MANAGEMENT OF MYOPIA PROGRESSION AND DRY EYE DISEASE

Investing in your practice with MYAH may be the right choice for you.

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Eye care providers face a series of questions when considering equipment upgrades. Will a new device result in more robust data collection and streamlined efficiency? Can a single platform contain multiple modalities that address several disease states? Will an upgrade make it easier for me to communicate with my patients and drive compliance with the treatments I recommend? When it comes to MYAH® (Topcon Healthcare Inc., Tokyo, Japan), the answer to all three questions is yes.

This new device can be a good solution for clinicians already managing or thinking about expanding their clinical routine to see patients with myopia progression or dry eye disease (DED).

MODERN MYOPIA MANAGEMENT

Innovative clinicians seek to leverage the latest technological advancements to provide patients with cutting-edge therapy for myopia management. Having access to a greater array of high-quality data deepens a clinician's understanding of the interactions between patient history, myopia progression risk, and intervention results.

Capturing Axial Length

Given the understandable emphasis on axial length in myopia management,[1] we need technology that easily and accurately captures data for new patients and compares those data over time for returning patients. MYAH axial length acquisition is fast, allowing its measurement in children, which can often be a challenge if it takes too long or needs repeating for better accuracy.

New patients with myopia benefit from risk of axial length progression evaluation, since it can be estimated from baseline data relative to reference data. Similarly, patients with already known risk factors associated with myopia progression can be assigned a follow-up regimen after baseline data collection.

Early Diagnosis and Follow-Up

Returning patients whose condition is being observed or who are undergoing treatment are best cared for when longitudinal data are examined for trends. MYAH's Parental Report shows changes in axial length and spherical equivalent (when imported) over time, allowing clinicians to better initiate and evaluate therapy. The initial dataset from the Myopia Research Group of Erasmus University Rotterdam, Netherlands became known as the *Tideman curves*. Percentile charts for axial length show the risk of developing myopia and high myopia, according to the patient age and gender (Figure 1). Tracking myopia progression in patients with early disease or in patients with risk factors may lead to timelier intervention.

Risk factors for developing future myopia include patients between the ages of 6 and 7 with a family history of myopia and patients who experience an increase of at least -0.50 D in refractive error in a year. Interestingly, patients in this same age group with only slight hyperopia also have an increased risk of becoming myopes (pre-myopes).[2] All these patients are referred to as pre-myopes and benefit from closer axial length monitoring.

Together with axial length measurement, the corneal data provided by Placido disc topography, including anterior corneal curvature and aberrations, add relevant information about the elements contributing to myopia progression. Corneal abnormalities, such as keratoconus, can also lead to an increase in myopia, and therefore it is important to screen for keratoconus before considering myopia management. In addition, such corneal conditions benefit from early diagnosis to enable the most effective management, which may include corneal cross-linking.

Adjusting Treatments

Clinicians tracking the effects of low-dose
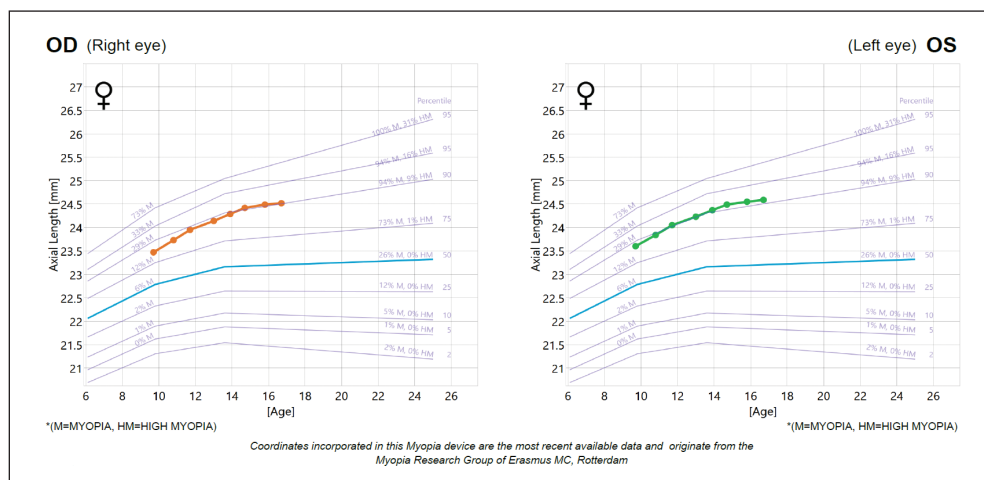
Watch MYAH and Myopia

Figure 1. The MYAH Parental Report produces an easy-to-understand longitudinal analysis of axial length, compared with extensive and exclusive normative data, showing the risk of developing myopia and high myopia according to the patient age and gender.

atropine therapy may find the dynamic pupillometry to be a useful tool for dose titration. This function may also be employed by clinicians who use orthokeratology to manage myopia, where the pupil size in relation to the size and position of the treatment zone is key.

MYAH also helps eliminate some of the guesswork when fitting or managing patients with orthokeratology lenses by capturing topographic data for use in the built-in lens fitting simulator, or automatically exporting to a wide range of lens provider sites. This both increases patient comfort and streamlines visits, reducing the number of trial lenses.

In addition, having the opportunity to show both qualitative and quantitative data to the patient can be very useful for their education. The recently added Parental Report focuses on the patient, or in the case of paediatrics, their parents (incorporating Figure 1). The report helps understand the risk of myopia, as well as the impact of any intervention. On top of that, it has personalized messages for the paediatric patient, assisting in treatment engagement and compliance.

DRY EYE DISEASE EVALUATION

The heterogenous and multifactorial nature of DED can frustrate both patients and eye care providers. However, the field has grown in its understanding and measurement of the disease's anatomic links (eg, Meibomian gland dysfunction, blink patterns) and clinical characteristics (eg, non-invasive tear break-up time, tear meniscus height). MYAH captures data points related to all these factors, assisting clinicians to offer early diagnosis, classification, and targeted therapy tailored to their patients' individual needs—all while occupying a small footprint in an otherwise crowded clinic.

Showing and explaining these data to patients assists in their understanding of their disease status and improvements with treatment. These metrics are a great way to maintain patient engagement with the treatment, especially for a condition in which symptoms can take a long time to improve and treatment compliance is so crucial.

Watch MYAH and Dry Eye

Meibography

The Meibography acquisition captures real-time snapshots of a patient's Meibomian gland anatomy. Many clinicians use the percentage Meibomian gland loss, as calculated by MYAH's software, to provide evidence of the need for in-clinic treatments for DED, to supplement patient-administered treatments.

Ocular Surface and Blink Analyses

A detailed report on the characteristics and dynamics of a patient's tear film is important when diagnosing and treating DED. Evaluations of noninvasive tear break-up time (NITBUT), tear meniscus height, blink analysis, and how corneal aberrations and hence visual quality changes between blinks, can all be performed by MYAH.

The NITBUT identifies which areas of the patient's ocular surface are first affected by quick tear film evaporation. The analysis of NITBUT together with the patient's interblink interval, allows automatic calculation of the ocular protection index (OPI), which clinicians can use to determine the risk of potential corneal damage secondary to ocular surface disease. This is also a particularly advantageous tool for detailed patient discussion regarding the importance of developing good blinking habits and intervening to improve NITBUT.

Dry Eye Summary Report

Different dry eye assessment tools performed during an examination can be combined into a single report on MYAH (Figure 2). Having access to NITBUT, blink analysis, tear meniscus height, and Meibography information for both eyes at a glance, takes the dry eye evaluation to a higher level. It not only improves the dry eye evaluation and the clinic workflow, but it is also a powerful tool for illustrating the alterations caused by dry eye to the patient. This helps them better understand their clinical situation, aiding discussions about in-office treatment options such as intense pulsed light (IPL) and increasing compliance with any at-home treatment.

SINGLE PLATFORM, MULTIPLE MODALITIES
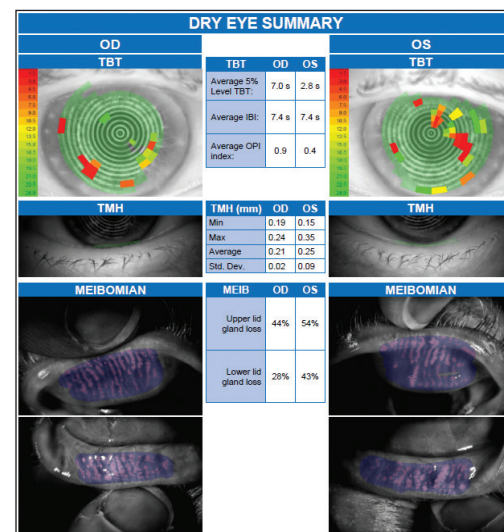
Eye care providers seeking increased

Figure 2. Clinicians use the MYAH Dry Eye Summary Report to have an overview of a patient's tear film and ocular surface. This comprehensive assessment improves clinic workflow and facilitates the clinical decision on the disease diagnosis and management.

precision of evaluation and care may find that the MYAH is a worthwhile investment for their practice. Given the range of patients who can benefit from the multiple modalities contained in the platform—from paediatric pre-myopic patients to long-term DED patients—return on investment can be quickly realized. In addition, you will be using cutting-edge technology to improve your clinic workflow and at the same time, provide the best solutions to your patients. ∎

1. Tideman JW, Snabel MC, Tedja MS, et al. Association of axial length with risk of uncorrectable visual impairment for Europeans with myopia. *JAMA Ophthalmol*. 2016;134:1355-1363.
2. Jones-Jordan LA, Sinnott LT, Maney RE, et al; the Collaborative Longitudinal Evaluation of Ethnicity and Refractive Error (CLEERE) Study Group. Early childhood refractive error and parental history of myopia as predictors of myopia. *Invest Ophthalmol Vis Sci*. 2010;51(1):115-121.

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