

- A Pediatric Ophthalmologist is a Board Certified Ophthalmologist who has completed additional training in Pediatric Ophthalmology.
- The American Academy of Pediatrics (AAP), in response to a recommendation from the AAP Subspecialty Work Group, created referral guidelines to assist general pediatricians in determining when to refer their patients to pediatric surgical specialists.
- Many complex pediatric problems are optimally managed by a medical-surgical team rather than an individual surgical specialist.
- The recommendations of the AAP policy statement have been used in part to guide the referral recommendations below.

### References of Interest:

1. AAP Surgical Advisory Panel: Guidelines for Referral to Pediatric Surgical Specialists  
Pediatrics Vol. 110 No. 1 July 2002, pp. 187-191
2. Guidelines for pediatrician referrals to the ophthalmologist  
Friedman LS, Kaufman LM. Pediatr Clin North Am. 2003 Feb; 50(1):41-53
3. Ten critical diagnoses not to miss on a pediatric eye screening  
Bothun ED. Minn Med. 2009 Jun; 92(6):34-7

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## 1) Visual Behavior/Acuity

### General Guidelines

- By 3 months of age, babies should exhibit a social smile and make eye contact.  
*(In premature babies corrected age should be used)*
- By 4 months of age, babies' ocular alignment is stable and can look from near to far and back again.
- Vision testing with a pediatric eye chart is usually feasible beginning age 3-4 years.

### Refer when:

- ▶ Absence of a social smile or eye contact by 3 months of age should prompt a referral.
- ▶ Any misalignment of eyes (intermittent or constant) in children after the age of 4 months or constant misalignment of eyes at any age even before 4 months should be evaluated.
- ▶ A difference of 2 lines or greater between eyes should prompt a referral. Any acuity  $\leq$  20/50 should be evaluated.

## 2) Eyelids

### General Guidelines

- Mechanical obstruction of vision can produce severe visual loss (deprivational amblyopia).
- Droopiness of Eyelid (ptosis) or Eyelid hemangioma can also cause visually significant Astigmatism that can result in Refractive amblyopia.

### Refer when:

- ▶ Any child with ptosis or eyelid mass should be referred for evaluation.

## 3) Nasolacrimal System

### General Guidelines

#### **Dacryoceles / Mucoceles**

- Often heralded by clinically apparent enlargement of the lacrimal sac and bluish discoloration of the overlying skin in the first weeks of life.

#### **Dacryostenosis (Blocked tear duct)**

- Excessive tearing is usually related to nasolacrimal duct obstruction, and often resolves in the first year of life.

### Refer when:

- ▶ Immediate referral - as there is risk for secondary infection and neonatal sepsis
- ▶ Tearing past 11-12 months requires a referral. If there is recurrent nasolacrimal sac infection (dacryocystitis), earlier referral and treatment is appropriate.

## 4) Anterior Segment

#### **Congenital Glaucoma**

- When excess tearing is associated with photophobia (light aversion), corneal enlargement and clouding, an immediate referral should be made for possible congenital glaucoma.

#### **Chronic Conjunctivitis**

- The most common cause is allergic conjunctivitis. However, other (more serious) etiologies should always be considered.

- ▶ Immediate referral - Delays can cause irreversible optic nerve damage, permanent corneal enlargement, irregular astigmatism and amblyopia.
- ▶ Persistent conjunctivitis / red eye associated with photophobia and corneal scarring are potential signs of Herpetic (HSV) eye disease and require prompt evaluation.

## 5) Ocular Media Opacities

- Examination of the red reflex is an essential part of healthy baby/child visits in nonverbal children.
- Infantile cataracts that are not extracted in the first 6-8 weeks of life may be associated with irreversible visual loss and nystagmus.

- ▶ Anytime there is a dull or asymmetric reflex a referral should be made.
- ▶ If there is a white reflex (leukocoria) an urgent referral should be made to rule out possible retinoblastoma.

## 6) Sensorimotor System (pupils and eye movements)

### General Guidelines

#### Difference in Pupil Size

- A difference in pupil size that is less than 1mm in *both* light and dark is usually benign.

#### Nystagmus

#### Esotropia (eyes turning in / toward nose)

#### Exotropia (eyes turning out / away from nose)

- Disruption of binocular vision development in the first 3-6 months of life may produce permanent loss of stereo-vision.
- Acute onset misalignment of eye (strabismus) or double vision (diplopia) can be a manifestation of more serious neurological issues like brain tumor.
- Strabismic amblyopia not treated before age 7-8 years is often irreversible.

### Refer when:

- ▶ Any difference in pupil size more than 1mm should be evaluated.
- ▶ Association of mild ptosis (droopy eyelid), with a smaller pupil on the same side, more pronounced in the dark, requires evaluation for Horner's Syndrome and workup for rare cases of neuroblastoma.
- ▶ A dilated pupil with limitation of eye movement requires urgent referral for evaluation of a 3<sup>rd</sup> nerve palsy.
  
- ▶ Any child with nystagmus (oscillating eye movements) should be evaluated.
- ▶ New/acute onset nystagmus requires urgent evaluation.
  
- ▶ Any infant older than 4 months of age with constant/intermittent ocular deviation should be evaluated promptly. Any infant with constant ocular deviation should be evaluated even prior to 4 months of age.
- ▶ Any child with suspected ocular misalignment should be evaluated.

## 7) Prematurity

### General Guidelines

- Very premature infants, <1500g or <32wks, are at risk for development of strabismus and refractive errors - even in the absence of retinopathy of prematurity (ROP).

### Refer when:

- ▶ These infants should be examined at minimum 3 and 6 months post discharge from the NICU (or more frequently if there is a history of retinopathy of prematurity).

## 8) Systemic Disorders

### General Guidelines

- Children with autoimmune disorders are at risk for uveitis.
- Children with Type I or II Diabetes are at risk for development of retinopathy.
- Children with Sickle Cell disease, Albinism, Hypertension, thyroid malfunction, sturge-weber syndrome.

### Refer when:

- ▶ Appropriate referral for screening should be made (e.g. JRA, Lupus).
- ▶ Baseline evaluation followed by appropriate examinations for children with diabetes is recommended.
- ▶ Baseline evaluation followed by appropriate eye examinations based on ocular findings.

## 9) Congenital Syndromes

### General Guidelines

- Subtle abnormalities of the anterior segment may be associated with significant underlying ocular maldevelopment (e.g. small iris coloboma - “key hole pupil” - with possible associated chorioretinal and optic nerve coloboma)
- Many genetic syndromes have eye findings.
- Children with Craniosynostosis can have bony compression of the optic nerve and irreversible loss of vision from. Strabismus is also common in patients with bony abnormalities of the orbit.

### Refer when:

- ▶ Any congenital deformity that involves the orbit or optic pathways should be evaluated.
- ▶ Children with Down syndrome are at higher risk for cataracts and high refractive errors.
- ▶ Ocular examination can aid in diagnosis of certain syndromes (e.g. Iris Lisch nodules is NF-1, lens subluxation in Marfan’s).
- ▶ Any child with a history of gestational drug exposure / alcohol should be evaluated for associated ocular abnormalities.
- ▶ Any child with craniosynostosis should be evaluation for optic neuropathy and strabismus.

## 10) Non-Accidental Injury

### General Guidelines

- Retinal hemorrhages may be an important clue to possible “shaken baby syndrome” and are more common before age 3 months - due to poor neck control.

### Refer when:

- ▶ Any child with suspected non-accidental injury should have a dilated fundus examination.

## 11) Headaches

### General Guidelines

- Headaches can be secondary to refractive errors (need for glasses) or ocular motility issues like convergence insufficiency.

### Refer when:

- ▶ Any child with chronic headaches or complaining of headache after prolonged reading should have a comprehensive eye examination.