When should children get their first eye examination?

Infants and toddlers

A routine screening eye examination is part of the general physical that is given to very young children by their neonatologist or paediatrician. The doctor checks for proper eye alignment, for problems on the outside of the eye, and how the eye reacts to changes in light and darkness (red pupillary light reflex). The doctor also checks for the quality of the red reflex.

An abnormal red reflex can be a sign of a problem in the structures of the eye, such as cataracts (clouding of the lens), high errors in refraction (how well the eye focuses light), or even tumours. If a problem is found during any part of the examination, the child is usually referred to a paediatric ophthalmologist, a doctor who specializes in diagnosing and treating eye conditions in children.

Children

Vision screenings, such as eye chart tests, determine how well a child can see the form and details of objects (visual acuity). In children between the ages of 3 and 5 years, distance visual acuity is tested using pictures, letters, or the tumbling E game.

Distance visual acuity is recorded as a fraction, such as 20/20. The number on top relates to the distance from the chart (most eye charts are read at 20 feet). The number on the bottom relates to the distance at which a normal eye can read the smallest line on the chart. These screenings represent one of the most effective techniques for detecting eye problems in children.

When does a child need further evaluation?

Children should be referred to the ophthalmologist if visual acuity is less than 20/40 or if there are two or more lines of difference in acuity between the two eyes. Children 6 years of age or older are referred if vision is 20/30, or less or if there is a two-line difference between the eyes. Children of any age should have their eye alignment checked using the cover test or the stereo test. Any ocular movement on the cover test or significant errors on the stereo acuity test should prompt referral. Children with a family history of significant childhood eye problems should be examined early in life for the presence of similar problems. A screening evaluation is completed by the paediatrician, but a detailed examination is best performed by the paediatric ophthalmologist.

What is a lazy eye and how is it treated?

The term "lazy eye" is a misnomer for poor vision in one eye, though the eye appears to be normal. If a condition causes a child to favour one eye, poor vision might occur in the eye that is not being used. The medical term for this condition is amblyopia.

Amblyopia can result from crossed eyes (strabismus). The brain turns off the image coming from the deviated eye to avoid double vision, since this image cannot be superimposed on the image coming from the other eye. Over time, the part of the brain receiving the image from the deviated eye loses the capacity to see small targets and vision is reduced in that eye. This condition is called strabismic amblyopia.

Amblyopia can also result from uncorrected high errors of refraction, such as astigmatism (an irregularity in the curvature of the cornea), or from unequal errors of refraction between the two eyes (anisometropia). The child's brain will favour the clearer image coming from the eye with the lesser error of refraction, thus leading to disuse of the other eye and hence to anisometropic amblyopia. Blurry images from hazy structures in the eye, such as from the cornea or the lens of the eye, can also lead to so-called deprivation amblyopia.

Amblyopia is treated by:

- Correcting the underlying eye problem, such as giving the appropriate glasses, aligning the eyes surgically, or clearing the ocular media
- Allowing the amblyopic eye to be used more through the penalization of the better-seeing eye with patching or dilating eye drops

Amblyopia is reversible in the first eight years of life but is best treated very early. The younger the child is at the beginning of therapy, the faster the recovery of vision.

When is strabismus surgery necessary?

Strabismus surgery is performed to realign deviated eyes and to allow for the use of both eyes in vision (binocular vision). With a few exceptions, ocular deviations that are either constant or very frequent are best treated surgically. Accommodative esotropia (inward deviation of the eye), for example, is best treated with glasses. Children with this disease are very farsighted (hypermetropic) and their eyes deviate inward as they accommodate or focus to see clearly. Glasses are given to relieve the accommodative effort, hence allowing the eyes to remain aligned.

Children with infantile esotropia and those with exotropia (outward deviation of the eye), on the other hand, most often require surgery to provide binocular vision. Because the problem in strabismus lies in the control of eye movements and not in the eye muscles, the results of surgical intervention are not perfect in all patients. About 15 percent to 25 percent or more of patients require additional surgery soon after surgery or in later years.

Children undergo strabismus surgery under general anesthesia in an outpatient setting. They generally do not experience any significant post-operative pain and resume normal activities within a day or two.

Do children get cataracts?

Children can get cataracts, clouding of the lens of the eye, from a variety of causes. About 50 percent of cases are inherited from one parent who might have no symptoms or who might have had surgery for a similar problem in infancy, childhood, or early adulthood.

Trauma is the next most common cause of cataracts. Both blunt and penetrating injuries to the eyes can disrupt the integrity of the lens and lead to its clouding. A large number of systemic (whole-body) metabolic, inflammatory, and infectious diseases can also lead to cataracts. And finally, the chronic use of some medicines — such as steroids — might also produce clouding of the lens.

How are cataracts in children treated?

Cataracts that interfere with vision are best treated surgically. The clouded lens is removed and is replaced by an artificial intraocular lens (IOL) or implant.

At first, IOL was only used in adults. As ophthalmologists realized the safety of these devices, and as the designs and materials of the devices improved, the implants began to be used in younger and younger children and eventually in infants. The advantage of the implants is that they provide clearer, more normal size images on the retina than contact lenses or glasses can.