

**Objectives:**

1. To state how to measure or estimate visual acuity in children
2. To detect strabismus by general inspection, the corneal light reflex test, and the cover test.
3. To explain why it is necessary to perform ophthalmoscopy in a child to rule out any organic causes of impaired vision when amblyopia is suspected.
4. To explain to parents the need for prompt treatment of amblyopia.

This lecture is loosely based on the material found in Chapter 6, Basic Ophthalmology by Frank Berson. Objectives include understanding the concepts of amblyopia and strabismus how they can be diagnosed, and a review of visual development and the measurement of vision in a child.

ADULT (over 8) vs. CHILD

ability to SUPPRESS

DIPLOPIA IN ADULTS

The major difference between an adult and a child is the ability to suppress the information from one eye. The child suppresses the information from the non fixing eye. An adult can't and instead sees both images i.e. double.

**EXTRAOCULAR MUSCLES -action, innervation**

MEDIAL RECTUS -adduction (3)

LATERAL RECTUS -abduction (6)

SUPERIOR RECTUS -elevation (3)

INFERIOR RECTUS -depression (3)

INFERIOR OBLIQUE -excyclorotation (3)

SUPERIOR OBLIQUE incyclorotation (4)

**NOMENCLATURE**

FUSION-

the brain's mechanism to keep the eyes working together preventing double vision and keeping them straight.

TROPIA-

a manifest turn. the fusion mechanism has broken down.

PHORIA-

a tendency for the eyes to turn. Fusion mechanism prevents this from occurring. If fusion is eliminated a turn develops

ESO-

eyes turned in

EXO-

eyes turned out

HYPER-

one eye higher than the other

COMMITENT-

the type of turn caused by fusional breakdown. Not caused by a specific muscle weakness and therefore symmetrical. The type most commonly seen in children

NONCOMMITENT-

the type of turn caused by muscle palsy. Not symmetrical. Uncommon in children

STRABISMUS-

turned eye i.e. one eye fixes on the object of regard; the other doesn't

**DIAGNOSING STRABISMUS**

**CORNEAL LIGHT REFLEX** - does the light reflect in a symmetrical manner

**COVER TEST**-diagnosing TROPIA

cover one eye

observe the movement of the other eye

repeat covering the other eye

movement=tropia

**UNCOVER TEST**-diagnosing PHORIA

cover test negative

observe eye as you uncover it

repeat for other eye

movement=phoria

**ALTERNATE COVER TEST**-diagnosing TROPIA or PHORIA

cover one eye

quickly cover the other

movement=tropia or phoria

**VISUAL DEVELOPMENT-THEORETICAL**

**BIRTH-** 20/200- normal infants can see their mother

**4 MONTHS-** MACULA MATURE - baby can fix and follow with each eye. -if not refer

**6 MONTHS-** Evoked potential -fully developed

**2 YEARS-** 20/20 -using preferential looking.

**TESTING FOR ACUITY AND AMBLYOPIA**

**FIXATION**-after 4 months fix and follow (one eye at a time)

**FIXATION PREFERENCE** up to 3 cover one eye and observe behavior

**PICTURE CARDS** 3-4 differences more important

**E GAME** 4-5 2 line difference or 20/40 -refer

**SNELLEN LETTERS** 5+ 2 line difference or 20/40-refer

AMBLYOPIA-POTENTIALLY NORMAL VISION IN AN EYE WITH SUBNORMAL VISION.

caused by visual deprivation or distortion

reversed by "correcting cause " and forcing use of the amblyopic eye.

TOTAL DEPRIVATION OF ONE EYE FROM BIRTH-TWO MONTHS -IRREVERSIBLE

1 YEAR-1 MONTH TO REVERSE

6 YEARS -6 TO 12 MONTHS TO REVERSE

9 YEARS -NO REVERSAL

\*\*\* RED REFLEX \*\*\* diagnose visual obstruction at birth

**TYPES OF STRABISMUS**

**ESOTROPIA**

INFANTILE (diagnosed by 6 months) Tx.-SURGERY

ACCOMMODATIVE-accommodates because of hyperopia.eyes converge and fusion mechanism  
breaks down Tx.-SPECTACLES INCLUDING BIFOCALS THEN  
SURGERY (AMBLYOPIA COMMON)

**EXOTROPIA**

INTERMITTENT

AMBLYOPIA RARE

Usually CONSERVATIVE MANAGEMENT