Frequently Asked Questions about Pediatric Ophthalmology:

1.What does a Pediatric Ophthalmologist do?

A Pediatric ophthalmologist deals with problems in children from new born to 15 years of their age. They are specially trained in it for it for at least one year

2.What are the common problems in Pediatric age group?

Common problems in Pediatric age group

- **Refractive Errors** –Children may have difficulty in seeing distant objects(myopia), .having eye strain while reading (hypermetropia and astigmatism)

1. **Allergic eye diseases,**(children will be continuously rubbing the eyes and they will be having red eyes

- **Convergence Insufficiency** –Convergence means while reading ,both eyes will come nearer ,but this cannot be seen in some children they cannot converge while reading ,so they will start seeing two images ,this will be very painful to children ,they will try to avoid reading, this children should be identified and treated as early as possible ,there are special exercises for it

- **Accommodative Weakness** –For every person their is one muscle inside the eye which changes the shape of the lens while reading. But in some children , this muscle will be week , we should assist this children by giving a separate glasses

- **Accommodative Spasm** –in some children the above mentioned muscle will be fixed in near so this children cannot see distance giving a pseudo myopia appearance

- **Pediatric Cataracts**– They can be presented immediately after birth to any age .paediatric cataract(at birth) surgery should be done as early as possible otherwise children will start moving their eyes(nystagmus) by 3 to 4 months of age ,once nystagmus appeared ,that child vision will be permanently reduced even if we do surgery ,so early detection is very important

- **Trauma to Eyes** –it can be a simple corneal abrasion to corneal tears ,lid tears ,cataract, and vitreous haemorrhages and retinal tears and injuries

- **Retinopathy of Prematurity** Normally in fetus by nine months retinal will be completely vascularised but in premature children this cannot happen so they are prone to get retinal problems and permanent loss of vision ,so this children has to be checked at one month of the age and by taking pediatrician advice.

- **Amblyopia**– In some children their eyes will be looking straight ,but on examination they will be having less vision in one eye (this is because high refractive error in one eye) this can be treated , but early detection is important(before eight years of age) ,so every parent has to have eye check up in their children at least once in preschool age ,so that the children in need can be identified and treated(children don't complain about this problem because the other eye is normal ,this can identified only when they close the normal eye

3.When should we see every child?

1. At birth to look after her eyes (normal or not)
2. At six months of age –to know about her vision in both eyes are normal or not, eyes are looking straight or there is any strabismus or not
3. At preschool age to know about their refractive errors.

Services offered –surgical

1. Congenital and Pediatric cataract surgeries –we have a well equipped department and theater and anesthetist available in working hours
2. Squint surgeries and treatment
3. Examination under general anesthesia

Medical

1. Refractive error correction.
2. Vision check-up in preschool and infants.
3. Amblyopia Management.
4. Convergence insufficiency, accommodative weakness and accommodative spasm management.
5. Trauma cases.

6. Retinopathy of premature babies and if necessary lasers in indicated premature children.
7. Barrage lasers in children with peripheral retinal tears.

Squint –Children without straight eyes can be identified as early as six months of age,so they should identified and consult near by Pediatric ophthalmologist as early as possible.

Low Vision

1.Introduction & What is Low Vision:

- These aspect of vision that are to be considered for defining visual impairment.
- Visual Acuity.
- Field of Vision.
- Visual Functioning
- Usually visual defects result into loss of clear distance vision or near vision or both distance and near, central vision or peripheral vision. All these losses are considered by measuring the visual acuity, field of vision and level of visual functioning.

1.1 Visual Acuity:

- It refers to the ability of the eye to see detail.
- The visual acuity for distance is measured as the maximum distance at which person can see a certain object, divided by the maximum distance at which a person with normal eye sight can see the same object.

1.2 Field of Vision:

- It refers to the area, which the steadily fixating eye could see.
- It is determined by the confrontation test in which mapping is done on a chart having concentric circles marked upon it.

1.3 Visual Functioning:

- It relates in part to the condition to the eye.
- The visual functioning refers to the degree to which ability of a person to use vision for all (daily) activities.

2.Low Vision Definition:

- WHO definition (1992)
- A person with Low vision one who has impairment of visual functioning even after treatment, and/ or standard refractive correction and has a visual acuity of less than < 6/18 to light perception.

  (or)

A Visual field of less than 10 degrees from the point of fixation, but who uses or is potentially able to use, vision for the planning and/or execution of a task.

3.What are the causes of Low Vision?

Common causes of Low vision in Children & Adult :

1.Albinism : Results from a loss of pigment. Some forms of albinism affect only the eyes (ocular) while other forms affect skin and hair color as well as the eyes.(oculocutaneous). Albinism is hereditary and may be autosomal recessive or X- linked.

2.Aniridia : Refers to partial or total absence of the iris of the eye. The lake of an iris results in acuity loss, light sensitivity and visual field loss.

3.Aphakia : Refers to absence of the lens of the eye. The lack of a lens prevents the ability to adjust focus between objects at different distance.

4.Cataract : The clouding can occurs over the entire lens or over a small area over the lens. Surgical removal of the cataract can result in aphakia. Childhood cataract is responsible for 5% to 20% of blindness in children world wide and for an even higher % of childhood visual impairment in developing countries.

5.Coloboma : A birth defect occuring during the development of the fetus. The result is under development, which results in a cleft in the pupil, iris, ciliary body, lens, retina, choroid and opticnerve.

6.Glaucoma : A condition resulting from an increase of pressure inside the eye, often from improper drainage of fluid increase pressure can cause damage to eye structures such as the optic nerve.

7.Macular Degeneration : There is a gradual loss of sensitivity of the central portion of the Retina, because this is the area of the retina responsible for detail vision, macular degeneration is often associated with the loss of central vision and the ability to see fine details.

8.Nystagmus : refers to the involuntary movement of the eye resulting in the inability to maintain steady fixation. The movement can be horizontal, vertical, circular or mixed.

9.Conginital Optictrophy : Refers to degeneration of the optic nerve. Loss of function of the optic nerve results in a decreased ability to transmit electrical signals to the visual center of the brain.

10.Optic nerve Hypoplasia : It is a condition in which the number of nerve with in the optic nerve bundle is reduced.

11.Retinitis Pigmentosa (RP): It is a progressive degeneration of the retina resulting in night blindness and peripheral field loss.

12.Retinopathy of Prematurity(ROP) : It is a condition in which the normal growth of blood vessels in the retina is disturbed during fetal development, often due to circumstance surrounding premature birth. This condition can lead to an increased risk of retinal tear or retinal detachment.

4.Visual handicap may be produced by various kinds of Visual Impairments:

a) Retinitis pigmentosa (RP)
b) Glaucoma
c) Age related macular degeneration(ARMD)
d) Diabetic retinopathy(DR)
e) Optic atrophy (adult)
f) Heminopia.

5.What are low vision aids types of low vision aids (or) devices:

Low vision aids are devices that help people use their sight to better advantages. These aids may be optical lenses, such as magnifiers or telescopes or non optical devices such as vision, filters, reading slits, stand, lamps and large printers.

Low vision aids may make things larger or appear larger they may make things brighter they may make things clearer, they may improve the contrast. Some aids do more than one of the above things, but generaly all low vision aid make it easier to see something.

6. Low vision aids are divided into the following groups:

1. Simple hand/ stand magnifiers.
2. Spectacle magnifiers
3. Telescope
4. Electronic magnifiers: CCTV (up to 6ox) text enlargement systems.
5. Other include : Enlargement, large prints, contrast, extra illumination and simply moving closer.

7.Optical Low Vision Aids:

Introduction:

A low vision device (LVD) is a device that enables the patients to improve his/her visual performance. There are basically three categerories of lvd's .a) Optical devices, b) Non- Optical devices and c) Electronic devices.

Telescope is the only optical LVD for intermediate and distance.

For near there are mainly 3 types of LVD'S

• Spectacle magnifier

• Stand magnifier

• Hand –held magnifier.

8.Non – optical Low Vision Aids:

Basically we can classify the low vision devices (LVD'S) in to two categories: Optical & Non-optical device.

Functional vision improves not only with optical devices, even non – optical devices play an important role in improving the functional vision of a person. Non – optical devices are comparatively cheaper than optical devices and are easily available for usage. Non – optical devices are helpful in increasing the illumination level, enhancing the contrast and improving greater physical comfort.

We can group the commonly used Non- optical devices under 7 categories as follows:

1. Relative size and larger assistive device
2. Glare, contrast and lighting control device
3. Posture and comfort maintenance device
4. Hand writing and written communication device
5. Orientation and mobility techniques and devices
6. Sensory substitution device
7. Medical management and life skill device.

9. Illumination Low vision devices Hand-held magnifier:

A hand-held magnifier is a convex lens that holds by means of handle at various distance from reading plane.

Type of hand held magnifiers illuminated and non- illuminated.

10.what services are available for patients with low vision in our hospital:

• Low vision assessment
• Low vision counseling
• Telescope training
• Magnifying glasses training
• Vision stimulation exercises
• Vision rehabilitation services
• Cane training
• Education guidance.

Strabismus

- Strabismus is the term for ocular misalignment, or if there is an underlying tendency towards misalignment.
- The eye is acted upon by six extra ocular muscles (four rectus muscles and two oblique muscles).
- Binocular single vision or sensory fusion is defined as the unification of visual excitations from corresponding retinal images into a single visual percept, a single visual image.
- Stereopsis is defined as the relative ordering of visual objects in depth, that is, in the third dimension.
- Amblyopia is defined as a unilateral or bilateral decrease of visual acuity caused by pattern vision deprivation or abnormal binocular interaction for which no causes can be detected by the physical examination of the eye and which in appropriate cases is reversible by therapeutic measures.
- Strabismus is usually idiopathic or related to a refractive error. In most of these cases, the eye muscles are normal and the eye can rotate freely. Less often, mechanical restriction of eye movements (restrictive strabismus) or an extra ocular muscle paralysis (paralytic strabismus) cause the strabismus. A blind eye may also drift, and this is termed sensory strabismus.
- Symptoms of Strabismus: When one eye is fixing on a target, the other eye will deviate. This may or may not be associated with double vision.

• Detection and diagnosis is based on
• A history of constant or intermittent deviation of one eye; any compensatory head posture?
• On inspection, do the eyes appear straight?
• Eye movements through the nine cardinal positions of gaze are noted.

• Corneal light reflex test.
• Cover tests.
• Sensory tests for fusion and stereo acuity.
• Tests for fusional control.
• Hess screen charting in cases of suspected paralytic squints.
• Early detection of squint is important because clinical studies clearly indicate that early surgery before 1 to 2 years of age is critical to obtaining some binocular fusion, at least peripheral fusion, in cases of infantile esotropia.

- Amblyopia should be treated as early as possible during the period of visual plasticity (birth to 8 years).Visual acuity improvement has been noted when children are treated in late childhood after 8 years of age. Even adults with dense amblyopia can show visual acuity improvement and prolonged plasticity. There have been sporadic cases of infantile esotropia that that demonstrated stereoacuity following “late” surgery, even in adulthood.
- If the tropia phase in intermittent exotropia increases, patients may develop dense suppression and over time, may progress to a constant exotropia with loss of fusion potential.
- The goals of strabismus treatment include preservation of binocular function and cosmesis.

Treatment of Esotropia-

- The treatment of congenital esotropia is usually surgical.
- The first step in the treatment of hypermetropic accommodative esotropia is to prescribe the full hypermetropic correction.
- The treatment of partially accommodative esotropia is surgery.
- The treatment for acquired non-accomodative esotropia is usually surgery.
- Treatment of intermittent exotropia is surgery if there is an increasing tropia phase,or deteriorating fusional control.
- Loss of vision due to amblyopia is preventable by early detection and treatment.
- In summary, early detection and appropriate treatment of amblyopia and strabismus can restore binocular vision and cosmesis.