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POSITION PAPER

Addressing myopia: best practices and minimum standards in clinical practice

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Introduction

This document is an updated version of the original position paper that was published in 2021. It provides evidence-informed best-practice recommendations and minimum standards for myopia prevention, detection and control, intended for clinicians, programme managers and policymakers. By outlining principles, interventions, monitoring strategies and human resource considerations, the document seeks to promote consistent, high-quality myopia management, improve visual outcomes, and reduce the long-term risk of myopia-related complications.

This document can also be read in conjunction with the IAPB Policy Brief: Early Intervention in Paediatric Myopia (2026)

Background

Recent global epidemiological evidence confirms that myopia has reached epidemic proportions among children and adolescents worldwide. A comprehensive systematic review and meta-analysis of 276 population-based studies, including more than five million children and adolescents examined between 1990 and 2023, estimates that approximately one third of children and adolescents globally are already myopic. Prevalence increased from around 24% in 1990 to approximately 36% by 2023. Projections suggest that, in the absence of additional action, nearly 40% of children and adolescents—more than 740 million individuals—will be myopic by 2050.

Increasing myopia is associated with a higher lifetime risk of sight-threatening complications such as glaucoma, cataracts, retinal detachment and myopic macular degeneration (MMD). Myopic macular degeneration is already reported as a leading cause of blindness in parts of East Asia, and the number of people predicted to be visually impaired from MMD alone by 2050 is substantial.

Behavioural and environmental risk factors

In addition to genetic susceptibility, behavioural and environmental factors play a critical role in the onset and progression of myopia. Time spent outdoors remains the most consistently supported protective factor, with evidence indicating that increased outdoor exposure reduces the incidence of new cases of myopia in children.

Emerging evidence suggests that higher levels of digital screen exposure may be associated with an increased risk of myopia in children and adolescents. Meta-analyses indicate a dose–response relationship, with each additional hour of daily screen time associated with a higher likelihood of myopia, particularly at lower levels of exposure. However, current evidence outside of time spent outdoors remains limited, heterogeneous and largely observational, and does not yet permit strong evidence-based clinical recommendations regarding specific screen-time thresholds.

Preliminary findings also indicate that short sleep duration and poor sleep quality may be associated with both the onset and progression of myopia, reinforcing the importance of broad, healthy-lifestyle counselling for children and adolescents. Similarly, current evidence suggests that exposure to formal schooling and high educational demands are key causal determinants of myopia onset, rather than chronological age alone, underscoring the importance of integrating myopia prevention, detection and correction strategies within education systems.

In line with the most recent International Myopia Institute white papers, IAPB emphasises that recommendations related to behavioural and environmental risk factors—other than increasing time outdoors—should be communicated cautiously and framed as emerging evidence rather than definitive clinical guidance.

Interventions to slow myopia progression

Since 2021, a large number of randomised clinical trials have been conducted evaluating interventions to slow myopia onset and progression. Rather than citing individual trials, this paper aligns with the consensus conclusions of the World Society of Paediatric Ophthalmology and Strabismus (WSPOS) and the International Myopia Institute (IMI) white papers, which provide comprehensive and regularly updated syntheses of the evidence.

Pharmacological interventions

Atropine eyedrops remain the most widely studied pharmacological intervention for myopia control in children. They work by relaxing the muscles in the eye and influencing growth signals, which can help reduce the axial elongation that causes worsening myopia. Recent evidence indicates that administering atropine eyedrops at a concentration of 0.05% generally produces a greater reduction in myopia progression and axial elongation than 0.01%, while causing only a modest increase in pupil size and near-vision symptoms in most children. Nevertheless, 0.01% atropine remains a reasonable option when higher concentrations are unavailable, poorly tolerated or constrained by regulatory considerations. Selection of atropine concentration should balance efficacy, adverse effects and local context, with close follow-up to monitor treatment response and potential rebound following cessation. Recent industry-sponsored trials also underscore that formulation and delivery method may influence treatment efficacy.

Optical interventions: spectacle lens design

Spectacles are not only used to correct existing myopia but can also play a role in slowing its progression in children. Specialised designs, such as defocus incorporated multiple segment (DIMS) lenses and newer peripheral defocus lenses, aim to reduce the eye's tendency to elongate, which is the main driver of worsening myopia. These lenses work by creating a controlled blur in the peripheral visual field, which signals the eye to slow growth, while still allowing clear central vision. Three-year follow-up data demonstrate that defocus-incorporated multiple segment (DIMS) spectacle lenses significantly slow both myopia progression and axial elongation. Newer peripheral defocus designs, including highly aspherical lenslets (HAL) and other lenslet or free-form configurations, typically achieve approximately a 30–50% reduction in refractive progression and a 25–30% reduction in axial length growth compared with single-vision lenses. Recent meta-analyses conclude that DIMS and HAL designs currently have the most robust and consistent evidence base among spectacle-based interventions.

Optical interventions: contact lenses

In addition to spectacles-based interventions, contact lenses offer effective options for myopia control. Orthokeratology lenses are rigid gas-permeable lenses worn overnight to temporarily reshape the cornea, flattening the central zone while steepening the mid-periphery. This induces peripheral myopic defocus, which slows axial elongation, while providing clear uncorrected vision during the day. Multifocal soft contact lenses achieve a comparable effect through concentric and aspherical optical designs that create peripheral myopic defocus while maintaining central clarity. For orthokeratology lenses, advantages include daytime freedom from corrective lenses. Limitations include the need for rigorous lens hygiene and the relatively high cost compared to spectacles.

Emerging therapies

Repeated low-level red light (RLRL) therapy has recently gained attention as a potential modality for myopia control. Multiple clinical studies report substantial reductions in axial elongation, particularly among children with high myopia. However, important uncertainties remain regarding long-term safety, including reports of structural retinal changes observed on optical coherence tomography and the potential for rebound effects after treatment discontinuation. In addition, access to RLRL technology is limited and regulatory oversight varies across countries. Consequently, RLRL should currently be regarded as an experimental intervention and is not recommended as a first-line treatment for myopia control.

Health systems and workforce alignment

Competency-based refractive error teams and the Eye Care Competency Framework

Myopia services should be organised within competency-based refractive error teams, guided by the Competency-based Refractive Error Teams (CRET) tool and the Eye Care Competency Framework (ECCF). These frameworks define the skills and roles required across primary, secondary and tertiary levels of eye care. Within this model, primary-level providers such as teachers, school nurses and community health workers undertake vision screening, basic eye-health education and referral; first-contact eye-care providers perform refraction, dispense spectacles, provide pre-myopia counselling and monitor follow-up; and specialist eye-care personnel prescribe pharmacological and advanced optical interventions and manage complications of high myopia. Applying CRET and ECCF supports safe task-sharing, clear referral pathways and equitable service delivery.

Quality standards for spectacles and WHO SPECS 2030

High-quality spectacles are essential for safe and effective myopia correction and control. WHO quality standards for spectacles and the WHO SPECS 2030 initiative define minimum optical and mechanical requirements, safe dispensing practices and tolerance limits, and promote quality-assured supply chains. These standards should be adopted as the normative reference for all spectacle devices, including myopia-control designs such as DIMS and HAL lenses. Custom-made spectacles should be edged and fitted to the individual wearer, and ready-made spectacles should not be used for children. National procurement and essential-devices lists should align with these standards to ensure quality and equity as services are scaled up.

Education, economics and alignment with global strategies

Myopia correction and control are critical not only for eye health but also for education and economic development. Evidence from school-based studies indicates that children with uncorrected refractive error achieve substantially lower learning gains than peers with corrected vision, contributing to large cumulative losses in educational attainment and future productivity, particularly in low- and middle-income countries. Integrating myopia detection and correction within school eye-health programmes supports learning outcomes, human capital formation and Sustainable Development Goal 4 on quality education. Embedding myopia management within integrated, people-centred eye-care approaches aligns clinical practice with WHO SPECS 2030, the Ten Strategies to Build a Future without Blindness and Visual Disability, and broader universal health coverage goals.

Myopia best practices and minimum standards in clinical practice

The following section outlines evidence-based standards of care for patients with myopia across the life course, from children at risk of developing myopia, to adults with established, stable myopia. It is structured to support clinical decision-making and service planning, particularly in settings with varying levels of resources.

A. Children and adolescents with progressive myopia

Domain	Best practice	Minimum standard
Principle	Full optical correction and active myopia control to slow myopia progression and axial elongation	Full correction of refractive error; avoidance of under- or over-correction
Optical interventions	Defocus Incorporated Multiple Segment (DIMS) spectacle lenses; Highly Aspherical Lenslet (HAL) and other evidence-based lenslet/free-form peripheral defocus designs; Orthokeratology contact lenses (overnight wear); Multifocal soft contact lenses (including regulatory-approved designs)	Executive or flat-top bifocal spectacles; Progressive addition or peripheral defocus spectacles where higher-efficacy options are unavailable
Pharmacological interventions	Low-dose atropine, typically 0.05% where available and tolerated, combined with appropriate refractive correction; Consider combination therapy if progression remains significant	Low-dose atropine 0.01% where higher concentrations are unavailable, poorly tolerated or restricted
Emerging / experimental interventions	Not first-line; use only within research, audit or closely monitored programmes	Not recommended
Lifestyle counselling (adjunct)	At least 120 minutes outdoors per day; cautious, balanced advice on near work, sleep and digital screen use	Advice on outdoor time and general eye health
Diagnostic assessment	Cycloplegic refraction; axial length measurement (if available); accommodation and binocular vision assessment; comprehensive ocular health examination	Visual acuity testing; basic refractive assessment with appropriate cycloplegia; screening and referral for ocular pathology
Monitoring	Regular review according to intervention-specific protocols; monitoring of axial length where feasible; surveillance for adverse effects and rebound after treatment cessation	Periodic visual acuity and refraction review with referral if progression accelerates
Human resources	Optometrist or ophthalmologist with training in myopia management	Suitably trained eye-care personnel working within defined referral pathways
Health system fit	Integrated within people-centred eye-care services with clear referral pathways	Referral pathway exists

B. Children identified with pre-myopia

Domain	Best practice	Minimum standard
Principle	Early identification, monitoring and risk reduction to delay onset of myopia	Detection and follow-up
Management	Regular cycloplegic refraction and structured risk assessment; lifestyle counselling (outdoor time, near-work habits)	Visual acuity screening and referral where risk factors are identified
Human resources	First-contact eye-care provider with access to specialist support	Trained screeners with referral pathways

C. Adults with stable myopia

Domain	Best practice	Minimum standard
Principle	Safe, accurate correction and monitoring for myopia-related ocular pathology	Vision correction and disease screening
Optical correction	Custom-made spectacles or contact lenses meeting WHO quality standards	Ready-made/ready to fit spectacles within ISO Standards and WHO Summary Guide on quality standards for spectacles limits, where appropriate
Clinical care	Periodic comprehensive eye examinations, including dilated fundus examination	Visual acuity testing and referral for ocular pathology
Human resources	Optometrist or ophthalmologist	Suitably trained personnel with referral pathways

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