

## 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

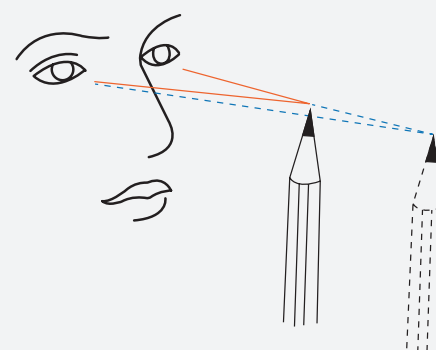


Less time outdoors



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

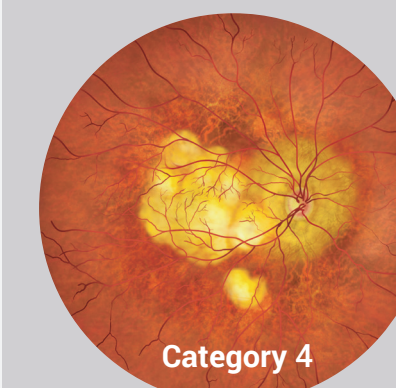
## Binocular vision



- 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

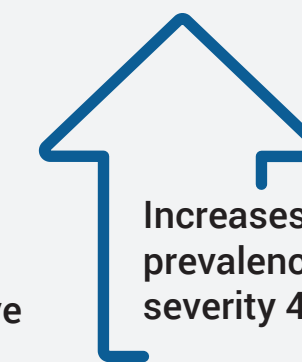
Affects

**50-70%**

of those with high myopia



Increases with age and spherical equivalent refractive error/ axial length



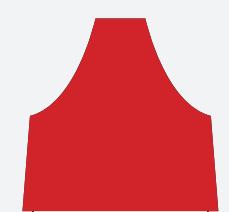
Increases in prevalence and severity 40+ years

## 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%**

ΔSphE 0.39 D  
ΔAL 0.13 mm

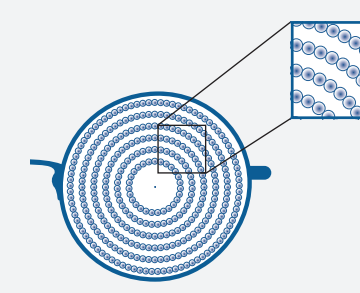
**0.025%**

ΔSphE 0.43 D  
ΔAL 0.16 mm

**0.05%**

ΔSphE 0.62 D  
ΔAL 0.25 mm

### Spectacle options

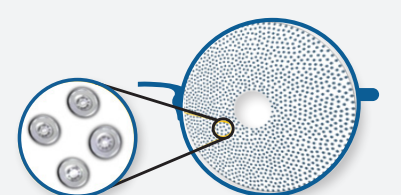


#### Highly Aspherical Lenslets (HAL)

2 years  
ΔSphE 0.80 D (55%)  
ΔAL 0.35 mm (51%)

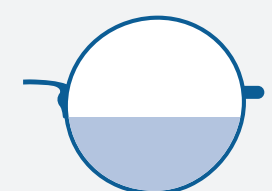
#### Defocus Incorporated Multiple Segments (DIMS)

2 years  
ΔSphE 0.44 D (52%)  
ΔAL 0.34 mm (62%)



#### Diffusion Optics Technology (DOT)

1 year  
ΔSphE 0.40 D (74%)  
ΔAL 0.15 mm (50%)



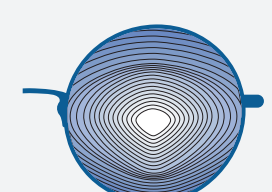
#### Executive Prismatic Bifocals (+1.50 D add)

3 years  
ΔSphE 1.05 D (51%)  
ΔAL 0.28 mm (34%)



#### Progressive Addition Lens (PALs)

2 years  
ΔSphE 0.14 D (24%)  
ΔAL 0.04 mm (28%)



#### Peripheral Hyperopia Reduction Lens

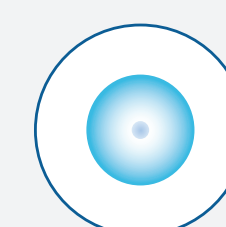
2 years  
ΔSphE 0.04 D (3%)  
ΔAL 0.04 mm (5%)

### Contact lens options



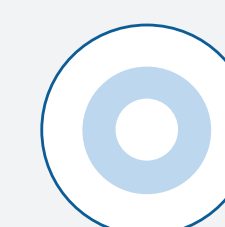
#### Dual Focus

3 years  
ΔSphE 0.73 D (59%)  
ΔAL 0.32 mm (52%)  
US FDA approved



#### Extended Depth of Focus

2 years  
ΔSphE 0.37 D (32%)  
ΔAL 0.15 mm (25%)



#### Center distance (+2.50 D add)

3 years  
ΔSphE 0.46 D (44%)  
ΔAL 0.23 mm (35%)

Soft contact lenses - worn daily



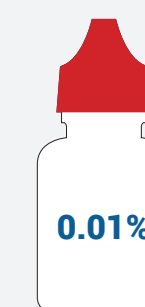
#### Orthokeratology

2 years  
ΔAL 0.27 mm (45%)  
Worn overnight

### Emerging therapies

#### Combination Atropine (0.01%) and Orthokeratology

2 years  
ΔAL 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