

Paediatric Ophthalmology and Strabismus

Anatomy and physiology of:

- Basic anatomy and physiology of strabismus (e.g., innervation of extraocular muscles, primary actions, comitant and incomitant deviations, overaction and underaction, restrictive and parietic saccades and pursuit movements).
- Basic sensory adaptations for binocular vision (e.g., normal and anomalous retinal correspondence, suppression, horopter, Panum's area, fusion, stereopsis).
- Anatomy and physiology of strabismus (e.g., torsion, tertiary actions, consecutive deviations).
- Sensory adaptations (e.g., anomalous head position).

Clinical knowledge of examination and ancillary testing:

- Basic examination techniques for strabismus (e.g., ductions and versions, cover and uncover testing, alternate cover testing, prism cover testing).
- Basic visual development and visual assessment of the paediatric ophthalmology patient (e.g., central, steady, maintained fixation; Lea symbols; HOTV; Kay pictures, illiterate E, Landolt C rings, Crowding – single letter vs whole board).
- Binocular sensory testing (e.g., Titmus stereo testing, Randot stereo testing, Worth four-dot, Bagolini lenses, afterimage testing).
- Basic and more advanced strabismus examination techniques (e.g., combined vertical and horizontal prism cover testing, double Maddox rod testing)
- Methods of vision testing and investigation in children with developmental delay (CVI, preferential looking, crowding), basic evaluation and differential diagnosis of decreased vision in infants and children (e.g., retinal and optic nerve aetiologies, amblyopia).
- Genetics in paediatric ophthalmology – methods (chromosome, array CGH, NGS, Exome)
- Electrodiagnostics in paediatric ophthalmology (ERG; VEP)

Clinical knowledge of diagnosis, aetiology and pathology

- Different aetiologies of amblyopia (e.g., deprivation, ametropic, strabismic, anisometropic).
- Recognise pseudostrabismus.
- Aetiologies of esotropia.
- Aetiologies of exotropia
- Different forms of childhood nystagmus (e.g., sensory, motor, congenital, acquired).
- Basic and more advanced visual development and visual assessment of the paediatric ophthalmology patient (e.g., blink to light or threat, measures of fixation and following behaviour, objective measures of visual acuity).
- Aetiologies of esotropia (e.g., congenital, comitant and incomitant, accommodative and non-accommodative, decompensated, sensory, neurogenic, myogenic, neuromuscular junction, restrictive, nystagmus blockage syndrome, spasm of the near, monofixation syndrome, consecutive).
- Aetiologies of exotropia (e.g., congenital, comitant and incomitant, decompensated, sensory, neurogenic, myogenic, neuromuscular junction, restrictive, basic divergence excess, exophoria, convergence insufficiency).
- Various strabismus patterns (e.g., A or V pattern).
- Aetiologies, evaluation and management of vertical strabismus (e.g., neurogenic, myogenic, neuromuscular junction, oblique overaction or underaction, dissociated vertical deviation, restrictive).
- Features, classification, and treatment indications, treatment, causes for retinopathy of prematurity
- Aetiologies and types of paediatric cataract – treatment, follow-up, refractive options

- Ocular findings in child abuse (e.g., retinal haemorrhages) and appropriately refer to child protective services or other authorities.
- Common hereditary or congenital ocular motility or lid syndromes (e.g., Duane's syndrome, Marcus-Gunn jaw-winking, Brown syndrome).
- Basic features of dyslexia.
- Basic evaluation of decreased vision in infants and children (e.g., retinopathy of prematurity, hereditary retinal disorders, congenital glaucoma, measles, vitamin A deficiency).
- Identifiable congenital ocular anomalies (e.g., microphthalmia, persistent foetal vasculature).
- Ocular findings in inherited, metabolic disorders.
 - Mucopolysaccharoidoses (e.g., Hurler syndrome, Scheie syndrome, Hunter syndrome, Sanfilippo syndrome, Morquio syndrome, Sly syndrome)
 - Lipidoses (e.g., Tay-Sachs disease, Sandhoff, Niemann-Pick, Krabbe's, Gaucher's, Fabry's disease, metachromatic leukodystrophy)
 - Aminoacidurias (e.g., homocystinuria, cystinosis, Lowe and Zellweger syndromes).
- Ocular findings in chromosomal abnormalities (e.g., trisomy 21; trisomy 13; trisomy 18; deletion of the short arm of chromosome 11; deletion of the long arm of chromosome 13; Cri du Chat syndrome, Turner's syndrome)
- Leucoria: describe, recognise
- Retinoblastoma, clinical, genetic, treatment patients with all stages of retinoblastoma (e.g., bilateral cases, monocular patient, treatment failure, pineal involvement).
- Aetiology, evaluation and management of congenital infections (e.g., toxoplasmosis, rubella, cytomegalovirus, syphilis, herpes).
- Common causes of paediatric uveitis.
- Capillary hemangiomas, dermoid cysts
- Paediatric ocular surface disease, diagnose and treat (chalazion, blepharitis, allergic conjunctivitis)
- Paediatric response to drugs (e.g., vigabatrin, steroid, alfaclonidin, cyclogyl)
- Retinopathy of prematurity (e.g., stages, treatment indications, retinal detachment).
- Aetiologies and types of paediatric cataract (e.g., congenital, traumatic, metabolic, inherited).
- Evaluation of the more complex hereditary ocular syndromes (e.g., bilateral Duane syndrome, Mobius syndrome).
- Evaluation of the less common congenital ocular anomalies (e.g., unusual genetic syndromes).
- Advanced principles of binocular vision and amblyopia (e.g., physiology of binocular vision, diplopia, confusion and suppression, normal and abnormal retinal correspondence, classification and characteristics of amblyopia).
- Paediatric retinal diseases (e.g., inherited retinopathies).
- Paediatric glaucoma.
- Paediatric eyelid disorders (e.g., congenital deformities, lid lacerations, lid tumours).
- Paediatric orbital diseases (e.g., orbital tumours, orbital fractures, rhabdomyosarcoma, severe congenital orbital malformations).

Clinical knowledge of therapy:

- (Non-)surgical treatment of strabismus and amblyopia (e.g., patching, atropine penalisation, Fresnel and grind-in prism therapy).
- Treatment of complex strabismus patterns (e.g., aberrant regeneration, postsurgical, thyroid ophthalmopathy, and myasthenia gravis).
- Treatment of complex aetiologies of vertical strabismus (e.g., skew deviation, postsurgical, restrictive).
- Treatment of intra- and extraocular paediatric diseases.