FACULTY OF PATHOLOGY

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

HIGHER SPECIALIST TRAINING IN

IMMUNOLOGY – CLINICAL AND LABORATORY

OUTCOME **B**ASED **E**DUCATION CURRICULUM

This curriculum of Higher Specialist Training in Immunology was developed in 2023 and undergoes an annual review by Dr Niall Conlon, National Specialty Director, Dr Ann O'Shaughnessy, Head of Education, and by the Immunology Specialty Training Committee. The curriculum is approved by the Faculty of Pathology.

Version	Date Published	Last Edited By	Version Comments
1.0	01 July 2023	Keith Farrington	New OBE Curriculum

National Specialty Director's Foreword

Immunology (Clinical and Laboratory) is a dynamic, rapidly developing clinical and laboratory specialty. The discipline focuses on diseases of the immune system and diagnostic approaches to these conditions. Core areas of interest for clinical immunologists include immunodeficiency disorders, complex autoimmune diseases, allergic diseases, and laboratory immunology. Immunology touches on a myriad of other medical specialties and is becoming increasingly important.

This RCPI Higher Specialist Training Outcome Based Education Curriculum provides the framework for the training of doctors that will produce excellent clinicians competent to practice independently as Consultant Immunologists. Registration as a specialist in Immunology (Clinical and Laboratory) with the Irish Medical Council will require completion of this training programme and success at the FRCPath examinations in the discipline. Fulfilment of these requirements will result in the award of a Certificate of Satisfactory Completion of Specialist Training.

The Immunology HST curriculum is an outcomes-based program. Specialty goals are aligned to key areas of practice. Within each goal are a series of training outcomes that reflect the sum of day-to-day practice in Immunology. Trainees will demonstrate proficiencies in each outcome matched to the level of their training, progressing to independent competence in each. Trainers will link closely with their trainees assisting them and evaluating their progress on a regular basis. There are nine specialty goals that include two core knowledge and skills goals, five clinical specialty goals and two goals focused on the laboratory. Progress through these goals will support preparation for the FRCPath exams in immunology.

The FRCPath examinations are important but independent markers of progress through the Immunology training scheme. It is expected that trainees will attempt the part 1 examination after 2 years of training. After success at part 1, candidates can progress to the Part 2 practical and viva examinations typically undertaken in year 4 or 5.

Immunology is a relatively new specialty in Ireland and consultants will have the opportunity to make huge contributions to Irish healthcare. Trainees completing this HST program will acquire a breadth of experience and be fully prepared for independent practice.

Table of Contents

1. INTRODUCTION

This section includes an overview of the Immunology training programme and of this curriculum document.

1.1. Purpose of training

This programme is designed to provide training in Immunology in approved training posts, under supervision, to fulfil agreed curricular requirements. Each post provides a trainee with a named trainer and the programme is under the direction of the National Specialty Director in Immunology.

1.2. Purpose of the curriculum

The purpose of the curriculum is to define the relevant processes, contents, outcomes, and requirements to be achieved. The curriculum is structured to delineate the overarching goals, outcomes, expected learning experiences, instructional resources and assessments that comprise your Higher Specialist Training (HST) programme. It provides a feedback framework for successful completion of HST programme.

In keeping with developments in medical education and to ensure alignment with international best practice and standards, the Royal College of Physicians (RCPI) have implemented an Outcomes Based Education (OBE) approach. This curriculum design differs from traditional minimum based requirement designs in that the learning process and desired end-product of training (outcomes) are at the forefront of the design to provide the essential training opportunities and experiences to achieve those outcomes.

1.3. How to use the curriculum

It is expected that both trainees and trainers have a good working knowledge of the curriculum and should use it as a guide for the training programme. Trainers are encouraged to use the curriculum as the foundation of their discussions with trainees, particularly during goals-setting, feedback, and appraisal processes.

Each trainee is expected to engage with the curriculum by maintaining an ePortfolio in which assessments and feedback opportunities must be recorded. The ePortfolio allows trainees to build up evidence to inform decisions on their progress at the annual reviews whilst also providing tools to support and identify further educational and development opportunities. It is imperative that the trainees keep an up-to-date ePortfolio throughout the duration of their programme.

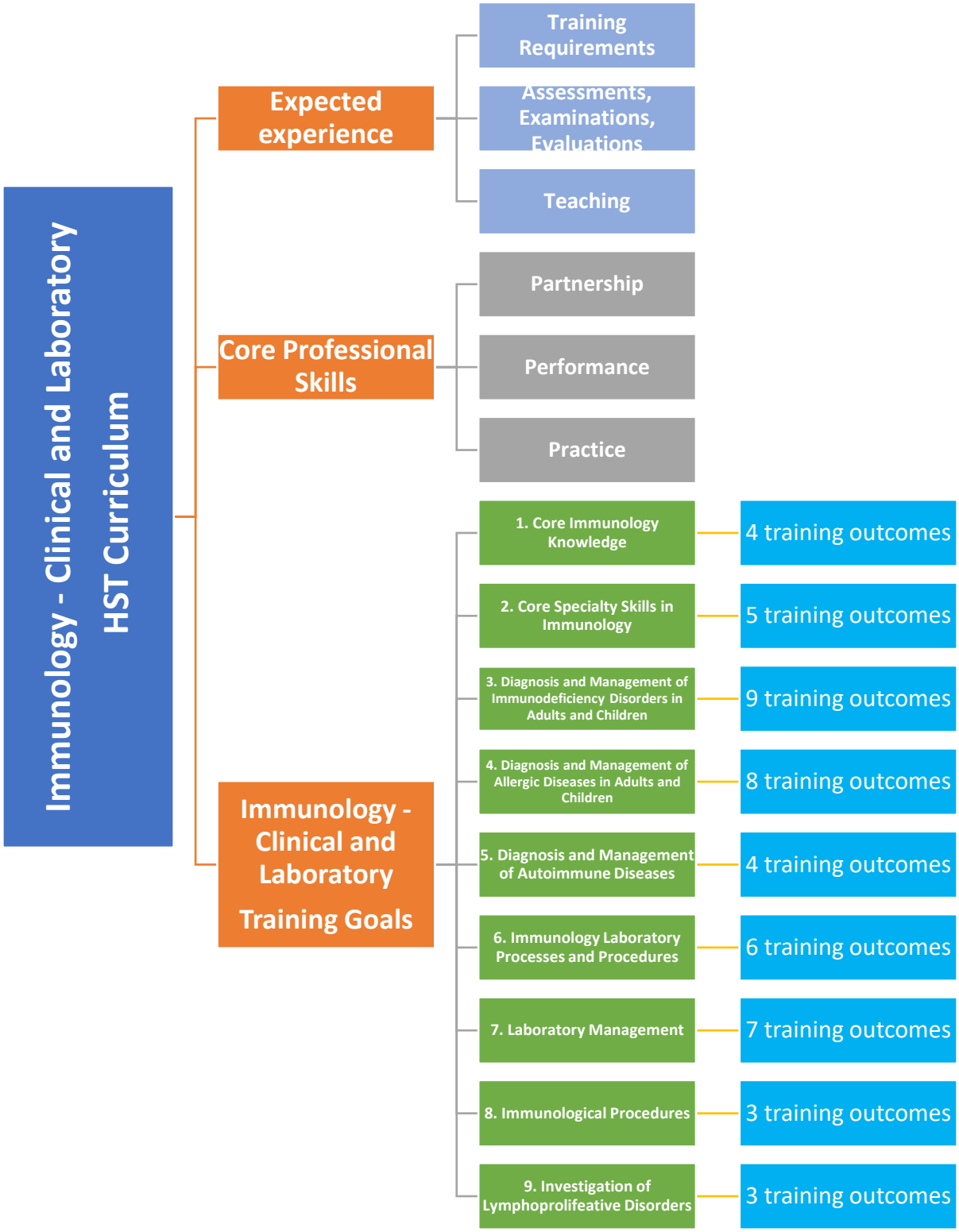
1.4. Reference to rules and regulations

Please refer to the following sections within the Immunology HST Training Handbook for rules and regulations associated with this post. Policies, procedures, relevant documents, and Training Handbooks can be accessed on the RCPI website following this link.

2. EXPECTED EXPERIENCE

This section details the training experience that all Trainees are expected to complete over the course of the higher specialist training

2.1. Programme structure



To complete the HST Training Programme in Immunology, Trainees are expected to observe the following rotations requirements.

Over the course of HST, Trainees are expected to complete:

- 60 months (5 x 12 months) experience in Immunology (including experience in Paediatric Allergy and Immunology where possible)
- Rotation experience will be acquired in each of the three centres in Ireland.
- At the start of each post, trainees are expected to fill out a Personal Goals form with their trainer and upload it on ePortfolio; the form should be agreed and signed by both Trainee & Trainer
- FRCPath Examination Part I, (year 2 or year 3), Part II (year 3 to 5)

Failure to demonstrate satisfactory progress at end of year review or in relation to examinations may result delay training or prevent its completion.

2.2. Clinics list, Ward Rounds and Consultations

Attendance at Clinics, participation in Ward Rounds and Patient Consultations are required elements of all posts throughout the programme. The timetable and frequency of attendance should be agreed with the assigned trainer at the beginning of the post.

This table provides an overview of the expected experience a Specialist Registrar should gain regarding clinics attendance, ward rounds, laboratory activities and consultations.

CLINICAL AND LABORATORY IMMUNOLOGY ACTIVITIES			
Clinic	**Timeline**	**Expected Experience**	**ePortfolio Form**
Immunology	Years 1-5	Attend at least 1 per week	Clinics
Allergy Clinic	Years 1-5	Attend at least 1 per week	
WARD ROUNDS and CONSULTATIONS			
Type	**Timeline**	**Expected Experience**	**ePortfolio Form**
Allergy Day Ward activities	Years 1-5	At least 1 per month	Clinical Activities
Infusion Day Ward reviews, Day Ward Queries, Home therapy training issues	Years 1-5	At least 1 per month	
In patient Consultations	Years 1-5	At least 1 per month	
Immunology Laboratory Time	Years 1-5	At least 1 per week	Clinical Activities
Procedures	Years 1-5	Perform or interpret at least one per week	Clinical Activities
MDT's (either team meeting consisting of multiple healthcare professionals or cross disciplinary)	Years 1-5	Attend at least 1 per week	Clinical Activities
Laboratory Meetings (including monthly quality management meetings, quarterly reviews, annual management reviews)	Years 1-5	Attend at least one per month	Clinical Activities

2.3. In-house commitments

Specialist Registrars are expected to attend a series of in-house commitments as follows:

- Attend at least **1 Grand Rounds per month**
- Attend at least **1 Journal Club per month**
- Attend at least **1 MDT Meeting* per week**
- Attend at least **1 Seminar, teaching session or journal club per month**
- Attend at least **1 Lecture / Webinar per quarter**

*Either the Immunology team consisting of multiple healthcare professionals or a cross disciplinary meeting

2.4. Evaluations, Assessments and Examinations

Specialist Registrars are expected to:

- **3 quarterly evaluation per training year** (1 evaluation per quarter)
- **1 end of post evaluation at the end of each post**
- **1 end of year evaluation at the end of each training year**
- **Complete FRCPath examinations**
- **Regularly update your ePortfolio – this is your record of training and is a vital resource**
- **Complete all relevant workplace based assessments in partnership with your trainer**
- **Complete at least 4 Case Based Discussions each training year, appropriate to the training year**
- **Complete at least 4 Mini CEX each training year, appropriate to the training year**

For more information on evaluations, assessment, and examinations, please refer to the Assessment Appendix at the end of this document.

2.5. Research, Audit and Teaching experiences

Specialist Registrars are expected to complete the following activities:

- Deliver **12 teaching sessions** (to include tutorials, lectures, bedside teaching, etc.) over the course of 5 years of HST
- Deliver **1 oral presentation**, per each year of HST
- Complete **1 Audit or Quality Improvement Project**, per year of HST
- Attend **1 National or International Meeting**, per each year of HST
- Complete **1 research project**, over the course of 5 years of HST
- Complete **1 publication** (may include peer reviewed research, case report or patient information that demonstrates effective written communication or scientific writing,) over the course of 5 years of HST

2.6. Teaching attendance

Specialist Registrars are expected to attend all the courses and study days as detailed in the Teaching Appendix, at the end of this document.

2.7. Overview of Expected Experience

Experience Type	Expected	ePortfolio form
Rotation Requirements	Complete all requirements related to the posts agreed	n/a
Personal Goals	At the start of each post complete a Personal Goals form on ePortfolio, agreed with your trainer and signed by both Trainee & Trainer	Personal Goals
Clinics	Attend Immunology outpatient Clinics as agreed with your trainer and record attendance per each post on ePortfolio	Clinics
Deliver Teaching	Record on ePortfolio all the occurrences where you have delivered Tutorials (at least 1 per Year), Lectures (at least 1 per Year), and Bedside or clinic teaching (at least 4 per Year)	Delivery of Teaching
Research	Desirable Experience: actively participate in research, seek to publish a paper and present research at conferences or national/international meetings	Research Activities
Publication	Complete 1 publication during the training programme	Additional Professional Activities
Presentation	Deliver 1 oral presentation or poster per each year of training	Additional Professional Activities
Audit	Complete and report on an audit or Quality Improvement (QI)per each year of training, either to start, continue or complete	Audit and QI
Attendance at In-House Activities	Attend at least 1 Grand Rounds per month, Attend at least 1 MDT Meeting (see above) per week, Attend at least 1 Seminar/Journal Club/Educational session per month, Attend at least 1 Lecture/Webinar per quarter Record attendance on ePortfolio	Attendance at In-House Activities
National/International Meetings	Attend 1 per year of training	Additional Professional Activities
Teaching Attendance	Attend courses and Study Days as detailed in the Teaching Appendix	Teaching Attendance
Examinations	FRCPath I & II	Examinations
Evaluations and Assessments	Complete a Quarterly Assessment/End of post assessment with your trainer 4 times in each year. Discuss your progress and complete the form.	Quarterly Assessments/End-of-Post Assessments
Workplace-based Assessment	Complete all the workplace-based assessment as agreed with your trainer and complete the respective form.	CBD/DOPS/Mini-CEX

End of Year Evaluation	Prepare for your End of Year Evaluation by ensuring your portfolio is up to date and your End of Year Evaluation form is initiated with your trainer.	End of Year Evaluation

2.8. Overview of Goals and Outcomes

- Core Professional Skills
- Core Immunology Knowledge
- Core Specialty Skills in Immunology
- Diagnosis and Management of Immunodeficiency Disorders in Adults and Children
- Diagnosis and Management of Allergic Diseases
- Diagnosis and Management of Autoimmune Diseases
- Immunology Laboratory Processes and Procedures
- Laboratory Management
- Investigation of Lymphyproliferative Disorders

3. CORE PROFESSIONAL SKILLS

This section includes the Medical Council guidelines for medical professional conduct, regarding Partnership, Performance and Practice

Partnership

Communication and interpersonal skills

- Facilitate the exchange of information, be considerate of the interpersonal and group dynamics, and have a respectful and honest approach
- Engage with patients and colleagues in a respectful manner
- Actively listen to the thoughts, concerns, and opinions of others
- Consider data protection, duty of care and appropriate modes of communication when exchanging information with others

Collaboration

- Collaborate with patients, their families, and your colleagues to work in the best interest of the patient, for improved services and to create a positive working environment
- Work cooperatively with colleagues and team members to deliver an excellent standard of care
- Seek to build trust and mutual respect with patients
- Appropriately share knowledge and information, in compliance with GDPR guidelines
- Take on-board available, relevant feedback

Health Promotion

- Communicate and facilitate discussion around the effect of lifestyle factors on health and promote the ethical practice of evidence-based medicine
- Seek up-to-date evidence on lifestyle factors that:
    - negatively impact health outcomes
    - increase risk of illness
    - positively impact health and decrease risk factors
- Actively promote good health practices with patients individually and collectively

Caring for patients

- Take into consideration patient's individuality, personal preferences, goals, and the need to provide compassionate and dignified care
- Be familiar with
    - Ethical guidelines
    - Local and national clinical care guidelines
- Act in the patient's best interest
- Engage in shared decision-making and discuss consent

Performance

Patient safety and ethical practice

- Put the interest of the patient first in decisions and actions
- React in a timely manner to issues identified that may negatively impact the patient's outcome
- Follow safe working practices that impact patient's safety
- Understand ethical practice and the medical council guidelines
- Support a culture of open disclosure and risk reporting
- Be aware of the risk of abuse, social, physical, financial, and otherwise, to vulnerable persons

Organisational behaviour and leadership

- The activities, personnel and resources that impact the functioning of the team, hospital, and health care system
- Understand and work within management systems
- Know the impacts of resources and necessary management
- Demonstrate proficient self-management

Wellbeing

- Be responsible for own well-being and health and its potential impact on the provision of clinical care and patient outcomes
- Be aware of signs of poor health and well-being
- Be cognisant of the risk to patient safety related to poor health and well-being of self and colleagues
- Manage and sustain your own physical and mental well-being

Practice

Continuing competence and lifelong learning

- Continually seek to learn, improve clinical skills, and understand established and emerging theories in the practice of medicine
- Meet career requirements including those of the medical council, your employer, and your training body
- Be able to identify and optimise teaching opportunities in the workplace and other professional environments
- Develop and deliver teaching using appropriate methods for the environment and target audience

Reflective practice and self-awareness

- Bring awareness to your actions and decisions and engage in critical appraisal of your own work to drive lifelong learning and improve practice
- Pay critical attention to the practical values and theories which inform everyday practice
- Be aware of your own level of practice and your learning needs
- Evaluate and appraise your decisions and actions with consideration as to what you would change in the future
- Seek to role model good professional practice within the health service

Quality assurance and improvement

- Seek opportunities to promote excellence and improvements in clinical care through the audit of practice, active engagement in and the application of clinical research and the dissemination of knowledge at all levels and across teams
- Gain knowledge of quality improvement methodology
- Follow best practices in patient safety
- Conduct ethical and reproducible research

4. Immunology – Clinical and Laboratory – Goals and Outcomes - Overview

This section includes the Immunology (Clinical and Laboratory) goals that the Trainee should achieve by the end of Higher Specialist Training

Each Training Goal is broken down into specific and measurable training outcomes.

*Under each outcome there is an indication of the **suggested** training/learning opportunities and assessment methods.*

To achieve the outcomes, it is recommended to agree the most appropriate training and assessment methods with the assigned Trainer.

Training Goal 1 – Core Immunology Knowledge

By the end of HST Trainees will be expected to have acquired and be able to demonstrate and discuss a significant core body of knowledge in fundamental immunology and its applications. Trainees will be able to integrate and apply this knowledge of the scientific basis of the immune system and the mechanisms that result in disease. The following knowledge points underpin clinical practice and Trainees are expected to be able to integrate this knowledge with general medical skills to assess patients with potential immunological disease. Trainees will also develop the ability to use relevant sources of information including computerised databases and should have the skills to use information resources to keep up to date with the latest developments in this rapidly developing field

- Principles of body self-defence
- The acute phase response and inflammation
- Cells of myelomonocytic lineage – dendritic cells, NK cells
- Innate immunity
- Complement
- The basis of specific immunity
- B and T Lymphocytes
- Organisation of the lymphoid system
- Cytokines, chemokines – origin, structure, effects, site(s) of action, metabolism regulation and gene activation
- Inflammatory mediators – origin, structure, effects, site(s) of action
- Hypersensitivity mechanisms
- Immunoregulation
- Immunodeficiency
- Allergic disease
- Mechanisms of autoimmunity
- Transplantation immunology
- Tumour immunology
- Immunotherapy
- Scientific basis of laboratory immunology

Outcome 1 – Pass FRCPath Part I (Immunology)

Assessment
Pass FRCPath Part I
Feedback opportunities
Personal study and self-directed learning
Journal club presentations
Diploma or MSc course in Immunology or Allergy

Outcome 2 – Pass FRCPath Part II (Immunology)

Assessment
Pass FRCPath Part II
Feedback opportunities
Personal study and self-directed learning

Journal club presentations
Diploma or MSC course in Immunology or Allergy

Outcome 3 – Attend Immunology Study Days

Assessment
Record attendance at study days in ePortfolio (Each year several study days ae organised and delivered in different sites. It is expected that Trainees will attend at least 75% of study days per training year.)

Outcome 4 – Attend suitable local training in each post

Assessment
Record attendance at local training in ePortfolio (Local training is organised in each site and Trainees are expected to attend and record where relevant on ePortfolio. Examples include Grand Rounds, Journal Clubs, Immunology seminars.)

Attend meetings of learned societies

- Irish Association for Allergy and Immunology
- British Society for Immunology
- British Society for Allergy and Clinical Immunology
- European Society for Immunodeficiencies
- European Academy of Allergy and Clinical Immunology

Training Goal 2 – Core Specialty Skills in Immunology

By the end of HST Trainees are expected to be able to assess and manage patients with congenital and acquired immunodeficiency – antibody and cell mediated defects, complement deficiency and neutrophil defects at consultant level. Trainees will also be able to investigate and manage patients with autoimmune/rheumatic diseases and systemic vasculitis and investigate and manage allergy and allergic disease. Trainees will attend outpatient clinics, day wards and consult rounds and record cases and feedback opportunities from senior colleagues.

Outcome 1 – Take a detailed and comprehensive history and perform appropriate physical examination (with a focus on allergic and immunological disease)

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Year 1, as indicated by Trainer in subsequent years

Outcome 2 – Select and Interpret appropriate laboratory and ancillary investigations (e.g. lung function tests, CT scans etc)

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 1-3, as indicated by Trainer in subsequent years

Outcome 3 – Formulate Differential Diagnoses

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 1-3, as indicated by Trainer in subsequent years

Outcome 4 – Prioritise therapeutic interventions

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 2-3, as indicated by Trainer in subsequent years

Outcome 5 – Deliver Effective Scientific Writing and communications (Case Reports, Meeting presentations, Scientific papers, Patient Information Leaflets, SOPs)

Assessment
Feedback opportunities
Submission and review of examples of scientific writing. This may include peer reviewed publications, authorship or amendment of SOPs, production of patient information leaflets. One document should be produced annually for inclusion in e portfolio

Training Goal 3 – Diagnosis and Management of Immunodeficiency Disorders in Adults and Children

By the end of HST Trainees will understand the pathophysiology (including the molecular basis) of immunodeficiency diseases and be able to advise on the appropriate use of laboratory tests for diagnosis, treatment, and prevention of primary and secondary immunodeficiency. Trainees will be able to organise and deliver home care therapy, anticipate, prevent, detect, and manage infections in immunocompromised patients and collaborate with colleagues in Infectious Diseases and Clinical Microbiology.

Specifically, Trainees will demonstrate:

- An in-depth and up to date understanding of inborn errors of immunity and secondary immunodeficiency states and how they are diagnosed, including the genetic and pathological principles underlying these disorders
- An understanding of predisposing factors to recurrent infection that can masquerade as immunodeficiency disorders.
- Proficiency in the therapy of immunodeficiency diseases, evidence-based indications for immunoglobulin replacement therapy, methods of delivery and potential hazards.
- Knowledge of the principles of immunoprophylaxis including advances in the field
- Investigate immunodeficiency disorders in adults and children (in collaboration with paediatricians and paediatric immunologists) presenting with recurrent or unusual infections or symptoms of immunodysregulation
- Provide advice and support appropriate referrals to international centres when more complex interventions e.g., HSCT are required

Knowledge base: Clinical features of inborn errors of immunity and acquired immunodeficiency syndromes, Antibody deficiency disorders including CVID, combined immunodeficiencies, severe combined immunodeficiencies- HIV disease, Complement deficiencies, Phagocyte deficiencies, Asplenia, Genetic studies of immunodeficiency syndromes, Assessment of secondary antibody deficiency, Knowledge of sensitivity, selectivity, specificity of laboratory tests, Awareness of the clinical consequences of HIV infection.

Outcome 1 – Take history and clinically assess patients with suspected primary and secondary immunodeficiency

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 1-3, as indicated by Trainer in subsequent years

Outcome 2 – Provide consultative advice on the diagnosis and management of secondary immunodeficiency

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 1-3, as indicated by Trainer in subsequent years

Outcome 3 – Advise clinically appropriate and cost-effective selection of laboratory tests, including genetic tests, and interpretation of these tests in context of clinical findings

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 1-3, as indicated by Trainer in subsequent years

Outcome 4 – Explain indications, process and risk of immunoglobulin therapy to patients. Manage the patient on immunoglobulin replacement, including structured home therapy reviews and Evaluate the complications of treatment in both hospital and home treatment environments

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 2-4, as indicated by Trainer in subsequent years
Review of home therapy patients

Outcome 5 – Anticipate, prevent, detect and manage infections in immunocompromised patients in close co-operation with other clinical colleagues (e.g. specialists in Infectious Diseases, Microbiology and Virology)

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 3-4, as indicated by Trainer is subsequent years

Outcome 6 – Manage C1 inhibitor deficiency

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 2-4, as indicated by Trainer in subsequent years

Outcome 7 – Provide consultative advice on immunisation to prevent communicable disease (in patients with immunodeficiency and in the general population), including: How to prevent and deal with adverse reactions Immunisation, Contraindications to immunisation, The use of test immunisation to assess immune competence. Demonstrate effective use of information resources to keep up to date with this field

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 2-4, as indicated by Trainer in subsequent years

Outcome 8 – In Collaboration with paediatric immunologists and paediatricians, assess children with recurrent or unusual infections or failure-to-thrive to exclude immunodeficiency diseases and provide advice on appropriate referrals to tertiary-care centres, when more complex interventions e.g. bone marrow transplantation are required.

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 3-5, as indicated by Trainer
Attendance at Paediatric Immunodeficiency clinics (where possible)

OUTCOME 9 – DELIVER APPROPRIATE TRANSITION OF PAEDIATRIC PATIENTS WITH IMMUNODEFICIENCY DISEASES TO ADULT SERVICES

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 3-5, as indicated by Trainer
Attendance at Paediatric Immunodeficiency clinics (where possible)

Training Goal 4 – Diagnosis and Management of Allergic Diseases

By the end of HST Trainees are expected to be able to diagnose and treat allergic diseases as they present in adulthood. Trainees will be expected to support the diagnosis of allergic disease in children. Trainees will be able to diagnose, and manage asthma, rhinitis, conjunctivitis and treat patients' allergic diseases.

Specifically, Trainees will demonstrate the ability to:

- Diagnose, assemble a differential diagnosis, and provide management of atopic diseases, including basic management of asthma and atopic dermatitis and both basic and advanced management of allergic rhinitis and food allergy.
- Assess and treat patients with allergic diseases, including identification of clinically significant allergens and provision of avoidance advice, performance, and interpretation of tests for sensitisation including skin prick and specific IgE testing, symptom & food diaries and allergen challenges as applied to allergy diagnosis.
- Recognise the clinical sequelae of IgE-mediated food allergy, and to distinguish these from intolerance syndromes
- Be familiar with the advantages and disadvantages of skin prick testing, specific IgE testing, exclusion diets, diet diaries and single and double-blind-placebo-controlled food challenge in the diagnosis of food allergy
- Recognise gastro-intestinal disorders which may mimic food allergy and referral of patients for appropriate specialist investigation
- Recognise anxiety and somatisation disorders which may mimic allergic disease – explain pathophysiology to patients and refer for appropriate care
- Analyse and manage allergic adverse reactions to drugs, including general and local anaesthetics, antibiotics and other drugs
- Be familiar with the principles of drug challenge and desensitisation and provide advice in relation to the use of alternate drugs in allergic patients
- Organise the systematic approach to the identification of aetiology, to explain emergency treatment plans, including self-administration of adrenaline and to provide management plans to patients prescribed adrenaline auto-injectors (written where necessary) with appropriate liaison between immunologist, general practitioner, paediatrician, and school where appropriate

Knowledge base: Mechanisms, common causes, clinical features, and differentials of anaphylactic reactions, specific IgE testing and skin testing for allergic sensitisation, Natural history of allergic diseases.

Anaphylaxis, (Chronic & Inducible) Urticaria/Angioedema, Asthma, Rhinitis, Drug & Vaccine allergy, Anaesthetic reactions, Atopic dermatitis, Latex allergy, Venom hypersensitivity. Modalities of allergen immunotherapy and the indications and contraindications in adults and children.

OUTCOME 1 – COMPLETE AN ALLERGY FOCUSED CLINICAL HISTORY IN THE SETTING OF FOOD ALLERGY, DRUG ALLERGY, RHINITIS VENOM ALLERGY AND OTHER RELATED DISORDERS

Assessment
Feedback opportunities

Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 1-3, and as indicated by Trainer in subsequent years

Outcome 2 – Investigate and treat patients with allergic diseases in adults and Support Paediatricians and Paediatric Allergy specialists in Allergy diagnosis, including identification of clinically significant allergens and provision of avoidance advice, performance and interpretation of skin tests, Specific IgE testing, symptom & food diaries and allergen challenges as applied to allergy diagnosis

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 1-3, and as indicated by Trainer in subsequent years

Outcome 3 – Recognise the clinical sequelae of IgE-mediated food allergy, and to distinguish these from intolerance syndromes, and other mimic disorders including anxiety and somatisation disorders

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 1-3, and as indicated by Trainer in subsequent years

Outcome 4 – Be familiar with the principals of and be able to perform unblinded, single and double-blind-placebo-controlled food and medication challenges in the correct clinical settings

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 1-3, and as indicated by Trainer in subsequent years

Outcome 5 – Analyse and manage allergic adverse reactions to drugs, including general and local anaesthetics, antibiotics and other Medications

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 1-3, and as indicated by Trainer in subsequent years
Attendance at drug allergy clinics or day ward sessions

Outcome 6 – Organise the systematic approach to the identification of aetiology, to explain emergency treatment plans, including self-administration of adrenaline in adults and children and to provide management plans to patients prescribed adrenaline auto-injectors (written where necessary) with appropriate liaison between immunologist, general practitioner, and other clinicians

Assessment
Feedback Opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 1-3, and as indicated by Trainer in subsequent years

Outcome 7 – Be familiar with the principles of allergen desensitisation in the treatment of allergic rhinitis and venom allergy and be aware of emerging indications for immunotherapy in the setting of food allergy

Be familiar with the principles of allergen desensitisation in the treatment of allergic rhinitis and venom allergy. Be aware of emerging indications for immunotherapy in the setting of food allergy Be aware of emerging indications for immunotherapy in the setting of food allergy

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) -

Outcome 8 – Deliver appropriate transition of Paediatric Patients with Allergic Diseases to adult services

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) –
Attendance at Paediatric allergy clinics (where available)

Training Goal 5 – Diagnosis and Management of Autoimmune Diseases

By the end of HST Trainees will be able to diagnose a range of autoimmune diseases, demonstrate an understanding of the immunopathogenesis of these disorders and be able to advise and administer a range of immunosuppressive therapies. Trainees will be competent in monitoring patients with autoimmune disease to prevent/minimise adverse effects of therapy.

Specifically, Trainees will demonstrate the ability to:

- Diagnose, investigate, and manage/undertake appropriate referral for management of connective tissue diseases, vasculitis and autoinflammatory disorders.
- Advise in the management of autoimmune skin diseases
- Undertake immunosuppressive and immunomodulatory therapy

Knowledge base: Diagnosis and management of Systemic Lupus Erythematosus, Rheumatoid Arthritis and Seronegative Arthropathies, Connective Tissue Disease, Autoinflammatory Disorders, Systemic vasculitis Disorders, Autoimmune diseases.

Therapies of Autoimmune diseases – Immunosuppressive drugs, principles of high dose IVIg, therapeutic monoclonal antibodies, plasma exchange, use of interferon, and knowledge of precautions applied during the use of such therapies.

Outcome 1 – Diagnose, investigate and manage/undertake appropriate referral for management of connective tissue disease such as systemic lupus erythematosus, rheumatoid arthritis and seronegative arthropathies, autoinflammatory syndromes and systemic vasculitis disorders

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years
Attendance at Autoimmune disease and/or Rheumatology clinics

Outcome 2 – Advise in the Diagnosis of autoimmune skin diseases, autoimmune liver diseases, autoimmune endocrine diseases, autoimmune gastro-intestinal diseases, autoimmune neuromuscular diseases and other rare autoimmune diseases

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years

Outcome 3 – advise in the diagnosis of neuroimmunological disorders and other rare autoimmune diseases: Manage or refer appropriately for treatment including immunosuppressive and immunomodulatory therapy (high dose intravenous immunoglobulin therapy, plasma exchange, immunosuppressive drugs, and biological agents)

Assessment
Feedback opportunities

Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years

Outcome 4 – Monitoring patients with autoimmune disease to prevent/minimise adverse effects of therapy

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 2-3, and/or as indicated by Trainer in subsequent years

Training Goal 6 – Immunology Laboratory Processes and Procedures

By the end of HST Trainees are expected to have the skills and knowledge to be able to direct a diagnostic immunology laboratory at consultant level. While Trainees are expected to liaise with the laboratory throughout the programme, the relative importance of this goals will increase with progression through the programme.

Specifically, Trainees will demonstrate the ability to:

- Select appropriate immunology tests, interpret results of the tests, and make clinical judgements based on the results.
- Be aware of the advantages and limitations of assays used in the immunology laboratory
- Be able to assess and use Quality Control and Quality Assessment data as it pertains to immunology assays
- Be able to investigate laboratory non-conformances in a systematic way
- Have an in-depth understanding of immunology laboratory quality management systems

Knowledge base:

- Measurement and analysis of proteins
- Detection of Antibody-Antigen reactions
- Fluorescence microscopy – Indirect immunofluorescence to detect autoantibodies
- Key technologies of molecular biology
- Immunological assays) including measurements of immunoglobulin and other relevant circulating proteins by various methods including turbidimetry, nephelometry, protein immunoblot
- Serum protein electrophoresis by gel and capillary zone methodologies
- Complement components and activation pathways
- Detection of autoantibodies
- Direct immunofluorescence of biopsy tissue
- Flow cytometry
- Oligoclonal antibody detection in CSF
- Principles of Histocompatibility and Immunogenetics
- Laboratory Practice (QC, QA, Assay validation, SOP's, Non-conformance investigation and root cause analysis)

Outcome 1 – Select, interpret and provide clinical advice based on laboratory investigations relevant to the diagnosis, assessment and monitoring of patients with suspected immunodeficiency, allergy or autoimmunity

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years

Outcome 2 – Write succinct, relevant and understandable reports in response to requests for investigation

Assessment

Regular Informal feedback
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years

Outcome 3 – Perform and interpret results of procedures and investigations, which are in routine use in the immunology laboratory

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years
Immunology laboratory experience (record hours where possible)

Outcome 4 – Assess quality control data and trouble shoot assays in routine use in the immunology laboratory

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years
Participation in laboratory meetings

Outcome 5 – Contribute to choice of assay & Deliver assay validation

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years

Outcome 6 – Understand and Explain principles, procedures, and investigations supporting solid organ transplantation

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years

Training Goal 7 – Laboratory Management

By the end of HST the Trainee is expected to have the skills to manage a diagnostic immunology laboratory. This will mean significant laboratory experience, particularly in the latter part of the programme (years 4 and 5), involvement in accreditation maintenance and inspections and laboratory quality improvement projects.

Specifically, Trainees will demonstrate the ability to:

- Manage the processes of the laboratory, including quality management systems, accreditation, QA, and QC

Knowledge base: Process management, Human Resource management, financial management, Business management and or, Demand Management, Organisational structure in the health service, Quality Assurance and Quality Control, Health, and Safety

Outcome 1 – Apply a structured approach to the routine operation of the Immunology laboratory

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years
HST Leadership for Pathology course
HST Core Pathology courses

Outcome 2 – Use standardised structured approaches to assay trouble-shooting and the maintenance of quality, the role of external agencies (including NEQAS and INAB) involved/associated with quality assurance

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years
HST Leadership for Pathology course
HST Core Pathology courses

Outcome 3 – Undertake option appraisals and prepare a business case

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years
HST Leadership for Pathology course
HST Core Pathology courses

Outcome 4 – Contribute to all aspects of maintenance of laboratory accreditation

Assessment

Regular Informal feedback
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years
HST Leadership for Pathology course
HST Core Pathology courses

OUTCOME 5 – CONTRIBUTE POSITIVELY TO THE LABORATORY'S QUALITY IMPROVEMENT PROGRAMME

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years
HST Leadership for Pathology course
HST Core Pathology courses

OUTCOME 6 – CONTRIBUTE TO STRATEGIC PLANNING IN THE LABORATORY

Assessment
Regular Informal feedback
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years
HST Leadership for Pathology course
HST Core Pathology courses

OUTCOME 7 – CONTRIBUTE TO DEMAND MANAGEMENT

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 4-5, and/or as indicated by Trainer in previous years
HST Leadership for Pathology course
HST Core Pathology courses

Training Goal 8 – Immunological Procedures

By the end of HST the Trainee is expected to become proficient in performing procedures on patients, prescribe immunoglobulin replacement therapy, educate patients on the treatment of anaphylaxis, and perform skin prick testing, and interpret other related investigations.

Knowledge base

- Administration of Immunoglobulin (IV)
- Administration of Immunoglobulin (SC)
- Lung function tests: interpretation
- Skin prick testing
- Intradermal testing
- Imaging: appropriate ordering and interpretation
- Protocol for systematic investigation of anaphylaxis
- Protocol for emergency management of anaphylaxis in adults and children
- Management of home therapy programmes
- Understanding of principles and applications of patch testing

Outcome 1 – Use a range of clinical skills as they apply to internal medicine but in particular in dealing with clinical immunological disorders

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD or DOPS) - Regular in Years 1-3, and/or as indicated by Trainer in subsequent years
Attendance at pulmonary function department, MDT meetings and education sessions

Outcome 2 – Perform and interpret practical tests of allergen sensitisation including skin prick testing and intradermal testing and allergy challenge testing

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD or DOPS) - Regular in Years 1-3, and/or as indicated by Trainer in subsequent years
Attendance allergy clinics and day wards
Attendance at Pulmonary function department
Attendance at appropriate Respiratory clinics (where possible)

Outcome 3 – administer immunoglobulin replacement therapy, Understand the principals of training in home therapy programmes for immunoglobulin replacement

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD or DOPS) - Regular in Years 1-3, and/or as indicated by Trainer in subsequent years
Attendance at Immunodeficiency day wards

Training Goal 9 – Investigation of Lymphoproliferative Disorders

By the end of HST Trainees will be able to investigate and diagnose lymphoproliferative disorders and myelomatosis and refer appropriately. Trainees will experience laboratory exposure to immunophenotyping, and laboratory experience in immunocytochemistry and attendance at bone marrow MDT's and haematology clinics.

Knowledge base:

- Knowledge of presentations, investigations, and diagnosis of:
  - Paraproteins
  - Multiple Myeloma
  - B-Cell malignancies
  - T-Cell malignancies
- Understand and be able to explain principles underlying haematopoietic stem cell transplantation

Outcome 1 – Contribute to the Diagnosis of lymphoproliferative disease and myeloma and refer appropriately to haematology services

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 3-4, and/or as indicated by Trainer in previous and subsequent years

Outcome 2 – Investigate and manage secondary immunodeficiency

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 3-4, and/or as indicated by Trainer in previous and subsequent years

Outcome 3 – Knowledge of presentations, investigations and diagnosis of T-Cell malignancies, Multiple Myeloma and MGUS, B-Cell malignancies

Assessment
Feedback opportunities
Workplace Based Assessment (Mini-CEX or CBD) - Regular in Years 3-4, and/or as indicated by Trainer in previous and subsequent years

5. APPENDICES

This section includes the assessment and teaching appendix

ASSESSMENT APPENDIX

Workplace-Based Assessment and Evaluations

The expression "workplace-based assessments" (WBA) defines all the assessments used to evaluate trainees' daily clinical practices employed in their work setting. It is primarily based on the observation of trainees' performance by trainers. Each observation is followed by a trainer's feedback, with the intent of fostering reflective practice.

Relevance of Feedback for WBA

Although "assessment" is the keyword in WBA, it is necessary to acknowledge that feedback is an integral part and complementary component of WBA. **Any senior clinician or experienced immunology nurses and scientists can play a role in WBA under the supervision of the local trainer**. The main purpose of WBA is to provide specific feedback for trainees. Such feedback is expected to be:

- **Frequent**: the opportunities to provide feedback are preferably given by directly observed practice, but also by indirectly observed activities. Feedback is expected to be frequent and should concern a low-stake event. Rather than being an assessor, the trainer is an observer who is asked to provide feedback in the context of the training opportunity presented at that moment.
- **Timely**: preferably, the feedback should be a direct conversation between trainer and trainee in a timeframe close to the training event. The trainee should then record the feedback on ePortfolio in a timely manner.
- **Constructive**: the recorded feedback would inform both trainee's practice for future performance and committees for evaluations. Hence, feedback should provide trainees with behavioural guidance on how to improve performance and give committees the context that leads to a rating, so that progression or remediation decisions can be made.

Types of WBAs in use at RCPI

There is a variety of WBAs used in medical education. They can be categorised into three main groups: *Observation of performance*; *Discussion of clinical cases*; *Feedback; Mandatory Evaluations*.

As WBAs at RCPI we use *Observation of performance* via MiniCEX and DOPS; *Discussion of clinical cases* via CBD; *Feedback* via Feedback Opportunity.

Mandatory Evaluations are bound to specific events or times of the academic year, for these at RCPI we use: Quarterly Evaluation/End of Post Evaluation; End of Year Evaluation; Penultimate Year Evaluation; Final Year Evaluation.

Recording WBAs on ePortfolio

It is expected that WBAs are logged on an electronic portfolio. Every trainee has access to an individual ePortfolio where they must record all their assessments, including WBAs. By recording assessments on this platform, ePortfolio serves both the function to provide an individual record of the assessments and to track trainees' progression.

Formative and Summative Feedback

The Trainee can record any WBA either as formative or summative with the exception of the *Mandatory Evaluations* (Quarterly/End of Post, End of Year, Penultimate Year, Final Year evaluations).

If the WBA is logged as formative, the trainee can retain the feedback on record, but this will not be visible to an assessment panel, and it will not count towards progression. If the WBA is logged as summative it will be regularly recorded and it will be fully visible to assessment panels, counting towards progression.

WORKPLACE-BASED ASSESSMENTS	
CBD |*Case Based Discussion*	This assessment is developed in three phases: 1. Planning: The trainee selects two or more medical records to present to the trainer who will choose one for the assessment. Trainee and trainer identify one or more training goals in the curriculum and specific outcomes related to the case. Then the trainer prepares the questions for discussion. 2. Discussion: Prevalently, based on the chosen case, the trainer verifies the trainee's clinical reasoning and professional judgment, determining the trainee's diagnostic, decision-making and management skills. 3. Feedback: The trainer provides constructive feedback to the trainee. It is good practice to complete at least one CBD per quarter in each year of training.
DOPS | *Direct Observation of Procedural Skills*	This assessment is specifically targeted at the evaluation of procedural skills involving patients in a single encounter. In the context of a DOPS, the trainer evaluates the trainee while they are performing a procedure as a part of their clinical routine. This evaluation is assessed by completing a form with pre-set criteria, then followed by direct feedback.
Mini-CEX | *Mini Clinical Examination Exercise*	The trainer is required to observe and assess the interaction between the trainee and a patient. This assessment is developed in three phases: 1. The trainee is expected to conduct a history taking and/or a physical examination of the patient within a standard timeframe (15 minutes). 2. The trainee is then expected to suggest a diagnosis and management plan for the patient based on the history/examination. 3. The trainer assesses the overall trainee's performance by using the structured ePortfolio form and provides constructive feedback.
Feedback Opportunity	Designed to record as much feedback as possible. It is based on observation of the trainees in any clinical and/or non-clinical task. Feedback can be provided by anyone observing the trainee (peer, other supervisors, healthcare staff, juniors). It is possible to turn the feedback into an assessment (CDB, DOPS or MiniCEX)
MANDATORY EVALUATIONS	
QE |*Quarterly Evaluation*	As the name suggests, the Quarterly Evaluation recurs four times in the academic year, once every academic quarter (every three months). It frequently happens that a Quarterly Evaluation coincides with the end of a post, in which case the Quarterly Evaluation will be substituted by completing an End of Post Evaluation. In this sense the two evaluations are interchangeable, and they can be completed using the same form on ePortfolio. However, if the trainee will remain in the same post at the end of the quarter, it will be necessary to complete a Quarterly Evaluation. Similarly, if the end of a post does not coincide with the end of a quarter, it will be necessary to complete an End of Post Evaluation to assess the end of a post. This means that for every specialty and level of training, a minimum of four Quarterly Evaluation and/or End of Post Evaluation will be completed in an academic year as a mandatory requirement.
EOP | *End of Post Evaluation*	
EOYA | *End of Year Evaluation*	The End of Year Evaluation occurs once a year and involves the attendance of an evaluation panel composed of the National Specialty Directors (NSDs); the Specialty Coordinator attends too, to keep records of and facilitate the meeting. The assigned trainer is not supposed to attend this meeting unless there is a valid reason to do so. These meetings are scheduled by the respective Specialty Coordinators and happen sometime before the end of the academic year (between April and June).
PYE | *Penultimate Year Evaluation*	The Penultimate Year Evaluation occurs in place of the End of Year Evaluation, in the year before the last year of training. It involves the attendance of an evaluation panel composed of the National Specialty Directors (NSDs) and an External Member who is a recognised expert in the Specialty outside of Ireland; the Specialty Coordinator attends too, to keep records of and facilitate the meeting. The assigned trainer is not supposed to attend this meeting unless there is a valid reason to do so.
FYE | *Final Year Evaluation*	In the last year of training, the End of Year Evaluation is conventionally called Final Year Evaluation, however, its organisation is the same as an End of Year Evaluation.

TEACHING APPENDIX

Courses

ACLS

Ethics Foundation

Ethics for Pathology

Core Pathology

An Introduction to Health Research Methods

HST Leadership in Pathology (> Year 3)

Mastering Communication (Year 1)

Performing Audit (Year 1)

Wellness Matters

Management Course (Year 4/5)

Study Days

Study days vary from year to year, they comprise a rolling schedule of hospital-provided topic-specific educational days and national/international events selected for their relevance to the Neurology HST curriculum.

Trainees are expected to attend the study days available.

