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Irish College of Ophthalmologists

Curriculum

Specialist Training in Surgical Ophthalmology

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Abbreviations

A/E= Accident and Emergency
AAO= American Academy of Ophthalmology
ACG= Angle Closure Glaucoma
AGIS= Advanced Glaucoma Intervention Study
ARMD= Age-Related Macular Degeneration
ARVO= Association of Research and Vision in Ophthalmology
BST= Basic Surgical Training
BRVO= Branch Retinal Vein Occlusion
CAPA= Competence, Assessment & Performance Appraisal
CBD= Case Based Discussion
CCBST= Certificate of Completion of Basic Surgical Training
CCST= Certificate of Completion of Specialist Training
CITGS= Collaborative Initial Treatment Of Glaucoma Study
CNTGS= Collaborative Normal Tension Glaucoma Study Group
CRVO= Central Retinal Vein Occlusion
CSR= Central Serous Retinopathy
DME= Diabetic Maculopathy
DOPS= Direct Observational Procedural Skills
DR= Diabetic Retinopathy
EAGLE= Effectiveness in Angle-Closure Glaucoma of Lens Extraction
EBOD= European Board of Ophthalmologists Diploma
EMGT= Early Manifest Glaucoma Trial
EOM= Ocular Motility
EURETINA= European Society of Retina Specialists
FAF= Fundus Autofluorescence Imaging
FFA= Fundus Fluorescein Angiography
FRCOphth= Fellowship of the Royal College of Ophthalmologists
HF= Human Factors
HST= Higher Surgical Training
I+C= Incision & Curettage
ICG= Indocyanine Green Angiography
ICO= Irish College of Ophthalmologists
IVTx= Intra-vitreous injection
JCA= Juvenile Chronic Arthritis
JCST= Joint Committee on Surgical Training
MDT= Multi-Disciplinary Team
Mini-CEX= Clinical Evaluation Exercise
MK= Microbial Keratitis
MMI= Multiple Mini Interview
MRCSI= Membership of the Royal College of Surgeons in Ireland
NPGTP= National Postgraduate Teaching Programme
NTG= Normal Tension Glaucoma
NYGS= New York Glaucoma Study
OCT= Optical Coherence Tomography
OCTA= Optical Coherence Tomography Angiography

OHTS= Ocular Hypertension
OSCE= Objective Structured Clinical Examination
PAC= Primary Angle-Closure
PDT= Photodynamic Therapy
PI= Laser Peripheral Iridotomy
POAG= Primary Open Angle Glaucoma
PRP= Pan-Retinal Photocoagulation
PVD= Posterior Vitreous Detachment
PXF= Pseudo-Exfoliative Glaucoma
RAC= Rapid Access Clinic
RCOphth= Royal College of Ophthalmologists
RCSI= Royal College of Surgeons in Ireland
RCTs= Randomised Controlled Trials
ROP= Retinopathy of Prematurity
RSTA= Research, Study, Teaching and Audit session
RVEEH= Royal Victoria Eye & Ear Hospital
SFS= School for Surgeons
SITA= Swedish Interactive Threshold Algorithm
SLT= Selective Laser Trabeculoplasty
SOE= Structured Oral Examination
SSAOP= Supervised Structured Assessment of Operative Performance
VF= Visual Field

Introduction

The Curriculum for Higher Specialist Training in Surgical Ophthalmology provides the structure for ophthalmic surgical training, culminating in graduation as an independent ophthalmic surgeon with achievement of the Certificate of Completion of Specialist Training (CCST).

The first part of this document explains the general outline of the Higher Specialist Training in Surgical Ophthalmology Programme including the stages of training and the overall framework of training.

The second part details the higher syllabi which lay down the standards of speciality based knowledge, clinical judgement, technical and procedural skills as well as professional skills and behaviour, which must be attained at each stage of training. The specialty-specific syllabus details the specific standards and requirements to practice as an independent medical ophthalmologist in Ireland. The Human Factors Programme covers the generic skills (communication, leadership etc) that are common to all specialties.

The second part also describes the educational framework of the Curriculum and how it *delivers* the content of the syllabi via its teaching and learning programmes, both at national as well as local level. The *assessment* system highlights the performance standards and assessment tools that are employed to ensure that defined competences are acquired at each stage of the training journey.

The third part details the evaluation of the curriculum and processes in place to quality assure both the training and the programme itself.

The Irish College of Ophthalmologists (ICO) delivers the National Higher Specialist Training in Surgical Ophthalmology Programme on behalf of the Royal College of Surgeons in Ireland. The responsibility for designing the curriculum and setting the curriculum standards rests with the Training Committee of the ICO who in turn reports to the Irish Surgical Post Graduate Training Committee (ISPTC). The curriculum establishes the training outcomes against which the progress of individual Higher Specialist Trainees (HST) on the Higher Specialist Training in Surgical Ophthalmology should be assessed. The curriculum is continuously reviewed and responds to changes in surgical or other practice, so that HST training continually evolves and improves. Appropriate transitional arrangements are applied following any amendments to the curriculum so as not to disadvantage existing trainees.

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

1. <https://msurgery.ie/home/policies-procedures-guidelines/>
2. **A Reference Guide for Postgraduate Specialty Training in the UK** (the Gold Guide, Seventh Edition), May 2018 (Department of Health)
- (<https://www.copmed.org.uk/gold-guide-7th-edition/the-gold-guide-7th-edition>)

What is Higher Specialist Training in Surgical Ophthalmology?

Higher Specialist Training in Surgical Ophthalmology is a structured 4 year 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.

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 training while recognizing the value of flexibility in meeting the needs of individual HSTs.
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 lifelong learning, knowledge reinforcement, audit and research in their future service to patients.

Educational Principles of the Curriculum

The purpose of the curriculum is to produce surgeons with the capability to deliver an excellent standard of ophthalmic surgical practice and provide this practice in a safe and professional manner and to the highest of international standards.

The curriculum is founded on the following principles:

- The curriculum is a hybrid model of both competency and time based medical education, which is moving from a strictly time-based model to an outcome-based approach, organised around competencies.
- Regulation of progression through the training programme is by the achievement of outcomes that are specified within the curriculum. These outcomes are competence-based rather than time-based.
- The curriculum is mapped to the eight domains of good professional practice as outlined by the Medical Council to ensure, that surgical ophthalmologists, completing the training programme are more than just technical experts.
- There is systematic progression from HST Year 1 through to HST Year 4 through to completion of the programme.
- Delivery of the curriculum is by ophthalmic surgeons who are appropriately qualified to deliver ophthalmic specialist training.
- The assessment process is underpinned by explicit performance standards to ensure that the levels of competence outlined in the curriculum are attained.
- 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 programme and within the workplace.

Curricular Design, Competency Points and Progression through the Training Pathway

Curricular Design and progression through the Training Pathway

The curriculum follows a hybrid competency and time based model. It focuses on the trainee's ability to demonstrate the knowledge, skills and professional behaviours that they have acquired in their training (specified in the syllabus) through observable behaviours. As a hybrid model, it is not solely defined by time and accordingly, it enables these competences to be acquired in different time frames reflecting variables such as structure of the programme at local level, rotation sub-specialty and the ability of the trainee.

However, there are certain milestones or competence points which enable trainees to benchmark their progress against the standards set down in the curriculum, as well as assist in directing trainees towards future career choices based on preference and ability. These milestones also allow assessors to determine if trainees are adequately achieving competence along their training path and therefore quality assure the training programme itself.

Competency points

- Entry into Basic Training in Surgical Ophthalmology (BST).
- Six-monthly CAPA appraisals during BST 1, BST 2 and BST 3.
- Completion of 3 years of BST, achievement of required competencies and award of CCBST.
- Entry into Higher Training in Surgical Ophthalmology (HST) via competitive cumulative scorecard performance and interview.
- Successful completion of each subspecialty Structured Oral Examination in Higher surgical Training
- Exit with CCST.

PART 1: Stages of Training

Stages of Training

A. Framework of HST:

Training Units, HST Timetables & Surgical Rotations

B. Generic Modules:

Human Factors in Patient Safety & Research Methodology Module

C. Competency Points:

Examinations, Assessments & Appraisals

D. Progression through HST:

Training Progression, remediation, leave during HST

E. Award of Certificate of Completion of Specialist Training (CCST)

A. Framework of Higher Surgical Training

Training Units for HST

Eleven training units are nationally recognized by the ICO for Higher Specialist Training in Ophthalmic Surgery:

1. Beaumont University Hospital
2. Children's University Hospital Temple Street
3. Cork University Hospital
4. Galway University Hospital
5. Limerick University Hospital
6. Mater University Hospital
7. Our Lady's University Hospital Crumlin
8. Royal Victoria Eye & Ear Hospital
9. Sligo University Hospital
10. St. Vincent's University Hospital
11. Waterford University Hospital

The minimum standards for each training unit are as follows

Each unit must

- Appoint an Educational Supervisor.
- Assign a designated Consultant Trainer to each HST 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 RSTA session, 2-4 theatre sessions*, 1-2 laser, minor operation, injection session or casualty session, 4-5 subspecialty clinical sessions with a good subspecialty 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 and deliver a 4-monthly audit session with supervision of clinical and quality improvement audit.
- 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.
- Inform workplace-based assessments (WBAs) to provide evidence of what trainees know and can do.

- Remediable and identifiable gaps in a trainee's basic competences may arise which may be due to variables such as structure of an individual training unit programme, rotation sub-specialty and/or ability of the trainee. The unit must ensure that these are dealt with expeditiously through local personal development plans with the Educational Supervisor, the Consultant Trainer and the trainee.
- Provide a dedicated teaching area with library facilities, internet access, photocopying facilities, audio-visual aids, digital projection and video-conferencing facilities.

Timetables

The recommended ICO guidelines for weekly HST timetables are: 1 RSTA session, 2-4 theatre sessions*, 1-2 laser, minor operation, injection session or casualty session, 4-5 subspecialty clinical sessions with a good subspecialty 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. Two hours of in-house weekly teaching and a 4-monthly audit meeting is recommended.

Sample timetable for HST

Monday	Tuesday	Wednesday	Thursday	Friday
<i>In-house teaching</i>		<i>In-house Journal Club</i>		
<i>AM</i>				
Theatre	Subspecialty Clinic	Subspecialty Clinic	Minor ops / Laser / Injection list	Subspecialty Clinic
<i>PM</i>				
Theatre	Casualty	Theatre	Subspecialty Clinic	RSTA
			<i>NPGT*</i>	

* NGTP: RVEEH National Postgraduate Teaching which is video-conferenced to all units.

Subspecialty Rotations

Higher Surgical Training is a 4 year training programme.

Over the 4 years of HST training, trainees will rotate through at least three training units. All posts are located in the eleven training units recognised for HST training. On average, 6 rotations will be in subspecialty training sites in Dublin and 2 rotations will be in specialty training sites in Sligo, Galway, Waterford, Cork or Limerick University Hospital.

Specific rotation allocations are determined for each HST trainee by the Programme Director and the Dean.

Each HST trainee is allocated eight 6-monthly rotations to ensure clinical and surgical exposure to the 8 different ophthalmic subspecialties below:

1. Cataract and Refractive Surgery
2. Paediatric Ophthalmology & Strabismus
3. Corneal and External Diseases

4. Glaucoma
5. Vitreoretinal surgery, medical retina and ocular oncology
6. Neuro-ophthalmology
7. Oculoplastics & Orbital / lacrimal disorders
8. Emergency Ophthalmology

B. Generic Module

Human Factors in Patient Safety Module

The Human Factors in Patient Safety programme is a mandatory component of ophthalmology training for HSTs. The programme is delivered by the Royal College of Surgeons in Ireland (RCSI). Details on dates of each module, which is repeated a number of times, are circulated in advance.

Trainees must attend 5 modules during Higher Surgical Training. Attendance is an important component of the annual assessment and is necessary to permit progression through the training programmes.

The five modules are outlined below:

- Leadership
- Safety Management Systems
- 21st Century Professionalism
- Advanced Communication: Advocacy & Negotiation
- Bias and Diversity Training

See section B.4 for further details.

Research Methodology

The ICO is committed to ensuring that trainees have good exposure to academic and research principles, as an integral part of HST training.

The Research Methodology Course is a modular programme which runs over 4 days. The programme gives a comprehensive introduction to research methodology, critical appraisal skills, statistical analysis and publications skills. It is delivered in RCSI by Professor Tom Fahy and his team. See section B.3 for further details.

The programme is mandatory for HST trainees. Trainees who completed a taught MCh, or MD or PHD prior to entry into HST are exempted from the research methodology course.

C. Competency Points

Examinations

The European Board of Ophthalmology Diploma

The European Board of Ophthalmology Diploma (EBOD) is a summative assessment. It is held twice annually; in Paris in the month of May and in Berlin in the month of October. There are two parts to the exam; a written MCQ section followed by a viva which covers each subspecialty area in ophthalmology. Success in the EBOD examination is a mandatory requirement for award of the CCST.

If you have any queries regarding the exam, you can contact lisa.flanagan@ebo-online.org or the general exams email address ebo@ebo-online.org

Fellowship of the Royal College of Surgeons in Ireland FRCSI Ophth Examination

The Fellowship of the Royal College of Surgeons in Ireland (FRCSI) is the exit appraisal for the Higher Ophthalmic Surgical Training Programme. The FRCSI examination is a test of competence to practice as an independent specialist (consultant) in ophthalmic surgery and is aimed at trainees who are coming to the end of their Specialist Training in Ophthalmology.

If you have any queries before your exam, you will see listed on the portal a contact person from the RCSI Exams office for the FRCSI exam or you can contact the general exams email address pgexams@rcsi.ie

For the Regulations and Eligibility Guidelines of the FRCSI Exam, please visit <http://www.rcsi.ie/ophmembersexams>

Formative Assessments

Ophthalmic Knowledge Assessment programme (OKAPs)

The Ophthalmic Knowledge Assessment programme or OKAPs is an examination administered by the American Board of Ophthalmology. It is a 260 item MCQ that is administered yearly to all residents in ophthalmology training programmes in the USA and is utilized and available to international training programmes. The OKAP assesses 13 subsets and the score is reported as a percentile rank or scaled scores.

The OKAPs will be administered yearly in HST Yr 1-3. The assessment will be formative in nature.

Subspecialty Oral Assessments (preparatory vivas)

Subspecialty Oral Assessments will be administered in HST Yr 3 and 4 and will be designed across the 8 subspecialty areas as per the HST curriculum. They are a preparatory assessment for the final FRCSI Ophth.

Appraisals

Competence, Assessment & Performance Appraisal (CAPA)

The CAPA is an evaluation tool which is designed to assess the progress of trainees. The CAPA scrutinises each trainee's suitability to progress to the next stage of, or complete, HST by providing a coherent record of a trainee's progress across multiple areas (clinical

skills, procedural skills, workplace-based assessments, presentations / publications and audit & examinations).

The CAPA takes place on a 12 monthly basis for all trainees. Trainee submitted assessment forms provide the evidence of progress. It is the trainee's responsibility to ensure that the documentary evidence is completed in adequate time for the CAPA.

D. Progression through Higher Surgical Training

Progression through HST

Trainees must achieve, in each approved HST rotation, the surgical, clinical, personal and professional competences defined for each subspecialty rotation and each stage of training in order to be allowed to progress to the next stage of HST training.

Evidence of attainment of the curricular aims, in placements recognized and inspected by the Manpower and Training Committee of the Irish College of Ophthalmologists is evaluated through the annual appraisal 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 CAPA process. In order to inform these assessments, trainees are required to submit a form containing the following information:

Curricular Outcomes measured at the CAPA:

- The Consultant Trainer's report
- Workplace-based assessments
- School for Surgeons
- Examinations
- eLogbook
- Formative Assessments
- Presentations and Publications
- Audit
- Courses

Remediation during HST

The Programme Director will monitor trainees' progress and provide remediation where necessary in order to support individual trainees to successfully complete their training.

Leave during training rotations in Specialist Training

Any period of unplanned 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 may require a further period of 6 months training to be performed.

Completion of Higher Specialist Training in Ophthalmic Surgery

Successful completion of HST results in the award of the Certificate of Completion of Specialist Training CCST. Trainees must achieve, in approved accredited posts in Ireland, the surgical, clinical, personal and professional competences defined in the surgical curriculum, fulfil the mandatory assessment requirements and pass the EBOD and the FRCSI Exit Examination to be awarded CCST.

E. Certificate of Completion of Specialist Training

Award of Certificate of Completion of Specialist Training (CCST)

Trainees must achieve, in approved accredited posts in Ireland, the surgical, clinical, personal and professional competences defined in the surgical curriculum, fulfil the mandatory assessment requirements and pass the EBOD and the FRCSI Exit Examination to be awarded CCST.

At the final CAPA assessment session, it is confirmed if the following mandatory components of the training programme have been successfully attained:

- Satisfactory outcome at all CAPA assessment sessions ST4 – ST7
- Audit
- Peer Reviewed Paper
- International Presentation
- Clinical Case Based Discussions and Presentations
- Participation in School for Surgeons
- Logbook: Final Six-Monthly Logbook and HST Summary Logbook
- Exams: EBOD Exam and FRCSI Exam
- Mandatory Courses
- Cumulative Record of Subspecialty Competency Forms
- Minimum three years in approved accredited HST posts in Ireland

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.

Award of the CCST will allow the Higher Surgical Trainee to be registered on the ophthalmic surgery registrar of the Irish Medical Council and will indicate that the Trainee has reached the curricular standards of competence to practice independently as an Ophthalmic Surgeon in Ireland.

PART 2: Components of the Curriculum

Components of the Curriculum

- A: The Syllabi
- B: Delivery of the Curriculum and the Educational Framework
- C: Assessment and Feedback

The curriculum has been designed around two broad areas:

A: The Syllabi

- **The Subspecialty- Specific Syllabus**– identifies learning outcomes for the domains of knowledge, clinical and technical skills for each of the 7 subspecialty areas.
- **Human Factors in Patient Safety programme** identifies learning outcomes for professional behaviour and leadership skills for each stage of training.

B. Delivery of the Curriculum

- **Delivery of the curriculum – The Educational Framework: The Teaching and Learning Programme** how the content of the curriculum is communicated and delivered by the ICO to the individual training units to the trainees, including the methods by which trainees are supervised.

C. Assessment and Feedback

- **Assessment**–The standards of training and how the attainment of outcomes is measured / judged to confirm competence.

A: The Syllabi

There are two syllabi that constitute the main content of the Medical Ophthalmology Curriculum. Each syllabus details the learning content and outcomes to be achieved at each stage of training.

- A1. Specialty –Specific Syllabus
- A2. Human Factors Syllabus

A1. Specialty –Specific Syllabus

The Subspecialty –Specific Syllabus

The Specialty - Specific Syllabus centers on a higher degree of specialization in the areas of:

1. Cataract and Refractive Surgery
2. Paediatric Ophthalmology & Strabismus
3. Corneal and External Diseases
4. Glaucoma
5. Vitreoretinal surgery, medical retina and ocular oncology
6. Neuro-ophthalmology
7. Oculoplastics & Orbital / lacrimal disorders
8. Emergency Ophthalmology

A2. Human Factors in Patient Safety Syllabus

The Human Factors in Patient Safety Syllabus

Human Factors is a programme of personal skills for clinical and surgical training which has been developed by the Royal College of Surgeons in Ireland. It aims to give trainees the personal skills and attitudes necessary for modern clinical practice as well as successful working in a multidisciplinary team.

B. Delivery of the Curriculum

The Educational Framework: 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 Trainees. The structured education component goes hand in hand with work-place training, enhancing the knowledge and skills acquired through clinical training posts.

The Educational Framework: The Teaching and Learning Education Programme has five components:

- B1. Knowledge
- B2. Technical, Clinical and Procedural skills
- B3. Academia, Critical Appraisal & Research
- B4. Professionalism and Human Factors
- B5. Practice Management

B1. Knowledge

The basic knowledge section of the Curriculum is delivered through a structured blended teaching and learning education programme 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

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

The NPGTP 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 programme is run by the Royal Victoria Eye and Ear Hospital from September to June of each academic year. The programme is live streamed. It is obligatory for trainees to attend a minimum of 60% of the National Ophthalmic Postgraduate Teaching Programme.

Irish College of Ophthalmologists Courses / Study Days (Appendix B)

The ICO delivers a number of academic courses throughout the year. Each trainee must attend at least one course per year during their training and must have attended all obligatory courses. See Appendix B for further information.

SCHOOL for Surgeons (SFS): Surgeons/Interactive Classroom

SCHOOL for Surgeons – SFS is the online component of the training programme. Each trainee is issued with a unique logon name and password to access the website. The site is found at <https://vle.rcsi.com/login/index.php>.

The course content of SFS is a combination of case presentations, review of relevant Journal articles (Journal Watch), audio-video presentations of clinical content and end of term MCQs. Cases are presented which are relevant to trainees and are based on the syllabus, the case-mix encountered in the clinic as well as the EBOD and the FRCSI Ophth.

Journal Watch engages trainees in appraising relevant articles and papers in peer reviewed Journals, all of which are available on the e-Journal Portal. Assignments are given on a regular four-weekly basis and trainees are expected to submit their assignments online by the due date. Feedback is given in the form of text or interactive classrooms after the assignment due date. Each assignment is graded and trainees are expected to score a minimum of 60% in order to pass each 6 month rotation of their training cycle.

During HST, trainees are expected to contribute to the Interactive Classrooms.

B2. Technical, Clinical and Procedural Skills

The skills section of the Curriculum is delivered through a structured blended teaching and learning education programme using simulator and wet-lab facilities as well as didactic teaching methods.

Clinical Supervision

Clinical and surgical 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.

Wet-lab based facilities

Wet-lab and dry-lab facilities allow trainees to expand their hands-on technical experience and further progress their development as a procedural and technical expert. A one day dry and wet-lab anterior vitrectomy skills course held at the RCSI is obligatory for all trainees.

B3. Academia, Critical Appraisal & Research

The ICO is committed to ensuring that HST trainees have good exposure to evidence based learning, critical appraisal and research principles as an integral part of HST training.

Trainees must demonstrate their involvement in research, at least by providing evidence of their capability to critically review new developments and research findings in 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 Meeting) 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.

The Research Methodology Course is a modular programme which runs over 4 days. The programme gives a comprehensive introduction to research methodology, critical appraisal and data analysis skills and is delivered in the RCSI by Professor Tom Fahy and his team. The programme is mandatory. However, those trainees who have already completed a taught MCh, or MD or PHD are exempted from the research methodology course. Trainees commencing in HMT will be contacted with details of the course including exemption details.

Research Methodology Course Modules

Module 1

- Introduction to Evidence Based Medicine
- Developing a research question and mapping to most appropriate study design
- Study design – strengths and weaknesses
- Fundamentals of bias, confounding and causality
- Protocol development
- Introduction to standardised reporting guidelines

Module 2

- Accessing clinical evidence
- Fundamentals of randomised controlled trials
- Fundamentals of systematic reviews and meta-analysis
- Other synopses of evidence, including clinical practice guidelines

Module 3

- Fundamentals of biostatistics
- Nature of data; descriptive statistics
- Hypothesis testing; sample size calculation
- Univariable analysis
- Multivariable analysis

Module 4

- Student presentations- protocol and/or completed research
- Funding of research and grant applications
- Peer review publishing
- Author
- Reviewer
- Editor

B4. Human Factors in Patient Safety

Ophthalmic Surgeons must 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 & 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 programme has a modular approach, and each module has precise learning objectives. 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 on average two / 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.

The Modules and their content are listed below. Modules 1-5 are attended during BST and modules 6-10 during HST.

Human Factors Modules are:

1. Talking to patients and relatives
2. Error, Medical Risk and Safety in Hospital Practice
3. Professionalism
4. Trauma A: Managing stress
5. Trauma B: Crisis Management
6. Leadership
7. Safety Management Systems
8. 21st Century Professionalism
9. Advanced Communication: Advocacy & Negotiation
10. Bias and Diversity Training

B5. Healthcare & Practice Management

In order to equip our graduates with the non-technical skills necessary to perform their job as medical ophthalmologists to the highest of standards the Irish College of Ophthalmologists has augmented their clinical and technical training with a new series of courses. The Seminar

Series in Ophthalmology was launched in 2017 and provides senior trainees with the opportunity to engage with a wide range of topics in order to prepare them for the demands of working in the HSE especially in relation to integrated care, development of new care pathways, quality care & patient safety as well as self-management leadership and professionalism. Each topic is delivered by a national or international expert in each area with emphasis on bringing quality and value based healthcare to medical ophthalmology practice.

- Health Systems
- Private Practice
- Contractual HR / IR Issues
- Quality Improvement
- Leadership
- Professionalism
- Burnout
- Integrated Care
- Business Plans
- Personal journeys: New appointees - the first 3 years
- Activity Based Funding

C. Assessment and Feedback

- C1. Overview of the Assessment System
- C2. Defining the Performance Standard
- C3: The Assessment Framework

C1: Overview of the Assessment System

Overview

Assessment is the systematic procedure for measuring 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 is in place for the entire of the basic and specialist training programme and which is blueprinted against and supports the approved Surgical Ophthalmology Curriculum. Such a system supports a variety of purposes including informing 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 or instruments at local, national and international level and incorporate formative as well as summative measures.
- 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 an independent medical ophthalmologist at specialist registration level.
- 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 so as to quality assure the curriculum itself.

C2: 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

In the early basic years of training, the appropriate depth and level of knowledge (level 2-3) required can be found in exemplar general ophthalmology textbooks (Kanaki, AAO). In higher training HSTs will read beyond the texts above, and encompass original literature and peer review articles in relevant scientific and clinical literature and should aim for level 4. Level 4 goes beyond the level of understanding and recall to extend into critical analysis and the application of evidence-based knowledge to real-life clinical scenarios. Level 4 is the level at which one would expect a newly qualified ophthalmic surgeon to function with regard to evidence-based knowledge and understanding of common clinical situations in the specialty but also in regard to the evaluation and critical analysis of difficult and complex cases and for this to be done to a satisfactory level without the requirement for external input.

There will be many opportunities within the programme for these trainees to acquire additional knowledge and skills above and beyond the content outlined in the curriculum. Self-directed learning is an important part of professional training and forms a vital part of life-long learning and modern ophthalmic practice.

*Modified from the Intercollegiate Surgical Curriculum Programme UK 2015

Standards for Training

Standards for surgical 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:
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:
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:
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 without assistance, including complications:
Exit descriptor: at this level the trainee:
- With regard to the common surgical 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 surgeon to function.
 - Is capable of supervising trainees.

C3: The Assessment Framework

The Assessment Framework

The individual components of the assessment system are:

- C3a. The Consultant Trainer's report
- C3b. Workplace-based assessments
- C3c. School for Surgeons
- C3d. Examinations
- C3e. Human factors
- C3f. eLogbook.
- C3g. Formative Assessments
- C3h. Audit
- C3i. CAPA.

C3a: The Consultant Trainer's Report

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. 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 HST must demonstrate his/her capability '*to do the right thing right at the right time and in the right spirit*'. 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, empathizing with patients etc. This is what is meant by '*in the right spirit*'.

At the end of each 6 month rotation each Consultant Trainer documents a summative report on the trainee's performance. It should be based on the initial personal development plan, include reference to completed WBAs and provide feedback on the trainee's professional and interpersonal skills.

The Consultant Trainer Report is an important component of the CAPA process.

C3b: Workplace-based assessments

WBAs encompass the assessment of skills, knowledge, behavior and attitudes during day-to-day ophthalmic practice. WBAs have a significant impact on learning by providing feedback to trainees regarding the current level of their practice. They also inform the summative assessment at the completion of each 6-month rotation and contribute towards the documentation of the attainment of curricular outcomes which forms an important part of the CAPA process.

Types of Workplace- based Assessment used

- Case based Discussions (CBD)
- Major Topic Presentation

WBAs per rotation - The number of types and intensity of each type of WBA in any 6 month rotation is determined by the curriculum. A minimum number of two CBDs and one major topic presentation per 6-month clinical placement is indicated in HST. The content is based on key fundamental knowledge and skills for ophthalmic practice appropriate to each year of training.

Case based Discussions (CBD)

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, prioritize 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. Two CBDs during each six month rotation is expected.

Major Topic Presentation

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. One presentation during each six month rotation is expected.

C3c. School for Surgeons and Interactive Classrooms

Assessment of knowledge & understanding as well as analysis and application of knowledge across key topics of the basic curriculum by case-based discussions, critical review of the literature, MCQs etc. The topics are arranged to involve both basic fundamental aspects of knowledge as well as higher level learning including relevant randomized control trials, literature searches and reviews as well as and evidence based approaches to clinical management. The 8 subspecialty categories of the curriculum - Oculoplastic, adnexal and lacrimal, Cornea & External Disease, Cataract & Refraction, Glaucoma, Vitreoretinal Disorders including Medical Retina, Neuro-ophthalmology, Paediatric Ophthalmology & Strabismus, Accident and Emergency Ophthalmology.

Trainees are obliged to submit 60% of all assignments. Four assignments are scheduled and graded per semester. An e-Interactive Classroom using the flipped classroom model is scheduled after each assignment is completed in order to deliver feedback and augment deeper learning including critical appraisal of the literature.

C3d. Examinations

The European Board of Ophthalmology Diploma

The EBOD is a summative assessment. It is held once a year in May, 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. The EBOD examination is a mandatory requirement for award of the CCST. Trainees will typically take the EBOD examination during HST Yr 1 or 2.

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>

Fellowship of the Royal College of Surgeons in Ireland FRCSI Ophth Examination

The Fellowship of the Royal College of Surgeons in Ireland (FRCSI) is the exit appraisal for the Higher Ophthalmic Surgical Training Programme. The FRCSI examination is a test of competence to practice as an independent specialist (consultant) in ophthalmic surgery and is aimed at trainees who are coming to the end of their Specialist Training in Ophthalmology. 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. You can apply via the RCSI Postgraduate Exams portal and search for the FRCSI exam listing <https://postgradexams.rcsi.ie/public/openexams>

If you have any queries before your exam, you will see listed on the portal a contact person from the RCSI Exams office for the FRCSI exam or you can contact the general exams email address pgexams@rcsi.ie.

For the Regulations and Eligibility Guidelines of the FRCSI Exam, please visit <http://www.rcsi.ie/ophmembersexams>.

C3e. Human Factors Programme

The Human Factors syllabus is mapped to the good professional practice framework and the programme is delivered by acknowledged experts from the RCSI. 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.

More details are available from the Human Factors Skills Course on the RCSI website at <https://msurgery.ie/home/core-surgical-training/human-factors/hst-training/>

C3f. eLogbook.

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

C3g. Formative assessments

Ophthalmic Knowledge Assessment programme (OKAPs)

The Ophthalmic Knowledge Assessment programme or OKAPs is an examination administered by the American Board of Ophthalmology. It is a 260 item MCQ that is administered yearly to all residents in ophthalmology training programmes in the USA and is utilized and available to international training programmes. The OKAP assesses 13 subsets and the score is reported as a percentile rank or scaled scores.

The OKAPs will be administered yearly in HST Yr 1-3. The assessment will be formative in nature.

Subspecialty Oral Assessments (preparatory vivas)

Subspecialty Oral Assessments will be administered in HST Yr 3 and 4 and will be designed across the 8 subspecialty areas as per the HST curriculum. They are a preparatory assessment for the final FRCSI Ophth.

C3h. Audit.

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

C3i. Competence and Assessment of Performance Appraisal (CAPA)

Evidence of attainment of the curricular aims, in placements recognized and inspected by the Manpower and Training Committee of the Irish College of Ophthalmologists is evaluated through the annual CAPA appraisal assessment process undertaken by the Irish College of Ophthalmologists on behalf of the Irish Surgical Post Graduate Training Committee (ISPTC).

Purpose - The CAPA Process is an evaluation tool which is designed to assess the progress of trainees. The CAPA scrutinises each 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 is not in itself an assessment exercise of clinical or professional competence but records that the required curriculum competences and experience are being acquired, and that this is at an appropriate rate by providing a coherent record of a trainee's progress across multiple areas (clinical skills, assessments, presentations / publications and audit and examinations) by the end of their training.

The CAPA takes place on a 12 monthly basis for all HST trainees. The trainee's learning portfolio provides the evidence of progress. It is the trainee's responsibility to ensure that the documentary evidence is completed in adequate time for the CAPA. The Programme Director will monitor trainees' progress to ensure that a programme of remediation will, if necessary, be provided to assist individual trainees to successfully complete their training.

The CAPA Panel Programme Director, Dean, Chair of the Training Committee and assigned Educational Supervisors.

Curricular Outcomes measured at the CAPA:

- The Consultant Trainer's report

- Workplace-based assessments
- School for Surgeons
- Examinations
- eLogbook
- Formative Assessments
- Presentations and Publications
- Audit
- Courses

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 Programme - additional training time required.
- Released from training programme with or without specified competences.
- Gained all required competences; will be recommended as having completed the higher surgical training programme and for an award of a CCST.

PART 3: Evaluation & Quality Assurance of the Curriculum

Evaluation and Quality Assurance of the Curriculum

- A. Training Governance Structure
- B. Supervision of Training
- C. Evaluation of the Training Process
- D. Inspection of Training Posts

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.

A. 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 recognized training and professional body for eye doctors 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 the ICO and the Consultant Trainers of the ICO on the ground.

B. Supervision of Training

The ICO co-ordinates the educational, organizational 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 Programme Director, as chairperson of the Manpower, Education and Training Committee, oversees the delivery of the programme with assistance from the Dean of Post Graduate Education 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.

The Programme Director

- Organising, managing and directing the training programme, ensuring that the programme meets the curriculum requirements.
- Administering and chairing the annual 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 Personal Development Plan takes place between the Consultant Trainer and the trainee.
- Inform the Programme Director or Dean of any trainee in difficulty.
- Ensure WBAs 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 Personal Development Plan 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 Personal Development Plan 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 Consultant Trainer is responsible for providing the Trainer Report. This provides written documentation of the trainee's progress and specific learning outcomes and is facilitated by reviewing the outcomes of the Personal Development Plan.

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 Personal Development Plan is put in place.
- Opportunities to discuss progress are identified.
- Workplace-based assessments are undertaken.

- Evidence is documented and provided for the CAPA process in a timely manner.

The Training Committee

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

C. Evaluation of the Training System and Training Programme

- Audit of achievement of Curricular Outcomes (WBAs).
- Audit of CAPAs.
- Audit of trainee performance at FRCSI / EBOD examinations.
- Audit of attrition rates.
- Audit of Trainee Surveys
- Audit of Remediation

D. 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 2013 based upon seven quality indicators. This was informed by the quality indicators developed by the JCST in the UK.

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.

Appendix A: Higher Training in Surgical Ophthalmology Syllabus

A. General Specialty Objectives

I. Knowledge Base and 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 recognize the **limits of their own knowledge** and have insight into their own difficulty in understanding complex interactions.

II. Professional Skills:

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

1. Consolidate and enhance their **clinical skills** acquired in Basic Training in Surgical Ophthalmology, 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, analyze 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 recognize & appropriately **manage complications of treatment**.
3. 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.
4. Develop and demonstrate the ability to provide **advice and support** to patients and carers, and to advise on and facilitate access to **rehabilitation** services.

5. Show an ability to **work as part of a team** including the professions allied to medicine, colleagues in other specialties and other agencies.
6. Demonstrate their **management skills** (e.g. unit administration, understanding budgets, organizing meetings etc.).
7. Develop an understanding of the principles of **Clinical Governance, Appraisal and Revalidation**.
8. 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.
9. **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 organization.
10. **Data Management** - including the reliable recording of clinical, research and audit data using digital filing systems, and an appreciation of the appropriate application of information technology in this context.

III. 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.)

B. 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 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. A target number of consultant-supervised special clinics will have be attended and educational experiences acquired.

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 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*' and an ability of a HST to demonstrate his/her capability '*to do the right thing right at the right time and in the right spirit*'.

The level of trainee competence should be certified by the Consultant Trainer at the end of each subspecialty rotation using the relevant subspecialty assessment document

Level 1	Requires continuing supervision in all areas of this section of the subspecialty curriculum.
Level 2	Is competent in a limited range or subset of areas in this subspecialty section of the 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 curriculum i.e. the full range of areas appropriate to a Consultant not specializing in this subspecialty 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.
- iii. Actively to have participated in, or assisted at, a minimum of 3 major ptosis repairs, 3 dacryocystorhinostomy, 3 major lid reconstructions.

Learning Outcomes

Acquirement of Learning Outcomes **OPL^H 1-13 to level 3 or 4** and Learning Outcomes **14-16 to level 2** (in addition to the LOs specified in Core Training) is required.

1. OPL^H LO 1 Clinical evaluation and oculoplastic management of lid disease – ectropion including wedge resection, lateral tarsal strip, lateral canthal sling and lateral tarsorrhaphy. (Linked to OPL^B LO 1,2, 3)
2. OPL^H LO 2 Clinical evaluation and oculoplastic management of lid disease entropion / trichiasis including Quickerts, reinsertion of lid retractors, canthal tightening. (Linked to OPL^B LO 1,2,3)
3. OPL^H LO 3 Clinical evaluation and management of lid disease - dermatochalasis, blepharoplasty, lagophthalmos and tarsorrhaphy. (Linked to OPL^B LO 1,2,3)
4. OPL^H LO 4 Clinical evaluation and small eyelid tumours – BCC, SQCC, in particular using the techniques of excision biopsy, frozen section, margin analysis, primary closure.
5. OPL^H LO 5 Principles and management of major lid reconstruction, Mohs' micrographic surgery, secondary closure, rehabilitative blepharoplasty, mucous membrane grafting, socket reconstruction. (Linked to OPL^B LO 3, 12)
6. OPL^H LO 6 Clinical evaluation and management of ptosis -differential -congenital, acquired, neurological. Assessment and surgical management. (Linked to OPL^B LO 2, 13)
7. OPL^H LO 7 Assessment and management of epiphora and dacryocystitis, including indication for dacryocystorhinostomy. (Linked to OPL^B LO 4, 14)
8. OPL^H LO 8 Clinical evaluation of thyroid related orbitopathy (TO) including staging of disease, activity scoring, recognition of compressive optic neuropathy and an understanding of the principles of management of TO related problems. (Linked to OPL^B LO 8)
9. OPL^H LO 9 Primary repair of lid lacerations. (Linked to OPL^B LO 5)

10. OPL^H LO 10 Assessment of cases of orbital and facial trauma, including recognition of fractures and appropriate use & timing of surgical intervention / orbital floor implants in management of orbital floor fracture. (Link to OPL^B LO 5, 9)
11. OPL^H LO 11 Assessment and management of orbital cellulitis. (Link to OPL^B LO 6, 7)
12. OPL^H LO 12 Appropriate use and interpretation of relevant special investigations, including CT, MRI and ultrasound scans. (Link to OPL^B LO 7, 9)
13. OPL^H LO 13 The uses of botulinum toxin in the periorbital area including levator weakening, temporary entropion correction, management of blepharospasm and other disorders of facial movement.
14. OPL^H LO 14 Assessment, clinical evaluation and evidence based management of proptosis and orbital lesions / tumours, including orbital inflammatory disease, orbital lymphoma, lacrimal gland neoplasms, and inflammatory disorders including sarcoidosis, Wegeners and IgG4 mediated disease. (Link to OPL^B LO 6,10)
15. OPL^H LO 15 Understanding of role of enucleation, evisceration and orbital implantation. (Link to OPL^B LO 17)
16. OPL^H LO 16 Orbital socket assessment and management of related problems & use of an ocular prosthetics service. (Link to OPL^B LO 10)

Oculoplastic and Orbit Reading: Core texts

1. Salmon, J.F, 2019, *Kanski 's Clinical Ophthalmology: A systematic Approach*, 9th edn, Elsevier, Oxford UK.
2. American Academy of Ophthalmology BCSC External Eye Disease and Cornea.
3. **Oculoplastic and Orbit Reading: Reference Texts / Journal / Seminal Publications / RCTs / Guidelines**
4. Collin, J.R.O. 2006, *A manual of systematic eyelid surgery*, 3rd edn, Butterworth Heinemann Elsevier, Oxford.

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.

Learning Outcomes

Acquirement of the Learning Outcomes **CExt^H 1-20 to level 3 or 4** and Learning Outcomes **CExt^H 21-22 to level 2** (in addition to the LOs specified in Core Training) is required.

1. CExt^H LO 1 Clinical evaluation, diagnosis and evidence-based management of blepharitis and acne rosacea. (Link to CExt^B LO 1,2 4)
2. CExt^H LO 2 Clinical evaluation, investigation and management of acute and chronic conjunctivitis, including appropriate use of laboratory investigations. (Link CExt^B LO1,2,3 4)
3. Ext^H LO 3 Clinical evaluation, investigation & evidence-based management of atopic eye disease. (Link to CExt^B LO 1,2,3,4)
4. CExt^H LO 4 Clinical evaluation, investigation and management of tear film insufficiency, including the use of punctal plugs and punctal cautery. (Link to CExt^B LO 1,2,3,4, 6)
5. CExt^H LO 5 Clinical evaluation, investigation & management of scleritis & episcleritis. (Link CExt^B LO 1,2,3,4,5)
6. CExt^H LO 6 Clinical evaluation and investigation & evidence-based management of infective bacterial keratitis. (Link to CExt^B LO 1,2,3,9)
7. CExt^H LO 7 Clinical evaluation, investigation & evidence-based management of infective herpetic keratitis & differential from acanthamoeba & fungal keratitis. (Link CExt^B LO 1,2,12)
8. CExt^H LO 8 Diagnosis & evidence-based management of acanthamoeba and fungal keratitis. (Link to CExt^B LO 1,2,10)
9. CExt^H LO 9 Invx & management of corneal inflammatory disease, including corneal melt, peripheral ulcerative keratitis & other autoimmune disease (Link CExt^B LO 1,2,11,21)

10. CExt^H LO 10 Clinical evaluation, diagnosis & management of keratoconus including evaluation by corneal topography, indications & timing for contact lens use, corneal crosslinking & corneal transplantation. (Link to CExt^B LO 1,2,15)
11. CExt^H LO 11 Clinical evaluation, diagnosis and management of neurotrophic keratopathy and persistent epithelial defects, including the use of protective ptosis by the injection of Botulinum toxin, tarsorrhaphy, amniotic membrane grafting. (Link to CExt^B LO 1,2,11,21)
12. CExt^H LO 12 Clinical evaluation and management of recurrent corneal erosion syndrome
13. CExt^H LO 13 Acute management of severe chemical burns involving the anterior segment and management of the complications of severe chemical injuries of the anterior segment. (Link to CExt^B LO 1,2,7)
14. CExt^H L14 Management & primary repair of penetrating eye trauma. (Link CExt^B LO 1,2,7)
15. CExt^H LO 15 Management of acute corneal perforation by transplantation or tissue glues.
16. CExt^H LO 16 Pterygium excision, including conjunctival autografting. (Link CExt^B LO 1,2,22)
17. CExt^H LO 17 Diagnosis and management of the epithelial, stromal & endothelial corneal dystrophies. (Link to CExt^B LO 1,2,18)
18. CExt^H LO 18 Clinical evaluation, investigation and management of cicatricial conjunctival disorders, particularly mucous membrane pemphigoid. (Link to CExt^B LO 1,2,20)
19. CExt^H LO 19 Clinical evaluation of the patient undergoing penetrating, lamellar corneal transplantation, DMEK or DSEK, leading to the development, after discussion with the patient, of a suitable management plan. (Link to CExt^B LO 1,2,14)
20. CExt^H LO 20 Management of contact lens related disorders. (Link to CExt^B LO 1,2,13)
21. CExt^H LO 21 Diagnosis and management of conjunctival tumours.
22. CExt^H LO 22 Limbal cell transplantation and conjunctival autografting.

Cornea Reading: Core texts

1. Salmon, J.F, 2019, *Kanski 's Clinical Ophthalmology: A systematic Approach*, 9th edn, Elsevier, Oxford UK
2. American Academy of Ophthalmology BCSC External Eye Disease and Cornea.
3. **Cornea Reading: Reference Texts / Journal / Seminal Publications / RCTs / Guidelines**
4. Krachmer, J.H., Mannis, M.J. & Holland, E.J. 2011, *Cornea*, 3rd edn, Mosby/Elsevier, St Louis, MO.

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 4 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.

Learning Outcomes

Acquirement of Learning Outcomes **CAT^H 1 – 12 to level 4** and Learning Outcomes **CAT^H 12– 15 to level 2** (in addition to the LOs specified in Core Training) is required.

1. CAT^H LO1 To draw up a management plan leading to a target post op refraction after discussion with the patient; this should include a theoretical knowledge of appropriate biometry algorithms & astigmatic management during cataract surgery. Link to (CAT^B LO 1,2,4,5,6,8)
2. CAT^H LO2 Biometry (keratometry & axial length determination) to indicate IOL power leading to target post op refraction. (Link to CAT^B LO 1,2,4,5,6,8)
3. CAT^H LO3 Routine phacoemulsification, to include capsulorhexis and placement of PC IOL (including foldable lenses), using a variety of contemporary forms of anaesthesia.
4. CAT^H LO4 Management of difficult cataract cases and complex phacoemulsification procedures. This includes cases with hard nuclei (by phacoemulsification and/or ECCE), small pupils, previous vitrectomy and/or trauma, high myopia, pseudo-exfoliation, mature and hypermature lenses, shallow AC, short / long AL, previous intra-vitreous injections, corneal disease such as previous PK or presence of corneal dystrophy / scarring including Fuchs Endothelial Dystrophy, previous or current uveitis including Fuchs Heterochromic cyclitis. (Link to CAT^B LO 1,2,4,5,6,7,8,)
5. CAT^H L5 Evidenced-based management of intraoperative complications (including zonular dehiscence by CTR, vitreous loss by anterior vitrectomy, suprachoroidal haemorrhage and wound leak by suturing). (Link to CAT^B LO 9)
6. CAT^H L6 Implantation of other IOL types (e.g. ACIOL in complicated cases, secondary AC and PC IOLs, Artisan, Toric IOLs).
7. CAT^H L7 Evidence-based management of post-op complications, including raised pressure, endophthalmitis, macular oedema and posterior capsular opacification (by laser capsulotomy). (Link to CAT^B LO 9)
8. CAT^H L8 Management of cataract in the presence of glaucoma (e.g. prior POAG, AACG or CACG including indication for phacotrabeculectomy and effect of cataract surgery on prior trabeculectomy).

9. CAT^H L9 Management of cataract in the presence of retinal disease (e.g. ARMD; uveitis, presence of diabetic retinopathy/DME).
10. CAT^H L10 Management of cataract in the presence of current or prior inflammatory disease (e.g. anterior, intermediate or posterior uveitis including Fuchs Heterochromic Cyclitis).
11. CAT^H L11 Management of adverse refractive outcomes of cataract surgery.
12. CAT^H L12 Theoretical aspects of refractive surgery, including excimer laser techniques.
13. CAT^H L13 Management of the dislocated crystalline lens.
14. CAT^H L14 Scleral-sutured IOLs and IOL exchange, piggy-back IOLs.
15. CAT^H L15 Extracapsular cataract surgery.

Cataract & Refractive Reading: Core Texts

1. Salmon, J.F, 2019, *Kanski 's Clinical Ophthalmology: A systematic Approach*, 9th edn, Elsevier, Oxford UK.
2. American Academy of Ophthalmology BCSC Cataract

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

Cataract & Refractive Reading: Reference Texts / Journal / Seminal Publications

1. 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.

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

Learning Outcomes

Acquirement of Learning Outcomes **GL^{HS} 1 – 21 to level 3 or 4** and Learning Outcomes **GL^{HS} 22 - 24 to level 2** (in addition to the LOs specified in Core Training) is required.

1. GL^{HS} LO1 To understand the aetiology, risk factors and pathophysiology of Ocular Hypertension, the risk of progression to primary open angle glaucoma, low & high risk indicators, relevance of central corneal thickness, risk calculator, resource management and the NNT, risk of deferral of treatment (OHTS II), management of resources for follow-up and monitoring (OHTS I & II) and to apply this understanding clinically. (Linked to GL^B LO1, LO2, LO3 LO4)
2. GL^{HS} LO2 To understand the aetiology, pathophysiology, risk factors and risk of progression of primary open angle glaucoma as well as the evidence base for treatment and to apply this understanding clinically. (EMGT, AGIS, SEAGIS) (Linked to GL^B LO1, LO2, LO3 LO4)
3. GL^{HS} LO3 To understand in-depth the aetiology, risk factors and pathophysiology and differences/similarities in treatment and progression rates between high-pressure and normal pressure open angle glaucoma and to apply this understanding clinically. To understand the importance of systemic vascular conditions in particular vasospasm, low BP and sleep apnoea in NTG. (CNTG Study) (Linked to GL^B LO1, LO2, LO3, LO4)
4. GL^{HS} LO4 To understand and clinically apply knowledge regarding the aetiology, pathophysiology, risk factors and aggressive clinical course of pseudo-exfoliation glaucoma. (EMGT) (Linked to GL^B LO1, LO2, LO3 LO4)
5. GL^{HS} LO5 To understand and clinically apply knowledge regarding the aetiology, risk factors and pathophysiology of other open angle glaucoma including pigment dispersion / traumatic etc. (Linked to GL^B LO1, LO2, LO3 LO4)
6. GL^{HS} LO6 To understand and clinically apply knowledge regarding the aetiology, risk factors and pathophysiology of primary closed angle glaucoma including the EAGLE Study.
7. GL^{HS} LO7 The accurate 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 indications for prophylactic YAG PI, its benefits and risks (EAGLE, ZAP).

8. GL^{HS} LO8 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 and the relevance of inter-observer and intra-observer error in the assessment process. (Linked to GL^B LO5)
9. GL^{HS} LO9 The appropriate selection and interpretation of white on white perimetry, in relation to reliability, sensitivity and reproducibility as well as interpretation of minimum criteria for diagnosis and VF progression analysis including knowledge of slow & rapid progressors. Knowledge and application of appropriate perimetric algorithms and the relevance of each. Knowledge of and interpretation of frequency doubling technology and its use in screening. Knowledge of software packages to assist in progression analysis. (Linked to GL^B LO6,7)
10. GL^{HS} LO10 Ability to construct and implement an individual management plan leading to a target IOP - grading of severity of glaucoma, life expectancy and knowledge of ocular and systemic risk factors for progression – as well as ability to assess effectiveness of therapy. (Linked to GL^B LO7,12,13)
11. GL^{HS} LO11 Pharmacological lowering of IOP, the different categories of pharmacological therapy, the efficacy of each category, to advise patients knowledgeably of potential IOP lowering effect, as well as local and systemic side-effects. (Linked to GL^B LO9, 10)
12. GL^{HS} LO12 Role of optic nerve head imaging devices especially OCT, correct interpretation and clinical application using an appropriate evidence base. (Linked to GL^B LO 18)
13. GL^{HS} LO13 Laser trabeculoplasty (ALT / SLT) indications, contraindications, correct technique, appropriate patient selection, efficacy and complications. (Linked to GL^B LO 14)
14. GL^{HS} LO14 Indications for trabeculectomy surgery. (Linked to GL^B LO 15)
15. GL^{HS} LO15 Trabeculectomy, bleb management, adjunctive metabolites to modulate wound healing and laser suture lysis.
16. GL^{HS} LO16 Medical and surgical management of the complications of trabeculectomy, including hypotony, flat anterior chamber, leaking bleb, blebitis, ciliary body shut-down, malignant glaucoma, choroidal effusion and hypotony.
17. GL^{HS} LO17 Management of glaucoma in the presence of cataract particularly in the setting of acute and chronic angle closure glaucoma, in the setting of post-trabeculectomy, role of phaco-trabeculectomy vs trabeculectomy and the role of cataract extraction as an appropriate independent IOP lowering procedure.
18. GL^{HS} LO18 Cycloablation (including cyclodiode laser) for refractory glaucoma.
19. GL^{HS} LO19 Diagnosis and Management of acute angle closure glaucoma, including medical and laser treatment and surgical treatment. (Linked to GL^B LO14)
20. GL^{HS} LO20 To diagnosis and manage rubeotic glaucoma, know the urgency of intervention, the appropriate steps regarding PRP, anti-VEGF and timing of glaucoma surgery trabeculectomy / tube. (Linked to GL^B LO16)
21. GL^{HS} LO21 To explain to patients and relatives the implications of a diagnosis of glaucoma in relation to prognosis, chronicity of disease and compliance with treatment. Implications of minimum Driving Criteria in relation to VA and VFs. (Linked to GL^B LO11)
22. GL^{HS} LO22 Indications for the use of MIGs, drainage tubes/stents and non-penetrating glaucoma surgery in complex glaucoma surgery.

23. GL^{HS} LO23 Knowledge and clinical diagnosis of other secondary glaucomas including phacolytic, erythroclastic, & silicone-oil glaucomas, Posner Schlossman syndrome, anterior segment dysgenesis, ICE, chronic closed angle glaucoma and malignant glaucoma.
24. GL^{HS} LO24 Diagnosis and Management of malignant glaucoma.

Glaucoma Reading: Core Texts

1. Salmon, J.F, 2019, *Kanski 's Clinical Ophthalmology: A systematic Approach*, 9th edn, Elsevier, Oxford UK.
2. American Academy of Ophthalmology BCSC Glaucoma

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

Glaucoma Reading: Reference Texts / Journal / Seminal Publications / RCTs / Guidelines

- i. European Glaucoma Society Guidelines – latest edition Major randomised controlled trials.
- ii. OHTS Study – Ocular hypertension treatment study.
- iii. CIGTS Study - Collaborative initial glaucoma treatment study.
- iv. EMGT Study – Early Manifest Glaucoma trial.
- v. AGIS Study – Advanced glaucoma intervention study.
- vi. CNTG Study – Collaborative normal tension glaucoma trial
- vii. EAGLE Study – Effectiveness of early lens extraction for the treatment on PACG.
- viii. LIGHT Study – Laser in Glaucoma and Ocular Hypertension 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.

Learning Outcomes

Acquirement of Learning Outcomes **Ret^{HS} 1–18 to level 3 or 4** & Learning Outcomes **Ret^{HS} 19–20 to level 2** (in addition to the LOs specified in Core Training) is required.

1. Ret^{HS} LO1 Clinical evaluation of rhegmatogenous and exudative retinal detachment leading to the development, in discussion with the patient, of a suitable evidence-based management plan. (Link to RET^{BS} LO 1, 2, 5, 7,9,11, 21)
2. Ret^{HS} LO2 Clinical evaluation of "wet" AMD, and the development of a suitable evidence-based management plan. (Link to RET^{BS} LO 1, 2, 3,6)
3. Ret^{HS} LO3 Clinical evaluation of "dry" AMD, and the development of a suitable evidence-based management plan. (Link to RET^{BS} LO 1, 2, 3,6)
4. Ret^{HS} LO4 Clinical evaluation of medical retinal diseases (including diabetic retinopathy/maculopathy & retinal vein occlusion) including the management of vitreous haemorrhage, leading to the development, in discussion with the patient, of a suitable evidence-based ocular and systemic management plan. (Link to RET^{BS} LO 1, 2, 3,4,10,12)
5. Ret^{HS} LO5 Clinical evaluation of medical retinal diseases (including CSR, macroaneurysms, macular telangiectasia, Coat's disease) leading to the development, in discussion with the patient, of a suitable evidence-based management plan. (Link to RET^{BS} LO 1-4, 10-14)
6. Ret^{HS} LO6 Clinical evaluation, imaging, monitoring as well as timing and benefits of surgical intervention of VMT, macular hole and ERM.
7. Ret^{HS} LO7 Clinical evaluation, imaging and investigations of suspected intraocular tumour, to include malignant melanoma, lymphoma & metastatic disease, leading to the development of a suitable management plan, to include radiotherapy/local resection and knowledge regarding histopathological prognostic markers. (Link to RET^{BS} LO 1, 2, 3,4,8,17)

8. Ret^{HS} LO8 Appropriate use & interpretation of OCT / FFA / OCTA / ICG / ultrasound. (Link to RET^{BS} LO 15)
9. Ret^{HS} LO9 Clinical evaluation of infectious & non-infections inflammatory retinal disease with appropriate use & interpretation of investigations for intermediate & posterior uveitis & retinal vasculitis, leading to the development, in discussion with the patient, of a suitable evidence-based ocular & systemic management plan. (Link to RET^{BS} LO 1, 2, 3,17)
10. Ret^{HS} LO10 Appropriate use & interpretation of electrodiagnostic studies in the context of acquired retinal disease & inherited retinal disease.
11. Ret^{HS} LO11 Management of ischaemic retinopathies by scatter laser photocoagulation, by slit lamp and indirect ophthalmoscope delivery systems.
12. Ret^{HS} LO12 Management of maculopathies by focal and grid laser photocoagulation.
13. Ret^{HS} LO13 Management of retinal breaks by laser photocoagulation and cryotherapy.
14. Ret^{HS} LO14 Management of endophthalmitis by intraocular biopsy, planning an appropriate pharmacological therapeutic strategy, & administration of intraocular drug therapy.
15. Ret^{HS} LO15 Knowledge of the appropriate screening available in the national diabetic retinopathy screening programme and national guidelines for treatment. (Link to RET^{BS} LO 12)
16. Ret^{HS} LO16 Clinical evaluation and assessment of genetic disease including RP, rod and cone dystrophies and other inherited retinal disorders.
17. Ret^{HS} LO17 Management of IOFB and dropped nucleus.
18. Ret^{HS} LO18 Specialist retinal / choroidal problems associated with non-infectious inflammatory eye disease (white dot syndromes including MEWDS, MIC & PIC), rare infectious conditions (including ARN, PORN, CMV, CAR) associated with immune competence and suppression, HIV, ocular and systemic malignancy.
19. Ret^{HS} LO19 Systemic problems associated with diabetes, rheumatological disease, genetic disease or other relevant general medical disorders.
20. Ret^{HS} LO20 Low vision appliances & social implications of blind & partial sight registration.

Retina: Core Text:

1. Salmon, J.F, 2019, *Kanski 's Clinical Ophthalmology: A systematic Approach*, 9th edn, Elsevier, Oxford UK.
2. American Academy of Ophthalmology BCSC Retina.

Reference Texts Vitreo-retinal Surgery:

1. Wilkinson, C, Hinton, D, Sadda, S, Wiedemann, 2018, *Ryan's Retina*, 6th edn, Elsevier.
2. Spandau, U, Heiman, H, 2019, *Practical Handbook for Small- Gauge Vitrectomy- A Step-by-Step Introduction to Surgical Techniques*, 2nd edn, Springer, Switzerland.
3. Kuhn, F, Pieramici, D.J, 2002, *Ocular Trauma: Principles and Practice*, 1st edn, Thieme Medical Publishers.
4. Garg, A, 2008, *Mastering the Techniques of Advanced Phaco Surgery*, 1st edn, Jaypee Brothers Medical Publishers.
5. Chand, D, 2019, *Advanced IOL Fixation Techniques (Strategies for Compromised or Missing Capsular Support)*, 1st edn, Slack Incorporated.

Reference Texts Medical Retina: Reference Texts / Journal / Seminal Publications / RCTs / Guidelines

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

- i. Age Related Macular Degeneration (AMD): ANCHOR, MARINA, PIER, CATT, VIEW, HORIZON/ SEVEN-UP
- ii. Diabetic Retinopathy (DR): DCCT, UKPDS, ETDRS, FIELD, ACCORD,
- iii. Diabetic Macular Oedema (DME): ETDRS, DRCR.net, RESTORE, RISE/RIDE, BOLT, VIVID/VISTA
- iv. Retinal Vein Occlusion (RVO): CVOS, SCORE, CRUISE, BRAVO, GALILEO, COPERNICUS
- v. EURTETINA Guidelines on Retinal Vein Occlusion
- vi. EURTETINA Guidelines on DME
- vii. EURTETINA Guidelines on ARMD

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.**

Learning Outcomes

Acquirement of Learning Outcomes **NO^H LO1-13 & ICS 18 to level 3 or 4** and Learning Outcomes **NO^H LO14-15 & ICS 16,17 &19 to level 2** (in addition to the LOs specified in Core Training) is required.

1. NO^H LO1 The clinical assessment and investigation of optic nerve and optic chiasmal disease. (Link to NO^B LO1,2,3 8,9,10,11)
2. NO^H LO2 The clinical assessment and investigation of pupil abnormalities. (Link to NO^B LO19)
3. NO^H LO3 The performance of confrontation visual field testing and the selection and interpretation of perimetry in the assessment of the visual pathways. (Link to NO^B LO1,2,3)
4. NO^H LO4 The clinical evaluation and management of paralytic strabismus, including the indications for botulinum toxin and extra-ocular muscle surgery. (Link to NO^B LO1,2,3 4 5 7 12 17)
5. NO^H LO5 The clinical evaluation, diagnosis, investigation (including temporal artery biopsy), evidence-based management and follow-up of giant cell arteritis,. (Link to NO^B LO1, 2, 6)
6. NO^H LO6 The clinical evaluation, management of typical and atypical optic neuritis with an evidence based approach of timing / relevance of neuro-imaging, relevant treatments and prognosis for optic neuritis and a clear understanding of the association and referral for treatment for underlying demyelination disease. (NO^B LO1,2,3 8,9,10,11)
7. NO^H LO7 The clinical evaluation, management of facial nerve palsy, blepharospasm and hemifacial spasm.
8. NO^H LO8 The clinical evaluation, assessment, investigation and management of ocular and systemic myasthenia gravis.
9. NO^H LO9 The assessment, investigation and management of Horner's Syndrome including the management and referral of acute Horner's in association with carotid artery dissection. (Link to NO^B LO19)
10. NO^H LO10 The assessment, investigation and management and follow-up of Benign Intracranial Hypertension (Link to NO^B LO1,2,3,10)

11. NO^H LO11 The clinical assessment and interpretation of eye movement disorders, including cranial nerve palsies, supra- nuclear eye movement disorders, skew deviation, INO, pontine & mid-brain lesions as well as nystagmus. (Link to NO^B LO4,7)
12. NO^H LO12 Indications for and interpretation of neuroimaging, neurophysiological, and carotid ultrasound studies.
13. NO^H LO13 The assessment, investigation and management of toxic optic neuropathies as well as iatrogenic causes and relevant screening protocols for same. (Link to NO^B LO1,2,3,11)
14. NO^H LO14 Appropriate use and interpretation of electro-diagnostic studies in the context of neuro-ophthalmology. (Link to NO^B LO11)
15. NO^H LO15 Liaison with neurologists, neurosurgeons and neuroradiologists.

To have a sound working knowledge, by exposure to

1. The performance of Goldmann and tangent screen perimetry.
2. The performance of electrodiagnostic studies.
3. Recording of eye movement abnormalities.
4. Optic nerve sheath fenestration.
5. The rehabilitation of patients with multiple neurological handicaps.
6. The use of botulinum toxin in management of disorders of ocular and facial movements.

Neuro-ophthalmology Reading: Core Text

1. Salmon, J.F, 2019, *Kanski 's Clinical Ophthalmology: A systematic Approach*, 9th edn, Elsevier, Oxford UK.
2. American Academy of Ophthalmology BCSC Neuro-ophthalmology.

Neuro-ophthalmology Reading: Reference Texts / Journal / Seminal Publications / RCTs

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

Optic Neuritis Treatment Trial I & II

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

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

Learning Outcomes

Acquirement of Learning Outcomes **Paed^{HS} 1-16 to level 3 or 4** and Learning Outcomes **Paed^{HS} 17 - 21 to level 2** (in addition to the LOs specified in Core Training) is required.

1. Paed^{HS} LO 1 The assessment of the normal growth and development of vision, abnormal or delayed visual maturation including amblyopia. (Link to Paed^{BS} LO 1,2,3,16)
2. Paed^{HS} LO 2 The clinical evaluation, determination of the refractive state and visual acuity in infants and children. (Link to Paed^{BS} LO 1,2,3)
3. Paed^{HS} LO 3 The assessment of ocular movement and binocularity, and in particular the selection and interpretation of orthoptic investigations as well as the evidence-based management of amblyopia and of disorders of binocular function. (Link to Paed^{BS} LO 1,2,3)
4. Paed^{HS} LO 4 Knowledge of the global trend in myopia and RFs for same as well as its evidence-based management (ATOM 1 & 2). (Link to Paed^{BS} LO 1,2,3)
5. Paed^{HS} LO 5 Strabismus surgery as applied to concomitant and incomitant strabismus. (Link to Paed^{BS} LO 1,2,3,4)
6. Paed^{HS} LO 6 The clinical evaluation and evidence-based management of epiphora & nasolacrimal duct obstruction in an infant/child. (Link to Paed^{BS} LO 15)
7. Paed^{HS} LO 7 The clinical evaluation and evidence-based management of infective (including ophthalmia neonatorum) and atopic eye disease in an infant/child. (Link to Paed^{BS} LO 13)
8. Paed^{HS} LO 8 The clinical evaluation and evidence-based management of unilateral /bilateral congenital cataract including timing of intervention, selection of procedure, post-operative management and follow-up. (Link to Paed^{BS} LO 5)
9. Paed^{HS} LO 15 Assessment & management of orbital cellulitis in children, appropriate imaging, timing of surgical intervention & liaison with ENT / neurosurgical opinion. (Link to Paed^{BS} LO 12)
10. Paed^{HS} LO 9 The assessment, diagnosis, management and follow-up of congenital glaucoma. (Link to Paed^{BS} LO 6)
11. Paed^{HS} LO 10 The assessment, diagnosis, staging, management and follow-up of ROP. (Link to Paed^{BS} LO 18)

12. Paed^{HS} LO 12 The assessment & management of acquired and inherited retinal disease (including ocular albinism, Coats, Stargardts, RP, rod / cone dystrophies) and the appropriate use & interpretation of electro-diagnostic studies in the context of paediatric eye disease. (Link to Paed^{BS} LO 7)
13. Paed^{HS} LO 14 Assessment and management of paediatric uveitis especially in relation to JCA and relevant screening protocols. (Link to Paed^{BS} LO 9)
14. Paed^{HS} LO 16 Assessment of suspected cases of non-accidental injury and liaison with the appropriate authorities. (Link to Paed^{BS} LO 14)
15. Paed^{HS} LO 17 Assessment and management of ptosis specific to the paediatric population, including Horner's, blepharophimosis and capillary haemangiomas and relevant treatment of same with avoidance of amblyopia.
16. Paed^{HS} LO 11 The clinical evaluation and differential diagnosis of leucocoria & evidence-based management of retinoblastoma. (Link to Paed^{BS} LO 10)
17. Paed^{HS} LO 13 Assessment of paediatric neurological diseases affecting vision and assessment, recording and management of nystagmus. (Link to Paed^{BS} LO 8)
18. Paed^{HS} LO 18 Assessment and diagnosis of anterior segment dysgenesis and posterior segment abnormalities including (Peters anomaly, aniridia)
19. Paed^{HS} LO 19 Clinical approaches to, and communication with, visually impaired infants / children and their parents, access to other support / health services. (Link to Paed^{BS} LO 16)
20. Paed^{HS} LO 20 Liaison with paediatricians, geneticists, clinical genetics for inherited retinal diseases, access to new treatments / trials and genetic counselling (Leber's amaurosis). (Link to Paed^{BS} LO 17)
21. Paed^{HS} LO 21 The interdisciplinary assessment of children with multiple handicaps. (Link to Paed^{BS} LO 17).

Paediatric Ophthalmology Reading: Core Text

1. Scott R. Lambert & Christopher J. Lyons, 2017, *Taylor & Hoyt's Pediatric Ophthalmology and Strabismus*, 5th edn, Elsevier.
2. Arthur L. Rosenbaum & Alvina Pauline Santiago MD, 1999, *Clinical Strabismus Management: Principles and Surgical Techniques*, 1st edn, David Hunter.
3. Michael C. Brodsky, 2016, *Pediatric Neuro-Ophthalmology*, 3rd edn, Springer-Verlag New York.

Paediatric Ophthalmology Reading: Reference Texts / Journal / Seminal Publications / RCTs / Guidelines

- Interactive teaching on ROP - prerequisite for paed Ophth
<https://www.aao.org/interactive-tool/retinopathy-of-prematurity-case-based-training>
- Double maddox rod test
<https://www.aao.org/image/double-maddox-rod-test>
- Strabismus simulator
<https://www.aao.org/interactive-tool/strabismus-simulator>

Preferred Practice patterns AAO in

- Amblyopia
- Exotropia and esotropia

- Paediatric Eye evaluations
- Amblyopia
- Adult strabismus

Appendix B: Compulsory and Recommended Courses & Meetings

Compulsory Courses for Higher Training in Surgical Ophthalmology

Human Factors in Patient Safety Programme, RCSI
Research Methodology Course, RCSI
School for Surgeons & Interactive Classroom, ICO
Anterior Vitrectomy Course, ICO

Highly Recommended National Meetings / Study days

Irish College of Ophthalmologists Annual Conference (May)
Association of Research and Vision in Ophthalmology (ARVO)
American Academy of Ophthalmology (AAO)
European Society for Cataract & Refractive Surgeons (ESCRS)
British & Eire Association of Vitreo Retinal Surgeons (BEAVRS)
EU Retina (EURETINA)

Recommended Management Course

The college recommends that a management course be completed. There are a range of courses available from short courses to Diplomas.

Recommended Subspecialty Course

Strabismus Course- University Hospital Waterford
Oculoplastics Course- Royal College of Ophthalmologists
Vitreous Retinal Course- Moorfields Eye Hospital
Neuro-Ophthalmology Course- Beaumont Hospital
Lasik Course- Moorfields Eye Hospital
Glaucoma Course- Moorfields Eye Hospital
Adare Medical Retina Course – University Hospital Limerick
Medical Retina Course- Moorfields Eye Hospital

Wet Labs

Artisan IOL wetlab ESCRS
DSAEK wetlab ESCRS

Appendix C: Exit Criteria for the Award of CCST

On successful completion of ST7, trainees are awarded CCST. The CCST will be awarded on successful achievement of:

1. Satisfactory CAPA appraisals for ST4-ST7 (including international presentation, publication, peer reviewed paper, CBD's, presentations of linked major clinical topic, SFS, logbook, audit, courses).
2. Completed a minimum of three years training in approved accredited posts in Ireland.
3. Achievement of the European Board of Ophthalmology Diploma.
4. Achievement of Fellowship of the Royal College of Surgeons in Ireland.
5. Success in each of the seven subspecialties; Oculoplastic, Adnexal & Lacrimal Surgery, Cornea & External Diseases, Cataract & Refractive Surgery, Glaucoma, Retina, Vitreous & Uvea, Neuro-Ophthalmology, Paediatric Ophthalmology & Strabismus.
6. Validated cumulative, procedural logbook.
7. Completion of the Human Factors in Patient Safety course.
8. Completion of the Research Methodology course.

Appendix D: Guidelines for Training Performance Management

The training programme recognizes that during the HST programme trainees may underperform and not achieve the desired performance requirements of the curriculum. There may be a multitude of reasons for this underperformance. The training programme provides support to all trainees so that they can maximize their development and career progression throughout training.

The support escalations are outlined below:

- Consultant Trainer.
- Unit Educational Supervisor.
- The Dean of Postgraduate Surgical Education or Programme Director (PD) for the specialty.

All trainees are encouraged to use the above contacts during their time on the programme should they encounter any problems or wish to seek career advice.

Trainees who are identified as performing below the standard appropriate to their stage of training will be required to undergo additional formal assessment. The specific competencies underlying the sub-optimum performance require identification, in addition to an examination of the trainee holistically. Following further assessment and evaluation appropriate training, assessment and other supports as deemed necessary will be put in place and form part of a learning support or remediation plan for the trainee. Documentation of this process must be clearly communicated and agreed by trainee, trainers, the Dean and / or the PD.

In order to implement the above processes the following will occur:

A1. Scheduled meeting between trainee, the consultant trainers and Dean and / or PD:

A meeting will take place between the relevant parties (the trainee, the consultant trainers and the Dean and / or PD). The goal of the meeting is to identify where performance has been sub-optimal, the competencies involved and explore underlying reasons for underperformance.

A2. Identification of competencies:

The specific technical, clinical or professional competencies underpinning the suboptimum performance will be identified. These will be clearly recognized and communicated both verbally and in writing to the trainee, the consultant trainers, the Dean and the PD.

A3. Assessment plan:

A plan to assess the relevant competences will be put in place. An appropriate assessment, in the form of workplace based assessments, will be completed by more than one trainer. The number, type and timing of the WBAs will be clearly communicated to the trainee, trainers, the

Dean and PD. Clear goals regarding progress, relevant performance standard and timeline in which to demonstrate same must be identified and aligned with curricular outcomes.

B. Review of progress:

A further review meeting to assess progress will be scheduled. The timing of same should be clearly communicated and agreed with trainee, trainers, the Dean and PD.

C. Further evaluation of the underperforming trainee:

Trainees who are identified as performing below the standard required may be requested to undergo further evaluation with additional assessments or appraisals. These assessments may be outside of those areas identified as suboptimum in order to develop a holistic view of the trainee's practice and in order to develop a meaningful feedback plan to support training. The results of these assessments will inform if additional supports need to be put in place.

This process (A- E) will be repeated until the competencies in question have been acquired to the relevant standard within an agreed timeline. If the agreed goals of remediation are not met, further steps to support the trainee may need to be taken.

This will be communicated to the trainee and the trainers, Dean and PD.