Aim 2WIN

Bill Harvey takes a look at the latest in the evolution of handheld autorefractors and finds much to commend it

It must be over 10 years ago since I trialled a number of handheld autorefractors for use in a school screening programme. Two findings became immediately apparent. Firstly, the instrument with the longer working distance (at that time it was the Welch Allyn SureSight) showed the best repeatability for individual children as they seemed more relaxed by the positioning. Also, those instruments capable of a binocular assessment were less likely to show anisometropic error due to accommodative changes, and might also be useful in detecting reflex differences that might betray underlying binocular fixation differences.

The 2WIN

Nowadays, handheld screening devices are not an unfamiliar sight in some health authority areas and I recently had an opportunity to try out the latest on the market – the 2WIN (distributed in the UK by Haag-Streit UK). The first thing to strike you about the unit is that it is similar, in size and weight, to a typical SLO digital camera (Figures 1 and 2). It weighs just 0.84kg, is easily portable between clinics and may be held by even the least muscle-bound for as long as it might take to assess a series of people without undue strain. The unit has a rechargeable battery which, once charged, should see you through the day and requires insertion of a micro SD memory card for data storage and transfer if you do not wish (as was my preference) to link up with a wireless printer to make hard copies of the results for storage and later analysis. Charging is via a USB input, yet this does not as yet allow transfer or links with a PC which, I feel, would be useful and is something that may well appear in the near future.

The next thing that strikes you about the 2WIN is the multidot display where a lens on a camera might be expected (Figure 2). I remember a few years back, when looking at the PlusOptix unit (distributed by Carleton) hearing how the designers had incorporated a smiley face over the lens and noticed a significant improvement in attention and cooperation from the younger patients. The 2WIN has a veritable lightshow display. There is the option of flashing and multicolour lights (Figure 3) which can be combined with squeaky noises if required.


1

2

3


4

5

One interesting observation was how adults found the lights and sounds quite off-putting and almost disturbing, whereas the children I assessed, the youngest being just three years old, loved the lights and sound combined and it definitely helped hold their attention.

Operation

The 2WIN is easy to use, has all that is needed to maximise cooperation from a nervous or inattentive child, and appears to have good repeatability of results. Set-up is easy via the LCD screen and buttons on the unit (Figure 4). The unit is designed to work at one metre and automatically signals when this distance is achieved. This is useful because we are all notoriously weak at gauging accurate working distances. Before assessing anyone, it is important to remember that ambient lighting environment may influence results (as with most instruments). The unit does include a light metre function, allowing correct set-up of the room. I used the unit once in the office and the windows, either in view behind the patient or when reflecting from the corneas of my guinea pigs, prevented me from getting any readings. The ideal environment is one of low, even ambient light with no localised light sources visible either directly or reflected. You then need to decide whether to assess one eye or both, whether to run the 'sound and light

show', and input basic patient data. The unit usefully includes screening programme parameters (referenced to the American Association for Pediatric (sic) Ophthalmology and Strabismus, though the user may customise this to their own screening programme design) and represent limits for various age groups for hyperopia, myopia, astigmatism, anisometropia, anisocoria and gaze.

Clicking the start button on the front immediately reveals the subject's eyes on the display screen (Figure 5) and any indication of inaccurate working distance – after a few tries. It is easy to make sure you are at the correct measuring distance quickly, at which point the measurement takes place in a matter of seconds. The instrument takes 30 seconds to take a measurement before 'giving up' or 10 seconds in quick mode. A number of error messages may appear to explain lack of measurement. These include inappropriate lighting and a high infra-red noise level, pupils being too large or small or too unstable a signal, perhaps due to an existing eye condition or very poor cooperation from the child. Once a successful reading has been taken, a report may be generated. This will include the objective refractive error for each eye, a reliability indicator (which is important and should be pre-established before any screening assessment), pupil size and a Hirschberg test-based indication of any deviation of an eye from the normal axis (often-voiced limitations of this might be counterbalanced by the need for screening that is effective enough to detect smaller errors that may otherwise slip through the net).

An extended report may be generated which will include colour coded sliding scales to indicate whether any measurements fall outside the pre-determined parameters of a screening protocol and therefore require further assessment in a more formal setting. At the moment these reports are printable via an infra-red associated printer. I have to say that storage on the memory card for later printing was a little frustrating and I would have liked to be able to directly transfer into a Windows programme for further analysis and patient management. I am sure this will be addressed.

Reliable and repeatable

I can only offer the anecdotal from the sample of 20 or so patients I assessed, who ranged from just three years old to adult. Firstly, repeat assessment in similar conditions showed a good repeatability with critical measurements, such as anisometropia, this remaining constant even when accommodative sphere variations where measured. The instrument easily and accurately detected cylinder. It required careful environment setting to achieve the best results – I state this not as a criticism but merely to point out that good accuracy requires some degree of careful setting up. I would not, for example, want to use this in outdoor or field activities. The two patients with small strabismus I assessed were both detected accurately.

Data from the manufacturer show comparison trials between the 2WIN and 'autorefractor' (model not stated) and between 2WIN and the prescribed refraction for a range of patients. For the former, a best fit for the scatter of compared results was calculated at y = 0.961 x -0.135 and a standard deviation of 0.672. For the second comparison, y = 0.989 x -0.231 and SD of 0.535. Both of these would appear more than adequate for a screening assessment. For screening for myopia of <-3.50DS, a sensitivity of 83.3 per cent and a specificity of 94.6 per cent is reported. For detecting anisometropia of >2.00DS, 100 per cent sensitivity is claimed along with a specificity of 89.2 per cent. My humble dabblings would support this and the ability to accurately detect early anisometropia is something we should all be supporting if levels of amblyopia are to be reduced.

At present there are increasing calls to standardise vision screening for the young in the UK. The lack of standardised approach has been partly due to a significant lobby maintaining that there is little or no point in detecting unilateral vision reduction as there is no evidence for any benefit in rectifying this. At last, I would argue, the tide is turning. People now realise that good binocular vision has multiple benefits when growing up, that a lack of evidence is an artefact of a system where evidence would require deliberate compromise of a group of children within any study sample (which no one would be allowed to do) and that there are increasingly effective ways of screening for problems of refraction and binocularity at even a very young age. The 2WIN is one of these ways.

● More details at: www.haag-streit.com

A wider corridor

Bill Harvey asks Essilor about its entry into the instrument market

It may have come to your notice at exhibitions earlier this year that Essilor appears to be marketing a range of ophthalmic instruments. While I was familiar with its dispensing and glazing equipment, I thought this a new departure for Essilor in the UK and was keen to find out more. I recently caught up with Paul Cumber (pictured above), instruments manager at Essilor's Thornbury site where, among the new instruments on display, I quizzed him about this venture.

While new to the UK ophthalmic equipment world, Essilor has made a global decision to distribute Essilor branded instruments and sees it as a way of making further headway in optometry. The introduction in the UK was deliberately a 'soft launch' and represents a significant learning curve for the company.

'We decided early on,' said Cumber, 'to make sure that we would never supply anything without full support and back up.'

This emphasis on support seems a key component of the company strategy. To begin with, the range of instruments is very much centred around the testing side of optometry, and includes slit lamps, lensmeters, autorefractors, refractor heads and test charts. These supplement the existing electronic systems, such as Visioffice, and also new electronic display units, such as the Activ'screen Junior and the M'eye Fit Touch (which *Optician* will feature in the coming months).

At present, there is no diagnostic or imaging instrumentation in the range, but Cumber intimated that this may well be in the pipeline. 'Our aim,' he said, 'is to become the one-stop shop for all eye care practices and the only equipment supplier to be able to supply all on demand.'

Keep your eyes open for the new kid on the block.

● More details at: www.essilor.co.uk/Instruments