

“Eyes & Vision Curriculum” for Undergraduate and Foundation Doctors

Examination of the eye and adnexa is an important part of the general examination of a patient. The eye may reveal a wide variety of systemic diseases and eye pathology is ever more common in the ageing population for whom we need to provide care.

An understanding of the effects of eye disease is critical to holistic patient care. Reduced visual function can have wide spread implications on the mobility, independence and psychological wellbeing of all patients.

Ophthalmic complaints are common and past estimates suggest that 6% of casualty attendances and 1.5% of GP consultations are ophthalmic. A number of acute ophthalmological conditions can be readily treated if recognised in their early stages and all doctors should be able to recognise these.

In addition, sight loss is an increasing health concern in the UK with an ageing population. An essential part of clinical work is to effectively diagnose, treat and refer people with an eye condition.

For the Undergraduate

The attached list of core knowledge, clinical skills and learning objectives is not designed to replace your own medical school ophthalmology curriculum but to serve as a guide to learning.

A. KNOWLEDGE

Knowledge of Anatomy to include:

- Anatomy of the eye and orbit
- Anatomy of the carotid artery system in relationship to ocular disorders
- Anatomy of the neuronal pathways for the pupils
- Anatomy of chiasm/tract/radiation/visual cortex
- Anatomy of the extraocular muscles and their association in cranial nerve palsies.

Knowledge of Physiology to include:

- Aqueous production and intraocular pressure
- Ciliary muscles/accommodation
- Lens and presbyopia
- Retinal function

B. CORE CLINICAL SKILLS that need to be acquired

Ophthalmic history: taking with emphasis on being able to elicit an accurate history of visual loss.

“Visual loss”:

- Pain
- Duration
- Degree of vision loss
- Permanent or transient - periodicity
- Central or peripheral loss
- Progression – getting better or worse
- One or both eyes
- Associated symptoms (flashes and floaters, pain, redness)

Visual Acuity: Assess basic visual acuity of the patient and the effect of pin hole. Understand the different visual acuity charts and their significance:

- **Snellen chart:** based on a 6 Meter chart in the UK and a 20 foot chart in the USA. 6/6 and 20/20 is regarded as “normal vision”
- **LogMAR charts (Logarithm of the **Minimum Angle of Resolution**):** initially used as a research tool but are now common place in the clinical setting due to their greater accuracy.

There is no direct correlation between LogMAR and the better recognised Snellen. A conversion table is the best way to compare the two.

Visual Fields:

- Recognise the **basic types of visual field examination** (confrontation, Goldmann and automated perimetry).
- Interpret visual field defects, especially homonymous hemianopia and bitemporal hemianopia.

Pupils:

- Demonstrate **pupil examination** and interpret abnormal pupillary reflexes and localise the level of pathology in context of the pupillary pathway.

Ophthalmoscopy:

- Perform a competent clinical examination of an eye with a pen torch and a direct ophthalmoscope.
- Describe the appearance of the optic disc and important retinal landmarks, as well as their orientation and dimensions with ophthalmoscope.
- Demonstrate the red reflex.

Eye Movements:

- Outline the actions of different extraocular muscles and associated eye movements.
- Demonstrate eye movement (ocular motility) examination
- Cover /uncover test
- Understand cranial nerve palsies and their ocular manifestations - – II, III, IV, V, VI, VII

C. LEARNING OBJECTIVES

Describe the presentation, clinical features, management and treatment of common ophthalmological conditions to include:

- Cataract
- Primary open angle glaucoma
- Angle closure glaucoma
- Diabetic eye disease and retinopathy grading
- Dry and wet age related macular degeneration
- Retinal venous and arterial occlusion
- Anterior ischaemic optic neuropathy (arteritic and non arteritic)
- Retinal detachment
- Strabismus
- Lid lumps and periocular tumours

Describe the typical **clinical features** and explain the **management** of common causes of a red eye to include:

- Eyelid disorders
- Conjunctivitis (bacterial, viral)
- Scleritis/episcleritis
- Sub conjunctival haemorrhage
- Corneal abrasion, corneal foreign body
- Keratitis including HSK (Herpes Simplex Keratitis)
- Complications of contact lens wear
- Anterior uveitis
- Acute angle closure glaucoma
- The eye in ITU

Recognise common causes of reduced vision:

Acute

- Vascular – AION (Anterior Ischaemic Optic Neuropathy), retinal venous and arterial occlusion
- Retinal detachment
- Vitreous Haemorrhage
- Wet Age Related Macular Degeneration (ARMD)
- Acute glaucoma (painful)

Chronic

- Cataract
- Dry ARMD
- Glaucoma

Paediatrics - Describe the typical clinical features and explain the management of a range of common conditions in infants and children to include:

- Sticky eye
- Refractive error
- Amblyopia
- Strabismus

- Awareness of emergency paediatric ophthalmic conditions such as non-accidental injury (NAI) and retinoblastoma which require urgent action.

Multisystem Diseases - Understand the typical ophthalmological complications seen in multisystem diseases and explain appropriate tests for screening and diagnosis, and ophthalmic interventions

- Diabetes
- Hypertension
- HIV
- Multiple Sclerosis,
- Sarcoidosis and TB
- Rheumatology
- Thyroid disease
- Stroke
- Giant cell arteritis

Common ophthalmic trauma - Understand the detection and emergency management of:

- Blunt and penetrating trauma
- Chemical trauma
- Orbital cellulitis

Understand the common and relevant investigations performed in Ophthalmology for diagnosis and treatment plans:

- Describe the use of vital dyes and mydriatics to aid in diagnosis of ocular disease.
- Understand the **basic concepts** of ophthalmic imaging including ultrasonography, fundus fluorescein angiography, optical coherence tomography, visual fields, biometry for cataract surgery and neuro-imaging.

Recognise the more common procedures performed in Ophthalmology:

- Cataract surgery
- Retinal laser
- Intravitreal injections

Visual impairment

- Understand the role and relationship of the diverse team of healthcare professionals involved in ophthalmic care.
 - Recognise the visual requirements for driving (visual acuity and visual field)
 - Demonstrate an awareness of visual impairment and its implications to the individual, family and society.
 - Appreciate the value and implications of registration of the visually impaired.
 - Understand the concept of low visual aids.
 - Awareness of Charles Bonnet Syndrome and visual hallucinations
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For Foundation Doctors and GP Trainees.

The following is the minimum ophthalmology tool-kit (M.O.T.) you need to be a safe doctor, whether working in primary care, A&E, ITU, in the out-patient department or on the wards. Refer to the undergraduate curriculum for an expanded version of core knowledge, clinical skills and learning objectives.

[A] ESSENTIAL OPHTHALMOLOGY KNOWLEDGE

1. Basic ophthalmic history
2. Basic ophthalmic terminology
3. Assessing vision
4. Assessing pupils
5. Assessing eye movements
6. Assessing the front of the eye
 - Pen-torch examination
7. Assessing the back of the eye
 - Using an ophthalmoscope effectively

[B] AWARENESS OF AND RAPID RECOGNITION OF LIFE AND/OR SIGHT-THREATENING OPHTHALMIC PROBLEMS

With systemic implications:

- Papilloedema and raised intracranial pressure
- Giant cell arteritis (arteritic ischaemic optic neuropathy)
- Third cranial nerve palsy secondary to enlarging intracranial aneurysm
- Expanding pituitary tumour
- Cavernous sinus thrombosis
- Orbital cellulitis
- Optic neuritis
- Severe thyroid eye disease
- Severe chemical injury
- Penetrating eye trauma
- Acute traumatic orbital haemorrhage
- Non-accidental injury in children
- Retinoblastoma in children

Sight threatening:

- Corneal abscess (including exposure keratitis in ITU patients)
 - Herpes Zoster Ophthalmicus
 - Acute retinal arterial occlusion
 - Retinal detachment
 - Proliferative diabetic retinopathy and vitreous haemorrhage (including in pregnancy)
 - Infectious post-op endophthalmitis
 - Endogenous endophthalmitis
 - Scleritis
 - Acute angle-closure glaucoma
 - Wet macular degeneration
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Resources Available

Oxford Handbook of Ophthalmology (Oxford Medical Handbooks) – 3rd edition

by Alastair Denniston (Editor), Philip Murray (Editor)

Moorfields Manual of Ophthalmology Paperback – 2nd edition

by Timothy L Jackson (Author, Editor)

Pocket Tutor Ophthalmology Paperback – 2012

Shyamanga Borooah (Author), Mark Wright (Author), Bal Dhillon (Author)

Lecture Notes: Ophthalmology Paperback – 10th edition

by Bruce James (Author), Anthony Bron (Author)

www.ophthalmologytraining.com. Ophthalmology Training is an animated online resource for anyone learning the key principles of Ophthalmology

International Council of Ophthalmology

Handbook for Medical Students

Learning Ophthalmology – edited and updated 2015 (pdf)