USING IN-OFFICE BIOMETRY TO TRACK MYOPIA

The ability to show patients measurable changes in their eyes is a valuable tool for encouraging their participation in treatment.

By Susan Walton, OAM

I am the sole practitioner of a private practice located in Newcastle, New South Wales, Australia. My team and I provide comprehensive behavioral optometric care to all ages of patients, although more than 50% of our patients are pediatric.

Over the past several years, my staff and I have noticed somewhat higher rates of myopia in younger and younger patients, which is mirroring a worldwide trend. According to a systematic review and meta-analysis of 145 studies on the global prevalence and estimated trends of myopia and high myopia from 2000 to 2050, approximately 4,758 million people (49.8% of the world's population) will have myopia by 2050.[1] On their own, this data suggests a growing need for screening services to track myopia and its progression. In addition, myopia has well-known associations with certain comorbidities, such as retinal detachments and glaucoma.

ADOPTING OPTICAL BIOMETRY

My staff and I pride ourselves on being early adopters of technological advances so we can remain at the forefront of comprehensive eye care. We had been using a topographer to fit orthokeratology (orthoK) lenses, but we wanted an objective and reproducible way to measure and track biometric changes in our patients' eyes.

Towards this goal, in January 2024, we purchased the AL-Scan M optical biometer for myopia management (NIDEK) to objectively assess the condition and its progression in our patients' eyes. With the AL-Scan M, we've begun capturing baseline biometry measurements on eyes that show certain markers of myopia during an evaluation, or which are already slightly myopic. Especially if the patient is a child, I will do my best to find any ways of preventing these signs from progressing.

Figure 1. Dr. Walton and a colleague demonstrate the ease of using the AL-Scan M and its small footprint in the clinic.

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IN-OFFICE UTILITY

The ability to measure an eye's axial length has been around a long time, but the capability to do it in one's own practice via an affordable device is more recent. The AL-Scan M is so easy and efficient to use that all my staff are trained to use it to maintain efficiency in our schedule. We position the patient in front of the device's chin rest, enter their details, and press a button, and the AL-Scan M scans both eyes within 30 seconds (Figure 1). We like that the device helps us position patients correctly for the scans. If the patient is sitting too far away or if their chin is too low, the biometer alerts us to adjust accordingly. It's super easy and efficient; using the AL-Scan M adds no time to our workload. Furthermore, the device stores patient data digitally after each scan.

USING THE AL-SCAN M FOR PATIENT EDUCATION AND MYOPIA MANAGEMENT

When patients show clinical signs of developing myopia, I explain to them (or, to their guardian) the necessity of taking axial length measurements at each visit to track the myopia's progression over time. As I accumulate these data, I can print out a graph to show them objectively whether their eyes are becoming more myopic at a concerning rate. The data help me decide whether to suggest a specialty prescription for either spectacles or contact lenses for my patient. If the patient or the parents resist these options, then I direct them to a website that provides education about myopia and its effects on visual performance.

CLINICAL ADVANTAGES OF THE AL-SCAN M

The AL-Scan M incorporates NIDEK's acclaimed 3D auto tracking and auto shot, which enable physicians to easily take accurate biometric measurements while keeping patients comfortable. The 3D auto tracking follows eye movements along the X-Y-Z directions to ensure accurate alignment of the eye. Once correct alignment is completed, the auto shot immediately captures the image and data.

In addition, the AL-Scan M comes with the Myopia Viewer MV-1 software (Figure 2). The MV-1 software, which can be loaded on a physician's PC, creates data charts from patients' scans over time. The software compares these patient charts against two different myopia growth curves, one defined by Prof. Jan Willem Lodewijk Tideman in the Netherlands,[2] and the other by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) in Japan. With these charts, the clinician can manually draw a line that shows the eye's possible axial length growth in the future. Thus, the MV-1 charts become an educational tool for patients (and their guardians) on their degree of myopia compared to an age-matched population and their expected rate of progression according to the growth curves.

Data integration between the AL-Scan M and the MV-1 is simple. After taking a patient's axial length measurements, the clinician can transfer the result from the AL-Scan M into MV-1, which will either add the data automatically under the patient's existing name, or it will create a new file under the patient's name. For practitioners who already have a NIDEK auto refractometer, the MV-1 can receive the refraction data seamlessly.

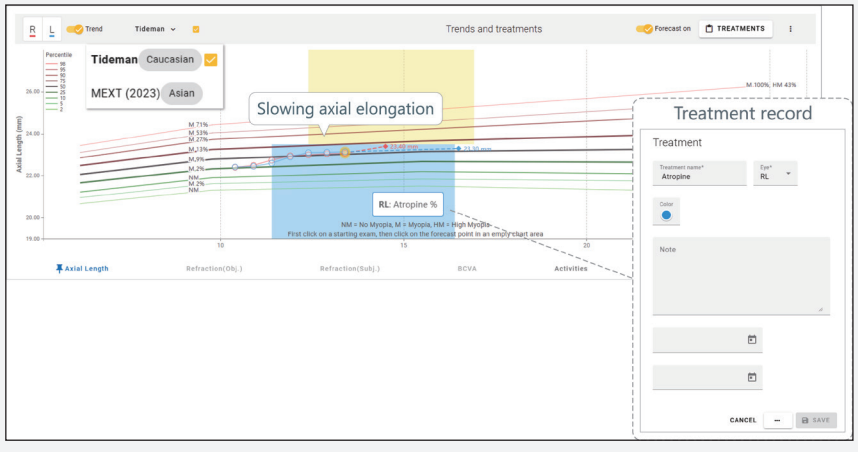

Figure 2. An example of the Myopia Viewer MV-1 software, which works on a PC. The MV-1 receives measurement data from NIDEK's devices and plots those values. It also includes two different growth charts and displays treatment records, if any. This report can be printed out.

There is a wonderful website published by Australian optometrists, a husband-and-wife team, who are at the forefront of education about myopia and the various ways to manage it (myopiaprofile.com).

CONCLUSIONS

I think the AL-Scan M is an excellent tool for clinicians, especially those whose patient demographics include myopic patients. The device is easy to use, straightforward to integrate into the practice's workflow, and highly accurate in the measurements it takes. Moreover, it's not particularly expensive in terms of some of the equipment that we buy, and the data it provides are extremely relevant for clinical decision-making. For example, because we already have an auto refractometer, the TONOREF III (NIDEK), we were able to immediately add the AL-Scan M for taking axial length measurements to track and manage myopia in our patients.

Regarding maintenance, our local distributor, BOC Instruments, supports us with remote updates to the MV-1 software, which is very convenient. The device does not require much space, using it does not impact our clinical flow, and it offers another way of encouraging myopic patients to consider treatment options like myopia control spectacles, myopia control contact lenses, orthoK lenses, or even atropine as appropriate. If a parent or patient needs any degree of additional information to encourage them to be diligent in addressing and reducing the rate of change of their or their child's increasing myopia, then the AL-Scan M is the tool. ■

1. Holden BA, Fricke TR, Wilson DA, et al. Global prevalence of myopia and high myopia and temporal trends from 2000 through 2050. *Ophthalmology*. 2016;123(5):1036-1042.
2. Tideman JWL, Polling JR, Vingerling JR, et al. Axial length growth and the risk of developing myopia in European children. *Acta Ophthalmol*. 2018;96(3):301-309.

Product/mode name: OPTICAL BIOMETER AL-Scan

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