The ROYAL COLLEGE of OPHTHALMOLOGISTS

Postgraduate Medical Training

Glaucoma syllabus

Patient Management domain

Contents

1 Introduction

Definition of Special Interest Area (SIA)

Glaucoma is the term applied to the study and treatment of disorders of the eye and optic nerve identified as a characteristic optic neuropathy with associated vision loss. The most common type of glaucoma is primary open angle; however, closed angle and secondary glaucomas with open and closed angles are also seen. High intraocular pressure (IOP) is a major risk factor for loss of sight from both open and closed angle glaucoma, and the only one that is currently modifiable. The risk of blindness depends on the height of the intraocular pressure, severity of disease at presentation, age of onset, and other determinants of susceptibility, such as family history of glaucoma. Lowering IOP is the only intervention proven to prevent the loss of sight from glaucoma. Specialists in glaucoma manage patients with complex and/or severe glaucoma disorders and related ocular and systemic disorders.

2 Syllabus

Level 1	
Learning Outcome	**Descriptors**
An ophthalmologist achieving this level will, in addition:	
Independently perform a patient assessment and investigations sufficient to identify, describe and interpret clinical findings to arrive at differential diagnoses. *These descriptors are replicated on all SIA syllabi (i-xi)*	▪ Demonstrate effective consultation skills, including active listening skills. ▪ Take ophthalmic and relevant systemic clinical histories appropriate to the clinical problem and patient's needs, eliciting the patient's ideas, concerns and expectations. ▪ Take a family history, and draw a pedigree chart as appropriate. ▪ Establish an effective, empathetic, compassionate and respectful doctor-patient relationship. ▪ Demonstrate cultural and social awareness. ▪ Understand the risks, professional responsibilities and safeguards of remote consultations, e.g. telephone, online consultations. ▪ Measure and record visual acuity for near and distance using an appropriate method and interpret the results. Understand the pros and cons of different methods of assessment for different patient groups. ▪ Be able to approximate equivalent levels of vision in Snellen, logMAR or EDTRS letter scores. ▪ Understand and interpret an optometric examination, including the assessment of vision

	and binocular vision. Interpret the refraction result. ▪ Assess other visual symptoms with appropriate tools e.g. Amsler chart for visual distortion, Ishihara or other appropriate test for colour vision. ▪ Assess and interpret normal and abnormal visual fields by confrontation, understand the reliability of this method and when to arrange more detailed visual field analysis. ▪ Assess the pupil for abnormalities of shape, size and reaction, including for Relative Afferent Pupillary Defect (RAPD). ▪ Examine the eyelids including eversion of lids. ▪ Perform slit lamp biomicroscopy of the eye and adjacent structures. ▪ Examine the cornea, ocular surface, anterior chamber, iris and lens using appropriate techniques including assessment of the red reflex and slit lamp illumination techniques. ▪ Employ gonioscopy for examination of angle structures. ▪ Measure the intraocular pressure (IOP) accurately using a variety of applanation techniques and understand the limits of each. ▪ Examine the vitreous, the choroid and the retina, including the macula and optic nerve, using appropriate techniques including the direct ophthalmoscope, binocular indirect ophthalmoscope, and lenses for binocular fundus examination with the slit lamp. ▪ Understand how retinal examination techniques differ in magnification, orientation and field of view of the retinal image. ▪ Describe and record the ophthalmic findings according to usual convention. ▪ Perform a proficient medical examination relevant to ophthalmology, including examination of the neck, skin, nose, joints and neurological system. ▪ Understand the associations between clinical findings in different parts of the eye. ▪ Understand the associations between systemic and ophthalmic diseases. ▪ Select investigations appropriate to the likely diagnosis.

	▪ Understand and apply knowledge of instrument technology relevant to ophthalmic practice. ▪ Create differential diagnoses including common conditions and those that are sight or life threatening, where appropriate.
These descriptors are specific to the Glaucoma syllabus (iv)	▪ Understand optic disc imaging techniques and the typical glaucomatous changes. ▪ Understand patterns typical of glaucoma, and correlate with disc changes.
Independently formulate and initiate a management plan for low complexity cases. *These descriptors are replicated on all SIA syllabi (i-xi)*	▪ Initiate a management plan, including referring to more experienced clinicians when appropriate. ▪ Involve other health care professionals in patient management when appropriate. ▪ Make appropriate referrals in a timely and efficient manner and in accordance with local protocols and guidelines. ▪ Recognise when a patient's clinical presentation needs priority and make appropriate arrangements to expedite their care. ▪ Recognise where the patient's vision may not meet the visual standards for driving and provide appropriate counselling. ▪ Explain diagnoses to patients in simple language, using visual aids, online patient resources, leaflets, 3D models of eyes and posters available in clinic. ▪ Deliver information in an accessible way, including identifying and making arrangements for patients with hearing, speech or sight impairment, or those with English as a second language. ▪ Communicate effectively and sensitively when breaking bad news and be prepared to give clear and honest information. ▪ Utilise translators appropriately and in accordance with local policy. ▪ Understand and apply knowledge of general medicine and surgery relevant to ophthalmic practice. ▪ Understand the associations between drugs and ophthalmic disease including biologics.

	▪ Recognise when a patient is seriously ill and make appropriate arrangements for the patient's care. ▪ Prescribe local and systemic medications safely. ▪ Be aware of the indications, contra-indications, side-effects, and possible interactions of the drugs that are prescribed. ▪ Be aware of the services and support available to patients and signpost appropriately. ▪ Initiate appropriate referral to low vision and social services, and to eye clinic liaison officer where available. ▪ Make accurate, legible, signed and dated records and use Electronic Patient Records (EPR) if available. ▪ Contribute to the preparation of patients for surgery, including review of medical therapy prior to surgery (e.g. anticoagulants) to optimise the patient's outcome. ▪ Understand the process of informed consent, following the principles set in law and by GMC guidance. ▪ Be aware of ongoing research and offer research participation opportunities to patients as appropriate. ▪ Contribute to the pre-operative assessment for local and general anaesthesia as part of a multidisciplinary team. ▪ Recognise patient conditions that render either local or general anaesthetic hazardous. ▪ Use appropriate aseptic technique when assisting with or performing surgery. ▪ Use the operating microscope competently, ensuring optimum operating position. ▪ Use suturing techniques appropriate for different ocular tissues, demonstrating understanding of different sutures and knots. ▪ Identify suture types, remove sutures from the eye and adnexa at the appropriate time and manage any retained material or wound problems.
Justify the differential diagnoses and plan with reference to basic and clinical science.	▪ Understand and apply knowledge of anatomy, of the eye, adnexa, visual pathways and associated aspects of head, neck, and neuroanatomy.

These descriptors are replicated on all SIA syllabi (i-xi)	▪ Understand and apply knowledge of the physiology of the eye, adnexa and nervous system. ▪ Understand and apply knowledge of related general physiology. ▪ Understand and apply knowledge of biochemistry and cell biology, in particular those aspects relevant to common eye diseases. ▪ Understand and apply knowledge of pathology, particularly the eye, adnexa and visual system. This includes histopathology, microbiology and immunology and other branches of pathology. This includes macroscopic and microscopic appearances and laboratory techniques, including staining techniques, used. ▪ Understand and apply knowledge of growth, development and senescence, and the anatomical, physiological and developmental changes that occur during embryogenesis, childhood and ageing relevant to ophthalmic practice. ▪ Understand the development of normal and abnormal acuity, binocular vision and the control of eye movements. ▪ Understand and apply knowledge of optics and medical physics, regarding ultrasound, laser, electromagnetic wavelengths, and radiological investigations relevant to ophthalmic practice. ▪ Understand and apply the fundamental principles of Genomics and apply knowledge of clinical genetics relevant to ophthalmic practice. This will include demonstrating an understanding of the genetic basis of disease (including different single nucleotide variations and copy number variations) and the genetic contribution to common complex disease (e.g. AMD). ▪ Understand and apply knowledge of clinical therapeutics relevant to ophthalmic practice, including methods of action and pharmacokinetics of drugs used. ▪ Understand and apply knowledge of statistics relevant to ophthalmic practice, for example in the interpretation and publication of research.
Work effectively with patients and the multi-professional team.	▪ Display the professional values and behaviours set out in the GMC's Good Medical Practice.

These descriptors are replicated on all SIA syllabi (i-xi)	▪ Use professional judgement and expertise to apply the principles of the guidance to the various situations faced in practice. ▪ Recognise the limits of own knowledge and competence and work within them. ▪ Recognise the level of supervision commensurate with own training. ▪ Show respect, courtesy, honesty, compassion and empathy for others, including patients, their carers and colleagues. ▪ Recognise and respect diversity and ensure equality for patients, their carers, colleagues and all those involved in patient care. ▪ Reflect on personal behaviour and its impact on other people and the working environment. Include reflection in the professional portfolio. ▪ Respect patient dignity. ▪ Take responsibility for own health and well-being. ▪ Take appropriate steps to protect patients when own health is affected by illness or disability. ▪ Make appropriate reasonable adjustments for patients. ▪ Respect patient confidentiality and be aware of the implications of sharing information and the appropriate circumstances for disclosure of patient information in protecting the individual and society. ▪ Work within appropriate health and safety legislation. ▪ Work within appropriate equality and diversity legislation. ▪ Understand and apply legislation for safeguarding. ▪ Apply the principles of clinical governance and ensure patient safety is paramount in all they do. ▪ Apply the professional duty of candour, demonstrating openness and honesty with patients and employers. ▪ Deliver an honest apology if necessary and offer a clear explanation. ▪ Use reporting tools for clinical incidents including serious incident and never events. ▪ Participate fully in the follow-up of any critical incidents in which they have been involved and learn from them. ▪ Demonstrate safe and effective handover.

	▪ Communicate effectively with colleagues in the same and other specialties, and check that information has been understood and actioned. ▪ Understand the impact of human factors in communication, and how to mitigate them. ▪ Write clear letters with diagnosis, treatment and management to patients and other health professionals. ▪ Communicate in a timely manner with colleagues and managers in regard to leave and return to work plans, following local protocols, including immediate communication about sickness absences. ▪ Proactively arrange meeting with supervisors, and attend these meetings. ▪ Be aware of potential and actual conflicts of interest and declare them appropriately. ▪ Obtain feedback from colleagues, including multi-source feedback and use the information obtained to develop clinical practice.

Level 2	
Learning Outcome	**Descriptors**
An ophthalmologist achieving this level will, in addition:	
Independently manage patients at an appropriate work-rate, employing the most appropriate clinical examination equipment and investigation modalities. *These descriptors are replicated on all SIA syllabi (i-xi)*	▪ Manage patients, with non-complex conditions suitable for management by the generalist, with indirect supervision. ▪ Manage patients, suitable for management by a generalist, at an accepted rate. ▪ Manage time and resources effectively. ▪ Demonstrate effective consultation skills, including effective verbal and non-verbal interpersonal skills. ▪ Identify and manage barriers to communication, including language barriers, sensory and cognitive impairment. ▪ Use the exophthalmometer and interpret the findings with relevance to the specific patient. ▪ Use appropriate tools to assess the cornea e.g. pachymeter and know when to use specular microscopy. ▪ Understand when to use, and competently employ a variety of lenses for binocular fundus and gonioscopy examination with the slit lamp. ▪ Use a portable slit lamp competently.

	▪ Use a binocular indirect ophthalmoscope with a variety of lenses, selected to the situation and appropriate indentation. ▪ Perform refraction and understand the relevance and importance of the refraction. ▪ Assess a patient's spectacles using neutralisation techniques and focimetry. ▪ Assess a patient's binocular co-operation and assess whether optical correction for this is necessary. ▪ Select investigations appropriate to the likely diagnosis. Know when they need to be ordered urgently and how to interpret the results. Know their contra-indications, limitations and implications (including cost). ▪ Employ and interpret new methods of assessment and investigation when they are introduced into clinical practice. ▪ Assess the progress of a patient's condition and respond accordingly. This includes observation of the natural history of a disease and clinical improvement or deterioration in response to interventions. ▪ Understand and apply knowledge of lasers. Apply this knowledge when recommending laser treatment. ▪ Employ safe practice, including complying with local laser safety procedures. ▪ Have knowledge of the common Low Vision Aids and the conditions for which they may provide benefit.
These descriptors are specific to the Glaucoma syllabus (iv)	▪ Understand when different methods of intraocular pressure (IOP) measurement are required and how to use them. ▪ Understand use of ultrasound biomicroscopy and anterior segment optical coherence tomography. ▪ Understand and interpret optic nerve imaging. ▪ Understand and interpret visual field-testing methods and glaucomatous changes. ▪ Select investigations appropriate to the likely diagnosis, such as use of ultrasound in paediatric cases and use of IOP phasing.

	▪ Perform laser peripheral iridotomy, including in the emergency setting, following practise in a simulated setting.
Refine the differential diagnoses and management plan by application of clinical knowledge. *These descriptors are replicated on all SIA syllabi (i-xi)*	▪ Create prioritised differential diagnoses and reach a potential diagnosis. ▪ Formulate a management plan based upon clinical assessment and, where appropriate, the results of relevant investigations. ▪ Demonstrate that decisions are made by applying appropriate and clear clinical reasoning. ▪ Recognise when a patient's ocular problem is a manifestation of a systemic disorder and when an ophthalmic diagnosis may indicate an increased risk of a systemic illness. ▪ Know the likely infective organisms in cases of infection, how they are best isolated and identified. ▪ Understand the indications and use of systemic and topical antimicrobials. ▪ Recognise when the management plan involves a level of expertise that is beyond own competence. ▪ Make appropriate referrals to other specialties, in a timely manner, using local pathways. ▪ Understand the rationale behind, and perform or organise the ophthalmic examinations required by protocols in other specialties. ▪ Know when patients should be jointly managed between specialties, and contribute to this management. ▪ Demonstrate the ability to reflect and learn from professional practice and clinical outcomes.
These descriptors are specific to the Glaucoma syllabus (iv)	▪ Identify whether the angle is open or closed. ▪ Identify the likely cause in secondary glaucoma cases with ability to identify or exclude whether typical signs are present, e.g. pseudoexfoliation. ▪ Recognise and escalate appropriately where there is high risk of the patient developing vision loss.

Level 3	
Learning Outcome	**Descriptors**

An ophthalmologist achieving this level will, in addition:	
Independently assess and manage moderate complexity patients, demonstrating an understanding of glaucoma procedures and selecting the most appropriate treatment according to current accepted practice.	▪ Understand and apply knowledge of medicine and surgery relevant to glaucoma practice, to make diagnoses and recommend a management plan. ▪ Be informed by the patient's unique medical, psychological and social circumstances. ▪ Understand the tests and imaging techniques that might be helpful in deciding about and guiding treatment. ▪ Use with accuracy and efficiency instruments available to assess the patient, including ultrasound, imaging and fields. ▪ Implement a detailed management plan to include care from triage to discharge from care. ▪ Acknowledge and follow relevant guidelines or protocols. ▪ Practise in line with the latest evidence. ▪ Understand the indications, risks and limitations of laser treatment and surgery and identify patients for whom these treatments would be appropriate. ▪ Perform laser iridotomy and selective laser trabeculoplasty. ▪ Involve the patient, and where appropriate, their carer, partner or relatives, in the choices about their care and enable them to express their informed consent.
Risk assess and prioritise patients appropriately, recognising the need for special interest input.	▪ Manage patient referrals efficiently, according appropriate priority to referrals based on clinical need and in accordance with local and national guidelines. ▪ Refer to more experienced clinicians when appropriate. ▪ Manage acute presentations following local guidance. ▪ Recognise where a patient is low risk and can be managed in a different clinic setting or is appropriate to be discharged back to the community. ▪ Manage surgical waiting lists and other access to clinical services appropriately, intervening when clinical care for a patient is put at risk by inappropriate waiting list management.

Independently perform low complexity glaucoma procedures.	▪ Perform appropriate laser for the management of glaucoma, including selective laser trabeculoplasty and diode. ▪ Have a good knowledge of techniques of laser application, delivery systems and treatment strategies, including the indications, risks and limitations of laser treatment. ▪ Develop new skills in a supervised simulated environment.

Level 4	
Learning Outcome	**Descriptors**
An ophthalmologist achieving this level will, in addition:	
Demonstrate advanced clinical management and surgical skills.	▪ Demonstrate competency in diagnosis, investigation and management of glaucoma cases in outpatients, inpatients and emergency settings. ▪ Have skills in cataract surgery to Level 4. ▪ Have advanced cataract surgery skills to manage cataract surgery in the setting of glaucoma co-pathology. ▪ Understand and utilise available instrument technology relevant to glaucoma, e.g. optical coherence tomography (OCT), ultrasound biomicroscopy (UBM). ▪ Perform glaucoma surgery independently including, but not limited to: - trabeculectomy with antimetabolites or non-penetrating glaucoma surgery - cyclodestructive procedures ▪ Understand other glaucoma drainage procedures, including microinvasive techniques and drainage tubes. ▪ Advise on or perform advanced glaucoma procedures to manage non-responsive acute angle closure glaucoma such as iridoplasty and diode laser. ▪ Demonstrate skills to manage the complications of glaucoma and cataract surgery including but not exclusively: - Hypotony - Infection - Inflammation - aqueous misdirection - failing or leaking blebs - choroidal detachments - haemorrhage

	▪ Undertake prospective audit of specialist surgical outcomes in glaucoma drainage procedures against national and/or published standards. ▪ Maintain a record of activities, using the RCOphth electronic logbook.
Manage the complexity and uncertainty of glaucoma cases.	▪ Understand and apply advanced knowledge of glaucoma diseases and practice. ▪ Independently manage glaucoma clinics and theatre lists. ▪ Diagnose and manage complex glaucomatous conditions and masquerade presentations including, but not limited to, secondary glaucoma and optic neuropathy. ▪ Manage and operate on patients whose previous glaucoma surgery has failed. ▪ Apply knowledge and skills in a flexible manner. ▪ Utilise existing skills to novel situations. ▪ Adapt management strategies to take account of patient's informed preferences, particular circumstances, age and co-morbidities, respecting patient autonomy. ▪ Manage the uncertainty of treatment success or failure and communicate effectively with patients where there is uncertainty. ▪ Manage the personal challenge of coping with uncertainty. ▪ Evaluate published developments in glaucoma knowledge and practice and modify own practice appropriately. ▪ Recognise and refer patients who will benefit from more specialist input.
Apply management and team working skills appropriately, including in complex, dynamic situations.	▪ Use highly developed consultation skills efficiently to manage busy clinics whilst managing patient expectations. ▪ Assist with decision-making where there are cognitive impairment barriers, employing Independent Mental Capacity Advocate (IMCA) services or equivalent if necessary. ▪ Understand how culture or religious beliefs can affect patients' decision-making and needs, and communicate these effectively to the team. ▪ Be sensitive to social situations and the impact these may be having on the patient, their carers and their disease. ▪ Understand when information must be shared more widely with schools, carers, police, etc. and understand the responsibilities and implications of sharing information.

	▪ Receive and respond to communications in complex or challenging situations. ▪ Supervise different models of delivery of glaucoma care, including but not limited to virtual clinic and supervision of allied professionals. ▪ Give specialist advice to non-glaucoma specialists. ▪ Liaise and support colleagues from other special interest areas to optimise patient care, when co-management is required. ▪ Promote professional values within the team. ▪ Work as a collaborative member of a team, respecting differences of opinion. ▪ Accept constructive and appropriately framed criticism. ▪ Support colleagues. ▪ Be an advocate for patients. ▪ Manage significant events and complaints, including writing formal reports. ▪ Understand and follow local policies in response to complaints.
Be an effective supervisor, teacher and trainer of glaucoma.	▪ Participate in education/training of medical students/junior trainees, and allied health professionals in glaucoma. ▪ Supervise and accredit/sign off trainees to Level 3 in glaucoma. This includes supervising simple glaucoma procedures and surgery to Level 3. ▪ Supervise and accredit/sign off trainees to Level 4 in cataract surgery. ▪ Supervise allied professionals in the delivery of glaucoma care under guidance of local governance policies.

3 Level 4: Indicative Time

The indicative time for training at this level is **18 months** of full time equivalent.