

THE COLLEGE OF OPHTHALMOLOGISTS OF HONG KONG

Training Curriculum

(A) Curriculum

- a) The training program should be a minimum of 6 years in a College recognized training post in ophthalmology.
- b) The training program is divided into two parts - Basic and Higher Training.
- c) The Basic Training will last for at least 2 years.
- d) Basic training is considered completed only after the trainee has passed the intermediate examination and logbook inspection.
- e) Higher Training will last for at least 4 years after completion of the basic training.
- f) Higher Training is considered to be completed only after passing the exit examination.

In addition, the following guidelines should be observed:-

- 1) The period of training should preferably be continuous. A cumulative absence of less than 12 months throughout his training period is acceptable. All types of leave are included.
- 2) Any break of training for more than 12 cumulative months is not encouraged but the trainee may apply to the College for approval.
- 3) Research in the field of ophthalmology is encouraged but whether the period of research could be considered as part of the training period will be left to the decision of the College and will be judged on individual basis. However, generally such period should not be accredited for more than twelve months in lieu of the clinical training.
- 4) Overseas training in the field of ophthalmology is encouraged but whether the period could be considered as part of the training will be left to the decision of the College and will be judged on individual basis.

B) Objective

1. Basic Training

Training in Basic Ophthalmology aims for the general acquisition of ophthalmological knowledge and surgical skills plus clinical judgment, as a continuous process, in stages under supervision that enable the Ophthalmic trainee, at the end, to handle general ophthalmological problems competently and at a high professional standard.

2. Higher Training

Training in Advanced Ophthalmology aims for acquisition of more advanced ophthalmic knowledge and surgical skills in various subspecialties, such that at the end the trainee can handle more difficult ophthalmic problems competently.

After completion of his/her training, the candidate is expected to be competent enough to become a general ophthalmologist with or without a special interest in a subspecialty. Management and communication skill should also be emphasized throughout the period of training.

C) Entry Requirement

1. Basic Training (2 years)

- (a) The candidate should be a graduate of an accredited medical school and registrable in Hong Kong and have a genuine intention to complete the full course of training.
- (b) Trainee applicant should preferably have good corrected eyesight, colour vision and good binocularity to facilitate their training and their future career in ophthalmology.
- (c) Candidate may enter into the Training Program any time after the completion of their internship.

2. Higher Training (4 years)

- (a) The Candidate must meet all the requirements as for Basic Training.
- (b) Candidate should have completed his/her Basic Training successfully and passed the intermediate examination and logbook inspection.

D) Examination Structure

		<u>Format</u>	<u>Time to be taken</u>
1.	Intermediate exam. -	Part A) Basic Sciences related to ophthalmology, optics, ophthalmic investigative techniques and generic issues of medical practice (MCQ)	- Possession of a medical qualification acceptable by the Medical Council of Hong Kong Completed at least 12 months of basic ophthalmic training
		Part B) Clinical refraction– clinical examination, and written (MCQ)	- Completed at least 20 months of basic ophthalmic training
After failure for 4 times in Part A or Part B examination after entering into recognized ophthalmic training post, the candidate may not be allowed to sit for the examination unless with special permission of the Education Committee.			
2.	Exit exam. -	Part C) written, oral and clinical	- completed after at least 3 years of Higher Training
		Part D) log book inspection & assessment	- completed after at least 4 years of Higher Training

E) LogBook

- 1) Logbooks should be obtained as soon as an ophthalmic trainee is accepted for training.
- 2) Entries in Logbooks should be made regularly and not retrospectively.
- 3) Logbooks must be available for inspection by the Trainers regularly. Accurate data entry is essential
- 4) Yearly review of the logbook is required.

F) Acquisition of knowledge and skills for various stages

1. Basic Training (2 years)

- (a) **Diagnostic skills** - Acquisition and exposure to skills and knowledge in performing the following and accurate interpretation of clinical signs observed by such:
- 1) Visual function tests:-
 - i. Accurate assessment of patient's visual acuity and trial of lenses.
 - ii. colour vision examination.
 - iii. visual field examination.
 - 2) Retinoscopy and refraction.
 - 3) Ophthalmic examination techniques – such as assessment of eye movements, the palpebral aperture, levator excursions, pupils, directed general medical and neurological examination.
 - 4) Biomicroscopic methods - such as slit lamp, operating microscope, applanation tonometry, gonioscopy and slit lamp fundoscopy.
 - 5) Fundoscopy techniques such as direct and binocular indirect ophthalmoscopy with scleral indentation.
 - 6) Detection, correlation and interpretation of relevant clinical findings and investigation of proper management of patients. Discussions with patients and/or their relatives regarding their medical conditions and bedside etiquette to enhance a patient-doctor relationship are emphasized.
 - 7) Updating and understanding the knowledge of various new investigative instruments/operative instruments is strongly encouraged.
 - 8) Exposure to other investigative/therapeutic procedures such as contact lens fitting, low vision aids, orthoptic instrumentations, corneal topography, fundus photography, fluorescein and ICG angiography, ultrasonography, optical coherence tomography, electro-diagnostic and neuroimaging techniques are to be expected.
 - 9) Trainees are required to learn basic principles of structural and microscopic changes of tissues in various eye diseases and pathology and the approach to therapy.

(b)Surgical skills and operations

The Trainee is expected to have exposure to the following operations mainly as an assistant:

- 1) Emergency operations
- 2) Intraocular operations including cataract extractions and anti-glaucoma operations
- 3) Paediatric ophthalmic operations like squint surgery

They may on occasions be allowed to perform operations under the supervision of their trainers.

At the end of this stage, the trainee is expected to achieve the following clinical skills:

- i. Competence in pre and post-operative management of ophthalmic patients.
- ii. Acquisition of knowledge of giving premedication to ophthalmic patients and of obtaining preoperative informed consent by giving careful explanation to patients and/or their relatives of the possible outcome and complications of individual operations.
- iii. Doing minor procedures.
- iv. Acquisition of aseptic technique, proper draping, avoid external pressure on eyeball during operations, etc.
- v. Knowledge of ophthalmic surgical instruments and their respective usage. Careful handling of instruments will be strongly stressed.
- vi. Acquisition of microsurgical techniques, instrumentation, and understanding of the maintenance and operation of the microscope.
- vii. Performance of a proper suturing technique.
- viii. Attendance of eye emergency.
- ix. Acquisition of various techniques of ophthalmic anaesthesia.

(c) Exposure to various subspecialties

- (1) Cornea and External Eye Diseases
- (2) Vitreous-retinal Eye Diseases
- (3) Glaucoma
- (4) Paediatric Ophthalmology and Strabismus
- (5) Oculoplastic and Orbit
- (6) Medical-ophthalmology
- (7) Neuro-ophthalmology
- (8) Ophthalmic Pathology
- (9) Others

(d) Possession of proper professional ethics and conduct.

2. Higher Training (4 years)

Mainly a consolidation of the experience gained in both Diagnostic skills and Surgical skills during the basic training period. Some supervision may be needed in the early stages. However, more and more surgical independence may be granted as time goes by. Trainees are expected to rotate through various subspecialties to consolidate their training, these include:

- (1) Cornea and External Eye Diseases (Including the principle and practice of laser refractive surgery)
- (2) Vitreo-retinal diseases
- (3) Glaucoma
- (4) Paediatric Ophthalmology and Strabismus
- (5) Oculoplastic and Orbit
- (6) Medical-ophthalmology
- (7) Neuro-ophthalmology
- (8) Others

Minimal technical/surgical skills required in different sub specialty

Cornea and External Eye Diseases

Topics which should be covered in Basic Surgical Training

1. Perform external examination (illuminated and magnified) and slit-lamp biomicroscopy, including drawing of anterior segment findings
2. Perform Seidel test
3. Perform tests for dry eye (e.g. Schirmer test, tear film breakup, and dye disappearance)
4. Perform punctal occlusion (temporary or permanent) or insert plugs
5. Perform simple corneal sensation testing (e.g. cotton-tipped swab)
6. Perform tonometry (e.g. applanation, Tono-Pen, Schiøtz, pneumotonometry)
7. Perform techniques of sampling for viral, bacterial, fungal, and protozoal ocular infections (e.g. corneal scraping and appropriate culture techniques)
8. Interpret simple stains of the cornea and conjunctiva (e.g. Gram stain, Giemsa stain)
9. Perform and interpret endothelial microscopy and pachymetry
10. Manage corneal epithelial defects (e.g. pressure patching and bandage contact lenses)
11. Perform removal of a conjunctival or corneal foreign body (e.g. rust ring)
12. Perform simple pterygium excision (e.g. with autologous conjunctival transplantation)
13. Perform an isolated corneal laceration repair (e.g. linear laceration not extending to limbus, not involving uveal or intraocular structures)
14. Perform a lateral tarsorrhaphy
15. Perform a simple incisional or excisional biopsy of a lid lesion
16. Perform steps of cataract extraction under direct supervisions

Higher surgical training

1. Perform and interpret the most advanced corneal imaging and measurement techniques
2. Perform a thin conjunctival flap (e.g. Gunderson flap)
3. Perform application of corneal glue
4. Perform stromal micropuncture
6. Perform simple keratectomy and lamellar keratectomy
7. Assist more complex corneal surgery (e.g. penetrating or lamellar keratoplasty, keratorefractive procedures and phototherapeutic keratectomy) and understand the postoperative management including post-keratoplasty astigmatism management and graft rejection
8. Perform cataract extraction (a combination of phacoemulsification and extracapsular cataract extraction)
9. Management of intraoperative and postoperative complication of cataract extraction.

Vitreo-retinal diseases

Topics to be covered in basic surgical training.

1. Perform fundus photography
2. Perform and interpret optical coherent tomography
3. Perform peripheral scatter photo coagulation
4. Perform laser retinopexy for retinal breaks
5. Perform vitreous tapping and intravitreal injections

Topics to be covered in higher surgical training.

1. Perform and interpret fluorescein and indocyanin green angiography
2. Perform focal and grid macular laser treatment
3. Perform cryopexy of retinal breaks
4. Assist or perform scleral buckling procedure and pars plana vitrectomy procedure

Glaucoma

Topics to be covered in Basic Surgical Training

1. Perform slit-lamp biomicroscopy, including assessment of AC depth
2. Perform Goldmann applanation tonometry, use handheld transducer-based tonometer for IOP measurement
3. Bleb morphology assessment
4. Cup-disc ratio assessment
5. Indentation gonioscopy
6. Perform Seidel test for bleb leak
7. Interpretation of visual field tests
8. Interpretation of OCT NFL thickness
9. Interpretation of anterior segment OCT
10. Perform laser PI
11. Perform ALPI
12. Administer medical therapy in the management of glaucoma

Topics to be covered in Higher surgical training

1. Assist or Perform glaucoma surgery: trabeculectomy +/- combined with phaco; GDD
2. Assist or Perform Bleb needling
3. Perform MMC/5 FU injection
4. Perform laser suturelysis
5. Perform laser trabeculoplasty
6. Perform laser trans-scleral cyclophotocoagulation
7. Management of post filtration surgery over-drainage including AC reformation
8. Management of post filtration surgery underdrainage
9. Assessment of hypotony maculopathy

Paediatric Ophthalmology and Strabismus

Topics which should be covered in Basic Surgical Training

1. Perform assessment of vision in neonate, infant and child
2. Perform ocular motility examination
3. Perform cyclopegic refraction in children
4. Assist in performing extra ocular muscle surgery
5. Perform Probing of nasolacrimal duct

Topics which should be covered in higher surgical training

1. Perform assessment of vision in more difficult patients. (uncooperative patients, mentally impaired and non verbal)
2. Perform force duction test.
3. Perform strabismus surgery, including recession and resection.
4. Assist in muscle strengthening and weakening procedure.

Oculoplastic and Orbit

Topics to be covered in Basic Surgical Training

1. Perform assessment of eyelid disorder including eyelid malposition, ptosis, proptosis.
2. Interpret normal and abnormal orbital and relevant paranasal sinus anatomy on imaging studies.
3. Remove periocular skin sutures, perform dressing.
4. Perform minor lid procedures (e.g., repair of small eyelid laceration not involving eyelid marginal, shave-excision of benign lesions, chalazion curettage).
5. perform treatment of trichiasis (e.g., epilation, electrolysis, and cryotherapy)
6. Perform punctal plug insertion, removal and punctoplasty after accurate assessment of indications and possible risks.
7. Perform incision and drainage of the lacrimal sac.

Topics to be covered in Advanced Surgical Training

1. Perform temporary tarsorrhaphy
2. Perform surgical correction of entropion and ectropion
3. Perform lateral canthotomy/cantholysis (during other elective eyelid procedures)
4. Perform botulinum toxin injection for blepharospasm,
5. Perform evisceration.
6. Perform enucleation
7. Assist or perform upper lid blepharoplasty
8. Assist in eyelid reconstruction
9. Assist or perform lacrimal surgery (e.g. dacryocystorhinostomy, Jones tube insertion)
10. Assist in orbitotomy for biopsy/fracture repair/decompression

Medical ophthalmology

Topics to be covered in Basic Surgical training

1. Perform an anterior chamber and vitreous tapping for diagnostic purpose

Topics to be covered in higher surgical training

1. Perform posterior subtenon injection of corticosteroid.
2. Perform intravitreal injection of medication.

Neuro-ophthalmology

Topics which should be covered in Basic Surgical Training

1. Perform basic visual function tests (Visual acuity, colour vision, confrontational visual field)
2. Eye Movement examination, including cover/uncover/ alternating/ prism cover test.
Hirshberg, Krinsky
3. Pupil examination, including pharmacologic testing
4. Eyelid examination
5. Exophthalmometry
6. Neurological examination in relation to ophthalmology, including other cranial nerves, cerebellar signs
7. Interpretation of orthoptic reports e.g. HESS chart, tests of binocularity and fusion, use of prisms
8. Manual and automatic perimetry: indication, perform and interpret results
9. Indication and interpretation of neuro-imaging in relation to ophthalmology and perform US of the orbit
10. Perform icepack test for MG. Know the indications of Tensilon and Neostigmine test

Higher surgical training

1. Perform Tensilon and Neostigmine tests
2. Perform forced duction and forced generation testing
3. Testing for non-organic visual loss
4. Perform Botox injection for blepharospasm, hemifacial spasm, upper lid retraction
5. Observe temporal artery biopsy
6. Know the indications for (and observe) Electro-diagnostics (VEP, ERG) for evaluation of optic nerve disorder and visual loss of unknown cause
7. Ocular and neuro-imaging for evaluation of optic neuropathy, ocular motility

abnormalities and visual loss of unknown cause e.g. OCT, CT/ MRI.

During higher training, the trainee may choose a subspecialty of his special interest to prepare himself for specializing in a specific field. A period of overseas training and attendance to overseas conference is highly desirable during this stage. Research is also encouraged.

At the end of higher training, the surgical experience (either as an assistant or surgeon, unless specified otherwise), should include a minimum of :-

1. 200 cataract operations (100 performed as main surgeon)
2. 15 squint operations
3. 15 glaucoma operations
4. 100 laser operations, (performed independently), including:
 - 15 Yag capsulotomy
 - 15 laser peripheral iridotomy
 - 5 laser peripheral iridoplasty
 - 5 laser trabeculoplasty
 - 20 pan-retinal photocoagulation
 - 15 macular laser (focal/grid)
 - 15 laser to retinal break
5. 5 transcleral cyclophotocoagulation (performed as main surgeon)
6. 15 vitreoretinal operations
7. 3 keratoplasty operations
8. 15 oculoplastic or orbital operations
9. 5 repair of ruptured eyeball operations
10. 10 intravitreal injection (performed independently)

The minimum surgical experience will be revised by the college every year if necessary.

The operative results and the complications should be entered into the logbook for inspection during the exit exam.

Assessments and certifications of trainee's competency by trainers are carried out throughout the training. They are required to be submitted to the College, include a minimum of:

1. 5 removal of corneal foreign body
2. 3 probing and syringing of lacrimal passage
3. 3 incision and curettage of chalazion
4. 3 excision of pterygium including at least one with anti-metabolites one with conjunctival autograft
5. 10 cataract operations (3 being performed at basic training and 7 at higher training period; of which 1 is of small pupil (4 mm or less) and 1 consisted use of capsular stains)
6. 2 Yag capsulotomy, 2 laser peripheral iridectomy, 1 laser peripheral iridoplasty, 1 selective laser trabeculoplasty, 2 pan-retinal photocoagulation, 2 macular laser (focal/grid), 2 laser to retinal break
7. 3 intravitreal injection

The number of each procedure required in active assessment will be revised yearly by the College if necessary.

The trainee shall filled in the relevant forms from the college with countersignature by a recognised trainer. The trainer had to be satisfied that the trainee concerned had attained a reasonable standard in performing the said procedure.

G) Criteria for the recognition of a Training Post in Ophthalmology by the College of Ophthalmologists

- 1) The post must be in a Service Unit (hereafter referred as “unit”) with minimum 3 full time trainers specializing in the field of ophthalmology.
- 2) There must be a minimum trainer to trainee ratio of 1:2.
- 3) The post must be in a unit in which the workload is in the field of Ophthalmology. It must provide adequate experience in both out-patient clinics and in-patient care.
- 4) The post must give sufficient experience of ophthalmic surgery and there must be opportunities to operate under supervision. Holder of the post should be involved in a duty roster which exposes him/her to adequate continued medical and surgical ophthalmic emergencies.
- 5) There shall be a training program preferably occupying one whole half day each week and consisting of lectures by visiting speakers, journal club meetings, case presentation and Grand Rounds.
- 6) A trainee in training program should have experience in the major specialized areas of Ophthalmology including ocular motility, paediatric ophthalmology, vitreo-retinal diseases, anterior segment diseases, external diseases, glaucoma, oculoplastics, orbit and neuro-ophthalmology diseases and rotations may be allowed so that such experience can be gained by the trainee, but the rotational program must be pre-approved by the College.
- 7) For a trainee in higher training, time may be allocated for research projects. One of the trainers should be responsible for supervising research.
- 8) Some forms of regular medical surgical audit are essential and a trainee must keep a log book or record of his/her operative experience and overall general performance. The log book or record should regularly be inspected and commented by his/her respective trainer.
- 9) The training post must be closely associated with a hospital providing twenty four hours accident and emergency service and should have no limitation to the management and admission of patients with ophthalmic diseases and emergencies.
- 10) The training post must be in or closely associated with a hospital in which there are twenty four hours anaesthetic, laboratory, radiology and other diagnostic services.
- 11) The training post must be in or closely associated with a hospital consisting of medical, surgical, paediatric and other related specialties.
- 12) There must be suitable library facilities.
- 13) The training unit must possess a reasonable up-to-date ophthalmic equipment and instruments for the normal running of the unit.
- 14) The training unit must inform the College of any changes in the institution affecting the above criteria and also to report to the College at the beginning of January and July every year.
* A trainer should have at least 2 years working experience in the training centre after obtaining the fellowship of the College.