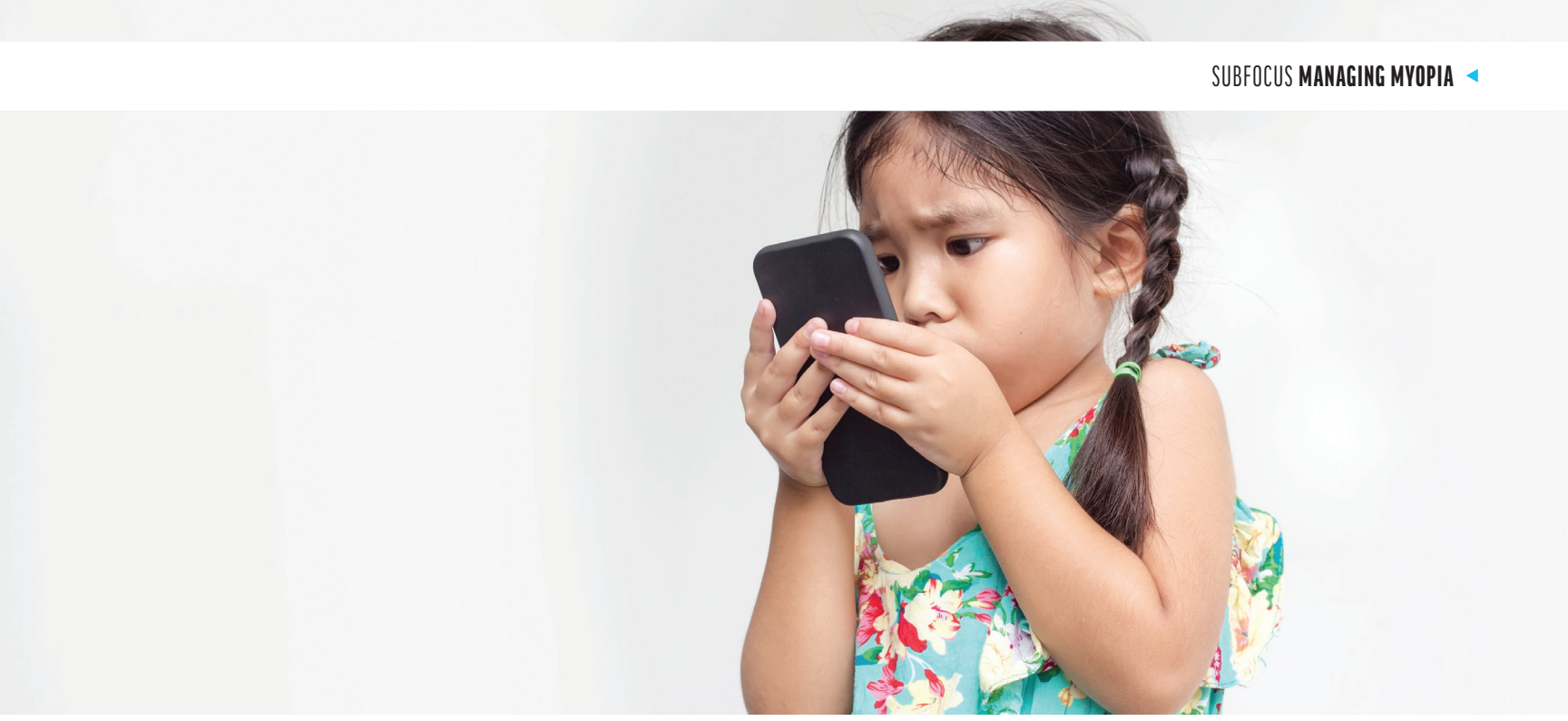


TAKING STOCK OF THE LATEST DEVELOPMENTS IN MYOPIA

A what's what of surgical and nonsurgical treatment options, as well as new diagnostic tools and company outreach efforts.

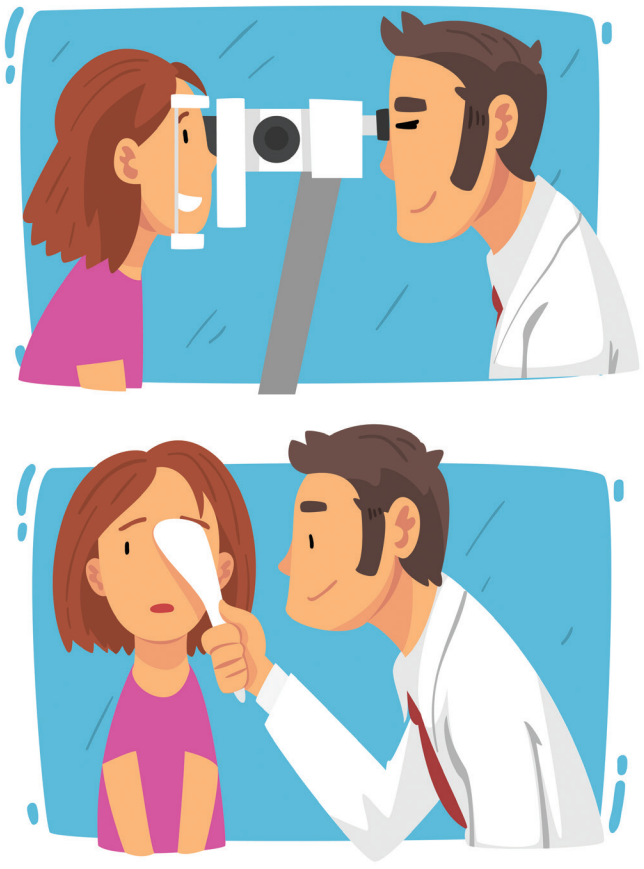
BY KAREN RODEMICH ROMAN, EDITOR-IN-CHIEF

Projections suggest more than half the world will be myopic, or nearsighted, by 2050.[1-3] That's a lot of refractive error to correct, and as any good clinician knows, one correction modality does not fit all. Historically, myopia management has not been an area of rapid growth. It wasn't until the 15th century that the first concave lenses to correct nearsightedness were invented in Europe by Nikolaus von Kues Krebs (aka Nicholas of Cusa).[4]

In the 18th century, Benjamin Franklin introduced bifocals, which were thought to help reduce eye strain and slow myopia progression.[5] Then, in Germany in 1888, August Müller used a blown-glass scleral lens that he created to correct his own myopia.[6] Years later, in 1930, the development of polymethyl methacrylate opened the door for companies to manufacture plastic scleral lenses.[7] Then came the use of atropine drops in 1999,[8] which have since been shown to slow the progression of myopia in children. Nighttime wear of orthokeratology lenses was first introduced in 1995.[9] More recently, specialty contact lenses, including multifocal lenses or soft contact lenses with peripheral defocus technology, such as MiSight 1 day contact lenses (CooperVision), have been employed to help control myopia progression. Myopia control spectacles, such as Stellest lenses (Essilor) and Zeiss MyoKids, Zeiss MyoVision/Pro/Ace, and Zeiss MyoCare (Zeiss), have also been developed in recent years.

With the increasing prevalence of myopia, it's important for eye care practitioners to have as many tools available to them to help halt the progression of this condition as early as possible. Let's take a look at the latest innovations and initiatives to make headlines in the past several months.

Editor's Note: Any relevant product, device, technology, or initiative not mentioned here was unintentionally excluded.



TECHNOLOGY/DIAGNOSTICS

A team of researchers from Tokyo Medical and Dental University in Japan have recently pioneered the use of a new type of OCT to inspect the detailed structure of the sclera. Using a technique called polarization-sensitive OCT, where the polarization of light acts as a contrast mechanism, the researchers investigated the properties of the collagen fibers in the scleras of patients with highly myopic eyes.[10] Additionally, they concentrated on the link between myopathy and the sometimes-pathologic condition, dome-shaped macula (DSM). A total of 89 highly myopic eyes from 72 patients, mostly older than 50 years of age, were included in their analysis.

Senior author Masahiro Yamanari, PhD, notes, "Given the common occurrence of scleral pathologies, such as DSM and staphylomas in eyes with myopia, recognizing fiber patterns could provide important insights that may be relevant to developing targeted therapies to address scleral abnormalities early and mitigate potential damage to the overlying neural tissue."

SURGICAL OPTIONS

Refractive surgery options to correct refractive error and improve distance vision have been around for years, but with time, the instruments have become more advanced and the software more sophisticated.

In January, the FDA approved the Teneo Excimer Laser Platform (Bausch + Lomb) for LASIK vision correction surgery for myopia and myopic astigmatism.[11] Teneo provides several unique features not offered by previous excimer laser platforms, including its ability to operate at 1,740 Hz, which is more than three times the speed of the laser's repetition; its customizable graphical user interface touchscreen, which is designed to simplify setup and allow surgeons to access patient data without flipping through screens; and a 360° swiveling microscope that adapts to surgeon height and posture, which aids in surgeon comfort.

Zeiss in January also announced the FDA approval of its Visumax 800 with SMILE pro software to surgically treat nearsightedness, with or without astigmatism.[12] The software allows faster treatment, creating the lenticule in less than 10 seconds with the help of a laser pulse repetition rate of 2 MHz. Not only does it reduce patient stress, according to Zeiss, but it also improves surgeon flexibility, as it is compatible with a larger variety of surgical beds.

Johnson & Johnson Vision in September 2023 announced the launch of the Elita Platform, which enables surgeons to perform refractive correction on patients with myopia—with or without astigmatism—using the new smooth incision lenticule keratomileusis procedure.[13] According to the company, the Elita Platform provides surgeons with consistently smooth and easy lenticular removal through a microscopic incision. The cornea is then reshaped, correcting the eye to flawless vision with next-day results and recovery.[14-16]

NONSURGICAL OPTIONS

As for what's new in nonsurgical myopia management approaches, there are three highlights to note. They include a photobiomodulation platform, FDA Breakthrough Device Designation for a spectacle lens, and news on red light therapy.

Photobiomodulation

Dopavision in May announced topline findings from its MyopiaX-1 proof-of-concept clinical trial.[17] MyopiaX is a first-in-class, child-friendly digital platform that integrates myopia treatment into daily routines, leveraging consumer electronics that noninvasively stimulate specific cells in the eye to regulate innate signaling pathways. Conducted across six European countries over 6 months, the randomized trial assigned 124 children with myopia in a 2:1 fashion to MyopiaX or a control group. MyopiaX was safe and tolerable over the 6-month trial period, with no ocular safety events reported, validating the treatment as a low-risk, noninvasive approach. The ongoing clinical trial is scheduled to wrap up this month.

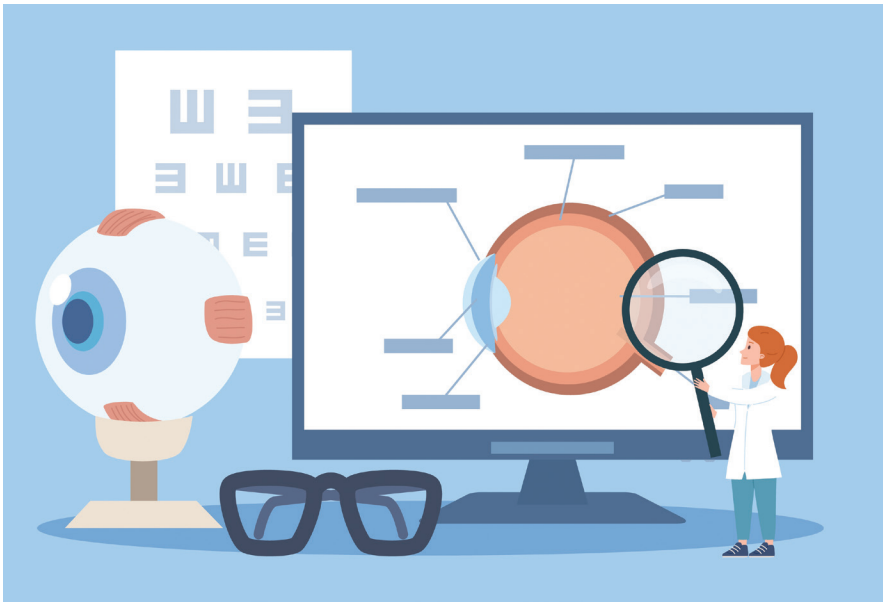
New FDA Designation

The FDA in February granted Breakthrough Device designation to SightGlass Vision's Diffusion Optics Technology spectacle lenses, which are designed to slow myopia progression in children.[18] Full 4-year outcomes from the pivotal CYPRESS study reported in September 2023 statistically significantly slowing of axial length progression and cycloplegic spherical equivalent refraction.[19]

Red Light Therapy

Low-level red light (LLRL) therapy has been used in China for the past few years,[20] and the treatment has been approved for myopia treatment in some European countries and in Australia. (The therapy is not FDA-approved in the United States.) LLRL therapy is delivered in twice-daily sessions lasting 3 minutes until the end of a patient's teenage years and has been shown to slow progression of myopia by up to 80%.[21]

Any clinician thinking about the (off-label) use of LLRL therapy in patients should consider this: A recent article published in *Ophthalmic & Physiological Optics* warns that the benefits of LLRL therapy may cause other kinds of long-term damage. Specifically, with regard to the two LLRL devices the researchers evaluated in their study, 3 minutes of continuous viewing approached or surpassed the maximum permissible exposure of LLRL devices for myopia control, putting the retina at risk of photochemical and thermal damage. The authors urge clinicians and parents not to try the therapy until better safety data become available.[22]



NEW EFFORTS/INITIATIVES

Innovative new products and procedures have surfaced in the name of managing myopia, but various companies and institutions have also been making headlines with their efforts to educate the masses about the condition. As we all know, early detection leads to earlier intervention, which can help head off the risks associated with high myopia, including open-angle glaucoma, cataracts, retinal tears, and myopic maculopathy or myopic macular degeneration.[23]

Myopia Insights Hub Unveiled

Zeiss Vision Care in May launched the Myopia Insights Hub.[24] The hub is an online platform that provides regular updates and expert insights on myopia and offers a range of features designed to keep users informed and engaged. There's a "Newsticker" section, which presents the latest findings from Zeiss's research and development efforts, and an "Article and Insights" section that features contributions from leading myopia experts. Additionally, the hub features an "Ask the Expert" section and provides access to resources from the Association for Research in Vision and Ophthalmology.

Myopia Action Month

Myopia Profile in September announced the return of Myopia Action Month. The no-cost global event is planning to deliver 30 days of tailored education, industry collaboration, and encouragement to empower eye care professionals to more effectively address the disease.[25] This year's program follows last year's successful inaugural year and features two educational tracks: foundational and advanced, each offering an on-demand package of four 15-minute recorded lectures covering a variety of topics. Additional information will be available about

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Myopia Action Month, including how to register, on myopiaprofile.com in the coming months.

Change Agents Named for The Myopia Collective

In June, a partnership between the American Optometric Association and CooperVision was formed to rally the profession and its allies to shift the focus on myopia from mere correction to comprehensive treatment.[26] The Myopia Collective, as the partnership is called, also announced its inaugural cohort of Change Agents, who will receive training to empower them to lead the charge in their communities and to make significant differences in the lives of children with myopia. Apart from Change Agents, everyone is invited to become members of The Myopia Collective.

THE FIGHT IS ON

Now that myopia is considered a pandemic by many, it is receiving much more attention, which has led to the innovations and educational initiatives you just read about. With continued efforts to spread awareness, diagnose refractive error as early as possible, and employ effective management strategies, there's hope that in the future, we may see these myopia prevalence numbers start to trend downward. ■

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