

Impact of myopia

2020

Myopia affects almost

30% of the world's population

2050

Myopia is estimated to affect

50% of the world's population

High myopia will affect

10% of the world's population

Myopia -0.50 D or worse

High myopia -5.00 D or worse



Risk of vision impairment

Uncorrected myopia is a leading cause of avoidable vision impairment. Complications associated with high myopia can be sight threatening e.g. myopic macular degeneration.



Education

In children, poor vision or uncorrected vision can impact scholastic performance and result in psychosocial stress. Negative attitudes to spectacle wear may also affect psychosocial well-being.



Quality of Life (QOL)

Reduced QOL has been demonstrated for myopia and myopia-related complications. QOL is impacted whether myopia is corrected or uncorrected and varies according to the type of corrective modality worn.



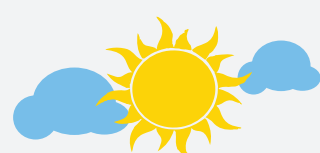
Economic impact

Given the progressive nature of myopia, direct costs (expenditure on diagnosis, correction/management, transport and treatment of morbidity) and lost productivity costs are substantial.

Risk factors



Higher levels of education and near work

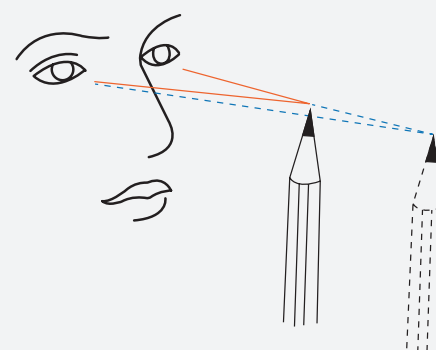


Less time outdoors



- East Asian ethnicity
- Parents with myopia
- Girls more susceptible according to some studies

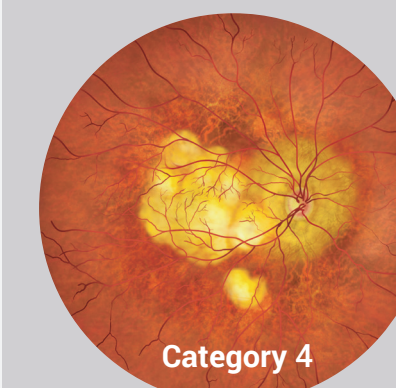
Binocular vision



- Link with myopia development is unclear
- Important to optimize accommodation and vergence in children to provide single, clear comfortable vision

Pathologic myopia

META-PM classification system



Category 4

Category

0

Retinal signs

No myopic retinal lesions
Tessellated (or tigroid) fundus
Diffuse choroidal atrophy
Patchy choroidal atrophy
Macular atrophy
Lacquer cracks, myopic choroidal neovascularization, Fuchs spot

Plus lesion
Posterior staphyloma



3% of the world's population is affected by pathologic myopia

1-3%
Asians

1%
Europeans

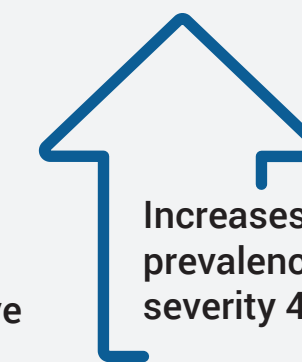
Affects

50-70%

of those with high myopia



Increases with age and spherical equivalent refractive error/ axial length



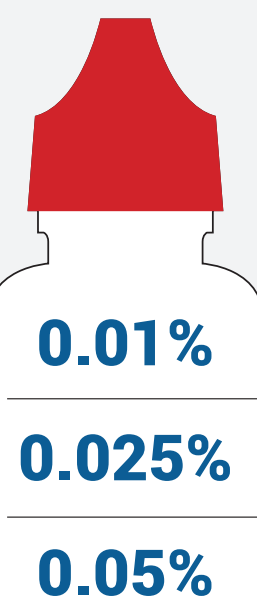
Increases in prevalence and severity 40+ years

Management options – Reported treatment effectiveness varies with age of initiation, treatment duration, compliance as well as demographic/environmental factors.

Prevention



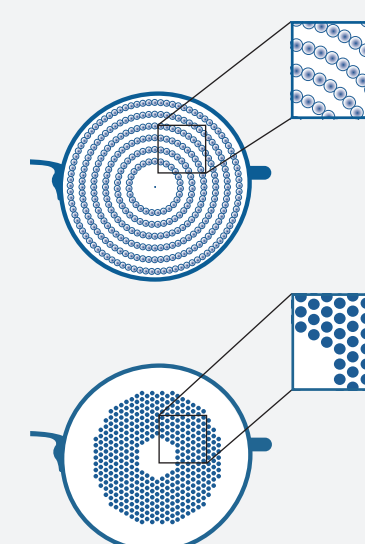
Pharmacological option



Atropine

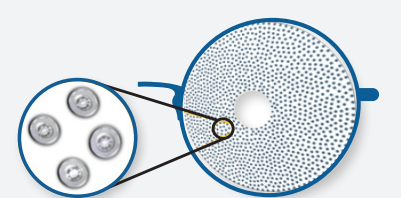
0.01% Δ SphE 0.39 D
 Δ AL 0.13 mm
0.025% Δ SphE 0.43 D
 Δ AL 0.16 mm
0.05% Δ SphE 0.62 D
 Δ AL 0.25 mm

Spectacle options

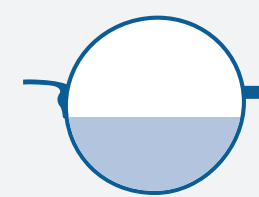


Highly Aspherical Lenslets (HAL)
2 years
 Δ SphE 0.80 D (55%)
 Δ AL 0.35 mm (51%)

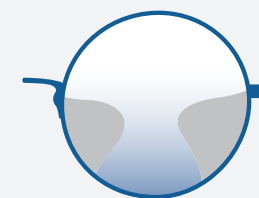
Defocus Incorporated Multiple Segments (DIMS)
2 years
 Δ SphE 0.44 D (52%)
 Δ AL 0.34 mm (62%)



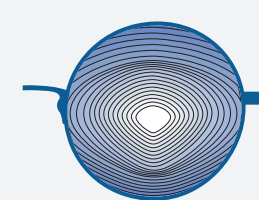
Diffusion Optics Technology (DOT)
1 year
 Δ SphE 0.40 D (74%)
 Δ AL 0.15 mm (50%)



Executive Prismatic Bifocals (+1.50 D add)
3 years
 Δ SphE 1.05 D (51%)
 Δ AL 0.28 mm (34%)



Progressive Addition Lens (PALs)
2 years
 Δ SphE 0.14 D (24%)
 Δ AL 0.04 mm (28%)

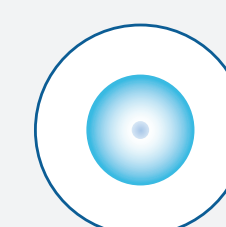


Peripheral Hyperopia Reduction Lens
2 years
 Δ SphE 0.04 D (3%)
 Δ AL 0.04 mm (5%)

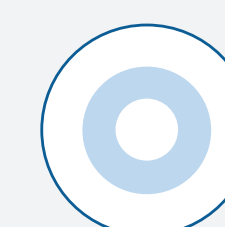
Contact lens options



Dual Focus
3 years
 Δ SphE 0.73 D (59%)
 Δ AL 0.32 mm (52%)
US FDA approved



Extended Depth of Focus
2 years
 Δ SphE 0.37 D (32%)
 Δ AL 0.15 mm (25%)



Center distance (+2.50 D add)
3 years
 Δ SphE 0.46 D (44%)
 Δ AL 0.23 mm (35%)

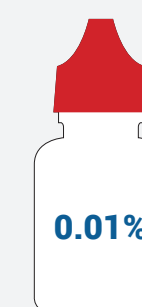
Soft contact lenses - worn daily



Orthokeratology
2 years
 Δ AL 0.27 mm (45%)
Worn overnight

Emerging therapies

Combination Atropine (0.01%) and Orthokeratology
2 years
 Δ AL 0.11 mm (27%) compared to Orthokeratology



0.01%



Red and blue light therapies – safety yet to be established

Atropine, spectacle and contact lens options: Δ = reduction in average progression compared to control group; SphE= spherical equivalent refractive error; AL= axial length; % efficacy = Δ /control group progression