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Bill Harvey takes a new look at a paediatric vision screener which now offers an extended range of assessments

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Figure 1

I remain surprised by the disjointed approach to paediatric vision screening in the UK.

My experience with my three children was that, unless I had suspected a problem they could have happily reached adulthood without any formal screening unless I had

arranged for testing. Non-optometric friends have confirmed the same and suggest a lack of awareness (still!) about the importance of early assessment, especially when compared with other developmental benchmarks such as growth rate or hearing. Can we be confident that without any formal pre- or early school treatment, we are detecting as early as is useful refractive, strabismic and ocular health concerns. Manifest strabismus or clear signs and symptoms of eye or vision disorders should be a cause of concern and assessed as early as possible, one would hope. But what about the less obvious strabismus or disease, or refractive anomalies?

Screening debate

Studies have suggested that at least 85 per cent of those aged up to 70 years have right and left eye refractions of 1 dioptre or less difference. Isotropic refractive error should arouse suspicion if myopic enough to cause problems, for example when children start school and have to view across a classroom. More significant hyperopia might also cause

visual symptoms or, often, manifest esotropia signs.



Figure 2

Lower values might remain undetected. In a study of 7843 children 7 years of age in the 1991 to 1992 birth cohort in Avon, UK, a 3.6 per cent prevalence of past or present amblyopia was recorded, with most having had treatment, thus leaving only 0.6 per cent with impaired vision. In this study, a strabismus prevalence of 2.3 per cent was recorded, including

73.4 per cent of cases that were convergent, 21.4 per cent divergent, and 5.2 per cent vertical.² Interestingly, the number of cases of amblyopia seemed to increase with lower socioeconomic status, perhaps sounding an alarm for those who advocate a purely self-reporting system of vision problem screening.

These numbers tally well with previous research that implies strabismus and amblyopia are common conditions in childhood, with strabismus affecting about 5 per cent of five year olds of whom 60 per cent have eso-deviations and 20 per cent exo-deviations. Amblyopia has an estimated prevalence in childhood of 1.2 per cent to 4.4 per cent depending on the defining criteria.^{3,4}



Figure 3

An effective screening programme might be designed to detect all these problems as early as necessary, but this would need to be justified in terms of its design and also about whether the outcome is worth achieving. On the one hand one might argue that detection of all non-manifest disorders, such as anisometropic amblyopia, is useful and is treatable.

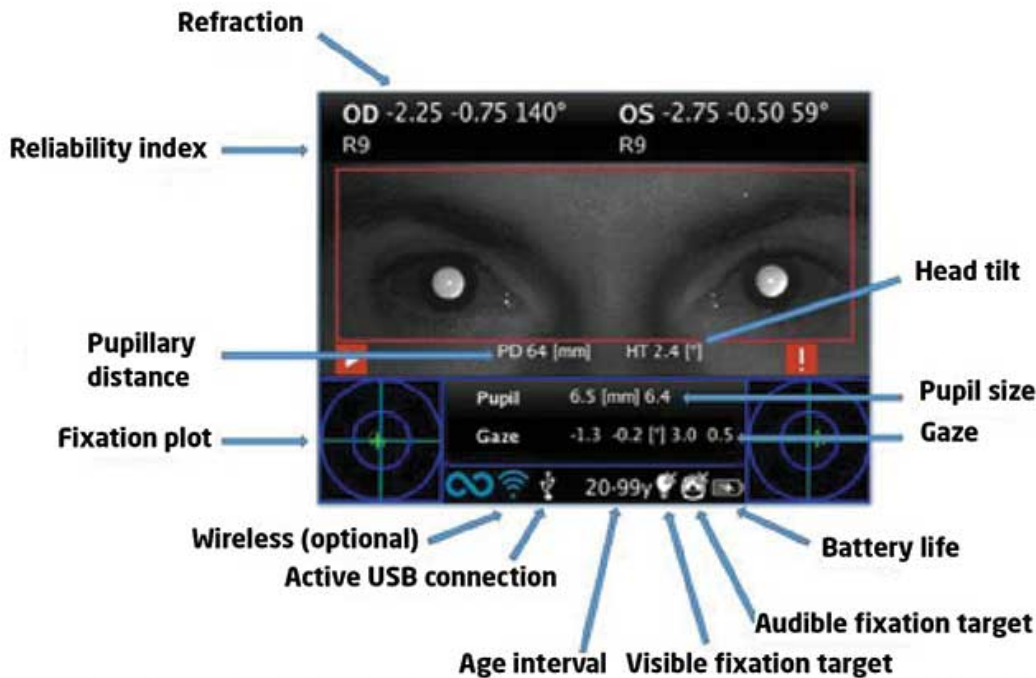
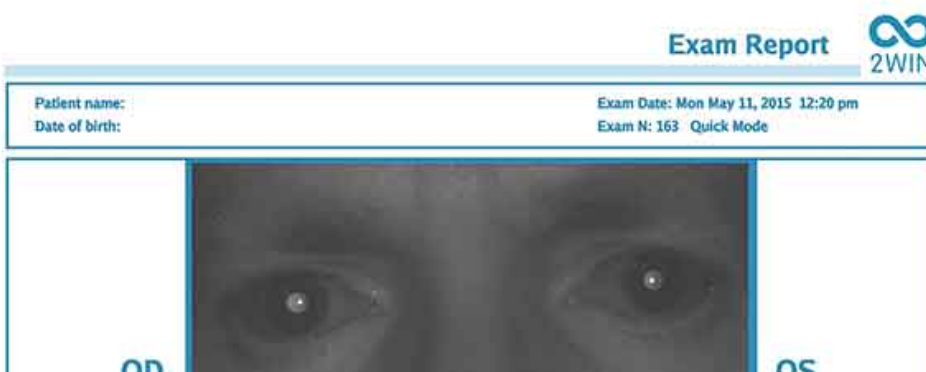


Figure 4

Some argue that strabismus or amblyopia may lead to failure to develop binocular vision which may prevent an individual pursuing certain occupations. There may be impact on educational performance and visuospatial coordination, though a lack of evidence here due to ethical concerns about effective research to prove the point, is often cited as proving the opposite. The associated cosmetic or visual disorder may interfere with social and psychological development with potentially serious effects for patients young and old. Eye disease later in life is likely to have greater impact on those with monocular visual reduction.^{5,6}



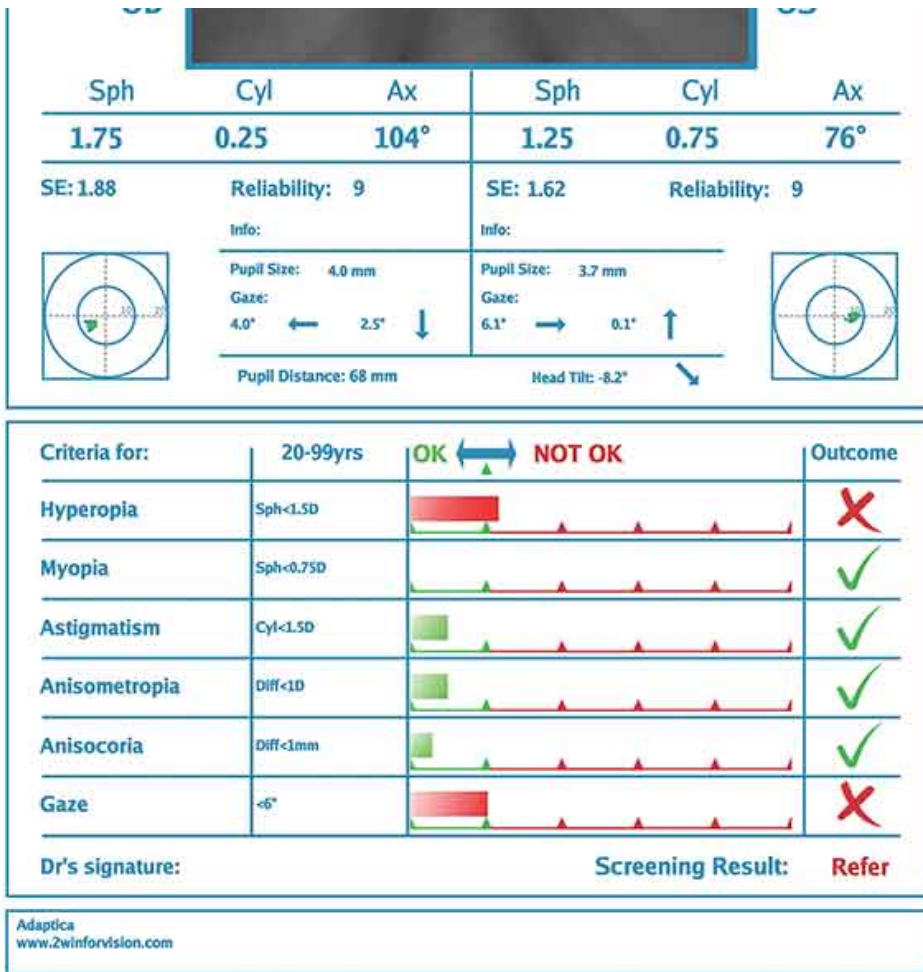


Figure 5

Arguments about the effectiveness, both in terms of cost and impact on quality of life, have often questioned the need for a standardised screening approach. Though preschool screening at 37 months was associated with an improved treatment outcome for individuals with amblyopia, the improvement was clinically small and disappeared when considering all children offered screening rather than only those who received it.⁷ The debate rages and authorities suggest further research is needed into improving the effectiveness of vision screening for preschool children, while in the interim studies do not conflict with current recommendations⁸ for school entry screening by orthoptists (by no means available across the UK).



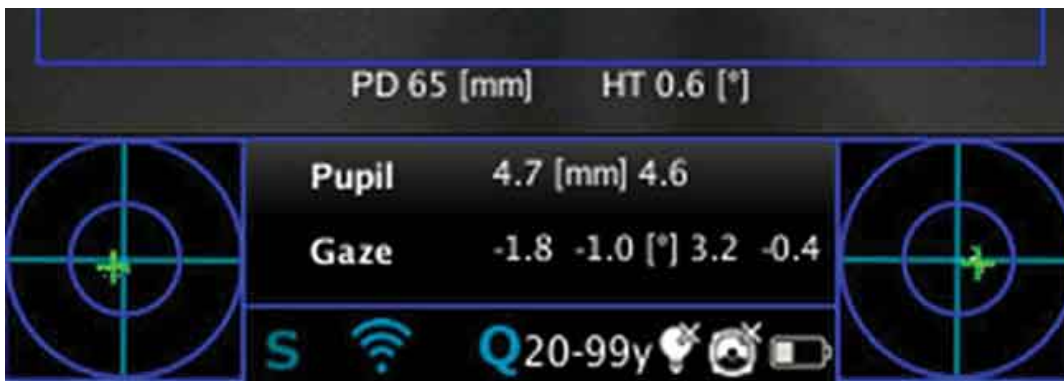
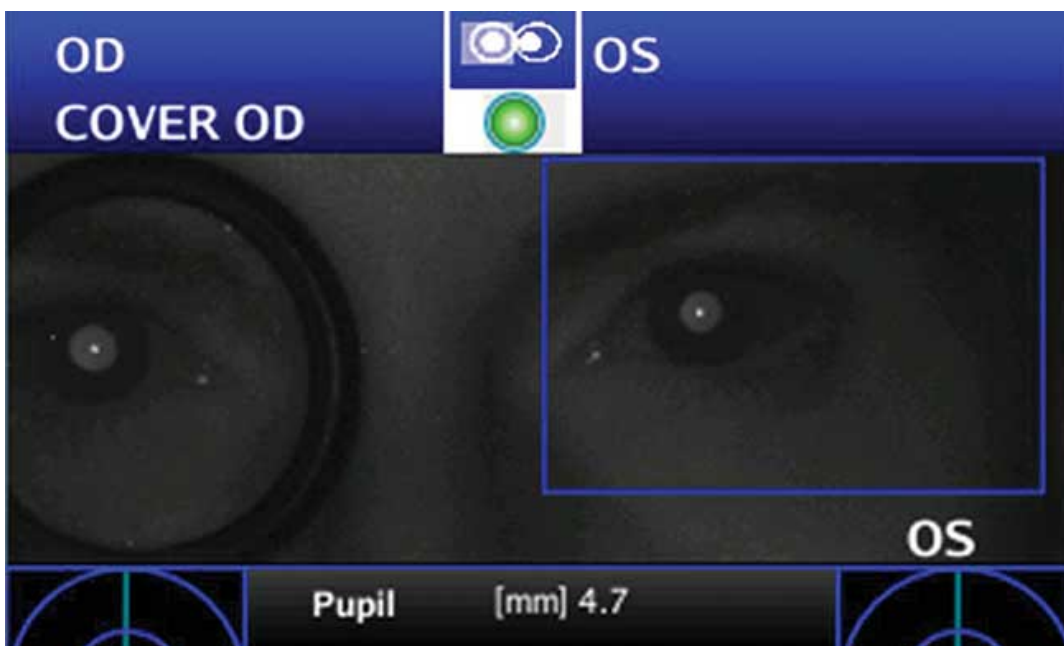


Figure 6

It might be argued that, as eye care practitioners, we should be interested in an across the board screening arrangement if we are happy that it is quick and easy to implement, sensitive enough to detect non-manifest anomalies, and that we can back it up with full refractive and amblyopic management, in many cases within our primary care setting. Lack of evidence for adverse impact of unilateral amblyopia should no more influence us than those arguing they can still function without wearing their glasses!

2Win

The 2Win paediatric vision screener from Adaptica (UK distributor Mainline Instruments) is a binocular autorefractor adapted to suit screening of the very young patient (Figures 1 and 2). I first reviewed this two years ago⁹ and was impressed by its easy use (even my young son was able to achieve reliable readings on his friends!), its incorporation of sound and light displays to help keep the attention of even the most fractious infant (Figure 3) and the one metre working distance and binocular assessment meant that, even with some accommodative fluctuation, it could accurately detect anisometropia (Figure 4 shows the information on screen after a test, and Figure 5 shows a data sheet for an anisometropic hyperope).



tool that reliably should detect non-manifest and measure manifest concerns in the young, the latest incarnation of the 2win cannot be recommended enough.

References

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