PEARLS FOR PRESCRIBING SPECTACLES IN CHILDREN

Dr. Njambi Omba - coecsa CME-Kenya chapter
Outline

- Introduction
- Visual system in children
- Guidelines for spectacles for the different refractive status
- Summary
Introduction

- Children not little adults!
- Unique visual features
- Most guidelines based on clinical experience Vs RCT
Unique Visual Features

- Inability to determine accurately VA - rely on visual behaviour and retinoscopy
- Cycloplegic refraction mandatory
- Lesser visual demands
- Proximal working distance (1-2 m for preschool)
- Strong accommodative power (12D in first decade)
- Plastic visual system
- Risk of amblyopia and strabismus

Prescribing for Myopia

- Minimal risk for amblyopia with symmetrical myopia
- Prescribing based on anticipated visual needs
- Visual acuity demands of pre schoolers unlikely to > 6/12
- Proximity to the visual target: Neonate (25cm); infant (2-3 feet); preschool (1-2m)
- **Correction**: Neonates > -4D; toddlers > -3D; pre-unit > -1.5D
- Full correction for older children
Myopia: Full correction vs undercorrection

- No documented evidence on stimulation or retardation of myopia progression

- Studies shown no effect in over or under correction

Astigmatism

- Mild to moderate meridional astigmatism of <1.5 D, minimal effect on VA in the young child
- More amblyopia with oblique astigmatism
- No correction in preverbal children with symmetric astigmatism <1.5 D unless with high hyperopia or myopia
- 1.0 - 1.5 D in early school-age benefit from correction
- SR for older children - give full cylinder tolerated
Anisometropia

- Very powerful amblyogenic factor, by age 3
- Anisometropic amblyopia is extremely difficult to detect
- Recent evidence from ATS;
- Preschoolers with mild - moderate anisometropic amblyopia; restoration of good visual acuity and stereopsis with spectacle correction alone
- Treatment of low level recommended > 1.0D

Challenge:

- The dominant fellow eye typically has minimal refractive error.
- Many children do not appreciate VA improvement—poor compliance with glasses.

Treatment: symmetric reduction of hypermetropia of up to 2.0 D + prescribing the full amount of cylinder unless in accommodative esotropia (full correction of both).

Holmes JM, Clarke MP. Amblyopia. Lancet 2006;367:1343–51
Hypermetropia

- Uncorrected hypermetropia can lead to:
  - Accommodative esotropia
  - Strabismic amblyopia
  - Refractive amblyopia

Most young children mildly hypermetropic no correction for mild- moderate hypermetropia

**Exceptions:** Asthenopia.
Hypermetropia

Threshold for treatment

- Fewer than 1% of healthy children have >4 D of hypermetropia
- Significant reduction in acuity when hypermetropia exceeds 4 D
- Treatment of moderate to high hypermetropia decreases risk of strabismus and amblyopia
- Associated strabismus influences treatment threshold
Hypermetropia

- Correction >4.00 D especially if:
  - Family history of strabismus or amblyopia
  - Poorly controlled phoria without correction

- Avoid full correction if no strabismus; blur at near hinders compliance

- Symmetric reduction up to 1.5 D of spherical hypermetropia in anisometropic amblyopia

- Full correction of all hypermetropia in strabismus

- SR for children > 7 yrs
Exception in prescribing for hypermetropia

- Significant developmental delay, cortical visual impairment, severe structural ocular abnormalities, and marked mental retardation

- Not tolerate spectacles or appreciate improved VA

- Down syndrome are often have low accommodative amplitudes; need spectacles at lower thresholds
### Summary: AAO PPP Recommendations

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<thead>
<tr>
<th>Condition</th>
<th>Age (years)</th>
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<tbody>
<tr>
<td></td>
<td>0–1</td>
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<tr>
<td>Isometropia</td>
<td></td>
</tr>
<tr>
<td>Myopia</td>
<td>≥ −5.00</td>
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<tr>
<td>Hyperopia without strabismus</td>
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<tr>
<td>Hyperopia with esotropia</td>
<td>≥ +3.00</td>
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<tr>
<td>Astigmatism</td>
<td>≥ 3.00</td>
</tr>
<tr>
<td>Anisometropia</td>
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<td>Myopia</td>
<td>≥ −2.50</td>
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<tr>
<td>Hyperopia</td>
<td>≥ +2.50</td>
</tr>
<tr>
<td>Astigmatism</td>
<td>≥ 2.50</td>
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</tbody>
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Thank you!