to follow existing diseases at the posterior pole and trigger referral for ophthalmological treatment on indication, improving patient outcomes. ◆

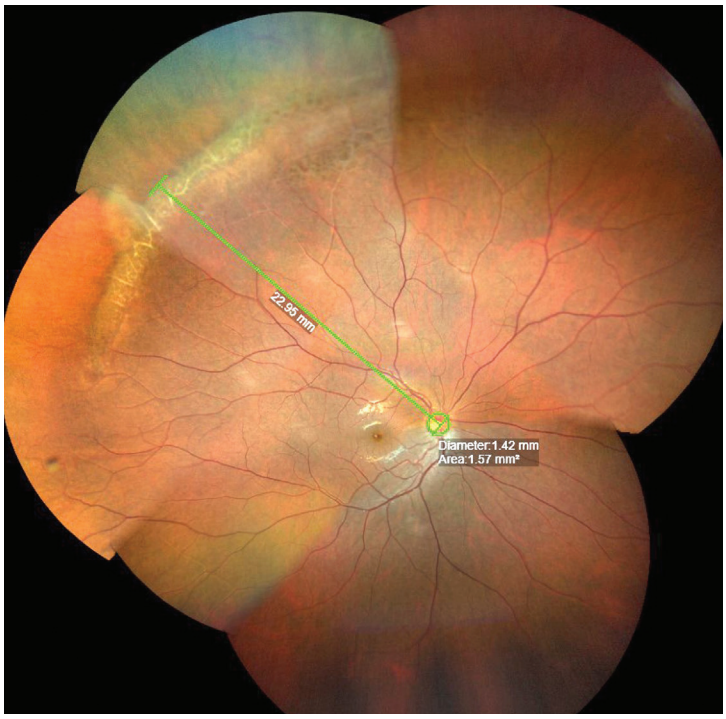

Figure 2. Showing retinal lattice dystrophy approximately 23 mm (16 disc diameters) superior temporal to the optic nerve head.

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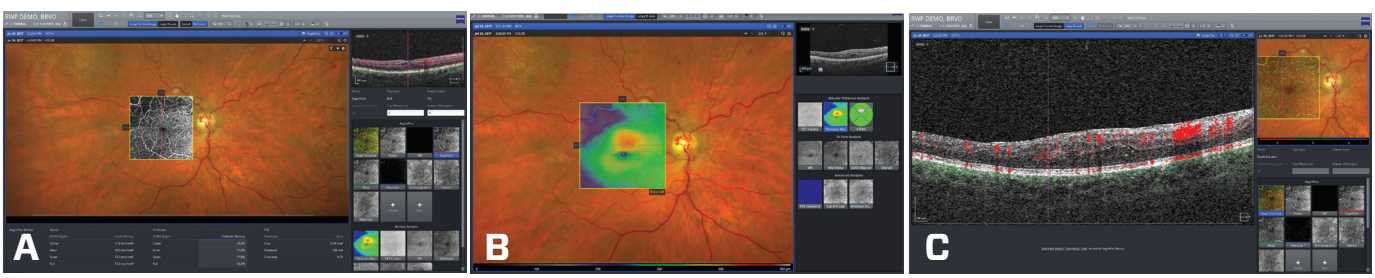

Figures 3A-3C. Simultaneous viewing of ultrawide field imaging with Angioplex and OCT data enables monitoring of the resolving BRVO and confirmation that there is no neovascularization.

A vital 21st-century optometric tool

Jason Teh
BOptom

In2Eyes Optometry Melbourne VIC

Product
Lipiflow thermal pulsation system

Supplier
Johnson & Johnson Vision

The passion and drive to treat dry eyes stems from the history of being a dry eye sufferer myself for over 20 years. Like many sufferers, my dry eyes are multifactorial.

In a review of 16 published articles on ocular surface and eye surgery published in December 2017 in the *Journal of Cataract Surgery*,[1] it was found that dry eyes adversely affect planning for cataract surgery, affect astigmatic estimates and increase the difficulty of performing cataract surgery. If not treated prior to surgery, the condition worsens ocular parameters and aggravates dry eye.

Apart from referrals from fellow optometrist, ophthalmologists, general practitioners and pharmacists, we at 'the Dry Eye Group' screen every patient that walks into our consultation room for ocular surface disease (OSD). We are equipped with some of the most advanced diagnostic and treatment tools: the Oculus Keratograph 5; Blephasteam (Thea), Intense Pulse Light (Lumis/E-ye) and the Lipiflow thermal pulsation system.

In line with the world-wide recognition of meibomian gland dysfunction (MGD) as the primary cause of dry eyes (appearing in over 70 per cent of dry eye disease), we often find that more than 50 per cent of our patient database have MGD with absolutely no symptoms. We also find that MGD is occurring much earlier in life, and is becoming more common in teenagers and young adults.

One of the main causes of MGD today stems from a lack of blinking. Blinking occurs about once every three to four seconds in most patients. However, when one uses a digital device or reads, blinking rates slow to 4.5 per minute, or once every 13.5 seconds.[2]

For MGD treatment, we often go to intense pulsed light treatment (IPL), the Lipiflow thermal pulsation system or a combination of both.

CASE REPORT

'Patrick,' a 66-year-old Asian male presented with a complaint about occasional itchy eyes and some dryness. Variable vision needing a check-up, possibly due to current medical treatment. Additionally, he had been on chemotherapy and a 'whole host of medications' to reduce side effects for the last three months. He also reported that he uses electronic devices many hours of the day.

His health assessment is shown in the tables below. Diagnosis: Evaporative Dry Eye (MGD related), exacerbated by medications and long term-computer use.

Discussion

Meibomian gland atrophy is not reversible, so doing nothing will only make signs and symptoms worse. Using artificial tears can give temporary relief, however, it will not treat the underlying problems. The attending optometrist will have two main goals: preventing further structural loss to affected meibomian glands and determining how much improvement or reduction of the symptoms can be achieved.

Patrick was aware that his results were less likely to be successful due to the large number of glands that had perished. Lipiflow is recommended in early stages of gland dysfunction and is usually contraindicated when glands are at the end-stages of dysfunction. We decided to 'throw the kitchen sink' at the problem, and developed a two-tier plan (at our clinic and at home) to kick start his gland rehabilitation.

Health assessment	Clinical findings
General Health: Stage 4 lymphoma; undergoing chemotherapy at time of visit.	MGD Grade 3 (significant atrophy of more than 67%) in both eyes (Figure 1).
Previous Ocular History: allergies and eczema. No injuries, no operations and no eye drops.	Change in spectacle prescription, which allowed him to see 6/6.
Family Ocular History: nil	Posterior ocular health and IOP's were unremarkable.

Dry Eye Assessment results (follow up appointment was made)
SPEED (Standard Patient Evaluation of Eye Dryness) questionnaire: score of 10
Non-Invasive Tear Break Up Time (NIKBUT): significantly low in both eyes (Figure 2)
Tear meniscus: normal at 0.3mm
Osmolarity: R: 300 L: 310
Expression test: Limited expression of meibum seen under slit lamp. Less than 25 per cent of glands were expressible.
No corneal staining noted with fluorescein dye
Lashes were clear of collarets
Lid margins were moderately injected with notching noted in areas of complete gland atrophy
Diagnosis: Evaporative Dry Eye (MGD related), exacerbated by medications and long term-computer use.

Tables 1 and 2. Health and dry eye assessment of patient. Diagnosis: evaporative dry eye.

Treatment plan

In the clinic: advanced treatments can help with varying success rates, depending on the severity of MGD. Lipiflow treatment was indicated in this case; IPL was contraindicated by medications that Patrick was taking.

At home: Patrick was advised to use warm compresses daily, and to continue their use indefinitely. Daily blink exercises were advised to reduce evaporative stress. Diet considerations were discussed and anti-inflammatory foods, rich in Omega 3 were encouraged. Finally, the important role of hydration in the management of dry eye overall was discussed.

Follow up

After three months since the start of the two-tiered treatment plan, Patrick was evaluated for results and feedback. Non-invasive keratographic tear film break-up time (NIKBUT) gradually improved after six weeks of Lipiflow. In fact, his NIKBUT was better by an average of three seconds. Given his limited number of glands, these results were considered significant.

Patrick's score from the SPEED dry eye questionnaire dropped from 10 to 2. His osmolarity was down from R: 300 L: 310 to R: 290 L: 295. Most importantly, the patient symptoms had significantly improved.

I asked Patrick for a comment to add to this article, this is what he had to say: 'Lipiflow saved my eyes. I had scratchy dry eyes for more than two years. But after the first course of Lipiflow, the symptoms disappeared within two weeks. I have maintained my condition with a heat pad twice daily and the dryness and scratchiness have not returned. A periodic repeat dose of Lipiflow helps to clear blockages of the oil glands to keep the oil flowing. I recommend this treatment to anyone who has dry eyes.'

Patrick now returns every 18 months for maintenance treatment. He will soon undergo cataract surgery, and I am sure that his ophthalmologist will appreciate working with a better ocular surface.

The more we learn about meibomian glands and their role in the progression of ocular surface disease, the more we realise that early detection of gland problems is paramount. As optometrists, we need to evaluate glands daily in practice.

As long as we look, educate, treat and manage the condition with proven tools like the Lipiflow thermal pulsation system, the better our chances of managing MGD in 2020 and beyond.

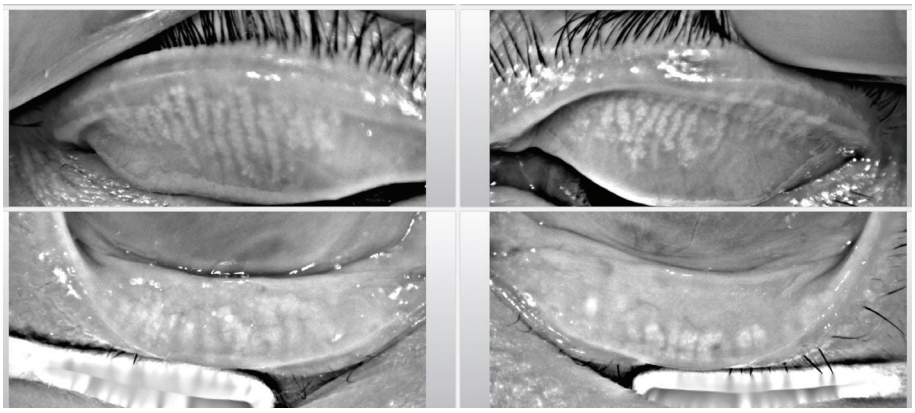

Figure 1. More than 66 per cent gland atrophy noted using Oculus K5

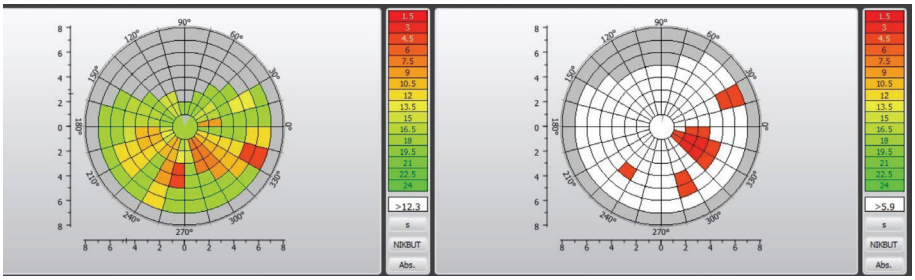

Figure 2. Non-Invasive Tear Break up Time measured using Oculus K5 (pre-treatment). Left eye evaporates significantly faster than the right eye.

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TOPCON Maestro2

Structural information and true-colour fundus imaging – instantaneously

Dr Fernando Lamas
B App Sc (Optom) BSc Post Grad Cert (Oc Ther)
Post Grad (Behav Optom OEP)
Lamas+Brown Optometrists
Lismore/Casino NSW

Equipment
TOPCON 3D OCT-1 Maestro2

Supplier
Device Technologies

As independent optometrists, it is important for us to stay ahead of the pack, and I think one of the best ways to do that is to always try to have the latest in technology and equipment. Armed with this perspective, equipment decisions have always been easy for me to make. For instance, I knew, given the rapid rate of innovation, that it was time to upgrade my OCTs in both my practices--despite them being only four years old.

Over the years, OCTs have become invaluable in the diagnosis and care of treating our patients. Today, I would feel like I was driving in the dark if I didn't have my OCT for consultations. To adequately take care of patients with macular degeneration and diabetes, an OCT is absolutely essential.

There is little room for doubt: the use of OCTs is well on the way to becoming the gold-standard of practice for optometric consultations. (Which has led to most chain-store practices installing OCTs in all their shops.)

After my current OCTs in my Lismore and Casino locations reached the age of four, I had to wonder: 'what is my next point of difference?'

The answer came to me when I visited Device Technologies at O=MEGA-19: OCT-Angiography. Although this feature has been available in other devices, the Topcon Maestro2 delivered fully-automated OCT angiography at the touch of a button. Angiography on the Maestro2 is simple and straightforward.

Its auto-alignment, auto-focus and auto capture functionality allowed me to easily teach my ancillary staff how to use the device. (In addition to automated capture, Maestro2 offers manual/semi-manual options for difficult-to-image patients.)

Every patient who required a full consultation in our practices had an OCT scan of their discs, macula and fundus photography, and this information has consistently proven invaluable.

Now with the Maestro2, we can rely on one machine to provide OCT for the anterior and posterior segments, good quality fundus photography and OCT Angiography of the discs and macula. It also continued to give a wonderful trend analysis of all my previous data with the new data. Again: invaluable.

I feel patients seek out independent optometrists because they trust them to provide the best, most comprehensive eye-health care. They want reassurance, and they are happy to pay for that.

There is no better moment for me than when I get to tell a patient at the end of their consultation: the nerves at the back of your eyes are as healthy and strong today as they were four years ago.' Now with angiography my confidence in diagnosis is one step further, and hopefully, one step ahead again.

That's awesome. ◆

AdaptDX Pro® adaptometer

Improving AMD care with functional diagnostics and monitoring

Dr Amanda Legge
OD
Wyomissing Optometric Center
Reading PA (USA)

Equipment
AdaptDX Pro® automated dark adaptometer

Supplier
Optos

Structural signs of AMD are notoriously challenging to detect and druse exhibit behaviour that is virtually impossible to predict, which explains why most AMD patients develop substantial, irreversible vision loss before they are treated.[1,2] However, newer functional diagnostic testing can overcome these challenges, making optometrists first responders in an AMD-care continuum that begins long before injections commence.

The case for functional testing

The AdaptDx™ (MacuLogix®) is a functional testing device that has been shown in clinical trials to identify patients with the earliest stages of AMD–even when they have no structural signs of AMD. It does this by revealing impaired dark adaptation function associated with early AMD, or even sub-clinical AMD, at least three years before it becomes clinically-evident.[3]

Before drusen are visible, an invisible layer of cholesterol builds up between the pigmented layer of the retina (RPE) and the elastic layer of Bruch's membrane. These cholesterol deposits–basal laminar (BLamD) and basal linear (BLinD)–cause oxidative stress and inflammation, hindering nutrient transportation to photoreceptor cells. As rods die, it becomes harder for the eyes to adjust to darkness and night vision declines. This dark adaptation impairment is the first sign of AMD.[4] The cholesterol deposits grow over time and, as they become sufficiently thickened, the lesion becomes clinically-detectable as a druse.[5] The first visible druse caused by AMD is just the tip of the iceberg of these lesions.

Dark adaptometry measures how long it takes for the eye to adapt from bright light to darkness. Automated dark adaptation assessments with the AdaptDx™ proved to be highly sensitive (90.6 per cent) and highly specific (90.5 per cent) to the presence of AMD, and is therefore a very accurate diagnostic tool. Before we had access to the AdaptDx™, we had no idea whether or not a few small drusen were clinically-significant. All we could do was wait and hope. Today, we don't have to wait–we can know for sure whether or not a patient has AMD based on the results of their dark adaptation test. This gives us, and our patients, valuable time to develop a plan to delay or slow down the disease progression.

The future begins today

The original AdaptDx™ automated dark adaptometer was introduced in 2014 and has since been used by more than 1,000 eye-care professionals worldwide to identify and monitor AMD. As of 2020, a second-generation

Continued page 28

AdaptDX Pro®

From page 27

dark adaptometer, the AdaptDx Pro®, has been introduced. As a self-contained wearable headset, the AdaptDx Pro® requires no dark room or external computer and features an artificial intelligence-driven onboard technician named 'Theia™.' After the in-office technician selects the testing protocol and places the device on the patient's head, Theia™ takes over to facilitate a reliable, consistent testing experience by using automated instructions and adaptive feedback spoken directly to the patient. Years of development went into creating this one-of-a-kind medical device to improve the testing experience and make modern AMD management practical in almost any optometry or ophthalmology practice.

The AdaptDx Pro® is a self-contained wearable headset with light-sealing eye cups; it requires no dark room or external computer.

CASE REPORT

Case of clinically-evident mild drusen with abnormal dark adaptation

A 67-year-old Caucasian male with no complaints presented for a routine exam. He was an established patient and reported that his vision was stable. His ocular history was remarkable for pseudophakia OU. He had no systemic history and did not take medications. He did not have a family history of macular degeneration.

Best-corrected visual acuities were 6/6 OD and 6/6-1 OS. Posterior chamber intraocular lenses (PC IOLs) were well-centred and clear. He had small, hard drusen in both eyes, but more obvious OS versus OD. He also had a Posterior Vitreous Detachment (PVD) in both eyes without retinal consequence.

Because of the clinically-evident drusen, even though small and scattered, dark adaptometry testing was ordered to determine if this finding was isolated drusen or a sign of early AMD. The patient's dark adaptation was significantly abnormal, and he had a functional deficit in dark adaptation that was due to early cholesterol deposition that was not clinically-visible.

Therefore, the patient was diagnosed with AMD and is managed as such. We recommended that the patient begin AREDS2 therapy, and that he commit to learning about AMD aetiology and the importance of close monitoring for progression to wet AMD. He was also instructed on Amsler Grid at-home screening, which he was asked to perform once per week monocularly.

It is important to confirm the reliability and consistency of the dark adaptation, similar to repeat visual field testing in glaucoma. The patient was scheduled to return in six months for another dilated examination and repeated dark adaptation testing, which was still abnormal (confirming the reliability of the first test) and stable from the first test.

Therefore, due to his early structural findings but significantly abnormal dark adaptation function, I continue to monitor him at six-month intervals unless he progresses in the future in either structure or function. Then, I would monitor him more frequently as he would be higher risk for conversion to choroidal neovascular membrane. ◆

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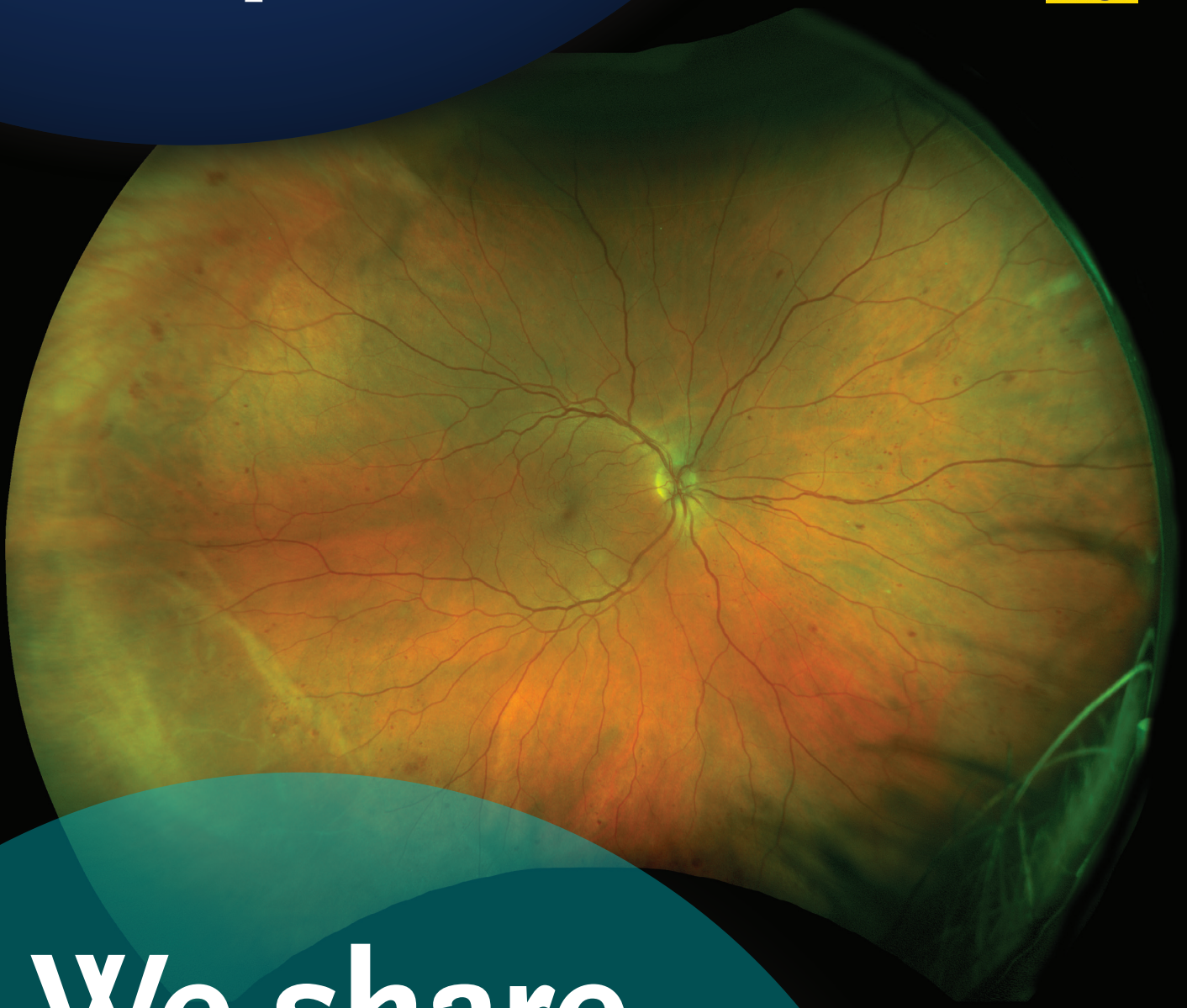

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