

# Ophthalmology for Emergency Physicians – A Seminar and Skills Course

Friday, November 17, 2023 | 8:30 a.m. – 4:40 p.m.  
UBC Eye Care Centre



Presented by the UBC Department of Ophthalmology

## LECTURES

### 1. **The Fundamentals**

- *Identify clinically-relevant anatomical structures of the eye and orbit.*
- *Describe the visual pathway from cornea to cortex*
- *Identify the neural and vascular anatomy of the orbit and surrounding structures*

### 2. **Approach to the Red Eye: Distinguishing Urgent from the Non-Urgent**

- *List the differential diagnoses of a red eye.*
- *Review differential of non-emergent causes of red eye and how to distinguish from emergent causes, including preseptal vs. orbital cellulitis, corneal abrasion vs. ulcer, endophthalmitis, subconjunctival hemorrhage, keratitis, pterygium, chalazion, blepharitis, and red eye emergencies with high pressure, including next steps and initial management*
- *Understand viral and bacterial conjunctivitis assessment, management, and urgency. Review the duration of contagiousness and infection control measures to help prevent outbreaks of epidemic viral keratoconjunctivitis*
- *Identify anterior uveitis, including episcleritis and scleritis. Review next steps and urgency.*
- *Discuss the presentation and recognize the urgency of endophthalmitis.*
- *Review the indications for topical steroid use and crucial importance of follow-up for screening of steroid-induced glaucoma*

### 3. **Neuro-Ophthalmic Emergencies**

- *Describe neuro-ophthalmic emergencies and their emergent management including pupil involving third cranial nerve palsy, papilledema, optic neuritis, pituitary apoplexy, giant cell arteritis, and acute-onset horner's syndrome.*
- *Review the features of migraine with and without aura and their key masqueraders. Apply the differential diagnosis of headache to neuro-ophthalmic pathology. 3) Define optic neuropathy; briefly review initial diagnosis and management. 4) Describe the signs and symptoms of elevated intracranial pressure. 5) Review the differential diagnosis of optic disc edema. 6) Describe the features of non-arteritic ischemic optic neuropathy and be able to differentiate it from other optic neuropathies.*

### 4. **Ocular Trauma**

- *List high risk and worrisome features of ocular trauma.*
- *Identify key features of globe rupture and intraocular foreign body and list initial management steps.*
- *Identify and manage corneal abrasion, laceration, and foreign bodies.*
- *Identify and manage hyphema (micro and macro) and rebleed issues.*

### 1. Glaucoma in the ER

- Define and recognize the many types of glaucoma and key differentiating features.
- Review the causes of elevated intraocular pressure including angle closure, open angle glaucoma, orbital compartment syndrome, C-C fistula, neoplasia, infectious and inflammatory diseases.
- Discuss initial management considerations for acute angle closure glaucoma.
- Determine urgency of referral for the various types of glaucoma (e.g. acute angle closure vs. open angle)

### 2. Retinal Disease Primer for the ER physician

- Define diabetic retinopathy and recognize its role in acute vision loss.
- Identify the features of amaurosis fugax versus other kinds of visual loss.
- Distinguish the features of retinal vascular occlusive events including CRAO and CRVO.
- Formulate a list of management priorities in retinal vascular occlusive events.

### 3. Flashes and Floaters

- Describe the anatomy of the vitreous and retina.
- Distinguish retinal versus non-retinal ocular symptoms as described by patients.
- Understand the pathophysiology of vitreous detachment and retinal detachment.
- Discuss the natural history of vitreo-retinal interface changes.
- Review initial management considerations for the patient with floaters and photopsia and urgency of referral
- Apply an approach to retinal hemorrhage.
- Review the utility of ultrasound in assessment of retinal detachment

### 4. Corneal Keratitis and Ulcers: Corneal Pathology in the Emergency Department

- Distinguish between viral and bacterial keratitis.
- Define an approach to herpetic eye disease.
- Review the role of CL wear and other high-risk features in the pathogenesis of bacterial keratitis and corneal ulceration.
- Employ treatment strategies for bacterial and viral keratitis.
- Discuss the role of topical analgesia in the management of corneal abrasions.
- Review the initial assessment and management of chemical injuries including pH assessment, identification of signs of more severe injury, indications for urgent ophthalmic consultation.

### 5. Orbital Emergencies

- Review the spectrum of common orbital traumatic injuries that occur around the eye including orbital compartment syndrome, lid and brow lacerations and fractures.
- Discuss early management considerations in orbital trauma.
- Describe the key differences on history and physical between preseptal and orbital cellulitis
- Review management considerations in pre-septal and orbital cellulitis.
- Review the common etiologies, signs and symptoms of orbital compartment syndrome
- Review the urgent management considerations of orbital compartment syndrome"

### A) Examining Eyes in the ER and Neuro-Ophthalmology

- Review the notations of Snellen acuity and how to assess vision in the absence of a Snellen chart.
- Examine extraocular muscles and recognize how they work in synchrony to move the eye.
- Examine visual fields by confrontation.
- Review the components and utilize the capabilities of the direct ophthalmoscope.
- Review how to characterize diplopia such as monocular versus binocular, and near versus distance, and how this applies clinically in diagnosis of etiology
- Discuss etiologies of ophthalmic cranial nerve palsies.
- Assess optic nerve function using physical exam skills.
- Provide hands on instruction and demonstration of the use of the direct ophthalmoscope to visualize the macula, optic nerve head, and major vessels

### B) Slit Lamp Specifics and IOP

- Label the parts of the slit lamp.
- Provide an approach to troubleshooting a malfunctioning slit lamp.
- Maximize the available features of the slit lamp in examination.
- Optimize the slit lamp view by adjusting eyepieces, magnification, room illumination, beam alignment, and tilt.
- Practice examining eyes with the slit lamp.
- Practice using the multiple modes of illumination (direct, retroillumination, indirect, scatter, etc).
- Demonstrate how to identify cells in the AC. Review how to identify blood in a hyphema and inflammatory cells and material in a hypopyon.
- Localize the layers of cornea, identify AC depth and lens position.
- Practice measuring intraocular pressure in a hypertensive eye using a porcine model

### C) Key Ophthalmic Procedures

- Review and execute the steps of a lateral canthotomy and cantholysis on fresh porcine model.
- Review and execute the techniques for corneal and conjunctival foreign body removal.
- Review and execute the technique for differentiating a positive and negative seidel sign.
- Practice the technique of measuring the size of a corneal ulcer's height, width, and depth.
- Review proper technique for testing pH in the setting of chemical injuries.
- Identify methods of examination in patients with swollen lids or blepharospasm.
- Demonstrate effect of severely elevated intraocular pressure on the structures of the eye using fresh porcine model.