



EXPECTEDS

The following are general levels of expected visual ability by age for each of the assessment areas.

A. General Considerations and History

A newborn is regarded as fully matured if the birth weight is not less than 2500 grams (5 lb 8 oz). Maturity of the newborn can also be described by weeks of gestation. Generally, infants less than 37 weeks of gestation are regarded as premature.

The general health status of the newborn is assessed by the Apgar score which ranges from 0-10. It is an evaluation of the infant's heart rate, respiratory effort, muscle tone, reflexes and color. The Apgar scores, usually recorded at one, three and five minutes after birth, can be a good indicator of possible neurological disorders or a difficult birth. An Apgar score greater than 7 after three minutes is considered normal.

B. Ocular Health

1. One Month

Eyes open for short periods only

Eyes open with sucking reflex and when infant held vertically upright

Foveal reflex not present, disc normally pale in color, grayish look to fundus

Pupils miotic and reactive to light (pupils less than 1.8mm or more than 5.4mm suggest the possibility of neurological damage). Average diameter is $3.6\text{mm} \pm 0.9\text{mm}$ in 10 footcandles of light

Stenosis of the nasolacrimal canal is often seen

Non-alignment or failure to maintain fixation is normal

2. Three Months

Pupils normal in size and reactive to light

Foveal reflex difficult to see if present

Stenosis of the nasolacrimal canal is observed frequently

3. Six Month

Pupils normal in size and reactive to light

Nasolacrimal canal should be patent

4. Nine Months

Foveal reflex present in 50% of infants

5. Twelve Months

Foveal reflex present in 90% of infants

C. Alignment and Ocular Motility

1. One Month

Fixates briefly on a bright object in the line of sight
Briefly follows a slowly moving stimulus
Best target for under one year is the parent's face
Slow and sluggish eye movements often opposite to head movement
Nearpoint of convergence generally absent – may sometimes converge to 50cm.

2. Two Months

Follows a bright object past the midline in all planes
Full versions – still slightly slow and sluggish – better horizontally than vertically
Nearpoint of convergence to nose
Versions full in all directions – with head movement
Any persistent strabismus or temporary misalignment of the eyes should be considered abnormal.

3. Six Months

Begins to follow moving object when in sitting position
Versions full and smooth in all directions with accompanied head movements
Nearpoint of convergence to nose
Begins to show reaching response to stereo testing

4. Nine to Twelve Months

Versions full, normal and smooth in all directions
Nearpoint of convergence to nose – adult like
Good response to stereo testing

D. Visual Acuity and Refractive Status (based on non-cycloplegic findings)

Hyperopia, myopia, astigmatism and anisometropia show marked variation during the first year of life. The presence of strabismus or a stable refractive measurement over a three-month period should be cause for immediate concern.

1. One Month

Visual acuity: responsive to 20/600 to 20/800 (Preferential Looking – PL)
Retinoscopy: -1.00 with up to 3.00 variability often not dependent upon the target

2. Three months

Visual acuity: responsive to 20/200 to 20/400 (PL)
Retinoscopy: -0.50 with up to 2.00 variability with good attention to the target

3. Six Months

Visual acuity: responsive to 20/80 to 20/200 (PL)
Retinoscopy: plano with up to 1.25 variability with good attention to the target

4. Nine Months

Visual acuity: responsive to 20/50 to 20/100 (PL)
Scopes: +0.50 with up to 1.00 variability with good attention to the target

5. Twelve Months

Visual acuity: responsive to 20/50 to 20/80 (PL)
Scopes: ± 0.50 with up to 1.00 variability with good attention to the target