Unlike adults, there is a huge variability of visual acuity assessment even in a child who has started speaking. So, it is difficult to use visual acuity as a criterion for prescribing glasses. Moreover, the measured acuity often underestimates the true acuity, because the child quickly gets tired and may not show interest in reading small letters on an eye chart. Therefore, it is very important to do a cycloplegic refraction to determine the amount of refractive error.

EMMETROPIZATION

The cornea and the lens, along with the axial length, form the primary refractive components of the eye. The process by which a normal eye has coordinated growth of its refractive components during early childhood to reach refraction near plano is called emmetropization. The average cycloplegic refractive error is approximately +2.00 D with a standard deviation of approximately 2.00 D. The keratometry at birth is ~52 D, compared to 42–44 D in adulthood.
WHEN TO PRESCRIBE GLASSES

Many guidelines have been given to guide the amount of spectacle prescription at each age. The American Academy of Ophthalmology has published guidelines based on consensus of opinion among an expert panel. Similarly, Miller and Harvey suggested recommendations based on consensus among members of the American Association for Paediatric Ophthalmology and Strabismus (AAPOS). The American Optometric Association also provides guidelines for correction of hyperopia and myopia based on consensus among expert optometrists. Many guidelines have also been suggested by individual authors.

The basic concepts for prescription of glasses remain the same. However, the upper limit for the prescription is variable, more so for hypermetropia. Many authors suggest monitoring the refractive error (hyperopia, myopia, or astigmatism) in infants and toddlers before prescribing glasses. If the refractive errors are associated with amblyopia, they have to be prescribed. However, if we find demonstrable amblyopia or heterotropia or nystagmus, we should give spectacles to the child.

The prescription should be undercorrected in the preschool years because of active process of emmetropization. Emmetropization remains active up to 4–5 years for astigmatism and possibly up to 6 years for spherical ametropia, and even until 9–10 years for some moderate hyperopes.

The majority of the infants with myopia can just be monitored as emmetropization is active, the visual world of babies is close, and they do not need clear distance vision. Only very high refractive error has to be corrected.

For correction of hypermetropia in preschool kids, Susan J Leat has suggested that one should underprescribe so as to leave the uncorrected error just above the mean refractive error for the age, leaving enough stimulus for emmetropization.

Guidelines for myopia

In infancy, only large amount of myopia needs to be corrected, as his world is confined to seeing near objects. As the child grows and begins to walk, he starts noticing farther objects, and hence his visual demands increase. So, the spectacle prescription should be based upon anticipated visual acuity needs of the child.

More than 5 D of myopia in infancy has to be corrected. Correct >2 D of myopia in children between 1 and 4 years of age. From 4 years to early school years, -1.00 D or even lower amount if it improves VA and the child appreciates it, should be corrected. However, one should undercorrect by about 1 D to aid the process of emmetropization.

Older school going children (>6-year-old), when acuity can be tested accurately, warrant full correction of myopia. Here, the prescription should be according to the visual acuity of the child. Myopic children who are found to have near esophoria and larger lag of accommodation (>0.43 D) or shorter habitual reading distances may be given a + 2.00 D addition progressive lens.

Guidelines for hypermetropia

Uncorrected hypermetropia can produce accommodative esotropia, strabismic amblyopia, and isoametropic (refractive) amblyopia. The threshold for the treatment of hypermetropia, however, is controversial.

Many studies show that <1% of healthy children have >4 D of hypermetropia. Atkinson et al. found that children with hypermetropia > 3.50 D had a 13 times greater risk of developing strabismus or amblyopia. These studies, therefore, suggest that hypermetropia > 4 D is definitely pathological and should be treated in all children of any age group.
Guidelines for anisometropia

If anisometropia is associated with amblyopia, it always has to be treated fully. Above 1-year of age, ≥3.00 D of anisometropia has always to be treated, because this is unlikely to be transient and is highly likely to cause amblyopia. The guidelines for prescribing lower amounts of anisometropia are very variable. If the child has <3.00 D of anisometropia after 1-year of age, we can monitor the child first over the next 4–6 months. If it persists, we should prescribe glasses. For more than 1.00 D of spherical hyperopic anisometropia, >2.00 D of spherical myopic anisometropia or >1.50 D of cylindrical anisometropia after 3.5 years of age, they are likely to cause amblyopia at this age.

SPECTACLES CHARACTERISTICS

It is equally important that a child should be given proper spectacle frame and lenses. Children with photophobia (albinism, aniridia, colobomata, corneal scarring, and treated retinopathy of prematurity) are prescribed glasses with dark tints (80 − 90% tint/10 − 20% transmission) for outdoors, and lesser tints for indoors (20 − 30% tint/70 − 80% transmission). Monocular patients should be given polycarbonate lenses to protect against inadvertent eye trauma.

The spectacle frame should be of a proper size and should follow basic requirements. The eye wire should cover both the eyes completely all around permitting the patient to view from the spectacle in various ocular positions. It should not come in contact of periocular skin. The nose pads should sit symmetrically on either side of the nose bridge and should neither be too tight or loose to prevent repeated slippage or skin marks. The temples should be parallel and should put mild and symmetric pressure on the forehead without causing serious imprinting on the skin. It should not project more than 2 mm out beyond the mastoid bone.

The spectacle frame should follow the “four point touch test.” All four points on the spectacle frame (two points from each side of eye wire and one each from temple) should touch the flat surface simultaneously [Figure 1].

Figure 1: An ideal spectacle frame following the “four point touch test”
The spectacle lenses should be of correct power (within \( \pm 0.25 \) D) and correct axis of astigmatism (error \( \leq 5^\circ \)). The optical center of the spectacle lens should be within 2 mm of visual axis. The surface of the lens should have no fractures/pitting/scratches, as they will affect the quality of vision thereby affecting the compliance of child wearing glasses.

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**REFERENCES**