

Visual Acuity Assessment in Infants and Children

Visual Acuity (VA)

- Visual acuity is an assessment of the function of the fovea.
- The test object is constructed so that each portion of it separated by an interval of 1 minute of arc and that the whole objects subtends an angle of 5 minutes of arc.
- Visual acuity is represented by two numbers, the first is the distance of separation the test object is from the patient, and the second is the distance at which the test object subtends an angle of 5 minutes.
 - Example: A 20/100 Snellen character will subtend 5 minutes of arc at 100 feet.
- Hand-held Allen Card single optotype characters are size 20/30.

Normal Visual Acuity, AAP Failure Criterion

- Age 3-4 20/50 or worse, or 2 line VA difference between eyes
- Age 5 20/40 or worse, or 2 line VA difference between eyes
- Age 5+ 20/30 or worse, or 2 line VA difference between eyes

Physiological Testing:

- The **VEP**, visually evoked response, is the recorded response of the visual cortex to patterned stimuli. VEP's can assess visual acuity and rule out cortical blindness.
- **ERG's**, Electroretinogram, assess the health of the retina but do not assess VA.
- **EOG's**, Electrooculogram, measure saccades, eye movements, etc. and do not assess VA.

Although a child reaches the **potential** for 20/20 VA at 6 months when the ocular dominance columns reach maturity, a child **achieves** 20/20 VA (adult levels):

<u>With</u>	<u>By age</u>
FPL	about 2 years (FPL = Forced Preferential Looking or Teller Acuity)
VEP	6 months
OKN	about 6 months
Minimum Resolvable	By 4 to 5 years (i.e., Snellen, HOTV, Allen)

Visual Acuity Assessment

Age 0-3 months

- Blinks To Light (BTL)
- Normal to see strabismus at this age.

Age 3 months

- Fixates and Follows, (F & F), performed monocularly
- Fixates on mother's face
- Follows a large toy
- Teller Acuity Testing or Forced preferential looking (FPL) assessment; see demonstration
- CSM/Induced Tropia Test; see demonstration
 - C - central vs. uncentral, (Is the corneal light reflex centered?)
 - S - steady vs. unsteady (Is a nystagmus present?)
 - M - maintain fixation (Does the child maintain fixation equally with either eye? If not, amblyopia may be present.)

Age 6 to 24 months

- CSM
- Allen pictures (Test monocularly. Use patches to occlude)
 - Distance 10 or 20 foot charts
 - Near card for 1/3 meter (14 inches)
 - Allen Cards (hand held) See demonstration.
- HOTV chart
- (The E-Game and Landolt C are difficult and unreliable.)

Older than 24 months

Snellen (letter chart)

(Number charts and Lea Symbols are difficult for many pre-schoolers)