

INSTRUMENTS

Suite success

Bill Harvey tries out the latest suite of dry eye assessment and management tools from Essilor Instruments and suggests it represent an excellent initial investment for those wishing to set up a dedicated dry eye management service

Dry eye disease (DED) is common, increasing in incidence and has a significant negative impact on sufferers. It is also a condition where eye care professionals (ECPs) in the primary care sector, with access to the latest instrumentation, a range of treatment options and the skillset to diagnose, intervene and monitor, can improve the lives of many people while at the same time build up their own primary care practice and reduce the ever-concerning demands placed on the secondary eye care sector.

I first reviewed the IDRA system a few years ago (*Optician* 21.12.18) and found it to be an easy to use, accurate, repeatable way to assess dry eye disease and an ideal instrument around which a dedicated dry eye service might be developed within a community practice. The IDRA is now centrepiece of a suite of instruments available from Essilor Instruments, who can now boast to be a one-stop shop for anyone developing a DED service. I recently had the opportunity to refamiliarise myself with the IDRA and to try out two further additions to the dry eye suite; the Activa and the TearStim.

THE IDRA

The IDRA is essentially a 5MP digital imaging system that can be fitted into the central pivot hole (figure 1) of any slit-lamp and is

FIGURE 1 The IDRA fits to a slit-lamp base and links to software in a laptop



FIGURE 2 The LED lights on the base unit. Note the blue tab for insertion of an orange absorption filter for blue light assessment



FIGURE 3 Two adaptor heads can be fitted. A wedge target (top right) for interferometry and a Placido-style (bottom right) for surface profile assessments

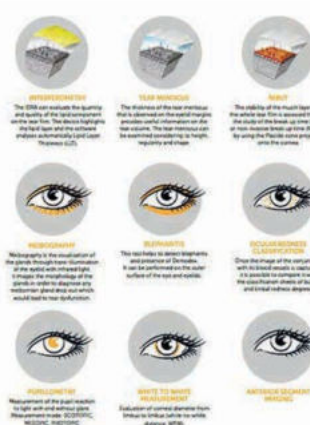


FIGURE 4 Summary of tests possible with the IDRA

capable of both multi-shot and video image capture. The unit is linked to a laptop onto which the licensed software has been downloaded.

The operating head of the IDRA, as seen from the patient view, comprises a series of LED lights for image capture (figure 2) and onto this head further adaptors can be clicked into place (figure 3). One of these has a white wedge and is used for interferometry, while a second has a series of concentric rings (Placido-style), which can be used for assessing surface integrity or distortion. A small blue tab allows the insertion of an orange absorption filter for when blue light assessment is being used.

After entering patient details, the IDRA offers a battery of tests which can be run individually, or as a sequential battery of tests according to your requirements. Figure 4 summarises the main test options. For each test, you are offered a short tutorial option (presented with his usual aplomb by optometrist Nick Dash, figure 5), told how to set up the IDRA head (figure 6), and then asked which eye or lid you wish to view (figure 7).

Depending upon the test, image and video capture is easy. There are options to adjust focus manually, though the auto-focus facility usually makes this unnecessary, adjust brightness and length of data capture time. One new feature is the ability to capture using the joystick button rather than having to use the laptop keyboard as previously. There is also a foot pedal option, useful when undertaking meibography after upper lid eversion. My assessments began with a simple symptom questionnaire, the DEQ-5 (figure 8). This can be sent out to patients in advance or completed on the software, which then incorporates the score in the overall patient profile; useful for monitoring purposes. Figure 9 shows a range of the tests I undertook. The ability to look at the pattern of tear break-up over time, the analysis of blink rate and quality, and the ability to visualise the meibomian glands in a

FIGURE 5 Tutorial from Nick Dash



FIGURE 6 Easy instructions on set-up throughout



FIGURE 10 Ways of viewing the meibomian glands



FIGURE 11 Severe meibomian gland drop-out



range of ways, including 3D (figure 10), is excellent. Figure 11 shows a patient with significant meibomian gland drop-out.

Importantly, outcome reports are customisable (figure 12), with multiple options. A full report can run to several sheets of print out, but keeping patients in the loop is key so having such a detailed profile should enable them to understand the benefit of any intervention and, importantly, to comply with instructions. Results can be displayed in easy-to-interpret colour scales or Florence Nightingale-style web charts (figure 13), which make patient instruction easy and reflect changes over time well. Patients need to know that what you are doing is working.

In a recent study,¹ 100 hundred patients with mild to moderate

FIGURE 7 Select the eye or lid



FIGURE 8 The DEQ-5

DRY EYE QUESTIONNAIRE (DEQ-5)

Name: _____

1. Questions about **EYE DISCOMFORT**:

a. During a typical day in the past month, how often did your eyes feel discomfort?

NEVER	BARELY	SOMETIMES	FREQUENTLY	CONSTANTLY
0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

b. When your eyes feel discomfort, how intense was this feeling of discomfort at the end of the day, within two hours of going to bed?

NEVER HAVE IT	NOT INTENSE AT ALL				VERY INTENSE
0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

2. Questions about **EYE DRYNESS**:

a. During a typical day in the past month, how often did your eyes feel dry?

NEVER	BARELY	SOMETIMES	FREQUENTLY	CONSTANTLY
0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

b. When your eyes feel dry, how intense was this feeling of dryness at the end of the day, within two hours of going to bed?

NEVER HAVE IT	NOT INTENSE AT ALL				VERY INTENSE
0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

3. Questions about **WATERY EYES**:

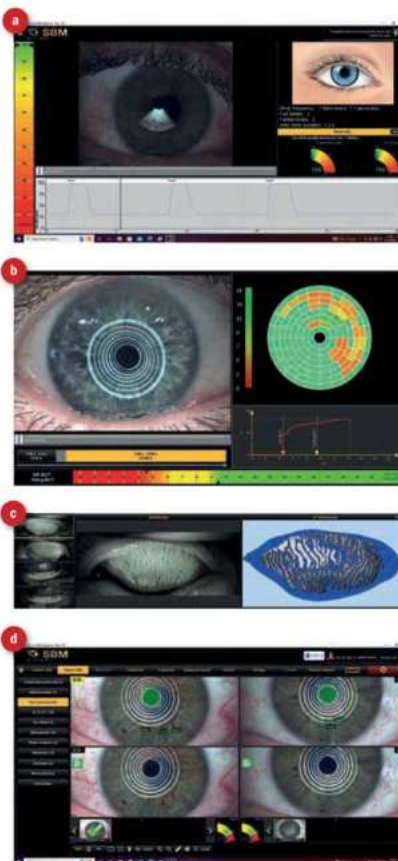
a. During a typical day in the past month how often did your eyes look or feel excessively watery?

NEVER	BARELY	SOMETIMES	FREQUENTLY	CONSTANTLY
0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>

Score:

0-10	10-20	20-30	30-40	40-50	TOTAL
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FIGURE 9 (a) Interferometry analysis of the lipid layer and blink analysis. (b) Non-invasive break-up time with localisation. (c) Meibography. (d) tear meniscus height measurements



DED and 100 matched control subjects were assessed using the IDRA and results compared for NIBUT, lipid layer thickness, tear meniscus height, meibomian gland loss (with meibography), and blink analysis. The conclusion: 'the automated non-invasive workup validated in this study may be a useful tool for reaching a non-invasive diagnosis of DED with a good performance, especially for NIBUT.'

THE IDRA APP

One excellent new function is the ability to link results to an app that a patient can download (figure 14). The app itself is free to download and contains a wealth of information about DED. It can then be linked to the patient's results by the clinician (figure 15). This allows results and information to be sent out to the patient, allows the patient to monitor their progress, to contact the clinician with queries, and even to upload images and data remotely for clinic analysis (figure 16). This excellent new functionality is also able to help with patient compliance by sending notifications and reminders about treatments and appointments.

THE ACTIVA

As ECPs know, successful management of meibomian gland dysfunction, a key factor in disruption of the lipid layer of the tears causing evaporation, is to use pressure applied to lid skin



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FIGURE 12 Report options



FIGURE 13 Easy to understand data display

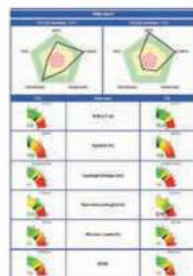


FIGURE 14 The SBM IDRA app



FIGURE 15 Linking the app to the patient database via a QR code generated by clicking on screen (the icon in the red circle)



FIGURE 16 (a) Patient results. (b) Information and reminders. (c) Monitoring progress



FIGURE 17 The Activa system



FIGURE 18 Activa in use



FIGURE 19 The TearStim



FIGURE 20 Pulsed light



FIGURE 21 The regions for application



twice daily for not less than five minutes at 40°C.² The days of non-sterile and rapidly cooling flannels are long gone. The Activa system (figure 17) is an electronically controlled mask which allows a controlled temperature and pressure to be applied for a period of 15 minutes. During the cycle, the mask introduces periods of firstly gentle, then more vigorous, massaging to assist in the expression of meibum from blocked glands. It is best done with the patient supine (figure 18). A recent study has found that the Activa is well-tolerated and, 30 minutes after each session, results in significant improvements in both the non-invasive break-up time and the lipid layer thickness. Also, patients reported an improvement of discomfort symptoms with a moderate to high satisfaction with treatment.³ I found similar, and combined the treatment with a thorough lid cleansing after each treatment cycle. Though the unit can be rented out, I suggest it is best used as an in-practice treatment within a dry eye clinic.

TEARSTIM

The TearStim is a desktop unit with a handset (figure 19) able to apply high intensity pulsed light (figure 20) to the malar region around the eye (via a thickly applied base gel) where the nerves supplying the meibomian glands are located (figure 21). Increasingly, optometrists have found this effective in the

long-term management of DED, particularly where previous interventions have been less effective or where lids have developed telangiectasis.⁴ The TearStim is very easy to use and, importantly, is patient friendly. Look out for future case reports on its effectiveness. ●

- For further information on the Essilor Instruments dry eye suite, go to ecp.essilor-pro.com/gb/instruments/dry-eye.

REFERENCES

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