

# CURRICULUM OF SPECIALIST TRAINING IN OPHTHALMIC SURGERY



Irish College of  
Ophthalmologists  
*Eye Doctors of Ireland*  
*Protecting your Vision*

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**ROYAL COLLEGE OF SURGEONS IRELAND**  
**THE IRISH COLLEGE OF OPHTHALMOLOGISTS**  
**Curriculum for Higher Specialist Trainees in Surgical Ophthalmology**

## **1.0 INTRODUCTION**

This curriculum document establishes the training outcomes against which the progress of individual Higher Specialist Trainees (HST) also referred to as Specialist Registrars (SPR) on the Higher Specialist Training in Surgical Ophthalmology (HST Years 4-7) should be assessed. The Curriculum for the European Board of Ophthalmology exit exam is also complementary to this document.

This document also sets out the assessment framework. The Training Committee of the Irish College of Ophthalmologists (ICO) which delivers Higher Specialist Training in Surgical Ophthalmology on behalf of the Irish Surgical Post Graduate Training Committee (ISPTC) continuously reviews the curriculum in response to changes in surgical (or other) practice, so that HST training evolves and improves continually. Appropriate transitional arrangements are applied following any amendments to the curriculum so as not to disadvantage existing trainees.

### **1.1 What is Higher Specialist Training in Surgical Ophthalmology?**

Higher Specialist Training in Surgical Ophthalmology (HST 4-7-) is a structured programme of learning which facilitates the acquisition of knowledge, understanding, skills and attitudes to a level appropriate to an ophthalmic surgical specialist who has been fully prepared to begin his/her career as an independent surgical practitioner (Consultant) in this specialty.

### **1.2 How is Specialist Training in Surgical Ophthalmology evaluated currently in Ireland?**

Evidence of attainment of the above aims, in placements recognised and inspected (2013) by the Manpower and Training Committee of the Irish College of Ophthalmologists (with or without 'out-of-programme' experience or fellowship experience), is evaluated through the annual Trainee assessment process undertaken by the Irish College of Ophthalmologists on behalf of the Irish Surgical Post Graduate Training Committee (ISPTC). This forms the basis of the Annual Review of Training Progression (ARTP) assessment process. In order to inform these assessments, Trainees are required to submit a form containing the following information:

#### **1) Structured education and training**

The assessment forms and the log book must demonstrate the depth, breadth and balance of surgical and non-surgical education and training gained under supervision by

attendance at general and special clinics, operating sessions and appropriate educational events.

## 2) Research

Trainees must also demonstrate their involvement in research, at least by providing evidence of their capability critically to review new developments and research findings in science and medicine as they apply to ophthalmology. It is preferable that they also make their own contribution to the advancement of scientific knowledge through presentations (for example, at the Annual Irish College of Ophthalmologists Congress and other named meetings re-imbursed through a grant scheme by the post-graduate training body ) and/or through publications in peer-reviewed journals.

Publication of one peer reviewed paper and presentation at one international meeting is a requirement for CCST

## 3) Clinical Audit

Expertise in, and an ongoing commitment to, clinical audit is required. Audit is compulsory for HSTs – one per year which must be publicly presented (local or national)

### 1.3 Who awards the CCST?

The award of the Certificate of Completion of Specialist Training (CCST) is made by the Royal College of Surgeons Ireland on the recommendation of the Manpower and Training Committee of the Irish College of Ophthalmologists. In making their recommendation, the Training Committee will take into account:

- 1) Evidence of having passed the exit assessment of the Irish College of Ophthalmologists.
- 2) The final **CAPA** indicating satisfactory completion of the CCST programme
- 3) A final review of the HST's **logbook**.
- 4) Completion of 1 year sub-specialty training to bring to a total of 7 years training
- 5) Evidence of satisfactory completion of core training in surgical ophthalmology (Y1-3)
- 6) Evidence of having passed the European Board of Ophthalmology exit examination.

This Higher Specialist Training in Surgical Ophthalmology curriculum should be read in conjunction with:

- 1) **A Reference Guide for Postgraduate Specialty Training in the UK** (the Gold Guide, Fifth Edition) , May 2014 (Department of Health)  
(<http://specialtytraining.hee.nhs.uk/files/2013/10/A-Reference-Guide-for-Postgraduate-Specialty-Training-in-the-UK.pdf>)
- 2) **'Guide for Higher Specialist Training in Ophthalmology'**, 2003 (Training Committee, Royal College of Ophthalmologists)  
(<http://www.rcophth.ac.uk/education/sprguide.html>)

- 3) **'Tomorrow's Doctors'**, December 1993 (General Medical Council)  
([http://www.gmc-uk.org/med\\_ed/tomdoc.htm](http://www.gmc-uk.org/med_ed/tomdoc.htm))
- 4) **'Good Medical Practice'**, May 2001 (General Medical Council)  
(<http://www.gmc-uk.org/standards/good.htm>)
- 5) **'Seeking Patients' Consent - the Ethical Considerations'**, November 1998 (General Medical Council)  
(<http://www.gmc-uk.org/standards/consent.htm>)
- 6) **'The Surgeon's Duty of Care'**, October 1997 (The Senate of Surgery of Great Britain and Ireland)  
([http://www.rcseng.ac.uk/services/publications/publications/?pub\\_id=25](http://www.rcseng.ac.uk/services/publications/publications/?pub_id=25))
- 7) **DoH documents on consent**, 2002  
(<http://www.doh.gov.uk/consent>)
- 8) Principles and Guidelines of a Curriculum for Education of Ophthalmic specialist  
klinische monatsblätter für augenheilkunde, Novmeber 2006 PPSI – S48 Vol 223.

#### 1.4 Aims of the Curriculum

- 1) To enable Trainees to acquire the 'Attributes of an Independent Practitioner' in preparation for appointment as a Consultant Ophthalmic Surgeon.
- 2) To specify a coherent programme of attainment of the knowledge, understanding, skills and attitudes required of a Trainee in order that he/she may obtain the CCST.
- 3) To ensure that the intended learning outcomes of Specialist Training in Ophthalmic Surgery are achievable and measurable.
- 4) To meet the need for consistency in judging competence and performance in the completion of 'core' training (see Appendix A) while recognising the value of flexibility in meeting the needs of individual SpRs (e.g. through advanced subspecialty training).
- 5) To reflect not only the reasonable career aspirations of Trainees (e.g. towards a rewarding professional practice) but also the needs of the service (e.g. a capacity for comprehensive service provision).
- 6) To promote an appreciation among Trainees of the importance of continuing self-learning, knowledge reinforcement, audit and research to their expert and effective service to patients in the future.

#### 1.5 Educational Principles of the Curriculum

The purpose of the curriculum is to provide an excellent standard of ophthalmic practice, delivered in a safe and professional manner, by ophthalmic surgeons trained to the highest of international standards.

The curriculum is founded on the following principles:

- The curriculum is blueprinted to the eight domains of good Professional Practice as outlined by the Medical Council to ensure that Ophthalmic Surgeons completing the training programme are more than just technical experts.
- There is systematic progression from year 4 through to year 7 of HST.
- Delivery of the curriculum is by ophthalmologists who are appropriately qualified to deliver ophthalmic specialist training.
- National Training Units are the main setting for teaching, learning and assessment.
- RCSI/ICO encourages diversity across the areas of age, disability, gender, religion, sexual orientation and ethnic national or racial origins, both within the training program and within the workplace

## 2.0 GENERAL SPECIALTY OBJECTIVES

### 2.1 Knowledge Base/Syllabus:

Through participation in, and commitment to, the training programme, Trainees will have consolidated and extended their knowledge in the following areas:

- 1) **Anatomy** - of the eye, adnexae, visual pathways and associated aspects of head, neck and neuro anatomy. This includes aspects of embryology, anatomy in childhood and during ageing. It extends to applied anatomy relevant to clinical methods of assessment and investigation (e.g. radiography, MRI).
- 2) **Physiology** - of the eye, adnexae and nervous system, including related general physiology. This extends to the organisation, function, mechanism of action, regulation and adaptations of structures and their component tissues relevant to clinical methods of assessment (e.g. acuity, visual fields, electrodiagnostics, intraocular pressure).
- 3) **Optics and ultrasonics** - including the application of physical, geometric and physiological optics to clinical management and an appreciation of the principles of instrumentation and clinical practice in these areas.
- 4) **Pathology** - especially the specialist pathology of the eye, adnexae and visual system but within a relevant general pathological context. This includes histopathology, microbiology and immunology and their inter-relationships.
- 5) **Clinical Science** - embracing all aspects of the medicine and surgery of the eye, adnexae and visual pathways, and including interactions with systemic disease and in the context of relevant general aspects of surgery and medicine. There is emphasis on multi-system disease and visual impairment in the context of other co-morbidities. For specific diseases, knowledge is expected concerning aetiology (including pathogenesis, genetics and interactions with patients' physical and social environment), clinical manifestations, investigation, diagnosis, management and prevention, and including management of visual impairment generally. The depth of knowledge in the various subspecialty areas should reflect the epidemiology of the condition (the 'burden of disease' to society and its significance to the patient).
- 6) **Health Service Management** - including the political and economic context of patient care, the role of constituent and associated agencies and relevant senior personnel roles in the organisation.
- 7) **Data Management** - including the reliable recording of clinical, research and audit data using paper-based and digital filing systems, and an appreciation of the appropriate application of information technology in this context.

### 2.2 Understanding:

Through their management of patients during Higher Specialist Training in Ophthalmic Surgery rotations, through discussions and through their presentations, trainees will:

- 1) Have shown their ability to **interpret investigations** appropriately according to the limitations of the tests and their context.

- 2) Have demonstrated a capacity to formulate a relevant **differential diagnosis**, to choose an appropriate **management strategy** from the options available and to plan and implement that strategy.
- 3) Have shown their understanding of the value of **clinical audit** in improving practice, including demonstration of a culture of personal audit.
- 4) Have demonstrated that they appreciate the importance of **basic and clinical research** in advancing knowledge and contributing to the evidence base as reflected, for example, in clinical guidelines published from time to time by The Royal College of Ophthalmologists.
- 5) Have shown that they understand the principles of **good medical practice**, and in particular of **informed consent**, including the specific issues which arise in the management of those with **mental incapacity**.
- 6) Have shown that they recognise the **limits of their own knowledge** and have insight into their own difficulty in understanding complex interactions.

### 2.3 Professional Skills:

Through their progressive experience and self-directed learning, trainees will:

- 1) Consolidate and enhance their **clinical skills** acquired in Core Training in Surgical Ophthalmology Y1-3, not least history taking (including that from the parent or guardian of a child), carry out an appropriately targeted clinical examination, develop investigative strategies through an appropriate choice of tests, analyse the evidence in order to formulate a provisional diagnosis, and outline an approach to therapeutic interventions (including indications and contraindications). Along with this trainees will develop a broad and deep understanding of relevant pharmacological, laser and surgical treatments and anaesthesia, and the ability to implement these as appropriate.
- 2) Demonstrate a capability to recognise and appropriately **manage complications of treatment**.
- 3) Maintain their skills in **cardiopulmonary resuscitation** (i.e. basic life support).
- 4) Demonstrate their skills in **communication**, especially with patients, relatives and colleagues but also in teaching and training and the presentation of the results of research. This includes the ability to write accurate and concise reports and letters.
- 5) Develop and demonstrate the ability to provide **advice and support** to patients and carers, and to advise on and facilitate access to **rehabilitation** services.
- 6) Show an ability to **work as part of a team** including the professions allied to medicine, colleagues in other specialties and other agencies.
- 7) Demonstrate their **management skills** (e.g. unit administration, understanding budgets, organising meetings etc.).
- 8) Develop an understanding of the principles of **Clinical Governance, Appraisal and Revalidation**.
- 9) Demonstrate their **information technology skills**, including the use of IT in communication and data handling. A proven ability to search for and retrieve information from conventional and electronic sources, including the internet and Medline, is important.



## 2.4 Professional Attitudes and Conduct:

In addition to the above, to develop a style of care which is:

- 1) **Humane** (especially compassion in 'breaking bad news' and in the management of the visually impaired, and recognition of the impact of visual impairment on the patient and society.)
- 2) **Reflective** (including recognition of the limits of his/her knowledge, skills and understanding.)
- 3) **Ethical** (e.g. in relation to rationing issues, truth-telling and disclosure of patient information.)
- 4) **Integrative** (especially involvement in the inter-disciplinary team in the eye care of children, the handicapped and the elderly.)
- 5) **Scientific** (e.g. critical appraisal of the scientific literature, evidence-based practice and use of information technology and statistics.)

### 3.0 SPECIFIC OBJECTIVES BY SUBSPECIALTY

For convenience, the details of the curriculum are classified by subspecialty sections. Whilst it is essential for Trainees to attend subspecialty clinics as specified, it is not expected that the whole of any subspecialty section of the curriculum will necessarily be delivered by subspecialists. Local Programme Directors (educational supervisors) will have some discretion to arrange rotations to take best advantage of local circumstances within the overall constraint of delivering the curriculum in the time available.

Within each of the seven subspecialty-based sections that follow, the objective and essential clinical experience is described.

#### 1) Objective

A summary of the fundamental aims of the training in that section.

#### 2) Essential Clinical Experience

This section specifies the minimum clinical experience which should be available to and achieved by each Trainee during Higher Specialist Training in Surgical Ophthalmology. In particular the level of competence to be attained is specified at level 4 or 5. A target number of consultant-supervised special clinics will have to be attended and educational experiences acquired. These mandatory attainments must have been recorded in the relevant part of the trainee's log-book.

Competence is defined as *'the extent of acquisition of knowledge/understanding and skills/attitudes that allows appropriate delegation of consultant responsibility to a junior in an unsupervised clinical or surgical setting'*. A Consultant's professional responsibility towards any of his/her patients has always included a requirement to establish the competence of trainees before delegating clinical care. Competence-based assessment of a Trainee by a Consultant Trainer is thus a (continuous) review of clinical performance in specified areas; in each of these areas, the SpR must demonstrate his/her capability *'to do the right thing right at the right time and in the right spirit'*. In judging competence, trainers are expected to extend their consideration of a Trainee's merit beyond the subspecialty-based areas of knowledge, understanding and skills towards more generic issues of attitude, professional values, team-working, communication skills, empathising with patients etc. This is what is meant by *'in the right spirit'*.

The range (or level) of attainment of Trainee competence should be certified for the relevant subspecialty sections during/after each placement (using a document entitled 'Competence Assessment by Subspecialty Section' or the CASS instrument) as follows:

Level 1	Requires continuing supervision in all areas of this section of the core curriculum.
Level 2	Is competent in a limited range or subset of areas in this subspecialty section of the core curriculum, as specified in the table <u>in the CASS instrument</u> .
Level 3	Is competent in most areas of this subspecialty section of the core curriculum, i.e. with the exception of those areas specified in the table in the CASS instrument.
Level 4	Is competent in all areas of this subspecialty section of the core curriculum i.e. the full range of areas appropriate to a Consultant not specialising in this subspecialty field
Level 5	Is competent in all areas of this subspecialty section of the core curriculum and also in many areas outwith the core (usually after clinical fellowship training) i.e. in a range of areas appropriate to a newly-appointed Consultant specialising in this field

For each training placement, the range (or level) of competence attained is normally certified in respect of 2 or 3 subspecialty sections, usually including subspecialty section III (Cataract & Refractive Surgery). Even if Trainee competence at level 4 or 5 has already been certified, re-certification of the range of Trainee competence in each subspecialty section should be undertaken by succeeding trainers wherever appropriate.

### 3.1 Clinical Rotations and Training Units

11 training units are nationally recognised by the ICO for Specialist Training in Ophthalmic Surgery.

Royal Victoria Eye & Ear Hospital  
 Sligo General Hospital  
 Mater Hospital  
 Temple Street  
 Beaumont Hospital  
 Crumlin  
 St. Vincent's University Hospital  
 University College Hospital Galway  
 Waterford Regional Hospital  
 Cork University Hospital  
 Mid-Western Regional Hospital, Limerick

*Specific allocations are determined for each trainee by the Programme Director*

#### Leave during training rotations in Specialist Training

Any significant period of leave, beyond the normal entitlement to study and annual leave, will interrupt the acquirement of skills during each 6 month rotation. Therefore a period

of unplanned leave of greater than 2 weeks per 6 months of training will require a further period of 6 months training to be performed.

### The minimum standards for each training unit are as follows

Each unit must

- Appoint an Educational Supervisor.
- Assign a designated Consultant Trainer to each CTO Trainee, one who meets with the Trainee at the beginning of each six-month rotation and proposes a learning agreement stating achievable clinical or procedural goals for that six months of training.
- Ensure the weekly timetable is in keeping with the recommended ICO guidelines for training: 1-2 RSTA session, 2-4 theatre sessions\*, one laser minor operation, injection session or casualty session, 4-5 clinical sessions with a good general case mix and a case load of 10 patients per trainee per session. On-call activities in keeping with European Working Time Directive (EWTD), with access to a second-on-call senior colleague. (see sample timetable below).
- Deliver 2 hours per week of in-house teaching, including a monthly journal club, in keeping with the syllabus content. Trainees are obliged to attend 60% of teaching.
- Organise workplace training in terms of appropriate 1:1 supervision and guidance as well as appropriate case mix and case load.
- Provide and identify relevant teaching and learning and relevant clinical and surgical opportunities to support trainees development (particularly in relation to readiness for summative assessment), at each particular stage of progress.
- Evaluations to provide evidence of trainees attitude, knowledge, teaching and interactive / interpersonal skills .
- Remediation. Due to variables such as structure of an individual training unit programme, rotation sub-specialty and/or ability of the trainee, remediable and identifiable gaps in a trainee's core competences may arise. The unit must ensure that these are dealt with expeditiously during the subsequent six months of training through local learning agreements with the educational supervisor, the Consultant Trainer and the trainee. The results of this process must be specifically addressed in their subsequent CAPA report.
- Provide a dedicated teaching area with library facilities, internet access, photocopying facilities, audio-visual aids, digital projection and video-conferencing facilities.

### 3.2 Delivery of the Curriculum: The Teaching and Learning Programme

The Teaching and Learning Programme is the structured education component of the Curriculum and is delivered by accredited Consultant Trainers in National Training Units, the Irish College of Ophthalmologists and the RCSI. Full participation in this programme is mandatory for all Ophthalmic Specialist Trainees. The structured education component goes hand in hand with work-place training, enhancing the knowledge and skills acquired through clinical training posts.

The Teaching and Learning Education Programme has three components.

1. Core Knowledge
2. Technical, Clinical and Procedural skills
3. Human Factors

#### 1. Core Knowledge

The core knowledge section of the Curriculum is delivered through a structured blended teaching and learning education program with local, national and e-learning components.

#### Clinical Supervision

Clinical knowledge and experience gained from direct patient care on the ward, out-patient department and/or theatre and supervised by Consultant Trainer/s in National Training Units, accredited by the ICO.

#### In-house teaching: Years 4-7 HST

A minimum of two hours per week of in-house teaching per week (during the academic year) takes place in each training unit. The content should be broadly based on the syllabus and should include case presentations, journal club, didactic lectures and audit. Each Consultant Trainer in the unit is expected to participate in the teaching and such participation by Trainers as well as attendance by trainees should be documented by the Unit's Educational Supervisor. It is obligatory for trainees to attend a minimum of 60% of postgraduate in-house teaching.

#### The National Postgraduate Teaching Programme (NPTG): Years 4-7 HST

The National Ophthalmic Postgraduate Teaching Programme includes monthly case presentations and lectures given by national and international invited speakers, with each subspecialty being represented at least once in the academic year. The program is video-conferenced to training Units in Cork University Hospital, Limerick Regional Hospital, Waterford Regional Hospital, Galway University Hospital, Sligo General Hospital and Letterkenny Hospital. It is obligatory for trainees to attend a minimum of 60% of the National Ophthalmic Postgraduate Teaching Programme.

#### Irish College of Ophthalmologists Course Study Days (Years 4-7 HST):

Throughout the Academic year the below courses take place. Each HST must attend at least one course per year during their training and must have attended all obligatory courses in order to obtain their CCST.

#### *Mandatory Courses:*

Year 1 (One of the following):

- ARVO; Association for Research & Vision in Ophthalmology
- AAO; American Academy of Ophthalmology
- ESCRS; European Society for Cataract & Refractive Surgeons

## Year 2

- Research Skills or Statistics Course Skills
- Subspecialty Course

## Year 3

- International Meeting (as per Year 1)
- Subspecialty Course
- RCOphth Oculoplastics Course
- Moorfields Medical Retina Course, London

## Year 4 (Management Courses - One of the following):

- RCPI Leadership Skills Course
- Diploma in Healthcare Management, Institute of Public Administrators
- UCD Professional Certificate in Healthcare Management

## All Years

- ICO Conference
- The annual affiliate membership subscription
- RAMI ophthalmology meetings

## *High Priority Courses:*

### Subspecialty Course (1 of the following):

- Vitreo Retinal Course Moorfields Eye Hospital
- Neuro-Ophthalmology Course, Beaumont Hospital
- Lasik Course, Moorfields
- Glaucoma Course, Moorfields Hospital
- Medical Retina Course – Limerick
- BEAVRS

### Wet Labs:

- Artisan IOL wetlab ESCRS
- DSAEK wetlab ESCRS

## 2. Technical, Clinical and Procedural Skills

The skills section of the Curriculum is delivered through direct surgery / procedure appreciation to individual patients.

### Clinical Supervision

Clinical skills and experience gained from direct patient care on the ward, out-patient department and/or theatre and supervised by Consultant Trainer/s in National Training Units, accredited by the ICO.

### 3. Human Factors Course (HF)

Ophthalmic specialists need to be able to perform in differing conditions and circumstances, respond to the unpredictable and make decisions under pressure, frequently in the absence of all the desirable data. They use professional judgement, insight and leadership in everyday practice, working within multi-professional teams. Their conduct is guided by professional values and standards as laid down in the eight domains of good professional practice by the Medical Council.

The Human Factors syllabus is mapped to the good professional practice framework and the programme is delivered by acknowledged experts from the RCSI. The program has modules, each of which contains tutorials, and each module has precise learning objectives. The course during HST is a follow on of the Basic Training in Surgical Ophthalmology Y1-3 course. The syllabus is arranged so that the modules can be taken in any order and a system of credits will be used to signify satisfactory completion of individual modules. Each module is designed to be delivered over a one day period and it is intended that each trainee will take three modules per annum. The different modules focus on the areas of leadership and professionalism, interpersonal skills and conflict resolution, crisis management, causes and avoidance of errors, stress management and time management as well as the competencies defined under the 8 domains of good professional practice by the Medical Council.

The training is delivered by a combination of didactic teaching and practical work which will involve role playing and small group discussions. Audio visual support is provided. Trainees are encouraged to find solutions to human factor problems for themselves and they are given assignments on which to work between modules. There is emphasis on practical application in the work place and the assignments reflect the importance of work place application. Completion of the HST human factors course is essential

### 3.3 Assessment and Feedback

#### The Assessment System

##### Overview

Assessment refers to the measuring of a trainee's progress or level of achievement, against defined criteria to make a judgement about a trainee. The assessment system refers to an integrated set of assessments which are in place for the entire of the core and specialist training programme and which is blueprinted against and supports the approved HST curriculum. Such a system supports learning and instruction, determining progress, measuring achievement, providing accountability and informing the efficacy of the curriculum itself as to the achievement of specified milestones.

The purpose of the assessment system is to

- Define the performance standard.
- Address the breadth and depth of agreed performance standards across the different domains of the curriculum, not just those that are easy to measure.
- Employ a broad variety of assessment tools to provide evidence towards good professional practice.
- Determine whether trainees have acquired the common and specialty-based knowledge, clinical judgment, procedural and technical skills, and professional behaviour and leadership skills required to practice at the level of a consultant ophthalmic surgeon.
- Provide systematic and comprehensive feedback as part of the learning cycle.
- Address all the eight domains of Good Professional Practice and conform to the principles laid down by the Medical Council.
- Determine whether trainees are meeting the standards of competence and performance specified at various stages in the curriculum for surgical training so as to quality assure the curriculum itself.

#### Defining the Performance Standard\*

Defining the performance standard is key to the assessment process. The quality of the assessment is dependent on the quality of the performance standard. Performance standards form the basis for the identification and provision of relevant teaching and training opportunities that are needed to support trainees at each particular stage of development. They also inform competence-based assessment to provide evidence of, not only what trainees know, but what they can do.

#### Standards for Training \*

##### Standards for depth of knowledge

The performance standard for knowledge is based on a 4 stage competence level. Each topic within a stage has a competence level ascribed to it, ranging from 1 to 4, which indicates the depth of knowledge required.

1. Knows of
2. Knows basic concepts



3. Knows generally
4. Knows specifically and broadly

The appropriate depth and level of knowledge required for HST is level 4. The College expects trainees to gain knowledge in the context of ophthalmic practice defined in the syllabus component of the curriculum. Some textbooks are recommended, but should not be considered as the sole source within their subject matter and there are alternative textbooks, journals and web information and references in “principles and guidelines of the curriculum of education of the ophthalmic specialist” (International Council of Ophthalmology) that may better suit an individual’s information requirements.

### Standards for Training

Standards for technical and procedural skills\*

The performance standard for technical and procedural skills has a 4 stage competence level defined by a descriptor ranging from 1 to 4. \*Intercollegiate Surgical Curriculum Programme UK 2015

1. Has observed

Exit descriptor: at this level the trainee:

- Has adequate knowledge of the steps through direct observation.
- Demonstrates that he/she can handle steps relevant to the procedure appropriately and safely.
- Can perform some parts of the procedure with reasonable fluency.

2. Can do with assistance

Exit descriptor: at this level the trainee:

- Knows all the steps – and the reasons that lie behind the methodology.
- Can carry out a straightforward procedure fluently from start to finish.
- Knows and demonstrates when to call for assistance / advice from the supervisor (knows personal limitations).

3. Can do whole but may need assistance

Exit descriptor: at this level the trainee:

- Can adapt to well-known variations in the procedure encountered, without direct input from the trainer.
- Recognises and makes a correct assessment of common problems that are encountered.
- Is able to deal with most of the common problems.
- Knows and demonstrates when he/she needs help.
- Requires advice rather than help that requires the trainer to assist.

4. Competent to do routine surgical cases without assistance, including management of complications

Exit descriptor: at this level the trainee:

- With regard to the common clinical situations in the specialty, can deal with straightforward and difficult cases to a satisfactory level and without the requirement for external input.
- Is at the level at which one would expect a newly qualified ophthalmic specialist to function.
- Is capable of supervising trainees.

### The Assessment Framework

The individual components of the assessment system are:

1. The Consultant Trainer's Report
2. Major Presentations
3. Case Based Discussions/Presentations
4. Examinations
5. eLogbook
6. Audit
7. Competence and Assessment of Performance Appraisal (CAPA)

#### 1: The Consultant Trainer's Report

At the end of each 6 month rotation each Consultant Trainer makes a report on the trainee's performance. It should be based on the initial Learning Agreement, include reference to completed assessment requirements, and provide feedback on the trainee's professional and interpersonal skills. It is an important component of the CAPA process.

#### 2. Major Presentations

This method of assessment is designed to assess the knowledge, understanding and communication/teaching skills of the HST with respect to major topic areas in differing subspecialties of ophthalmology. These topics will be presented at local or national ophthalmology meetings. The acceptable desired depth of knowledge is that of a consultant ophthalmic surgeon without subspecialist training in that area. The HST will receive feedback from their trainer within the unit on the competency of the presentation. Major topics in the different subspecialties are outlined in the syllabus. Three presentations during each six month rotation is expected.

#### 3. Case-based Discussions (CBD) or Case-based Presentations

This method is designed to assess clinical judgement, decision-making and the application of medical knowledge in relation to patient care in cases for which the trainee has been directly responsible. The method is particularly designed to test higher order thinking and synthesis as it allows assessors to explore deeper understanding of how trainees compile, prioritise and apply knowledge. The CBD is not focused on the trainees' ability to make a diagnosis nor is it a viva-style assessment. The CBD should be linked to the trainee's reflective practice.

The process is a structured, in-depth discussion between the trainee and the Assigned Educational Supervisor about how a clinical case was managed by the trainee; talking through what occurred, considerations and reasons for actions. By using clinical cases that offer a challenge to the trainee, rather than routine cases, the trainee is able to explain the complexities involved and the reasoning behind choices they made. It also enables the discussion of the ethical and legal framework of practice. It uses patient records as the basis for dialogue, for systematic assessment and structured feedback. As the actual record is the focus for the discussion, the assessor can also evaluate the quality of record keeping and the presentation of cases.

Most assessments take no longer than 15-20 minutes. After completing the discussion and filling in the assessment form, the Assigned Educational Supervisor should provide immediate feedback to the trainee. Feedback would normally take about 5 minutes. Three presentations during each six month rotation is expected.

#### 4. Examinations

The Fellowship of the Royal College of Surgeons in Ireland (FRCSI) is the exit appraisal for the Higher Specialist Training in Surgical Ophthalmology (STSO) programme. Trainees will have completed MRCSI prior to entry and EBOD. The FRCSI OPH is a summative assessment. It assesses knowledge and skills that are encompassed within the HST syllabus. The purpose of the examination is to determine that trainees have acquired the knowledge, skills and understanding required to practice independently as an Ophthalmic Surgeon. The FRCSI OPH assesses knowledge and applied knowledge in the generality of ophthalmic specialty training.

#### The European Board of Ophthalmology Diploma (EBOD)

The EBOD is a summative assessment. It is held once a year in Paris, France by the European Board of Ophthalmology. There is a written MCQ section followed by a viva which covers each subspecialty area in Ophthalmology. Trainees will typically take the EBOD examination in the latter part of training. The EBOD examination is a mandatory requirement for award of the CCST. Information on the EBOD examination is available at <http://ebo-online.org/newsite/ebodexam/diploma/asp>

#### 5. eLogbook

The logbook is the surgical trainee's record of all procedures performed on patients. Trainees record their level of involvement in a procedure the complexity of the procedure and the supervision received using the descriptors.

#### 6. Audit

Assessment of Audit reviews a trainee's competence in completing the audit cycle. Trainees should complete at least one audit each year during their HST Training.

## 7. Competence and Assessment of Performance Appraisal (CAPA)

Purpose - The CAPA Process (Competence, Assessment and Performance Appraisal) is an evaluation tool which is designed to assess the progress of trainees. The CAPA scrutinises each surgical trainee's suitability to progress to the next stage of, or complete, the training programme. It bases its recommendations on the evidence that has been gathered in the trainee's learning portfolio during the period between CAPA reviews. The CAPA records that the required curriculum competences and experience are being acquired, and that this is at an appropriate rate. It also provides a coherent record of a trainee's progress. The CAPA is not in itself an assessment exercise of clinical or professional competence.

The CAPA takes place on a yearly basis for all trainees. The trainee's learning portfolio provides the evidence of progress. It is the trainee's responsibility to ensure that the documentary evidence is complete in good time for the CAPA. The Chairman of the training committee in conjunction with the Dean will monitor trainees' progress to ensure that any remedial action can be taken, if necessary, to enable individual trainees to successfully complete their training.

The composition of the manpower and training committee includes postgraduate Dean, Chair of the Manpower and Training Committee, Chair of the Medical Ophthalmologists Committee, Assigned Educational Supervisors from each training unit throughout the country.

### Curricular Outcomes measured at the CAPA

1. The Consultant Trainer's Report
2. Major Presentations
3. Case Based Discussions/Presentations
4. Examinations
5. eLogbook
6. Audit
7. Human Factors

CAPA Outcomes – Six outcomes are possible

- Achieving progress and competences at the expected rate and should progress to the next grade.
- Development of specific competences required – additional training time not required.
- Inadequate progress by the trainee – additional training time required.
- Inadequate participation in the compulsory components of the National Training Program - additional training time required.
- Released from training programme with or without specified competences.
- Gained all required competences; will be recommended as having completed the training programme and for an award of a CCST.

## 4.0 EVALUATION AND QUALITY ASSURANCE OF THE CURRICULUM

This aspect of the Curriculum looks at how the educational programme is organised and how the supervision of training is quality assured by defining governance structures as well as the roles and responsibilities of those involved in the implementation of the curriculum in regard to supervision of training, the training systems and the individual training units.

### 4.1 Training Governance Structure

Higher Specialist Training in Surgical Ophthalmology is delivered through a collaborative relationship between the Royal College of Surgeons in Ireland (RCSI) and the Irish College of Ophthalmologists (ICO). The ICO, which was established in 1991, is the recognised training and professional body for eye doctors in Ireland.

ICO has responsibility for the governance, management and delivery of medical and surgical ophthalmology training in Ireland.

While the RCSI, through the ISPTC, retains statutory and strategic responsibility for the Higher Specialist Training in Surgical Ophthalmology, the day to day operational management and delivery is coordinated through the Manpower, Education and Training Committee of ICO and the Consultant Trainers of ICO on the ground.

### 4.2 Supervision of Training

The ICO co-ordinates the educational, organisational and quality management activities of the national ophthalmic training programmes. It ensures the implementation of the HST curriculum with its associated training requirements for educational supervision, by clearly defining roles and responsibilities.

#### Roles and Responsibilities

The Chairman of the Manpower, Education and Training Committee, with assistance from the Dean of Post Graduate Education oversee the delivery of the program along with members of the Manpower and Education Committee. Educational Supervisors are nominated Consultant Trainers from each designated Training Unit and ensure that there is a direct line of accountability from College to Training Unit to Consultant Trainer to Trainee.

## Chairman of the Manpower, Education and Training Committee

The Chairman is responsible for

- Organising, managing and directing the training programme, ensuring that the HST Training programme meet the HST curriculum requirements.
- Administering and chairing the yearly CAPA process.
- Overseeing progress of individual trainees through the levels of the curriculum, ensuring that appropriate levels of supervision, training and support are in place in each Unit.
- Helping Educational Supervisors manage trainees in difficulty and implementing remediation as required.

## Educational Supervisor

The role of the Educational Supervisor in each Training Unit is to

- Ensure that an induction to the unit (where appropriate) has been carried out.
- Ensure a Learning Agreement takes place between the Consultant Trainer.
- Inform the chairman of any trainee in difficulty.
- Ensure assessments and evaluations are carried out according to the Curriculum.
- Ensure an end of placement Consultant Trainer's report is provided by each Consultant Trainer for the CAPA.
- Ensure in-house teaching takes place according to the ICO guidelines and that attendance at such teaching is documented.
- Ensure timetables are in accordance with the Curriculum.

## Consultant Trainer

- Have overall educational and supervisory responsibility for the trainee in a given rotation.
- Ensure that the trainee is familiar with the curriculum and assessment system relevant to the level/stage of training and undertakes it according to requirements.
- Ensure a Learning Agreement is put in place with the trainee with an interim review at the middle and end of the placement.
- Ensure appropriate training opportunities are in place to ensure the outcomes of the Learning Agreement are achievable.
- Ensure that the trainee has appropriate day-to-day supervision appropriate to their stage of training.
- Give detailed feedback on a trainee's performance.
- The CT is responsible for providing the Consultant Trainer Report. This provides written documentation of the trainee's progress and specific learning outcomes and is facilitated by reviewing the outcomes of the Learning Agreement.

## Trainee

The ICO encourages learning which is trainee-led and trainer-guided. Trainees are expected to take a proactive approach to learning. The trainee is responsible for ensuring that

- A learning agreement is put in place.
- Opportunities to discuss progress are identified.
- Assessment requirements are undertaken.
- Evidence is documented and provided for the CAPA process in a timely manner.

#### The Manpower, Education and Research Committee (Training Committee)

The responsibility for designing the curriculum, setting the curricular standards and overseeing its implementation rests with the Manpower, Education and Research Committee. The Training Committee meets at least 4-5 times per year, is chaired by the Chairperson of Training and has in attendance the Dean, Educational Supervisors from each Training Unit and the President of the College.

### 4.3 Quality Assurance of Training

#### Evaluation of the Training System and Training Program

- Audit of achievement of Curricular Outcomes
- Audit of CAPAs.
- Audit of trainee performance at FRCSI / exit examination.
- Audit of attrition rates.
- Audit of Trainee Surveys (Appendix L).

The existing HST Training Program was inspected and approved by the European Board of Ophthalmologists in 2013. The EBO will be invited for a repeat inspection visit in 2016.

#### Inspection of Training Posts

As part of its role in the quality management of ophthalmic specialist training, the ICO developed a quality assurance strategy for its inspection of training posts in 2014 based upon seven quality indicators. This was in turn based on the quality indicators developed by the JCST in the UK (Appendix M).

The ICO recommends that clinical placements need to be in Training Units that:

- Are able to provide sufficient clinical resource.
- Have sufficient trainer capacity.
- Have high quality clinical and procedural supervision.

Trainees must be placed in approved posts that meet the required training and educational standards. Individual hospitals and units must take responsibility for ensuring that clinical governance and health and safety standards are met.



## 5.0 OPHTHALMIC SURGERY CURRICULUM AND COMPETENCIES

The ophthalmic higher surgical curriculum is an extension of the core training in surgical ophthalmology curriculum (CTSO and describes the necessary core competencies and learning objectives of trainees pursuing a career as an independent ophthalmic surgeon. It is complementary to the CTSSO program and knowledge and skills acquired during the initial training years are a pre-requisite to the successful completion of the higher surgical curriculum in ophthalmic surgery through successful attainment of the CCST. The level of competence required to exit the final program would be Level 4 or 5 throughout the 7 core disciplines of ophthalmic surgery detailed below. Each section is sub-divided into objective, essential clinical experience and recommended reading. This curriculum will be updated at required timepoints and reflected in amended documents.

### Level of Competence

- Level 4: Is competent in all areas of this subspecialty section (ie. Full range of areas appropriate to a Consultant not specialising in this field).
- Level 5: Is competent in all areas in this subspecialty area and many other areas outside the core curriculum appropriate to a newly appointed Consultant specialising in this field.

## Subspecialty Section 1

### Oculoplastic, Adnexal and Lacrimal Surgery

#### Objective

To acquire demonstrable and certified proficiency in the assessment and contemporary management of disorders of the eyelids and adnexae.

#### Essential clinical experience

- i) To have attended a minimum of **20 oculoplastic and/or adnexal sub-specialty clinics**.
- ii) To have attained level 4 competence in non complex ectropion, entropion surgery.
- iii) To have attained level 4 competence in repair of lid lacerations.
- iv) Actively to have participated in, or assisted at, a minimum of 3 major ptosis repairs, 3 dacryocystorhinostomy, 3 major lid reconstructions.\*

In addition to those areas specified in Core Training, detailed (level 4) understanding of assessment and management of the following is required:

- 1 Oculoplastic management of lid disease, including entropion, ectropion, trichiasis, dermatochalasis, lagophthalmos and small tumours, in particular using the techniques of biopsy, blepharoplasty, wedge resection, lateral canthal sling and lateral tarsorrhaphy.
- 2 Primary repair of lid lacerations.
- 3 Ptosis management.
- 4 Assessment of cases of orbital and facial trauma, including recognition of fractures.
- 5 Management of epiphora and dacryocystitis, including dacryocystorhinostomy.
- 6 Understanding of role of enucleation, evisceration and orbital implantation.
- 7 Thyroid related orbitopathy (TO) problems including recognition of compressive optic neuropathy and an understanding of the principles of management of TO related problems.
- 8 Appropriate use and interpretation of relevant special investigations, including CT, MRI and ultrasound scans.
- 9 Major lid reconstruction, Mohs' micrographic surgery, rehabilitative blepharoplasty, mucous membrane grafting, socket reconstruction.
- 10 Orbital floor implants in management of orbital floor fracture.
- 11 Biopsy and removal of orbital tumours, including the use of exenteration.
- 12 Orbital cellulitis.
- 13 The uses of botulinum toxin in the periorcular area including levator weakening, temporary entropion correction, management of blepharospasm and other disorders of facial movement.
- 14 Use of an ocular prosthetics service.
- 15 Orbital socket assessment and management of related problems.

### Oculoplastic and Orbit Reading

In addition to the core texts, the following references are recommended:

Collin, J.R.O. 2006, *A manual of systematic eyelid surgery*, 3rd edn, Butterworth-Heinemann Elsevier, Oxford.

McNab, A. 1998, *Manual of orbital and lacrimal surgery*, 2nd edn, Butterworth-Heinemann, Oxford; Boston, MD.

Rootman, J. 2003, *Diseases of the orbit: a multidisciplinary approach*, 2nd edn, Lippincott, Williams and Wilkins, Philadelphia, PA.

Tyres, A. & Collin, R. 2008, *Colour atlas of ophthalmic plastic surgery*, 3rd edn, Butterworth-Heinemann, Oxford.

Zide, B.M. & Jelks, G.W. 1985, *Surgical anatomy of the orbit*, Raven Press, New York, NY.

Doxanas, M. & Anderson, R.L. 1984, *Clinical orbital anatomy*, Williams & Wilkins, Baltimore, MD.

Henderson, J.W., Campbell, J.R., Farrow, G.M. & Garrity, J.A. 1994 *Orbital tumors*, Raven Press, New York, NY.

McCord, C.D., Tanenbaum, M. & Nunery, W. 1995, *Oculoplastic surgery*, 3rd edn, Raven Press, New York, NY.

Wiersinga, W.M., & Kahaly, G.J. 2010, *Graves' orbitopathy: a multidisciplinary approach: questions and answers*, Karger, Basel

## Subspecialty Section 2: Cornea and External Diseases

### Objective

To acquire demonstrable and certified proficiency in the assessment and contemporary management of disorders of corneal and external eye diseases.

### Essential clinical and surgical experience

- i) To have attended a minimum of **20 corneal and/or external eye disease clinics**.
- ii) Actively to have participated in, or assisted at, a minimum of **6 corneal transplant operations**.
- iii) Actively to have participated in the management of the **complications of corneal transplantation**, including rejection and refractive problems.
- iv) Level 4 competence in repair of corneal and cornea-scleral lacerations.

In addition to those areas specified in Core Training, detailed (level 4) understanding of assessment and management of the following is required:

- 1 Diagnosis and management of blepharitis and acne rosacea.
- 2 Pterygium excision, including conjunctival autografting.
- 3 Acute management of severe chemical burns involving the anterior segment.
- 4 Investigation and management of atopic eye disease.
- 5 Investigation and management of acute and chronic conjunctivitis, including appropriate use of laboratory investigations.
- 6 Investigation and management of cicatricial conjunctival disorders, particularly mucous membrane pemphigoid.
- 7 Investigation and management of scleritis and episcleritis.
- 8 Investigation and management of tear film insufficiency, including the use of punctal plugs and punctal cautery.
- 9 Management and primary repair of penetrating eye trauma.
- 10 Clinical evaluation of the patient undergoing penetrating and lamellar corneal transplantation leading to the development, after discussion with the patient, of a suitable management plan.
- 11 Investigation and management of infective keratitis, particularly bacterial, herpetic, acanthamoeba and fungal keratitis.
- 12 Investigation and management of inflammatory diseases of the cornea, including corneal melt, peripheral ulcerative keratitis and other autoimmune corneal disease.
- 13 Diagnosis and management of keratoconus including contact lens use, corneal collagen crosslinking and corneal transplantation.
- 14 Diagnosis and management of neurotrophic keratopathy and persistent epithelial defects, including the use of tarsorrhaphy.
- 15 Use of corneal topography and specular microscopy in the evaluation of corneal disease.
- 16 Management of contact lens related disorders.
- 17 Management of recurrent corneal erosion syndrome
- 18 Diagnosis and management of the corneal dystrophies.
- 19 Management of acute corneal perforation by transplantation or tissue glues.

- 20 Management of the complications of severe chemical injuries of the anterior segment.
- 21 Diagnosis and management of fungal keratitis.
- 22 Diagnosis and management of conjunctival tumours.
- 23 Limbal cell transplantation and conjunctival autografting.
- 24 Amniotic membrane grafting.
- 25 Production of protective ptosis by the injection of Botulinum toxin.

### Cornea Reading

American Academy of Ophthalmology BCSC External Eye Disease and Cornea.

Krachmer, J.H., Mannis, M.J. & Holland, E.J. 2011, *Cornea*, 3rd edn, Mosby/Elsevier, St Louis, MO.

Holland, E.J., Mannis, M.J. & Lee, W.B. 2013, *Ocular surface disease: cornea, conjunctiva and tear film*, Elsevier/Saunders, London/New York, NY.

## Subspecialty Section 3: Cataract & Refractive Surgery

### Objective

To acquire demonstrable and certified proficiency in assessment and contemporary management of (adult) cataract, and to develop an understanding of the principles of refractive surgery.

### Essential clinical and surgical experience

- i) Level 5 competence in cataract surgery.
- ii) To show documented evidence of having undertaken a personal assessment by audit of the above cases; this should include a full audit of at least 50 consecutive cases performed in the latter part of training, measured against the Royal College Cataract Audit data.

In addition to those areas specified in Ophthalmic Basic Specialist Training (Appendix 1), detailed (level 5) understanding in the following is specifically required:

- 1 To draw up a management plan leading to a target post op refraction after discussion with the patient; this should include at least a theoretical knowledge of astigmatic management during cataract surgery.
- 2 Biometry (keratometry & axial length determination) to indicate IOL power leading to target post op refraction.
- 3 Routine phacoemulsification, to include capsulorhexis and placement of PC IOL (including foldable lenses), using a variety of contemporary forms of anaesthesia.
- 4 Management of difficult cataract cases. This should include cases with hard nuclei (by phacoemulsification and/or ECCE), small pupils, previous vitrectomy and/or trauma, high myopia, pseudoexfoliation, and mature and hypermature lenses.
- 5 Management of intraoperative complications (including vitreous loss by anterior vitrectomy and wound leak by suturing).
- 6 Implantation of other IOL types (e.g. AC in complicated cases, secondary AC and PC IOLs).
- 7 Management of post op complications, including raised pressure, endophthalmitis, macular oedema and posterior capsular opacification (by laser capsulotomy).
- 8 Management of cataract in the presence of glaucoma (e.g. phacotrabeculectomy).
- 9 Management of cataract in the presence of retinal disease (e.g. ARMD; and especially in the presence of diabetic retinopathy).
- 10 Management of adverse refractive outcomes of cataract surgery.
- 11 Theoretical aspects of refractive surgery, including excimer laser techniques.
- 12 Management of the dislocated crystalline lens.
- 13 Sclerally sutured IOLs and IOL exchange.
- 14 Piggy-back IOLs.
- 15 Anterior segment revision (including use of anterior vitrector).
- 16 Intracapsular cataract surgery.

In addition to the core texts, the following references are recommended:

Seibel, B.S. 2005, *Phacodynamics: mastering the tools and techniques of phacoemulsification surgery*, SLACK, Thorofare, NJ.

Barry, P., Seal, D.V., Gettinby, G., Lees, F., Peterson, M., Revie, C.W. 2006, 'ESCRS study of prophylaxis of postoperative endophthalmitis after cataract surgery', *J. Cataract Refract. Surg.*, vol. 32, pp. 407–410.

Reading should be supplemented with appropriate articles and video resources from:

-relevant ophthalmic journal articles;

- American Academy of Ophthalmology *Focal Points*;

- American Academy of Ophthalmology *One Network*

([http://www.aaopt.org/education/prod\\_access.cfm](http://www.aaopt.org/education/prod_access.cfm)); and

- *Video Journal of Cataract and Refractive Surgery* (<http://eyetube.net/portals/robert-osher/>), accessed 21 August 2013)

## Subspecialty Section 4: Glaucoma

### Objective

To acquire demonstrable and certified proficiency in the assessment and contemporary management of ocular hypertension and primary and secondary glaucoma in adults.

### Essential clinical and surgical experience

- i) To have attended a minimum of **20 glaucoma clinics**.
- ii) Perform Yag PI and laser trabeculoplasty to level 5 competency

In **addition** to those areas specified in Basic Specialist Training, detailed (level 4) understanding of the following is required:

- 1 The clinical evaluation of the retinal nerve fibre layer and optic nerve head by slit lamp biomicroscopy, with evidenced-based knowledge of the range of normality of optic nerve head topography.
- 2 The clinical evaluation of the drainage angle with clear knowledge of the range of normality and competence to diagnose an occludable angle with reference to appropriate literature regarding prophylactic YAG PI, its benefits and risks.
- 3 The appropriate selection and interpretation of visual fields, in relation to reliability, sensitivity and reproducibility as well as interpretation of VF progression analysis.
- 4 The drawing up of an individual management plan leading to a target IOP.
- 5 Pharmacological lowering of IOP, to know the different categories of pharmacological therapy, to advise patients knowledgeably of potential IOP lowering effect, as well as local and systemic side-effects.
- 6 Role of optic nerve head imaging devices, correct interpretation and clinical application.
- 7 Indications for trabeculectomy surgery.
- 8 Trabeculectomy, bleb management, adjunctive metabolites to modulate wound healing and laser suture lysis.
- 9 Management of the complications of trabeculectomy, including hypotony, flat anterior chamber, leaking bleb, ciliary body shut-down, malignant glaucoma, choroidal effusion and hypotony.
- 10 Management of glaucoma in the presence of cataract particularly in the setting of acute and chronic angle closure glaucoma, in the setting of trabeculectomy surgery and the role of cataract extraction as an appropriate independent IOP lowering procedure.
- 11 Cycloablation (including cyclodiode laser) for refractory glaucoma.
- 12 Argon Laser trabeculoplasty indications, contraindications and correct method with knowledge of correct patient selection, efficacy and complications.
- 13 Management of acute angle closure glaucoma, including medical and laser treatment and surgical treatment.
- 14 management of malignant glaucoma



- 15 Anterior segment dysgenesis, ICE
- 16 Use of drainage tubes/stents in complex glaucoma surgery.
- 17 Non-penetrating glaucoma surgery
- 18 Other secondary glaucomas including phacolytic, erythroclastic, and silicone-oil glaucomas, Posner Schlossman syndrome, chronic closed angle glaucoma and malignant glaucoma.

**Glaucoma Reading:**

- 1 Rich R Shields, M Krupin T The glauomas Mosley St Louis.
- 2 American Academy of Ophthalmology BCSC Glaucoma.

European Glaucoma Society Guidelines – latest edition

Major randomised controlled trials.

OHTS Study – Ocular hypertension treatment study.

CIGTS Study - Collaborative initial glaucoma treatment study.

EMGT Study – Early manifest glaucoma trial.

AGIS Study – Advanced glaucoma intervention study.

CNTG Study – Collaborative normal tension glaucoma trial

## Subspecialty Section 5: Retina, Vitreous and Uvea (including Ocular Oncology)

### Objective

To acquire demonstrable and certified proficiency in the assessment and contemporary management of disorders of the retina, vitreous and uvea.

### Essential clinical experience

- i) To have attended a minimum of **40 subspecialty retinal clinics** (at least 20 surgical and 20 medical).
- ii) To have attained level 4 experience in **posterior segment laser treatments**.
- iii) Actively to have participated in, or assisted at
  - a) a minimum of **20 retinal operations** by conventional or vitrectomy techniques.
- iv) Level 4 competence in **ultrasound examinations** of cases with echographic features of posterior segment disease.
- v) Level 4 competence in retinal examination including scleral indentation.

In addition to those areas specified in Core Training, detailed (level 4) understanding of assessment and management of following is specifically required:

- 1 Clinical evaluation of rhegmatogenous retinal detachment leading to the development, in discussion with the patient, of a suitable management plan.
- 2 Clinical evaluation of medical retinal disease (including diabetic retinopathy and retinal vein occlusion) leading to the development, in discussion with the patient, of a suitable management plan.
- 3 Clinical evaluation of "wet" AMD, and the development of a suitable management plan.
- 4 Clinical evaluation of suspected intraocular tumour, leading to the development of a suitable management plan.
- 5 Appropriate use and interpretation of fluorescein angiography.
- 6 Appropriate use and interpretation of investigations for uveitis and retinal vascular disease.
- 7 Appropriate use and interpretation of electrodiagnostic studies in the context of retinal disease.
- 8 Management of ischaemic retinopathies by scatter laser photocoagulation, by slit lamp and indirect ophthalmoscope delivery systems.
- 9 Management of maculopathies by focal and grid laser photocoagulation.
- 10 Management of retinal breaks by laser photocoagulation and cryotherapy.
- 11 Management of endophthalmitis by intraocular fluid biopsy, planning an appropriate pharmacological therapeutic strategy, and the administration of intraocular drug therapy.
- 12 Organisation of appropriate screening for diabetic retinopathy.
- 13 Management of IOFB and dropped nucleus.
- 14 Treatment of SR-NVM.
- 15 Management of intraocular tumours, to include radiotherapy and local resection.

- 16 Specialist clinics dealing with retinal problems associated with inflammatory eye disease, HIV, ocular malignancy and genetic disease.
- 17 Specialist clinics dealing with the systemic problems associated with diabetes, rheumatological disease, genetic disease or other relevant general medical disorders.
- 18 Histopathological examination of (intra)ocular tumours.
- 19 Low vision appliances and the social implications of blind and partial sight registration.

In addition to the core texts, the following references are recommended:

### Vitreoretinal Reading

- 1 American Academy of Ophthalmology BCSC Retina.
- 2 Retina Ryan SJ 2013 5<sup>th</sup> edition Vol 1+2+3
- 3 Agarwal, A. & Gass, J.D.M. 2012, *Gass' atlas of macular diseases*, 5th edition, Elsevier Saunders, Edinburgh.

### Other reading

Curtin, B.J. 1977, 'The posterior staphyloma of pathologic myopia', *Tr. Am. Ophth. Soc.*, vol. 75, pp. 67-86.<<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1311542/>>

Edwards, A.O. 2008, 'Clinical features of the congenital vitreoretinopathies', *Eye*, vol. 22, pp.1233-1242.

Holz, F.G., Pauleikhoff, D., Spaide, R.F. & Bird, A.C. 2013, *Age-related macular degeneration*, 2nd edn., Springer, Berlin, Heidelberg.

Kuhn, F. 2008, *Ocular traumatology*, Springer, Berlin.

Lewis, H.2003, 'Peripheral retinal degeneration and the risk of retinal detachment', *Am. J. Ophthalmol.*, vol. 136, pp. 155-160.

Macasai, M.S. (ed.) 2007, *Ophthalmic microsurgical suturing techniques*, Springer

### Medical Retina Randomised Clinical Trials

1. Age Related Macular Degeneration (AMD): ANCHOR, MARINA, PIER, CATT, VIEW, HORIZON/ SEVEN-UP
2. Diabetic Retinopathy (DR): DCCT, UKPDS, ETDRS, FIELD, ACCORD,
3. Diabetic Macular Oedema (DME): ETDRS, DRCR.net, RESTORE, RISE/RIDE, BOLT, VIVID/VISTA
4. Retinal Vein Occlusion (RVO): SCORE, CRUISE, BRAVO, GALILEO, COPERNICUS

## Subspecialty Section 6: Neuro-Ophthalmology

### Objective

To acquire demonstrable and certified proficiency in the assessment and contemporary management of neuro-ophthalmic disorders.

### Essential clinical experience

To have attended a minimum of **20 neuro-ophthalmology clinics** or have otherwise been exposed to the investigation and management of **an equivalent number of patients covering the full range of neuro-ophthalmic disease.**

In addition to those areas specified in Core Training, detailed understanding (level 4) of the following is specifically required:

- 1 The clinical assessment and investigation of optic nerve and optic chiasmal disease.
- 2 The clinical assessment and investigation of pupil abnormalities.
- 3 The performance of confrontation visual field testing and the selection and interpretation of perimetry in the assessment of the visual pathways.
- 4 The clinical assessment and interpretation of eye movement disorders, including cranial nerve palsies, supranuclear eye movement disorders, and nystagmus.
- 5 Appropriate use and interpretation of electrodiagnostic studies in the context of neuro-ophthalmology.
- 6 Indications for and interpretation of neuroimaging, neurophysiological, and carotid ultrasound studies.
- 7 The management of paralytic strabismus, including the indications for botulinum toxin and extra-ocular muscle surgery.
- 8 The management of giant cell arteritis, including temporal artery biopsy.
- 9 The management of facial nerve palsy, blepharospasm and hemifacial spasm.
- 10 Liaison with neurologists, neurosurgeons and neuroradiologists.

To have a sound working knowledge, by exposure to

- 11 The performance of Goldmann and tangent screen perimetry.
- 12 The performance of electrodiagnostic studies.
- 13 Recording of eye movement abnormalities.
- 14 Optic nerve sheath fenestration.
- 15 The rehabilitation of patients with multiple neurological handicaps.
- 16 The use of botulinum toxin in management of disorders of ocular and facial movements.

### Neuro-ophthalmology Reading

In addition to the core texts, the following references are recommended:

Pane, A., Burdon, M. & Miller, N.R. 2007, *The neuro-ophthalmology survival guide*, Mosby/Elsevier, Edinburgh/New York, NY.

Biousse, V. & Newman, N.J. 2009, *Neuro-ophthalmology illustrated*, Thieme Medical Publishers, NY.

Savino, P.J., Danesh-Meyer, H.V. & Wills Eye Hospital 2012, *Neuro-ophthalmology (Color atlas & synopsis of clinical ophthalmology series)*, 2nd edn, Wolters Kluwer/Lippincott Williams & Wilkins Health, Philadelphia, PA.

American Academy of Ophthalmology BCSC neuro-ophthalmology.

Miller N, Hoyt W, Walsh 2008 Walsh & Hoyt's Clinical neuro ophthalmology The Essentials.

#### [Neuro-ophthalmology Randomised Clinical Trials](#)

Keltner, J.L., Johnson, C.A., Cello, K.E., Dontchev, M., Gal, R.L. & Beck, R.W. (Optic Neuritis Study Group) 2010, 'Visual field profile of optic neuritis: a final follow-up report from the optic neuritis treatment trial from baseline through 15 years', *Archives of Ophthalmology*, vol. 128, no. 3, pp. 330-7.

Beck, R.W. & Gal, R.L. 2008, 'Treatment of acute optic neuritis: a summary of findings from the optic neuritis treatment trial', *Archives of Ophthalmology*, vol. 126, no. 7, pp. 994-5.

Optic Neuritis Study Group 2008, 'Multiple sclerosis risk after optic neuritis: final optic neuritis treatment trial follow-up', *Archives of Neurology*, vol. 65, no. 6, pp. 727-32.

Beck, R.W., Smith, C.H., Gal, R.L., Xing, D., Bhatti, M.T., Brodsky, M.C., Buckley, E.G., Chrousos, G.A., Corbett, J., Eggenberger, E., Goodwin, J.A., Katz, B., Kaufman, D.I., Keltner, J.L., Kupersmith, M.J., Miller, N.R., Moke, P.S., Nazarian, S., Orengo-Nania, S., Savino, P.J., Shults, W.T., Trobe, J.D. & Wall, M. (Optic Neuritis Study Group) 2004, 'Neurologic impairment 10 years after optic neuritis', *Archives of Neurology*, vol. 61, no. 9, pp.1386-9.

## Subspecialty Section 7: Paediatric Ophthalmology and Strabismus

### Objective

To acquire demonstrable and certified proficiency in the assessment and contemporary management of paediatric eye disease and strabismus.

### Essential clinical experience

- 1 To have attended a minimum of **20 paediatric ophthalmic clinics**.
- 2 Level 4 competence in routine strabismus surgery.
- 2 Actively to have participated in the ophthalmoscopic screening for ROP of a minimum of **10 neonates**.

In addition to those areas specified in Basic Specialist Training, detailed understanding (level 4) of following is specifically required:

- 1 The assessment of the normal growth and development of vision, and of abnormal or delayed visual maturation including amblyopia.
- 2 The determination of the refractive state and visual acuity in infants and children.
- 3 The assessment of ocular movement and binocularity, and in particular the selection and interpretation of orthoptic investigations.
- 4 Assessment of paediatric neurological diseases affecting vision.
- 5 Appropriate use and interpretation of electrodiagnostic studies in the context of paediatric eye disease.
- 6 The management of amblyopia and of disorders of binocular function.
- 7 Strabismus surgery as applied to concomitant and incomitant strabismus.
- 8 Relevant paediatric therapeutics.
- 9 Assessment of suspected cases of non-accidental injury and liaison with the appropriate authorities.
- 10 Clinical approaches to, and communication with, visually impaired children and their parents.
- 11 Liaison with paediatricians and geneticists.
- 12 The management of congenital cataract, congenital glaucoma and ROP.
- 13 The management of retinoblastoma.
- 14 The management of nystagmus.
- 15 Clinical genetics and genetic counselling.
- 16 The performance of electrodiagnostic tests in children.
- 17 The interdisciplinary assessment of children with multiple handicaps.

### Paediatric Ophthalmology Reading

Wilson, M.E., Saunders, R.A. & Trivedi, R.H. (eds) 2009, *Pediatric ophthalmology: current thought and practical guide*, Springer-Verlag, Berlin. (this book can be read in a term - also available as an ebook)

American Academy of Ophthalmology BCSC paediatrics and strabismus.

Taylor D, Hoyt CS, D. 2013, *Pediatric ophthalmology and strabismus*, 4th edn, Elsevier Saunders. (this is a good book to browse, in order to reinforce your learning)

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