



Call for Myopia Management Prioritization: Federal Focus and Evolving Research

Background

In September 2024, the National Academies of Sciences, Engineering and Medicine (NASEM) released a report that makes an urgent call for new federal funding, research, surveillance and disease classification to counter myopia development and progression. The NASEM report outlines a policy research agenda to address gaps in understanding myopia's increasing incidence.

The report recommends that the National Institutes of Health and other funding agencies solicit and fund research to investigate the genetic and environmental mechanisms in the development of myopia, and funding agencies should support innovative, multidisciplinary research to identify mechanisms and novel treatments for myopia. The report goes on to recommend that the Centers for Disease Control and Prevention (CDC) and state health departments collect consistent, harmonized data on the prevalence of myopia in the U.S., prioritizing longitudinal surveillance on refractive error prevalence in children using standardized procedures. CDC should also coordinate with the World Health Organization to create consistent definitions and monitoring methods that would benefit the global community.¹ The NASEM study underscored that to further develop the knowledge base related to myopia and to reduce the incidence and negative consequences of the disease, eye care professionals, federal agencies and funding agencies need to make improvements to standardize care, increase funding to study treatments, encourage outdoor time and overall facilitate the standardization of assessments and diagnostics.²

Research continues to be conducted on the impact of contact lenses in addressing myopia progression. Included in this Health Policy Institute (HPI) brief is information regarding recent studies focused on contact lens use. This is not a comprehensive overview of all research related to myopia management. Additional (HPI) briefs will focus on other interventions for slowing the progression of myopia.

Dual Focus Contact Lens Efficacy

[Long-term Effect of Dual-focus Contact Lenses on Myopia Progression in Children: A Six-Year Multicenter Clinical Trial](#)³

Purpose: Evaluate the effectiveness of dual focal contact lenses in sustaining slow progression of myopia.
Methods: Axial length measurements from 170 eyes in a six-year clinical trial of dual focus myopia control lens (MiSight® 1 day, CooperVision®). Treatment groups included one having undergone six years

¹ National Academies of Sciences, Engineering, and Medicine. 2024. *Myopia: Causes, Prevention, and Treatment of an Increasingly Common Disease*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/27734>.

² [Myopia Report Highlights.pdf](#)

³ Chamberlain, P, Hammond, DS, Arumugam, B, Bradley, A. Six-year cumulative treatment effect and treatment efficacy of a dual focus myopia control contact lens. *Ophthalmic Physiol Opt.* 2023; 00: 1–7. <https://doi.org/10.1111/opo.13240>

of treatment (T6) and the other having three years of treatment after three years of wearing a single vision control lens (T3).

Results: When compared to the predicted accumulated growth of untreated eyes, six years of treatment reduced growth by 0.52 mm, while three years of treatment initiated three years later reduced growth by 0.19 mm. Treated eyes experienced significantly less growth compared to untreated myopic eyes and exhibited growth patterns closer to age-matched emmetropic eyes. If the goal is to match the accelerated axial growth of myopic individuals to emmetropic levels for 100% efficacy, the similar growth rates observed in eyes treated with MiSight® and emmetropic eyes suggest a high level of efficacy. On average, the growth reduction of T6 ranged between 86% and 112% of the emmetropic target. MiSight® reduced the likelihood of fast growth defined as $\geq 0.3\text{mm}$ of axial progression by 95% over three years when compared to untreated eyes.

[Dual Focus Contact Lens Successfully Slows Myopia Progression in Both Fast and Slow Progressors](#)⁴

Purpose: Compare eye growth rates before and during myopia control treatment with CooperVision MiSight® 1 day contact lens.

Methods: Applying data from the CooperVision®'s multiyear, international MiSight® 1 day clinical trial. The study analyzed individual eye growth rates before and during treatment with MiSight®. Eyes that responded to treatment were divided into quartiles of slowest to fastest progressing.

Results: The fastest growing eyes wearing single vision contact lenses during the first three years of the study slowed the most when they were moved into the MiSight® 1 day treatment lens. The slowest growing eyes during pre-treatment effectively stopped progressing, which means that both fast and slow progressors benefit from MiSight® 1 day contact lenses for myopia management.

Soft Contact Lens Safety in Children

[Adverse event \(AE\) rates in the retrospective cohort study of safety of pediatric soft contact lens wear: the ReCSS study](#)⁵

Purpose: To ascertain the safety of soft contact lens (SCL) wear in children through a retrospective chart review including real-world clinical practice settings.

Methods: The study reviewed clinical charts from 963 children mostly from seven U.S. eye care clinics. Subjects were first fitted while 8-12 years old with various SCL designs, prescriptions and replacement schedules, and observed through age 16.

Results: The study encompassed 2,713 years-of-wear with the average age at first fitting being 10.5 years old. The annualized rate of noninfectious inflammatory AEs was 0.66%/year (95% CI 0.39-1.05) and 0.48%/year (0.25-0.82) for contact lens papillary conjunctivitis. After adjudication, two presumed or probable microbial keratitis (MK) cases were identified, a rate of 7.4/10,000 years-of-wear (95% CI 1.8-29.6). Both inflammatory and MK rates are comparable to established rates among adults wearing SCLs.

⁴ Kwan, et al. Dual focus contact lens successfully slows myopia progression in both fast and slow progressors. Poster presentation at the Global Specialty Lens Symposium, January 2023.

⁵ Chalmers RL, McNally JJ, Chamberlain P, Keay L. Adverse event rates in the retrospective cohort study of safety of paediatric soft contact lens wear: the ReCSS study. *Ophthalmic Physiol Opt.* 2021 Jan;41(1):84-92. doi: 10.1111/opo.12753. Epub 2020 Nov 11. PMID: 33179359; PMCID: PMC7839756.

[Incidence of Corneal Adverse Events in Children Wearing Soft Contact Lenses](#)⁶

Purpose: There is increasing interest in fitting children with soft contact lenses, in part due to the increase in prescribing of designs to slow the progression of myopia. This literature review summarizes large prospective and retrospective studies that include data on the incidence of microbial keratitis and corneal infiltrative events (CIEs) in children wearing soft contact lenses.

Results: Seven prospective studies published between 2004 and 2022 were identified representing 3,752 patient years-of-wear in 1,756 children, nearly all of whom were fitted at age 12 years or younger. Collectively, they report one case of microbial keratitis and 53 CIEs, of which 16 were classified as symptomatic. The overall incidence of microbial keratitis was 2.7 per 10,000 patient years (95% CI: 0.5-15), and the incidence of symptomatic CIEs was 42 per 10,000 patient years (95% CI: 26-69). Two retrospective studies were identified representing 2,545 patient years-of-wear in 1,025 children, fitted at age 12 years or younger. One study reports two cases of microbial keratitis giving an incidence of 9.4 per 10,000 patient years (95% CI: 0.5-15). The incidence of CIEs seems to be markedly lower than in adults.

Orthokeratology

[CLEAR - Orthokeratology](#)⁷

Purpose: This review article provides a comprehensive overview of orthokeratology (OK), including its history, mechanisms of refractive and ocular changes, and current use in correcting myopia. It also covers topics of candidate selection, fitting process, factors impacting success and safety/compliance. **Findings related to myopia management:** OK lenses are expected to slow myopia progression by approximately 30% to 60%. On average, the axial elongation over the first two years of ortho-k lens wear is 0.16 mm per year for children aged six to 16 years across a range of ethnicities, which is comparable to annual eye growth in emmetropic children aged 6 to 10 years in the U.S. The exact mechanism underlying the myopia control effect of OK is not fully understood. Monitoring myopia progression during orthokeratology treatment is crucial, with accurate axial length measurements before and during OK wear being essential for tracking progression. Eye care professionals personalize treatment based on factors such as age, refractive status, parental myopia, individual needs and lifestyle, although there isn't a single evidence-based approach. If ortho-k proves inadequate, alternative interventions should be explored. Close monitoring of myopia progression post-ortho-k therapy is critical, as rapid axial growth (i.e., rebound) may require timely intervention. However, resuming lens wear slows axial elongation again, suggesting the need for continued ortho-k use during years of likely myopia progression.

[The Effect of an Overnight Corneal Refractive Therapy Lens on Vision and Corneal Curvature in Chinese Myopes](#)⁸

Purpose: Investigate the effectiveness of reducing myopia using CooperVision's Paragon® CRT HDS 100 orthokeratology lens.

Method: The 12-month, four-site study enrolled 254 subjects aged 8 to 43 years with both eyes having myopic refractive error of -4.00DS or less, astigmatism of 1.50DC or less, and no corneal abnormalities.

Results: The Paragon® CRT HDS 100 ortho-k lens used in this study temporarily reduced myopia effectively in a large majority of Chinese patients. The project reports significant improvements to

⁶ Bullimore MA, Richdale K. Incidence of Corneal Adverse Events in Children Wearing Soft Contact Lenses. *Eye Contact Lens*. 2023 May 1;49(5):204-211. doi: 10.1097/ICL.0000000000000976. Epub 2023 Mar 6. PMID: 36877990; PMCID: PMC10503544.

⁷ Vincent SJ et al. CLEAR - Orthokeratology. *Cont Lens Anterior Eye*. 2021 Apr;44(2):240-269. doi: 10.1016/j.clae.2021.02.003.

⁸ Jiang J, et al. The Effect of an Overnight Corneal Refractive Therapy Lens on Vision and Corneal Curvature in Chinese Myopes. Poster presentation at the Global Specialty Lens Symposium, January 2023.

clinically relevant levels of both uncorrected distance visual acuity and manifest refraction spherical equivalent after one week and were sustained throughout the follow-up period.

Additional Resources

AOA will continue to provide updates on additional evidence regarding myopia management. Be sure to review the AOA's [previous clinical report on myopia management](#) citing optometry's leading role in the diagnosis, management and treatment of myopia.

We also encourage all doctors to join the Myopia Collective—a new initiative aimed at rallying the profession of optometry and its allies to interrupt the status quo and realize a new standard of care for children with myopia. Join [here](#) to become a **member** and count yourself as one of the thousands that have already introduced myopia control efforts in their practices