

# Pediatric Curriculum Roadmap

## PBL Teaching Sessions

- **Pediatric Eye Exam (Owen)**
  - Visual Acuity Assessment and Performing the Eye Exam in Children
  - Refractive Amblyopia
  - Congenital Nystagmus and Poor Vision
  - Chromosomal Craniofacial abnormalities
- **Visual Development & Amblyopia (Young)**
  - Sensory & Motor Physiology
  - Deprivational Amblyopia
  - Anterior Segment Disorders: Pediatric Cataracts/Glaucoma
- **Strabismus (Jardine)**
  - Nomenclature
  - Esotropias/Exotropias
  - Strabismic Amblyopia
  - Vertical Strabismus
- **Pediatric Retina (Hoffman)**
  - Retinopathy of Prematurity
  - Non-accidental Trauma
  - Retinoblastoma
- **Pediatric Orbital Disorders (Dries)**
  - Pediatric Ocular Tumors: Rhabdomyosarcoma, hemangiomas, neuroblastoma
  - Congenital Lacrimal Disorders
  - Optic Nerve Abnormalities

## Core Topics (to be discussed on rotation, weekly presentations)

- ☐ **Retinoscopy:** optics (principles to understand at the end of this roadmap) , astigmatism, exam techniques (practice on AAO simulator)
- ☐ **Esodeviations:** infantile, refractive, high AC/A ratio (review PPT cases with Dr. Jardine)
- ☐ **Exodeviations:** intermittent, control, tenacious proximal fusion (review PPT cases with Dr. Jardine)
- ☐ **Amblyopia:** refractive (unilateral, bilateral), strabismic, deprivational
- ☐ **Pediatric cataracts:** indications for surgery, unique features
- ☐ **Pediatric glaucoma:** clinical features, PCG, secondary childhood glaucoma
- ☐ **Congenital nasolacrimal duct obstruction**

## Required Clinical Skills (to be learned on rotation)

- ☐ Pediatric eye exam (using toys, lights, distraction techniques – singing is preferred)
- ☐ Retinoscopy (goal is consistency, within 0.50 to 1.00 D of attending exam)
- ☐ Strabismus measurements (spend clinic time with orthoptist, Julie Harmon)
- ☐ ROP risk stratification and exam grading (attend ROP rounds at least once a week either at PCH or U)

### Surgical Expectations:

- It is an expectation that you **come prepared to the OR** with knowledge of the patient's case, strabismus measurements, and pertinent clinical history.
- Approximately 1-2 weeks prior to starting the peds rotation, schedule a wet lab with Dr. Jardine to practice scleral passes. Order pig eyes in advance (they take about 1 week to arrive). Spend additional time in the wet lab to master **scleral passes, suturing, and instrument tying**.
- After 1 month on the rotation, it is expected that you demonstrate knowledge of how to execute the **correct steps of strabismus surgery** (with each attending you have operated with  $\geq 2$  times) **from start-to-finish** without prompting by the attending. This will require taking detailed notes of each surgeon's unique approach to strabismus surgery and reviewing those notes prior to joining them in the OR.
- By the end of the rotation, you should demonstrate proficiency in performing key steps of strabismus surgery:
  - Isolating the muscle
  - Placing muscle sutures
  - Performing safe, smooth scleral passes

### Directed Reading and Resources

1. AAO retinoscopy simulator (<https://www.aao.org/interactive-tool/retinoscopy-simulator>)
  2. AAO strabismus simulator (<https://www.aao.org/interactive-tool/strabismus-simulator>)
  3. AAO ROP simulator (<https://www.aao.org/interactive-tool/retinopathy-of-prematurity-case-based-training>)
  4. AAO Retinoscopy 101 (<https://www.aao.org/young-ophthalmologists/yo-info/article/retinoscopy-101>)
  5. Tim Root retinoscopy basics (<https://www.youtube.com/watch?v=ezOoPKZwNDk>)
  6. Pertinent BCSC chapters
  7. ROP (Dr. Hoffman's book)
- **Surgery with Dr. Hoffman:**
    - See PowerPoints and surgical videos made by previous residents on Box
  - **Surgery with Dr. Jardine:**
    - Pay special attention to describing and executing these key steps:
      - "Joop!"
      - "Clear the trail"
      - The "bookmark" step
      - "Show me the wings"
      - The "dolphin" maneuver (with sound effects)
      - The "Big Mac Hold"
      - "Don't cry, don't cry, don't cry" (scleral passes)
      - "Show. Me. THE MUSCLE!!" (The Jerry Maguire Step)

### Additional Topics You Should Encounter on Rotation

- Sensory evaluation:** 4D BO prism, Worth 4 Dot, Bagolini lenses, induced tropia
- Sensory adaptations:** suppression, ARC, monofixation
- Amblyopia:** risk factors determining severity, treatment options
- Inferior oblique overaction:** presentation, treatment options
- V and A pattern strabismus**
- DVD**
- Peculiar motility disorders:** Duanes, Brown, monocular elevation deficiency, Mobius
- Nystagmus:** congenital vs latent, PAN, spasmus nutans, null point, Kestenbaum procedure
- Indications for and complications of strabismus surgery**
- Muscle surgery in thyroid eye disease**
- Craniosynostosis**
- Orbital hemangiomas and lymphangiomas**
- Ophthalmia neonatorum**
- Aphakic glaucoma**
- Pediatric anterior uveitis:** JIA, spondyloarthropathies, TINU, Kawasaki, surveillance
- Persistent fetal vasculature**
- ROP:** risk factors, phases, grading, treatment, sequelae
- Pediatric Retinal Disease:** Coats, FEVR, incontinentia pigmenti, Stickler syndrome
- Pediatric Corneal Disease:** STUMPED acronym, Peter's Anomaly, Anterior segment dysgenesis, Haab's striae, congenital glaucoma, dermoids, Axenfeld-Riegers
- Retinoblastoma:** genetics, histology, presentations, treatment, sequelae
- Optic nerve abnormalities:** hypoplasia, morning glory disc, coloboma, optic atrophy
- Neuro-oculocutaneous syndromes:** NF, TS, VHL, Sturge-Weber, Ataxia-Telangiectasia
- Ocular manifestations of non-accidental trauma**

### **Optics Principles to Understand on Rotation:**

- What is happening during accommodation?
- Why is it important to use cycloplegic drops in retinoscopy?
- How do you measure dynamic retinoscopy?
- What does moving the sleeve up and down do to the light rays in the retinoscope?
- When would you cut the plus on a hyperope who needs glasses? Why?
- When would over-minus a myope? Why?
- What happens to your estimated cycloplegic refraction if you are off axis?