Health Professions Council of South Africa

GUIDELINES FOR MYOPIA MANAGEMENT	
PROFESSIONAL BOARD FOR OPTOMETRY AND DISPENSING OPTICIANS	
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Definitions:

“Health practitioner” means a person registered with the Health Professions Council of South Africa in a profession registrable in terms of the Health Professions Act 56 of 1974, as amended.

“Eye, eye health, and vision services” Healthcare involving mainly the eye, adnexa, visual system and related services.

“**Contact Lenses**” Refers to all types of contact lenses, as all contact lenses are medical devices, including lenses that do not have refractive power. This includes but is not limited to cosmetic contact lenses (soft and rigid), hybrid contact lenses, and all types of soft and rigid contact lenses.

“Evidence-based” is an umbrella term that refers to the use of the best research evidence (found in health sciences literature) and clinical expertise (what health care providers know).

“Amplitude scanner (A-scan)” Ultrasound biometry, sometimes known as an A-scan (short for Amplitude scan), is a form of regular diagnostic test used in optometry and ophthalmology. The A-scan measures the length of the eye, which is a crucial factor in many vision problems.

“Optical partial coherence interferometry” measures ocular biometric parameters such as the central corneal thickness, anterior chamber depth, lens thickness, and axial length of the eye precisely.

Abbreviations:	
PBODO	Professional Board for Optometry and Dispensing Opticians
HPCSA	Health Professions Council of South Africa
ATOM	Atropine in the Treatment of Myopia
BFSCL	Bifocal Soft Contact Lens
SVSCL	Single Vision Soft Contact Lens
COME	Correction of Myopia Evaluation Trial
LAMP	Low-concentration Atropine for Myopia Progression

1. Introduction

Uncorrected myopia is the primary cause of poor distance vision. Over the last 20 years, myopia has become significantly more prevalent globally. By 2050, it is expected that 10% of the world's population will have myopia greater than 5.00 diopters (D), accounting for half of all myopes. Myopia has substantially increased in prevalence and severity, and its age of onset has decreased, raising interest in finding and implementing treatments to halt progression in children and lessen the risk of eye problems and related challenges later in life.

A variety of myopia treatment and control strategies are available. Understanding the mechanisms involved in delaying myopia onset and decreasing its advancement is critical to lowering the global prevalence and incidence (Baird, et al., 2020).

The most effective way to reduce myopia-related disorders is to prevent myopia progression in youngsters. Even with the limitations of currently available treatments for myopia, initiating a course of treatment is likely to produce a better long-term prognosis than dispensing single-vision lenses. One of the primary goals of myopia therapy in children is to reduce the risk of blindness and visual impairment later in life. Existing evidence-based therapy options are available, and ongoing research will give further information on the safety and effectiveness of existing or innovative drugs for managing myopia. The increased prevalence and volume of myopia in children must be addressed, and optometrists must take the lead.

The PBODO recognises that myopia management and treatment are essential components of the clinical care that optometrists provide, and as such, they must be carried out with the same professional competence and ethics as any other area of optometric clinical practice. The PBODO, by virtue of its mandate to protect the public and guide the professions, has therefore developed guidelines for myopia control and management.

The Guidelines for Myopia Management aim to highlight considerations in prophylactic strategies to delay the progression of myopia. The guidelines must be read in conjunction with the existing health regulations, the Ethical Guidelines for Good Practice of the HPCSA as well as the standard of care contained within the Clinical Guidelines of the PBODO.

The Ethical Booklets include but are not limited to:

Booklet 1: General ethical guidelines for healthcare professions

Booklet 4: Patient consent

Booklet 5: Confidentiality

Booklet 7: Guidelines for withholding and withdrawing treatment

Booklet 9: Keeping of patient records

Booklet 11: Guidelines on over-servicing, perverse incentives and related matters

2. Clinical Care, Professional Duty and Responsibilities

2.1 It is imperative that practitioners assume complete accountability for managing and controlling myopia. This includes early detection of myopia and of patients who are at risk, prompt discussion of the myopia pandemic and available options to mitigate the condition, prescription dispensing, after-care, and health promotion.

2.2 Before beginning myopia treatment and control, a thorough examination of the anterior and posterior segments of the eye as well as a comprehensive eye examination must be performed.

2.3 Duties to patients include but are not limited to, always acting in the patient's best interests, respecting patients' rights, confidentiality, privacy and dignity, informing patients about their conditions, and maintaining confidentiality at all times, as required by the National Health Act No. 61 of 2003 and the South African National Patients' Rights Charter.

2.4 Healthcare practitioners should not give medical advice or administer treatment without first acquiring informed consent from the parent/guardian for prescribing myopia management therapies.

2.5 Pharmaceutical agents used for myopia management may only be prescribed by practitioners who are registered in the category of therapeutics in optometry.

2.6 The practitioner must keep detailed records of the professional services and advice that he/she provided to the patient and parent/guardian.

2.7 The practitioner must further ensure that advice on treatment given is understood by the patient and/or the parent/guardian.

2.8 Patients and parents/guardians must also be advised of their option to decline myopia management therapy.

2.9 The information given must be in a language that the patient can understand and be sensitive to cultural differences.

2.10 An optometrist or registered optical dispenser should dispense made-to-order optical appliances/devices. The registered therapeutic optometrist should prescribe therapeutic pharmaceutical agents.

2.11 Reasonable time frames must be adhered to when providing follow-up services.

2.12 Patient records must remain confidential & must be retained for the minimum period specified by the HPCSA

2.13 Myopia management must have a health promotion/health education component.

2.14 Practitioners must in good faith, act as advocates on behalf of patients and are obligated to discuss any/all necessary, available and appropriate treatment options.

2.15 To ensure the safety and effectiveness of myopia management, patients should be evaluated at least every six months.

2.16 All healthcare professionals and support employees who have access to patient information are legally obliged to maintain patient confidentiality. Disclosure of patient information, practitioner information, and myopia management procedures without due consent constitutes a breach of confidentiality.

2.17 Patients who are at risk for developing myopia should be identified. Risk factors for developing myopia must be discussed with the parent or guardian.

2.18 Once a patient is diagnosed with myopia, the various options for myopia management and the implications of beginning treatment must discussed with parents/guardians.

2.19 Public awareness campaigns, early screening, discussions of individual lifestyle-based risk factors, and the start of evidence-based treatments for myopia should all be part of the evaluation and management of the condition.

3. Mitigation, Measurement, and Management

A World Health Organisation (WHO) resolution encouraging eye care professionals to set up a standard of care for the management of myopia was adopted in 2021. Three pillars - *mitigation, measurement*, and *management*, should be part of the strategy.

3.1 Mitigation

3.1.1 Detection

Myopia progression can be slowed down by early myopia detection and treatment. Many myopic children do not complain or report symptoms (Benjamin, 2006). However, regular testing or screening helps to identify myopic children and children at risk (Guidelines for Paediatric Examination).

3.1.1.1 Pre-test procedures

a) Document all necessary patient demographic details: Name, address, date of birth, referring practitioner, etc.

b) In line with myopia management, a thorough case history must include the following:
    i. History of myopia in the family, age of onset, spectacle or contact lens-wearing habits etc.
    ii. Occupation & hobbies i.e., vocational, and non-vocational vision requirements
c) Review whether there is any contra-indication to the use of pharmaceutical agents and/or contact lenses from the case history, bearing in mind the relevant clinical guidelines.

3.1.1.2 Screening

All children should have their eyes checked on the following schedule:

a) first eye examination at six months of age,
b) another aged 3 to 5 years,
c) one more before pre-school,
d) and annually thereafter (Association, 2017).

3.2 Measurement

3.2.1 Examination pearls

The clinical strategy should include health promotion. Discuss the following:

a) Risk factors for myopia; include myopic parents, early onset, spending less than two hours each day outdoors, refractive error, and near work for long periods or close working distances (Goss & Cox, 1985; Haarman et al., 2020; Wen et al., 2020).
b) Encourage lifestyle changes wherever possible to help postpone the onset of myopia.
c) When encountering a young myopic adult about to have children, a young patient who is still somewhat hyperopic but on course to become myopic, and especially a small child who just acquired a pair of low myopic prescription glasses immediately commence education about myopia.
d) Long-term risk factors: Myopia can cause a patient to develop myopic macular degeneration (MMD), staphyloma, retinal detachment, primary open-angle glaucoma, cataracts, and reduced visual acuity later in life. The higher the prescriptions, the higher the threat of these diseases. MMD and retinal detachment provide the greatest and most serious risks since they frequently co-occur with myopia severity and longer axial lengths (Santodomingo-Rubido et al., 2017).

3.3 Management

Myopia progresses most rapidly in children, it is, therefore, imperative to pay close attention to this cohort of patients. The goals of myopia treatment are to limit the lengthening of the eye, minimize the spectacle prescription, and lower the risk of difficulties in later life.

3.3.1 Evidence-Based Treatment

Effective evidence-based treatments include orthokeratology (ortho-K), which modifies the cornea temporarily, low-dose atropine eyedrops (0.025% to 0.05% atropine), and dual focus or multifocal center-distance soft contact lenses. In addition, the development of axial elongation and spherical equivalent refractive error has been demonstrated to be slowed in numerous nations using innovative spectacle lenses that correct peripheral defocus (Chia et al., 2016).

3.3.2 Management Options

A range of myopia management options and alternatives, the implications of beginning treatment, effects on other family members, lifestyle factors, predicted development etc. must be discussed with parents/guardians. Once a treatment plan has been established, additional follow-up evaluations should be conducted beginning with one week following the initial session and then every three months moving forward.

Dry and cycloplegic refractive error analysis, keratometry, axial length measurement, and binocular performance evaluation in the form of accommodation amplitude, accommodation lag, ocular alignment, and, in some circumstances, vergence amplitudes are all necessary components of clinical testing. Each treatment option that is offered has the potential to affect binocular performance. Low-dose atropine reduces accommodative amplitude by an average of 2.00 D to 3.00 D, according to the LAMP and ATOM trials (Gifford et al., 2017; Tarrant et al., 2008).

Clinicians can decide whether a patient is a good candidate for atropine treatment by using a baseline amplitude of accommodation test.

The slowing of axial elongation and spherical equivalent refractive error is a common result of all myopia control techniques (Chamberlain et al., 2019; Gifford et al., 2017; Tarrant et al.,

2008; Yam et al., 2020). Therefore, based on the patient's lifestyle and the clinical evaluation, it is appropriate to select the best alternative for them.

4. Fees

4.1 Regulatory guidelines regarding acceptable business practices must be followed.

4.2 Practitioners may charge consultation fees for services rendered.

4.3 HPCSA strongly cautions against practices that may amount to over-servicing and perverse incentives.

4.4 Patients must be advised of fees that will be charged or costs that will be incurred in respect of myopia management, before the consultation being held.

4.5 Patients must timeously be advised of potential long-term costs that may be incurred in respect of myopia management.

5. Ethical Guidelines for Good Practice in the Health Care Professions

Booklet 1: General ethical guidelines for health care professions

Booklet 2: Ethical and professional rules of the Health Professions Council of South Africa as promulgated in government gazette R717/2006

Booklet 3: National Patients' Rights Charter

Booklet 4: Seeking patients' informed consent: The ethical considerations

Booklet 5: Confidentiality: Protecting and providing information

Booklet 7: Guidelines for withholding and withdrawing treatment

Booklet 9: Guidelines on Patient Records

Booklet 11: Guidelines on over-servicing, perverse incentives, and related matters

Booklet 13: General ethical guidelines for health researchers

Booklet 16: Ethical Guidelines on social media

6. Additional readings

Myopia Management Standard of Care Guide (worldcouncilofoptometry.info)

7. References

1. Yen, M.Y., Liu, J.H., Kao, S.C. and Shiao, C.H., 1989. Comparison of the effect of atropine and cyclopentolate on myopia. *Annals of Ophthalmology*, *21*(5), pp.180-2.
2. SHIH, Y.F., CHEN, C.H., CHOU, A.C., HO, T.C., LIN, L.L.K. and HUNG, P.T., 1999. Effects of different concentrations of atropine on controlling myopia in myopic children. *Journal of Ocular Pharmacology and Therapeutics*, *15*(1), pp.85-90.
3. Shih, Y.F., Hsiao, C.K., Chen, C.J., Chang, C.W., Hung, P.T. and Lin, L.L.K., 2001. An intervention trial on efficacy of atropine and multi-focal glasses in controlling myopic progression. *Acta Ophthalmologica Scandinavica*, *79*(3), pp.233-236.
4. Chua, W.H., Balakrishnan, V., Chan, Y.H., Tong, L., Ling, Y., Quah, B.L. and Tan, D., 2006. Atropine for the treatment of childhood myopia. *Ophthalmology*, *113*(12), pp.2285-2291.
5. Curtin, B.J., 1985. *The myopias: basic science and clinical management*. Harpercollins College Division.
6. Chung, K., Mohidin, N. and O'Leary, D.J., 2002. Undercorrection of myopia enhances rather than inhibits myopia progression. *Vision Research*, *42*(22), pp.2555-2559.
7. Li, S.M., Ren, M.Y., Gan, J., Zhang, S.G., Kang, M.T., Li, H., Atchison, D.A., Rozema, J., Grzybowski, A., Wang, N. and Anyang Childhood Eye Study Group, 2022. Machine learning to determine risk factors for myopia progression in primary school children: the Anyang childhood eye study. *Ophthalmology and Therapy*, *11*(2), pp.573-585.
8. Tong, L., Huang, X. L., Koh, A. L. T., Zhang, X., Tan, D. T. H., & Chua, W.-H. (2009). Atropine for the Treatment of Childhood Myopia: Effect on Myopia Progression after Cessation of Atropine. *Ophthalmology*, 116(3), 572–579.
9. Barrett, B.T., 2009. A critical evaluation of the evidence supporting the practice of behavioural vision therapy. *Ophthalmic and Physiological Optics*, *29*(1), pp.4-25.

   The Hong Kong Progressive Lens Myopia Control Study: Study Design and Main Findings
10. Investigative Ophthalmology & Visual Science September 2002, Vol.43, 2852-2858.
11. Baird, P.N., Saw, S.M., Lanca, C., Guggenheim, J.A., Smith III, E.L., Zhou, X., Matsui, K.O., Wu, P.C., Sankaridurg, P., Chia, A. and Rosman, M., 2020. Myopia. *Nature Reviews Disease Primers*, *6*(1), p.99.

12. Lu, Y., Lin, Z., Wen, L., Gao, W., Pan, L., Li, X., Yang, Z. and Lan, W., 2020. The adaptation and acceptance of defocus incorporated multiple segment lens for Chinese children. *American Journal of Ophthalmology*, *211*, pp.207-216.
13. Walline, J.J., Greiner, K.L., McVey, M.E. and Jones-Jordan, L.A., 2013. Multifocal contact lens myopia control. *Optometry and Vision Science*, *90*(11), pp.1207-1214.
14. Aller, T.A., Liu, M. and Wildsoet, C.F., 2016. Myopia control with bifocal contact lenses: a randomized clinical trial. *Optometry and Vision Science*, *93*(4), pp.344-352.
15. Țone, S., Niagu, I.A., Bogdănici, Ș.T. and Bogdănici, C.M., 2020. Update in pediatric myopia treatment strategies. *Romanian Journal of Ophthalmology,* 64(3), pp.233-238.
16. Wei Wang., Yu Jiang., Zhuoting Zhu., Shiran Zhang., Meng Xuan., Xingping Tan., Xiangbin Kong., Hui Zhong., Gabriella Bulloch., Ruilin Xiong., Yixiong Yuan., Yanping Chen., Jian Zhang., Junwen Zeng., Ian G. Morgan. and Mingguang, H. Axial Shortening in Myopic Children after Repeated Low-Level Red-Light Therapy: Post Hoc Analysis of a Randomized Trial
17. Jiang Y., Zhu Z., Tan X, et al. Effect of repeated low level red-light therapy for myopia control in children: a multicenter randomized controlled trial. Ophthalmology. 2021. https://doi.org/10.1016/j. ophtha.2021.11.023.
18. WCO passes a resolution for myopia management standard of care. *Review of Myopia Management*. April 13, 2021. Accessed June 7, 2023. www.reviewofmm.com/wco-passes-resolution-for-myopia-management-standard-of-care
19. Association, A. O. (2017). Comprehensive pediatric eye and vision examination. *Evidence-Based Clinical Practice Guideline*.
21. Benjamin, W. J. (2006). *Borish's Clinical Refraction-E-Book*. Elsevier Health Sciences.
22. Chamberlain, P., Peixoto-de-Matos, S. C., Logan, N. S., Ngo, C., Jones, D., & Young, G. (2019). A 3-year randomized clinical trial of MiSight lenses for myopia control. *Optometry and Vision Science*, *96*(8), 556-567.
23. Chia, A., Lu, Q.-S., & Tan, D. (2016). Five-year clinical trial on atropine for the treatment of myopia 2: myopia control with atropine 0.01% eyedrops. *Ophthalmology*, *123*(2), 391-399.
24. Gifford, K., Gifford, P., Hendicott, P. L., & Schmid, K. L. (2017). Near binocular visual function in young adult orthokeratology versus soft contact lens wearers. *Contact Lens and Anterior Eye*, *40*(3), 184-189.

25. Goss, D., & Cox, V. (1985). Trends in the change of clinical refractive error in myopes. *Journal of the American Optometric Association*, *56*(8), 608-613.
26. Haarman, A. E., Enthoven, C. A., Tideman, J. W. L., Tedja, M. S., Verhoeven, V. J., & Klaver, C. C. (2020). The complications of myopia: a review and meta-analysis. *Investigative* , *61*(4), 49-49.
27. Santodomingo-Rubido, J., Villa-Collar, C., Gilmartin, B., Gutiérrez-Ortega, R., & Sugimoto, K. (2017). Long-term efficacy of orthokeratology contact lens wear in controlling the progression of childhood myopia. *Current* , *42*(5), 713-720.
28. Tarrant, J., Severson, H., & Wildsoet, C. F. (2008). Accommodation in emmetropic and myopic young adults wearing bifocal soft contact lenses. *Ophthalmic and Physiological Optics*, *28*(1), 62-72.
29. Wen, L., Cao, Y., Cheng, Q., Li, X., Pan, L., Li, L., Zhu, H., Lan, W., & Yang, Z. (2020). Objectively measured near work, outdoor exposure and myopia in children. *British Journal of Ophthalmology*, *104*(11), 1542-1547.
30. Yam, J. C., Li, F. F., Zhang, X., Tang, S. M., Yip, B. H., Kam, K. W., Ko, S. T., Young, A. L., Tham, C. C., & Chen, L. J. (2020). Two-year clinical trial of the low-concentration atropine for myopia progression (LAMP) study: phase 2 report. *Ophthalmology*, *127*(7), 910-919.
31. Review of Myopia Management. April 13, 2021. Accessed February 17, 2022