An eye for dispensing

An iPad attachment for dispensing caught **Bill Harvey's** eye at Optrafair. Here he tries it out

Practitioners are increasingly using electronic tablets in practice. In theory, we are nearly at a stage where the entire patient journey might involve tablet or online information gathering – from booking the appointment and undertaking pre-examination questionnaires, during the examination itself with tablet-controlled automated phoropter heads and record keeping, down to the final dispense.

Computerised and tablet driven dispensing is not new, and systems such as the AnyView on a desktop can take dispensing measurements and link to the Anypad tablet software upon which the patient is able to see various vision simulations and lens options. The company responsible for the Anypad systems, the South Korean View ITech, has produced a tablet attachment that it claims has addressed some of the potential limitations of a hand-held automated dispensing unit. These complications include errors induced by unsteady handling, issues relating to convergence upon the tablet when assessing distance pupillary distances, problems relating to parallax (as one has with a frame rule) and the need for a flash to get reflexes for centration measurements. The hand-held unit has been available overseas for some time, but Optrafair saw its first UK appearance at the stand of Stevenage-based supplier BIB Ophthalmic Instruments which is sole distributor for the unit in the UK and responsible for the name Cyclops.

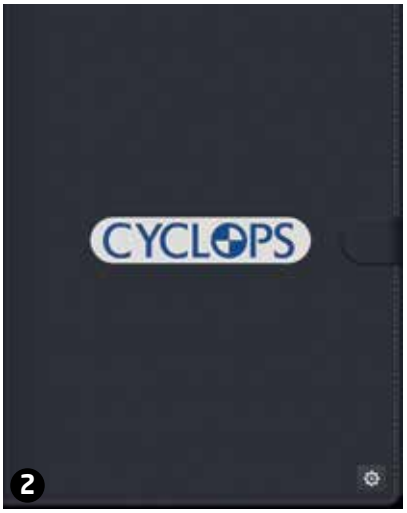
The Cyclops

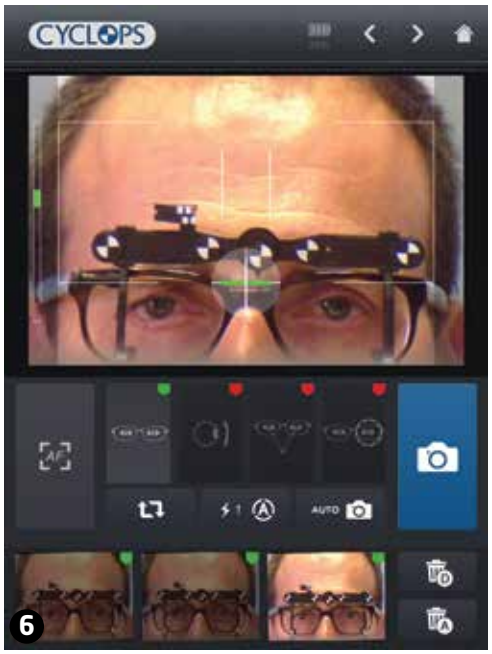
The unit is a simple add on to an iPad along with a click on over-frame with targets to allow measurement. There is also a desk stand which improves accuracy by ensuring a steady unit during data capture (Figure 1). The manufacturer claims accuracy to within 0.4mm on measurements when the unit is held freely, 0.2mm accuracy when used on the stand. These figures compare favourably with rule-based measurements. However, the sceptic in me wanted to test this, as many of us have experience of electronic units that, when used on the same patient serially, can sometimes give significantly different readings. The problem of convergence for distance measurement has been tackled by an integral mirror-projection system (the patented Infinity Optics system) providing a simulated distance target. Parallax error is minimised by use of gyroscopic input and a telephoto lens helps crop out extraneous light that may inhibit accuracy. The unit fits over the iPad and a patented jack input fits into the headphone socket to allow communication of flash information and also to recharge the unit from the tablet.

To get up and running, I downloaded the free Cyclops Pro app and was ready to go. At the time of writing there were already plans to update the app, with further features, but updating will be as easy as with any app.

Taking measurements

To start, I opened the app which initially turns your tablet into an electronic 'leather-bound' folder (Figure 2). At this point, after registering some basic information, you calibrate the tablet by holding it up to a vertical flat surface for five seconds, as prompted on screen. I then attached the over-frame target to my colleague's chosen frame,





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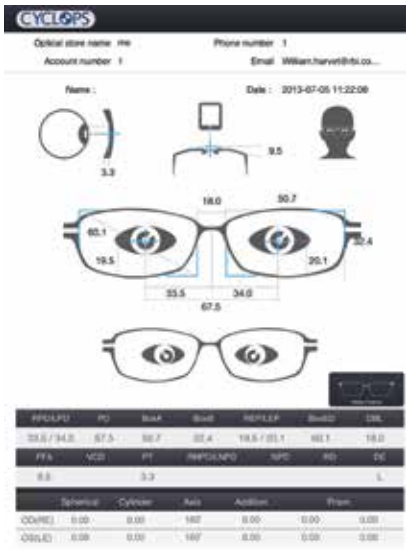

12

making sure that the small triangle on the brow was moved to match the bow curve of the frame (Figures 3 and 4). I used the stand (Figure 5) and activated the first of four measurements. The unit is positioned in front of the patient such that their eyes are seen on screen (Figure 6) and, when in the correct position, green markings and a 'good' signal allow an auto capture function to take the measurement (manual capture is also possible). Each capture is colour coded and orange and, worse, red images are best rejected for accuracy to be maintained.

The second function assesses the frame from the side (Figure 7) and data capture is similarly undertaken. Next comes near centration assessment and for this the patient holds the tablet at the required near working distance (Figure 8) but I had to guide the angle of view to make sure the image is adequately centred before the data are taken. Finally, the unit also includes a function for assessing binocular dominance. The Essilor S series requires a binocular dominance measurement (see page 27), but in the UK these lenses are ordered strictly via exclusive Essilor ordering, so, at the moment, this function of the Cyclops is of interest only here. A small frame is flicked down (Figure 9) and the patient asked to view a target through the square (Figure 10).

Once all measurements are taken, the frame parameters and pupil centres are refined by moving cursors on screen (Figure 11). This is aided by an autoalignment function. The software can then display the final dispensing measurements (Figure 12) which can be printed, saved as an image, or emailed to a lab or data system. Note along with the measurements, the left eye is highlighted as dominant.

Easy to use

This system is easy to use and appears accurate. To test this further, I am taking the unit out on the road to undertake dispenses on 'real-life' patients and will be reporting back on it in the coming weeks. In the meantime, I would suggest this is an attractive tablet adaptation that should appeal to all wishing for a modern and versatile dispensing method.

● Loan of unit courtesy of BIB Ophthalmic Instruments. Further information on 01438 740823