Dispensing

I have recently used the Cyclops dispensing system (reviewed in *Optician* 12.07.13 and loaned courtesy of BIB Ophthalmic Instruments) on a number of domiciliary visits and have found that, with a bit of experience and adaptation, the system is both repeatable and reliable.

I also think that anyone hoping for a completely accurate and objective measurement, may be disappointed. The lighting conditions and the way the captured images are processed offer opportunity for error and so, perhaps not surprisingly, experience and training with the system are needed to get the best results.

I only say this because sometimes systems that appear to be automated are often acquired in the hope that they may make up for errors that have crept in with previous methods. However, anyone guilty of repeated parallax error with their ruler might equally be guilty of inadequate capture or image setting with the Cyclops.

Experience of the Cyclops

The system is easy to set up, portable and patients seem to both like it and be impressed by it. The last point was especially pertinent to those whose only previous experience of dispensing was having an old ruler placed on their face.

The option to use the unit on the stand (Figure 1) rather than as hand-held (Figure 2) was definitely preferable and results were gathered more quickly with the former because the image capture was more reliable.

The dispensing process is effectively four steps: a front of face capture (giving distance PDs and setting within the frame data along with a dihedral value courtesy of a small rotating target over the right eye – Figure 3), a side of face capture (which gives pantoscopic and back vertex distances – Figure 4), a near centration test requiring the patient to hold the unit themselves at an appropriate distance, and a binocular dominance test. Of these, the third test proved the least easy, with several patients finding it tricky to both hold the iPad as they would a book, while at the same time (admittedly with help from me) centring the image of their eyes sufficiently enough to capture the required image.

Accuracy

I checked most of the measurements manually (PDs in Figure 5) and also compared the data sheets of the same

Dispensing on the move

Bill Harvey takes the Cyclops dispensing system based around the iPad out on the road
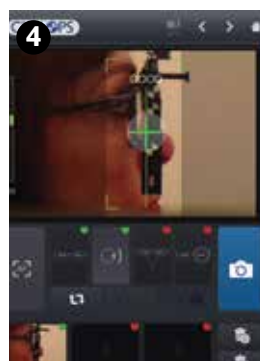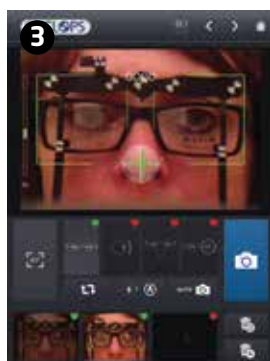
patient for repeatability. Figure 6 shows the measurements from the same patient and these were compared after repeated assessment of each patient. Firstly, there appeared to be good repeatability in the measurements of distance parameters. Generally I was always within 1mm for each eye both on repeat measurement and also comparing with a manual measurement. For side measurement, pantoscopic angle was easy but the back vertex measurement suffered the same problem as is often found with manual measurement. Some frames obscure the points from which measurement is made. Assumptions, therefore, need to be made. This may be easily overcome by rechecking from

above or below or using a gauge to check the assumed measurement. The greatest variation was found with near PDs. As well as the problems getting the patient to centre the target properly, the image captured under flash makes it more difficult to achieve the 'green' marked acceptable image. Also, the image, because of the flash, is much harder to adapt when you are required to position the markings on screen over the pupil centre. There is significant potential for error here and a careful eye is needed along with ensuring the best possible image is being looked at to help improve repeatability. ●

Popular

Overall, the system is easy to use, patients loved it, and as long as you know what you are doing with the near measurement in particular, then it would be a useful addition to any dispensing area.

● Frames for the trial courtesy of Ridgeway Optical Supplies (www.ridgewayoptical.co.uk)