



High-tech in a rural setting

David and Elizabeth Baddeley offer a personal viewpoint on the benefits of technology in refraction

My wife and I have been optometrists since the early 1980s. Both of us are quite tall and, as a lot of optometrists know, there is a lot of leaning forward in the job to put trial frames on and off and to offer and change lens powers.

It was back in the early 1990s, after a few chiropractic manipulations, that we heard of automated phoropter heads. In particular, the idea of having them linked to an autorefractor and focimeter appealed, the logic being we would get quicker accurate refractions, leaving more time to check the health of the eyes.

Early days

The first system acquired was chosen partly on the basis of gaining a commercial advantage. However, such an early unit was let down by its physical design and software.

The oculars were rather narrow in visual field, giving some clients a feeling of claustrophobia. Also to change from one cross-cylinder power to the other involved going into 'setup' each time. The control panel was linked to the unit via infra-red remote control and that could be a little quirky too.

However, the whole aspect of being able to have a good starting point by having the objective auto refractor readings fed in, and then being able to make rapid lens presentations, meant we were 'sold'. The trial frame was relegated to the 3 or 4 per cent of people who find the phoropter head a problem (the hard of hearing and the very young, for example).

Visits to Optrafair were an opportunity to see what else was available and a few years later we had a demo of the Nidek 2100 automated system. We were quite happy to switch brands and we haven't looked back since.

Upgrading

In November 2006, while in the process of selling one business and starting another, we had the folk at Birmingham Optical set up a complete testing room with their latest autorefractor (it auto-

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tracks even the shakiest of eyes), linked to their latest automated focimeter (particularly strong at analysing various aspects of progressive power lenses). These two key items were then hardwired into the RT-5100 automated phoropter head.

As I do the autorefraction, I am confident that the PD is measured accurately, as long as the patient keeps still, the distance the machine travels in millimetres is the pupillary distance. Having one's objective loaded into the phoropter via RS232 cabling or 'Eyecare' card (wireless) with the correct PDs can save a lot of time and fumbling. We feel in this day and age to put a trial frame is rather retro and a lot of my diehards would feel they had not had a proper test if someone 'dared' to do that to them. A lot of our following is built on my high-tech reputation.

It is possible to use the 'assist' software to 'hold the hand' of a new user by following a set programmable sequence, offering prompts, if required, by pressing the help key. This would be useful in situations where non-optometric staff were to carry out refraction duties – something becoming quite commonplace in the US. In fact, Nidek refer to it as a 'Smart Refractor'.

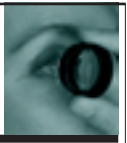
Clinical use

The instrument is sleek and ergonomic. It really graces a modern consulting room especially when its headlights are on (the two powerful LEDs mounted on the front to illuminate the reading chart). It has the Nidek 'Final Fit' software that effectively does what a smart optometrist would do anyway – that is, to not give the subjective result 'blindly' but to

tailor the Rx according to what is likely to be best tolerated (with what they have worn before in mind). Experience suggests that, rather than having a fear of technology, patients not only increasingly expect a more high-tech approach but prefer it.

The RT-5100 is thinner and less cumbersome than its predecessor and offers a very wide field of view (40°) which helps keep the client and practitioner 'in touch'. The loss of rapport is often a criticism levelled at phoropter heads. Lens changes are quoted as 50 per cent faster than in the RT-2100, though millisecond differences are not perceivable when using the kit.

Clients are always very impressed and typically comment on how they used to 'forget' what the previous lenses looked like on trial frame lens changeovers. This has a direct impact in terms of increasing dispensing, by the client seeing for themselves any change in Rx at the press of a button. Very small changes in sphere or cylinder are instantly more noticeable when the comparison is instantaneous, rather than the drawn out change in trial lenses. Typically, I put an image of a road sign or approaching local bus on my Test Chart 2000 and people can then judge for themselves any potential benefit in their new Rx. One can do similar almost instant comparisons for intermediate and near-visions too. The RT-5100 converges the eye pieces nicely and, if you increase pantoscopic tilt a little, there is never too much trouble testing near vision. Instead of the optometrist dictating that new correction is needed based on a verbal description of how marked a change there may be, here the client



makes the decision for themselves. I am often pleasantly surprised how even the subtle changes are considered worth prescribing by patients and this has a definite positive impact on our dispensing figures. It is important to remember that their current spectacles are often scratched and of inferior quality, so we sometimes use them for comparison.

Cleanliness and hygiene is assured by an easy-to-clean forehead rest and face shield around the lenses. Back vertex distance is easy to monitor (vital with high powers on phoropters) as one can press the PD button and see a graticule that gives the number of millimetres. Also, if the patient drifts away from the forehead rest a 'smart forehead position detector' (a blue LED that goes out when the forehead rest is pressed in) is really useful. If the patient has a slight head tilt we merely tilt the spirit level accordingly. This avoids ending up with inaccurate vertical prism, as long as one adjusts for changes in cylinder accordingly.

The phoropter can measure prism much more easily than previous designs, having the ability to change in 0.10 prism dioptre increments of rotary prism up to 20 prism dioptres in total. Try doing that in a trial frame easily.

The touch panel control is quite novel.



It incorporates a small colour LCD screen that tilts to accommodate both a sitting or standing position. If it is tilted beyond halfway the display reverses. This is claimed to be a world first. This is particularly handy as one can then pass it to the client to view as a reading chart (it has a specific reading chart within the potential displays). It can also at this stage be used as client information as it

can explain various eye conditions with visual simulations of AMD or cataract. Patients appreciate this information as the increase in patient information systems bears testament.

We are big fans of Test Chart 2000 and are hoping to get a link between the phoropter control and the chart. At present, the RT 5100 works best with one of the Nidek projectors. Pressing an icon on the control panel that requires Polaroid or red and green supplementary lenses will cause those lenses to be presented automatically. One can work in increments of 0.12DS on sphere up to -29.00DS to +26.75DS and in 0.25DC amounts in 1° stages of cylinder to ±8.75DC. This covers all the patients we have seen to date.

No looking back

We are still surprised to think of how many colleagues are risking their backs and sanity by fiddling around with trial lens sets and trial frames. The fact that one doesn't need to perpetually clean the trial lenses is surely reason enough to switch (we no longer have a pre-reg to do that). ●

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