



FACULTY OF PATHOLOGY

ROYAL COLLEGE OF
PHYSICIANS OF IRELAND

HIGHER SPECIALIST TRAINING IN

IMMUNOLOGY



This curriculum of training in Immunology was developed in 2012 and undergoes an annual review by Dr Niall Conlon, National Specialty Directors, Dr Ann O’Shaughnessy, Head of Postgraduate Training and Education, and by the Immunology Training Committee. The curriculum is approved by the Faculty of Pathology.

Version	Date Published	Last Edited By	Version Comments
11.0	01 July 2022	Keith Farrington	Changes to form names

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Introduction

Immunology is a medical discipline which encompasses both clinical and laboratory aspects. In addition to carrying responsibility for running service laboratories, Immunologists are increasingly engaged in clinical management of patients. Their training has thus to address both the technical and managerial skills of the laboratory and the clinical skills relating to patient care. The discipline of Immunology includes allergy.

Besides these specialty specific elements, trainees in Immunology must also acquire certain core competencies which are essential for good medical practice. These comprise the generic components of the curriculum.

Aims

Upon satisfactory completion of specialist training in Immunology, the doctor will be **competent** to undertake comprehensive medical practice in that specialty in a **professional** manner, unsupervised and independently and/or within a team, in keeping with the needs of the healthcare system.

Competencies, at a level consistent with practice in the specialty of Immunology, will include the following:

- Patient care that is appropriate, effective and compassionate dealing with health problems and health promotion.
- Medical knowledge in the basic biomedical, behavioural and clinical sciences, medical ethics and medical jurisprudence and application of such knowledge in patient care.
- Scientific knowledge of basic immunology and its application to patient care.
- Competence to direct a clinical immunology laboratory
- Interpersonal and communication skills that ensure effective information exchange with individual patients and their families and teamwork with other health professionals, the scientific community and the public.
- Appraisal and utilisation of new scientific knowledge to update and continuously improve clinical practice.
- The ability to function as a supervisor, trainer and teacher in relation to colleagues, medical students and other health professionals.
- Capability to be a scholar, contributing to development and research in the field of Immunology.
- Professionalism.
- Knowledge of public health and health policy issues: awareness and responsiveness in the larger context of the health care system, including e.g. the organisation of health care, partnership with health care providers and managers, the practice of cost-effective health care, health economics and resource allocations.
- Ability to understand health care and identify and carry out system-based improvement of care.

Professionalism:

Being a good doctor is more than technical competence. It involves values – putting patients first, safeguarding their interests, being honest, communicating with care and personal attention, and being committed to lifelong learning and continuous improvement. Developing and maintaining values are important; however, it is only through putting values into action that doctors demonstrate the continuing trustworthiness with the public legitimately expect. According to the Medical Council, Good Professional Practice involves the following aspects:

- Effective communication
- Respect for autonomy and shared decision-making
- Maintaining confidentiality
- Honesty, openness and transparency (especially around mistakes, near-misses and errors)
- Raising concerns about patient safety
- Maintaining competence and assuring quality of medical practice
-

- **Entry Requirements**

- Applicants for Higher Specialist Training (HST) in Immunology must have a certificate of completion in Basic Specialist Training (BST) in General Internal Medicine and obtained the MRCPI
- OR
- Equivalent, i.e. satisfactorily completed two years in approved senior house officer / registrar posts in Ireland and obtained the MRCPI
- OR
- Equivalent outside Ireland, i.e. satisfactorily completed two years in an approved training programme outside Ireland and obtained the MRCPI.
- Those who do not hold a BST certificate and MRCPI must provide evidence of equivalency. MRCPUK will be considered as equivalent for the purpose of applying to Higher Specialist Training in Immunology.
- Entry on the training programme is at year 1. Deferrals are not allowed in entry to Higher Specialist Training.
- A period of experience in Immunology at Senior House Officer (SHO) or Registrar grade is desirable, but not essential before entry to HST. Other medical specialties particularly relevant to the practice of Clinical Immunology include: Rheumatology, nephrology, infectious diseases, respiratory medicine, dermatology, haematology and paediatrics. Higher Specialist Training in Immunology is open to applicants with a diversity of relevant previous experience. Applicants for entry to the specialty should recognise the advantage of additional training time spent (1 year) in the general specialist training grades in order to gain a broad range of experience.

Duration & Organisation of Training

In the SpR grade, trainees will continue to work under Consultant supervision in the Immunology service, gradually widening their knowledge and experience in each area so that by the time they have passed the FRCPATH Part II they are able to work largely independently. The exact rotational arrangements will vary according to the development of departments in the various regional centres, the number of placements on the training scheme and the number of other trainees in the Training Programme. The training scheme should be organised in such a way as to give each trainee some experience in most recognised areas of sub-specialisation. More formal teaching and nationally organised training courses will supplement the day-to-day supervised training.

SpRs have time available for participation in research projects as part of their training. The more academically inclined trainees will be encouraged to take time out from the training time to include a more sustained period of grant-funded research, working towards an MD or PhD. One year of this research time can count towards the five years needed for the acquisition of a CSCST.

The nature of Specialist Registrar training in Immunology is such that it is not appropriate to specify individual skills to be acquired by the end of any year; rather the five years should be looked at as a whole so that by the end of the training period the overall objectives listed in the following sections will have been achieved. Training Programmes will include suitable rotations to cover all the necessary areas of experience and will include secondments to related specialities to ensure that each trainee gains the breadth of experience needed for their future career. Some areas of training are considered optional, however if a trainee wishes to develop competence in such areas, rotations will be modified accordingly, or the trainee will be encouraged to undertake an additional year of subspecialty training.

The total **minimum** time for completion of training in Immunology and award of a CSCST is 5 years.

Satisfactory completion is consequent upon acquisition of FRCPATH Part II which can only be undertaken after a minimum of 4½ years total training time in the Specialty.

Rotation on the immunology programme involves time spent at Beaumont Hospital Dublin, St. James Hospital, Dublin and University Hospital Galway.

Training Programme

The training programme offered will provide opportunities to fulfil all the requirements of the curriculum of training for Immunology in approved training hospitals. Each post within the programme will have a named trainer/educational supervisor and programmes will be under the direction of the National Specialty Director for Immunology. Programmes will be as flexible as possible consistent with curricular requirements, for example to allow the trainee to develop a sub-specialty interest.

The experience gained through rotation around different departments is recognised as an essential part of HST. A Specialist Registrar may **not** remain in the same unit for longer than 2 years of clinical training

Where an essential element of the curriculum is missing from a programme, access to it should be arranged, by day release for example, or if necessary by secondment.

Assessment Process

The methods used to assess progress through training must be valid and reliable. The Immunology Curriculum has been re-written, describing the levels of competence which can be recognised. The assessment grade will be awarded on the basis of direct observation in the workplace by consultant supervisors. Time should be set aside for appraisal following the assessment e.g. of clinical presentations, case management, observation of procedures.

As progress is being made, the lower levels of competence will be replaced progressively by those that are higher. Where the grade for an item is judged to be deficient for the stage of training, the assessment should be supported by a detailed note which can later be referred to at annual review. The assessment of training may utilise the Mini-CEX, DOPS and Case Based Discussions (CBD) methods adapted for the purpose. These methods of assessment have been made available by HST

for use at the discretion of the NSD and nominated trainer. They are offered as a means of providing the trainee with attested evidence of achievement in certain areas of the Curriculum e.g. competence in procedural skills, or in generic components. Assessment will also be supported by the trainee's portfolio of achievements and performance at relevant meetings, presentations, audit, in tests of knowledge, attendance at courses and educational events.

The FRCPATH Examinations will be the main objective assessments of progress. Part I of the FRCPATH is a test of knowledge which can be taken after a minimum of two years training. FRCPATH Part II may be taken after a minimum of four and a half years total training time, of which three and a half years must have been at the SpR grade. Both of these examinations can be taken in Immunology.

The Faculty of Pathology and ICHMT will determine the date of completion of training having regard to:

1. acquisition of FRCPATH by examination **and**
2. satisfactory completion of all the requirements of the Curriculum in a recognised Training Programme.

The Faculty of Pathology will forward their recommendations to the ICHMT for issuance of a Certificate of Satisfactory Completion of Specialist Training (CSCST) in Immunology. This certificate can then be used, along with such other documents as may be required, for an application to the Medical Council for entry to the Register of Specialists and, where appropriate, for issuance of the Council's Certificate of Specialist Doctor (CSD).

Generic Components

This chapter covers the generic components which are relevant to HST trainees of all specialties but with varying degrees of relevance and appropriateness, depending on the specialty.

As such, this chapter needs to be viewed as an appropriate guide of the level of knowledge and skills required from all HST trainees with differing application levels in practice.

Good Professional Practice

Objective: Trainees must appreciate that medical professionalism is a core element of being a good doctor and that good medical practice is based on a relationship of trust between the profession and society, in which doctors are expected to meet the highest standards of professional practice and behaviour.

Medical Council Domains of Good Professional Practice: Relating to Patients, Communication and Interpersonal Skills, Professionalism, Patient Safety and Quality of Patient Care.

KNOWLEDGE

Effective Communication

- How to listen to patients and colleagues
- The principles of open disclosure
- Knowledge and understanding of valid consent
- Teamwork
- Continuity of care

Ethics

- Respect for autonomy and shared decision making
- How to enable patients to make their own decisions about their health care
- How to place the patient at the centre of care
- How to protect and properly use sensitive and private patient information in accordance with data protection legislation and how to maintain confidentiality
- The judicious sharing of information with other healthcare professionals where necessary for care following Medical Council Guidelines
- Maintaining competence and assuring quality of medical practice
- How to work within ethical and legal guideline when providing clinical care, carrying research and dealing with end of life issues

Honesty, openness and transparency (mistakes and near misses)

- Preventing and managing near misses and adverse events.
- When and how to report a near miss or adverse event
- Incident reporting; root cause and system analysis
- Understanding and learning from errors
- Understanding and managing clinical risk
- Managing complaints
- Following open disclosure practices
- Knowledge of national policy and National Guidelines on Open Disclosure

Raising concerns about patient safety

- Safe working practice, role of procedures and protocols in optimal practice
- The importance of standardising practice through the use of checklists, and being vigilant
- Safe healthcare systems and provision of a safe working environment
- Awareness of the multiple factors involved in failures
- Knowledge and understanding of Reason's Swiss cheese model
- Understanding how and why systems break down and why errors are made
- Health care errors and system failures
- Human and economic costs in system failures
- The important of informing a person of authority of systems or service structures that may lead to unsafe practices which may put patients, yourself or other colleagues at risk
- Awareness of the Irish Medical Councils policy on raising concerns about safety in the environment in which you work

SKILLS

- Effective communication with patients, families and colleagues
- Co-operation and collaboration with colleagues to achieve safe and effective quality patient care
- Being an effective team player
- Ethical and legal decision making skills
- Minimising errors during invasive procedures by developing and adhering to best-practice guidelines for safe surgery
- Minimising medication errors by practicing safe prescribing principles
- Ability to learn from errors and near misses to prevent future errors
- Managing errors and near-misses
- Using relevant information from complaints, incident reports, litigation and quality improvement reports in order to control risks
- Managing complaints
- Using the Open Disclosure Process Algorithm

ASSESSMENT & LEARNING METHODS

- Consultant feedback at annual assessment
- Workplace based assessment e.g. Mini-CEX, DOPS, CBD
- Educational supervisor's reports on observed performance (in the workplace): prioritisation of patient safety in practice
- RCPI HST Leadership in Clinical Practice
- RCPI Ethics programmes
- Medical Council Guide to Professional Conduct and Ethics
- Reflective learning around ethical dilemmas encountered in clinical practice
- Quality improvement methodology course - recommended

Infection Control

Objective: To be able to appropriately manage infections and risk factors for infection at an institutional level, including the prevention of cross-infections and hospital acquired infection

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care; Management (including Self-Management).

KNOWLEDGE

Within a consultation

- The principles of infection control as defined by the HIQA
- How to minimise the risk of cross-infection during a patient encounter by adhering to best practice guidelines available, including the 5 Moments for Hand Hygiene guidelines
- The principles of preventing infection in high risk groups e.g. managing antibiotic use to prevent *Clostridium difficile*
- Knowledge and understanding of the local antibiotic prescribing policy
- Awareness of infections of concern, e.g. MRSA, *Clostridium difficile*
- Best practice in isolation precautions
- When and how to notify relevant authorities in the case of notifiable infectious disease
- Understanding the increased risk of infection to patients in surgery or during an invasive procedure and adhering to guidelines for minimising infection in such cases
- The guidelines for needle-stick injury prevention and management

During an outbreak

- Guidelines for minimising infection in the wider community in cases of communicable diseases and how to seek expert opinion or guidance from infection control specialists where necessary
- Hospital policy/seeking guidance from occupational health professional regarding the need to stay off work/restrict duties when experiencing infections the onward transmission of which might impact on the health of others

SKILLS

- Practicing aseptic techniques and hand hygiene
- Following local and national guidelines for infection control and management
- Prescribing antibiotics according to antibiotic guidelines
- Encouraging staff, patients and relatives to observe infection control principles
- Communicating effectively with patients regarding treatment and measures recommended to prevent re-infection or spread
- Collaborating with infection control colleagues to manage more complex or uncommon types of infection including those requiring isolation e.g. transplant cases, immunocompromised host
- In the case of infectious diseases requiring disclosure:
 - Working knowledge of those infections requiring notification
 - Undertaking notification promptly
 - Collaborating with external agencies regarding reporting, investigating and management of notifiable diseases
 - Enlisting / requiring patients' involvement in solving their health problems, providing information and education
 - Utilising and valuing contributions of health education and disease prevention and infection control to health in a community

ASSESSMENT & LEARNING METHODS

- Consultant feedback at annual assessment
- Workplace based assessment e.g. Mini-CEX, DOPS, CBD
- Educational supervisor's reports on observed performance (in the workplace): practicing aseptic techniques as appropriate to the case and setting, investigating and managing infection, prescribing antibiotics according to guidelines
- Completion of infection control induction in the workplace
- Personal Protective Equipment Training Course (In hospital)

Self-Care and Maintaining Well-Being

Objectives:

1. To ensure that trainees understand how their personal histories and current personal lives, as well as their values, attitudes, and biases affect their care of patients so that they can use their emotional responses in patient care to their patients' benefit
2. To ensure that trainees care for themselves physically and emotionally, and seek opportunities for enhancing their self-awareness and personal growth

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care, Relating to Patients, Communication and Interpersonal Skills, Collaboration and Teamwork, Management (including self-management).

KNOWLEDGE

- Self-awareness including preferences and biases
- Personal psychological strengths and limitations
- Understand how personality characteristics, such as need for approval, judgemental tendencies, needs for perfection and control etc., affect relationships with patients and others
- Knowledge of core beliefs, ideals, and personal philosophies of life, and how these relate to own goals in medicine
- Know how family-of-origin, race, class, religion and gender issues have shaped own attitudes and abilities to discuss these issues with patients
- Understand the difference between feelings of sympathy and feelings of empathy
- Know the factors between a doctor and patient that enhance or interfere with abilities to experience and convey empathy
- Understanding of own attitudes toward uncertainty and risk taking and own need for reassurance
- How own relationships with certain patients can reflect attitudes toward paternalism, autonomy, benevolence, non-maleficence and justice
- Recognise own feelings in straightforward and complex patient-doctor interactions
- Recognising the symptoms of stress and burn out

SKILLS

- Exhibiting empathy and showing consideration for all patients, their impairments and attitudes irrespective of cultural and other differences
- Ability to create boundaries with patients that allow for therapeutic alliance
- Challenge authority appropriately from a firm sense of own values and integrity and respond appropriately to situations that involve abuse, unethical behaviour and coercion
- Recognise own limits and seek appropriate support and consultation
- Work collaboratively and effectively with colleagues and other members of health care teams
- Manage effectively commitments to work and personal lives, taking the time to nurture important relationship and oneself
- Ability to recognise when falling behind and adjusting accordingly
- Demonstrating the ability to cope with changing circumstances, variable demand, being prepared to re-prioritise and ask for help
- Utilising a non-judgemental approach to patient's problem
- Recognise the warning signs of emotional ill-health in self and others and be able to ask for appropriate help
- Commitment to lifelong process of developing and fostering self-awareness, personal growth and well being
- Be open to receiving feedback from others as to how attitudes and behaviours are affecting their care of patients and their interactions with others
- Holding realistic expectations of own and of others' performance, time-conscious, punctual
- Valuing the breadth and depth of experience that can be accessed by associating with professional colleagues

ASSESSMENT & LEARNING METHODS

- On-going supervision
- RCPI Ethics programmes
- Wellness Matters Course
- RCPI HST Leadership in Clinical Practice course

Communication in Clinical and Professional Setting

Objective: To demonstrate the ability to communicate effectively and sensitively with patients, their relatives, carers and with professional colleagues in different situations.

Medical Council Domains of Good Professional Practice: Relating to Patients; Communication and Interpersonal Skills.

KNOWLEDGE

Within a consultation

- How to effectively listen and attend to patients
- How to structure an interview to obtain/convey information; identify concerns, expectations and priorities; promote understanding, reach conclusions; use appropriate language.
- How to empower the patient and encourage self-management

Difficult circumstances

- Understanding of potential areas for difficulty and awkward situations
- How to negotiate cultural, language barriers, dealing with sensory or psychological and/or intellectual impairments and how to deal with challenging or aggressive behaviour
- Knowing how and when to break bad news
- How to communicate essential information where difficulties exist, how to appropriately utilise the assistance of interpreters, chaperones, and relatives.
- How to deal with anger and frustration in self and others
- Selecting appropriate environment; seeking assistance, making and taking time

Dealing with professional colleagues and others

- How to communicate with doctors and other members of the healthcare team
- How to provide a concise, written, verbal, or electronic, problem-orientated statement of facts and opinions
- The legal context of status of records and reports, of data protection confidentiality
- Freedom of Information (FOI) issues
- Understanding of the importance of legible, accessible, records to continuity of care
- Knowing when urgent contact becomes necessary and the appropriate place for verbal, telephone, electronic, or written communication
- Recognition of roles and skills of other health professionals
- Awareness of own abilities/limitations and when to seek help or give assistance, advice to others; when to delegate responsibility and when to refer

Maintaining continuity of care

- Understanding the relevance of continuity of care to outcome, within and between phases of healthcare management
- The importance of completion of tasks and documentation, e.g. before handover to another team, department, specialty, including identifying outstanding issues and uncertainties
- Knowledge of the required attitudes, skills and behaviours which facilitate continuity of care including, being available and contactable, alerting others to avoid potential confusion or misunderstanding through communications failure

Giving explanations

- The importance of possessing the facts, and of recognising uncertainty and conflicting evidence on which decisions have to be based
- How to secure and retain attention avoiding distraction
- Understanding how adults receive information best, the relative value of the spoken, written, visual means of communication, use of reinforcement to assist retention
- Knowledge of the risks of information overload
- Tailoring the communication of information to the level of understanding of the recipient
- Strategies to achieve the level of understanding necessary to gain co-operation and partnership; compliance, informed choice, acceptance of opinion, advice, recommendation

Responding to complaints

- Value of hearing and dealing with complaints promptly; the appropriate level, the procedures (departmental and institutional); sources of advice, and assistance available
- The importance of obtaining and recording accurate and full information, seeking confirmation from multiple sources
- Knowledge of how to establish facts, identify issues and respond quickly and appropriately to a complaint received

SKILLS

- Ability to appropriately elicit facts, using a mix of open and closed-ended questions
- Using “active listening” techniques such as nodding and eye contact
- Giving information clearly, avoiding jargon, confirming understanding, ability to encourage co-operation, compliance; obtaining informed consent
- Showing consideration and respect for other’s culture, opinions, patient’s right to be informed and make choices
- Respecting another’s right to opinions and to accept or reject advice
- Valuing perspectives of others contributing to management decisions
- Conflict resolution
- Dealing with complaints
- Communicating decisions in a clear and thoughtful manner
- Presentation skills
- Maintaining (legible) records
- being available, contactable, time-conscious
- Setting realistic objectives, identifying and prioritising outstanding problems
- Using language, literature (e.g. leaflets) diagrams, educational aids and resources appropriately
- Establish facts, identify issues and respond quickly and appropriately to a complaint received
- Accepting responsibility, involving others, and consulting appropriately
- Obtaining informed consent
- Discussing informed consent
- Giving and receiving feedback

ASSESSMENT & LEARNING METHODS

- Mastering Communication course (Year 1)
- Consultant feedback at annual assessment
 - Workplace based assessment e.g. Mini-CEX, DOPS, CBD
 - Educational supervisor’s reports on observed performance (in the workplace): communication with others e.g. at handover. ward rounds, multidisciplinary team members
- Presentations
- RCPI Ethics programmes
- RCPI HST Leadership in Clinical Practice Course

Leadership

Objective: To have the knowledge, skills and attitudes to act in a leadership role and work with colleagues to plan, deliver and develop services for improved patient care and service delivery.

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care; Communication and Interpersonal Skill; Collaboration and Teamwork; Management (including Self-Management); Scholarship.

KNOWLEDGE

Personal qualities of leaders

- Knowledge of what leadership is in the context of the healthcare system appropriate to training level
- The importance of good communication in teams and the role of human interactions on effectiveness and patient safety

Working with others

- Awareness of own personal style and other styles and their impact on team performance
- The importance of good communication in teams and the role of human interactions on effectiveness and patient safety

Managing services

- The structure and function of Irish health care system
- Awareness of the challenges of managing in healthcare
 - Role of governance
 - Clinical directors
- Knowledge of planning and design of services
- Knowledge and understanding of the financing of the health service
 - Knowledge of how to prepare a budget
 - Defining value
 - Managing resources
- Knowledge and understanding of the importance of human factors in service delivery
 - How to manage staff training, development and education
- Managing performance
 - How to perform staff appraisal and deal effectively with poor staff performance
 - How to rewards and incentivise staff for quality and efficiency

Setting direction

- The external and internal drivers setting the context for change
- Knowledge of systems and resource management that guide service development
- How to make decisions using evidence-based medicine and performance measures
- How to evaluate the impact of change on health outcomes through ongoing service evaluation

SKILLS

- Effective communication with patients, families and colleagues
- Co-operation and collaboration with others; patients, service users, carers colleagues within and across systems
- Being an effective team player
- Ability to manage resources and people
- Managing performance and performance indicators

Demonstrating personal qualities

- Efficiently and effectively managing one-self and one's time especially when faced with challenging situations
- Continues personal and professional development through scholarship and further training and education where appropriate
- Acting with integrity and honesty with all people at all times
- Developing networks to expand knowledge and sphere of influence
- Building and maintaining key relationships
- Adapting style to work with different people and different situations
- Contributing to the planning and design of services

ASSESSMENT & LEARNING METHODS

- Mastering Communication course (Year 1)
- RCPI HST Leadership in Clinical Practice (Year 3 – 5)
- Consultant feedback at annual assessment
- Workplace based assessment e.g. Mini-CEX, DOPS, CBD
- Educational supervisor's reports on observed performance (in the workplace): on management and leadership skills
- Involvement in hospital committees where possible e.g. Division of Medicine, Drugs and Therapeutics, Infection Control etc.

Quality Improvement

Objective: To demonstrate the ability to identify areas for improvement and implement basic quality improvement skills and knowledge to improve patient safety and quality in the healthcare system.

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care; Communication and Interpersonal Skills; Collaboration and Teamwork; Management; Relating to Patients; Professionalism

KNOWLEDGE

Personal qualities of leaders

- The importance of prioritising the patient and patient safety in all clinical activities and interactions

Managing services

- Knowledge of systems design and the role of microsystems
- Understanding of human factors and culture on patient safety and quality

Improving services

- How to ensure patient safety by adopting and incorporating a patient safety culture
- How to critically evaluate where services can be improved by measuring performance, and acting to improve quality standards where possible
- How to encourage a culture of improvement and innovation

Setting direction

- How to create a 'burning platform' and motivate other healthcare professionals to work together within quality improvement
- Knowledge of the wider healthcare system direction and how that may impact local organisations

SKILLS

- Improvement approach to all problems or issues
- Engaging colleagues, patients and the wider system to identify issues and implement improvements
- Use of quality improvement methodologies, tools and techniques within every day practice
- Ensuring patient safety by adopting and incorporating a patient safety culture
- Critically evaluating where services can be improved by measuring performance, and acting to raise standards where possible
- Encouraging a culture of improvement and innovation

Demonstrating personal qualities

- Encouraging contributions and involvement from others including patients, carers, members of the multidisciplinary team and the wider community
- Considering process and system design, contributing to the planning and design of services

ASSESSMENT & LEARNING METHODS

- RCPI HST Leadership in Clinical Practice
- Consultant feedback at annual assessment
- Involvement in hospital committees where possible e.g. Division of Medicine, Drugs and Therapeutics, Infection Control etc.

Scholarship

Objective: To develop skills in personal/professional development, teaching, educational supervision and research

Medical Council Domains of Good Professional Practice: Scholarship

KNOWLEDGE

Teaching, educational supervision and assessment

- Principles of adult learning, teaching and learning methods available and strategies
- Educational principles directing assessment methods including, formative vs. summative methods
- The value of regular appraisal / assessment in informing training process
- How to set effective educational objectives and map benefits to learner
- Design and delivery of an effective teaching event, both small and large group
- Use of appropriate technology / materials

Research, methodology and critical evaluation

- Designing and resourcing a research project
- Research methodology, valid statistical analysis, writing and publishing papers
- Ethical considerations and obtaining ethical approval
- Reviewing literature, framing questions, designing a project capable of providing an answer
- How to write results and conclusions, writing and/or presenting a paper
- How to present data in a clear, honest and critical fashion

Audit

- Basis for developing evidence-based medicine, kinds of evidence, evaluation; methodologies of clinical trials
- Sources from which useful data for audit can be obtained, the methods of collection, handling data, the audit cycle
- Means of determining best practice, preparing protocols, guidelines, evaluating their performance
- The importance of re-audit

SKILLS

- Bed-side undergraduate and post graduate teaching
- Developing and delivering lectures
- Carrying out research in an ethical and professional manner
- Performing an audit
- Presentation and writing skills – remaining impartial and objective
- Adequate preparation, timekeeping
- Using technology / materials

ASSESSMENT & LEARNING METHODS

- An Introduction to Health Research (online)
- Performing audit course (online)
- Effective Teaching and Supervising Skills course (online) - recommended
- Educational Assessment Skills course - recommended
- Health Research Methods for Clinicians - recommended

Management

Objective: To understand the organisation, regulation and structures of the health services, nationally and locally, and to be competent in the use and management of information on health and health services, to develop personal effectiveness and the skills applicable to the management of staff and activities within a healthcare team.

Medical Council Domains of Good Professional Practice: Management.

KNOWLEDGE

Health service structure, management and organisation

- The administrative structure of the Irish Health Service, services provided in Ireland and their funding and how to engage with these for best results
- Department of Health, HSE and hospital management structures and systems
- The national regulatory bodies, health agencies and patient representative groups
- Understanding the need for business plans, annual hospital budgets, the relationship between the hospital and PCCC

The provision and use of information in order to regulate and improve service provision

- Methods of collecting, analysing and presenting information relevant to the health of a population and the apportionment of healthcare resources
- The common ways in which data is presented, knowing of the sources which can provide information relevant to national or to local services and publications available

Maintaining medical knowledge with a view to delivering effective clinical care

- Understanding the contribution that current, accurate knowledge can make to establishing clinical effectiveness, best practice and treatment protocols
- Knowledge of sources providing updates, literature reviews and digests

Delegation skills, empowerment and conflict management

- How to assess and develop personal effectiveness, improve negotiating, influencing and leadership skills
- How to manage time efficiently, deal with pressure and stress
- How to motivate others and operate within a multidisciplinary team

SKILLS

- Chairing, organising and participating in effective meetings
- Managing risks
- Managing time
- Delegating tasks effectively
- Managing conflicts
- Exploring, directing and pursuing a project, negotiating through the relevant departments at an appropriate level
- Ability to achieve results through an understanding of the organisation and its operation
- Ability to seek / locate information in order to define an issue needing attention e.g. to provide data relevant to a proposal for change, establishing a priority, obtaining resources
- Ability to make use of information, use IT, undertake searches and obtain aggregated data, to critically evaluate proposals for change e.g. innovative treatments, new technologies
- Ability to adjust to change, apply management, negotiating skills to manage change
- Appropriately using management techniques and seeking to improve these skills and personal effectiveness

ASSESSMENT & LEARNING METHODS

- Mastering Communication course
- Performing audit course (online)
- RCPI HST Leadership in Clinical Practice
- Annual audit
- Consultant feedback on management and leadership skills
- Involvement in hospital committees

Standards of Care

Objective: To be able to consistently and effectively assess and treat patients' problems

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care; Relating to Patients; Communication and Interpersonal Skills; Collaboration and Teamwork: Management (including Self-Management); Clinical Skills.

KNOWLEDGE

Diagnosing Patients

- How to carry out appropriate history taking
- How to appropriately examine a patient
- How to make a differential diagnosis

Investigation, indications, risks, cost-effectiveness

- The pathophysiological basis of the investigation
- Understand the clinical significance of reference ranges, positive and negative predictive value and potential risks of inappropriate tests
- The procedures for commonly used investigations, common or/and serious risks
- Understanding of the sensitivity and specificity of results, artefacts, PPV and NPV
- Understanding significance, interpreting and explaining results of investigations
- Logical approach in choosing, sequencing and prioritising investigations

Treatment and management of disease

- Natural history of diseases
- Quality of life concepts
- How to accurately assess patient's needs, prescribe, arrange treatment, recognise and deal with reactions / side effects
- How to set realistic therapeutic goals, to utilise rehabilitation services, and use palliative care approach appropriately
- Recognising that illness (especially chronic and/or incapacity) has an impact on relationships and family, having financial as well as social effects e.g. driving

Disease prevention and health education

- Screening for disease: methods, advantages and limitations
- Health promotion and support agencies; means of providing sources of information for patients
- Risk factors, preventive measures, and change strategies applicable to smoking, alcohol, drug abuse, and lifestyle
- Disease notification; methods of collection and sources of data

Notes, records, correspondence

- Functions of medical records, their value as an accurate up-to-date commentary and source of data
- An understanding of the need and appropriate use of problem-orientated discharge notes, letters, more detailed case reports, concise out-patient reports and focused reviews
- Appreciating the importance of up-to-date, easily available, accurate information, and the need for communicating promptly e.g. with primary care

Prioritising, resourcing and decision taking

- How to prioritise demands, respond to patients' needs and sequence urgent tasks
- Establishing (clinical) priorities e.g. for investigations, intervention; how to set realistic goals; understanding the need to allocate sufficient time, knowing when to seek help
- Understanding the need to complete tasks, reach a conclusion, make a decision, and take action within allocated time
- Knowing how and when to conclude

Handover

- Know what are the essential requirements to run an effective handover meeting
 - Sufficient and accurate patients information
 - Adequate time
 - Clear roles and leadership
 - Adequate IT
- Know how to prioritise patient safety
 - Identify most clinically unstable patients
 - Use ISBAR (Identify, Situation, Background, Assessment, Recommendations)
 - Proper identification of tasks and follow-ups required
 - Contingency plans in place
- Know how to focus the team on actions
 - Tasks are prioritised
 - Plans for further care are put in place
 - Unstable patients are reviewed

Relevance of professional bodies

- Understanding the relevance to practice of standards of care set down by recognised professional bodies – the Medical Council, Medical Colleges and their Faculties, and the additional support available from professional organisations e.g. IMO, Medical Defence Organisations and from the various specialist and learned societies

SKILLS

- Taking and analysing a clinical history and performing a reliable and appropriate examination, arriving at a diagnosis and a differential diagnosis
- Liaising, discussing and negotiating effectively with those undertaking the investigation
- Selecting investigations carefully and appropriately, considering (patients') needs, risks, value and cost effectiveness
- Appropriately selecting treatment and management of disease
- Discussing, planning and delivering care appropriate to patient's needs and wishes
- Preventing disease using the appropriate channels and providing appropriate health education and promotion
- Collating evidence, summarising, recognising when objective has been met
- Screening
- Working effectively with others including
 - Effective listening
 - Ability to articulate and deliver instructions
 - Encourage questions and openness
 - Leadership skills
- Ability to prioritise
- Ability to delegate effectively
- Ability to advise on and promote lifestyle change, stopping smoking, control of alcohol intake, exercise and nutrition
- Ability to assess and explain risk, encourage positive behaviours e.g. immunisation and preventive measures
- Involve patients' in solving their health problems, by providing information and education
- Availing of support provided by voluntary agencies and patient support groups, as well as expert services e.g. detoxification / psychiatric services
- Act in accordance with, up to date standards on palliative care needs assessment
- Valuing contributions of health education and disease prevention to health in a community
- Compile accurate and appropriate detailed medical notes and care reports including the results of examinations, investigations, procedures performed, sufficient to provide an accurate, detailed account of the diagnostic and management process and outcome, providing concise, informative progress reports (both written and oral)
- Transfer information in an appropriate and timely manner

- Maintaining legible records in line with the Guide to Professional Conduct and Ethics for Registered Medical Practitioners in Ireland
- Actively engaging with professional/representative/specialist bodies

ASSESSMENT & LEARNING METHODS

- Consultant feedback
- Workplace based assessment e.g. Mini-CEX, DOPS, CBD
- Educational supervisor's reports on observed performance (in the workplace)
- Annual Audit
- Medical Council Guide to Professional Conduct and Ethics

Dealing with & Managing Acutely Ill Patients in Appropriate Specialties

Objectives: To be able to assess and initiate management of patients presenting as emergencies, and to appropriately communicate the diagnosis and prognosis. Trainees should be able to recognise the critically ill and immediately assess and resuscitate if necessary, formulate a differential diagnosis, treat and/or refer as appropriate, elect relevant investigations and accurately interpret reports.

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care, Clinical Skills.

KNOWLEDGE

Management of acutely ill patients with medical problems

- Presentation of potentially life-threatening problems
- Indications for urgent intervention, the additional information necessary to support action (e.g. results of investigations) and treatment protocols
- When to seek help, refer/transfer to another specialty
- ACLS protocols
- Ethical and legal principles relevant to resuscitation and DNAR in line with National Consent Policy
- How to manage acute medical intake, receive and refer patients appropriately, interact efficiently and effectively with other members of the medical team, accept/undertake responsibility appropriately
- Management of overdose
- How to anticipate / recognise, assess and manage life-threatening emergencies, recognise significantly abnormal physiology e.g. dysrhythmia and provide the means to correct e.g. defibrillation
- How to convey essential information quickly to relevant personnel: maintaining legible up-to-date records documenting results of investigations, making lists of problems dealt with or remaining, identifying areas of uncertainty; ensuring safe handover

Managing the deteriorating patient

- How to categorise a patients' severity of illness using Early Warning Scores (EWS) guidelines
- How to perform an early detection of patient deterioration
- How to use a structured communication tool (ISBAR)
- How to promote an early medical review, prompted by specific trigger points
- How to use a definitive escalation plan

Discharge planning

- Knowledge of patient pathways
- How to distinguish between illness and disease, disability and dependency
- Understanding the potential impact of illness and impairment on activities of daily living, family relationships, status, independence, awareness of quality of life issues
- Role and skills of other members of the healthcare team, how to devise and deliver a care package
- The support available from other agencies e.g. specialist nurses, social workers, community care
- Principles of shared care with the general practitioner service
- Awareness of the pressures/dynamics within a family, the economic factors delaying discharge but recognise the limit to benefit derived from in-patient care

SKILLS

- BLS/ACLS (or APLS for Paediatrics)
- Dealing with common medical emergencies
- Interpreting blood results, ECG/Rhythm strips, chest X-Ray, CT brain
- Giving clear instructions to both medical and hospital staff
- Ordering relevant follow up investigations
- Discharge planning, including complex discharge
- Knowledge of HIPE (Hospital In-Patient Enquiry)
- Multidisciplinary team working
- Communication skills
- Delivering early, regular and on-going consultation with family members (with the patient's permission) and primary care physicians
- Remaining calm, delegating appropriately, ensuring good communication
- Attempting to meet patients'/ relatives' needs and concerns, respecting their views and right to be informed in accordance with Medical Council Guidelines
- Establishing liaison with family and community care, primary care, communicate / report to agencies involved
- Demonstrating awareness of the wide ranging effects of illness and the need to bridge the gap between hospital and home
- Categorising a patients' severity of illness
- Performing an early detection of patient deterioration
- Use of structured communication tools (e.g. ISBAR)

ASSESSMENT & LEARNING METHODS

- ACLS course
- Record of on call experience
- Mini-CEX (acute setting)
- Case Based Discussion (CBD)
- Consultant feedback

Therapeutics and Safe Prescribing

Objective: To progressively develop ability to prescribe, review and monitor appropriate therapeutic interventions relevant to clinical practice in specific specialities including non-pharmacological therapies and preventative care.

Medical Council Domains of Good Professional Practice: Patient Safety and Quality of Patient Care.

KNOWLEDGE

- Pharmacology, therapeutics of treatments prescribed, choice of routes of administration, dosing schedules, compliance strategies; the objectives, risks and complications of treatment cost-effectiveness
- Indications, contraindications, side effects, drug interaction, dosage and route of administration of commonly used drugs
- Commonly prescribed medications
- Adverse drug reactions to commonly used drugs, including complementary medicines
- Identifying common prescribing hazards
- Identifying high risk medications
- Drugs requiring therapeutic drug monitoring and interpretation of results
- The effects of age, body size, organ dysfunction and concurrent illness or physiological state e.g. pregnancy on drug distribution and metabolism relevant to own practice
- Recognising the roles of regulatory agencies involved in drug use, monitoring and licensing e.g. IMB, and hospital formulary committees
- Procedure for monitoring, managing and reporting adverse drug reaction
- Effects of medications on patient activities including potential effects on a patient's fitness to drive
- The role of The National Medicines Information Centre (NMIC) in promoting safe and efficient use of medicine
- Differentiating drug allergy from drug side effects
- Know the difference between an early and late drug allergy, and drug side-effects
- Good Clinical Practice guidelines for seeing and managing patients who are on clinical research trials
- Best practice in the pharmacological management of cancer pain
- The management of constipation in adult patients receiving palliative care

SKILLS

- Writing a prescription in line with guidelines
- Appropriately prescribing for the elderly, children and pregnant and breast feeding women
- Making appropriate dose adjustments following therapeutic drug monitoring, or physiological change (e.g. deteriorating renal function)
- Reviewing and revising patients' long term medications
- Anticipating and avoiding defined drug interactions, including complementary medicines
- Advising patients (and carers) about important interactions and adverse drug effects including effects on driving
- Providing comprehensible explanations to the patient, and carers when relevant, for the use of medicines
- Being open to advice and input from other health professionals on prescribing
- Participating in adverse drug event reporting
- Take and record an accurate drug allergy history and history of previous side effects

ASSESSMENT & LEARNING METHODS

- Consultant feedback
- Workplace based assessment e.g. Mini-CEX, DOPS, CBD
- Educational supervisor's reports on observed performance (in the workplace): prioritisation of patient safety in prescribing practice
- Guidance for health and social care providers - Principles of good practice in medication reconciliation (HIQA)

Specialty Section

The Acquisition of a Core Body of Knowledge in Fundamental Immunology and its Applications

Objectives: To provide the trainee with a core body of knowledge in fundamental Immunology to underpin clinical and laboratory practice.

KNOWLEDGE

- Principles of body defence
 - Non-specific defence mechanisms
 - Innate immune response
 - Adaptive immune response (humoral/cellular)
- The acute phase response and inflammation
- Cells of myelomonocytic lineage, dendritic cells, NK cells
 - Ontogeny, structure, phenotype, function and activation
 - Chemokines and migration from the blood vasculature
 - Complement and Fc receptors, adhesion molecules
 - Phagocytosis, intracellular/extracellular killing
 - Respiratory burst and secretory products
- Innate immunity
 - Role of pattern recognition receptors including toll-like receptors
 - Interferons
 - Natural opsonins
 - Effector mechanisms of innate immunity
- Complement
 - Regulation of complement activation
 - Genetics, structure, function, control in defence and in disease
 - Deficiencies
- The basis of specific immunity
 - Antigens: types, structures, processing and presentation
 - Immunogenetics: polymorphisms, generation of diversity and rearranging gene families
 - Immunoglobulins: structure, function and antigen binding
 - Immunoglobulin effector functions
 - Major Histocompatibility Complex: structure, function and regulation
 - T cell receptors: structure, function and antigen binding
- T and B Lymphocytes
 - Ontogeny, phenotype, subpopulations
 - Receptor/ligand interactions and cell activation
 - Effector functions
- Organisation of the lymphoid system
 - Primary and secondary lymphoid organs
 - Population dynamics
 - Lymphocyte migration
 - Mucosal and other compartments of the lymphoid system
- Cytokines, chemokines - origin, structure, effects, site(s) of action (receptor), metabolism regulation and gene activation
- Inflammatory mediators (e.g. leukotrienes, prostaglandins and platelet-activating factor: origin, structure, effect, sites of action)
- Hypersensitivity mechanisms
 - IgE mediated: acute and late phase reactions
 - IgG, IgA-, and IgM-mediated: opsonization, complement fixation, antibody dependent, cell-mediated cytotoxicity, stimulation and blocking
 - Immune complex mediated: physicochemical properties and complex clearance
 - Cell-mediated: participating cells, effector mechanisms and granuloma formation
- Others: natural killer cells, lymphokine-activated killer cells etc.
- Immunoregulation
 - Tolerance: clonal selection, suppression and antigen-induced paralysis
 - Cell-cell interactions: help and suppression
 - Idiotype networks: inhibition and stimulation

- Immunodeficiency
 - Genetic basis of immunodeficiency disorders
 - Scientific basis of therapy of primary immunodeficiency
 - New developments in diagnosis and therapy of immunodeficiency
 - Pathogenesis and management of secondary immunodeficiency
- Allergic Disease
 - Pathogenesis of allergic diseases
 - Scientific basis of management of allergic disorders
 - New developments in therapy of allergic disease
- Mechanisms of autoimmunity
 - Known genetic cases of autoimmunity
 - Known environmental cases of autoimmunity
- Transplantation immunology
 - Histocompatibility: major and minor antigens and principles of cross matching
 - Graft rejection: mechanisms
 - Graft-versus-host reactions and their mechanisms
- Tumour immunology
 - Tumour markers: leukaemias and lymphomas; cancer immunology
 - Oncogenes: translocation and breakpoints
 - Classification and biology of malignancies of the lymphoid system
- Immunotherapy
 - Drugs
 - Vaccines
 - Antibodies
 - Recombinant molecules
 - Immunosuppression
 - Others
- Scientific basis of laboratory immunology

SKILLS

- Integrate and apply a broad based knowledge of the scientific basis of the immune system and the mechanisms that result in disease states.
- Integrate knowledge of basic immunology with general medical skills to assess patients with potential immunological disease
- Explain putative mechanisms of action and evidence base of various immunological therapies including immunoprophylaxis
- Explain the indications for the use of these therapies including explaining adverse effects associated with individual therapies
- 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

ASSESSMENT & LEARNING METHODS

- Personal study and self-directed learning
- Literature search & critical review
- Journal club presentations
- Study days and small group seminars
- Diploma or MSc course in immunology or allergy
- Attendance at meetings and courses run by the Royal Colleges
- Attendance at 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 for Allergy & Immunology
- Testing knowledge during tutorials conducted by trainer
- Evidence of teaching others (including feedback from students)
- Annual training assessments
- FRCPath Immunology Parts 1 and 2

The SpR trainee will be expected to sit the Part 1 FRCPath examination by the end of year 2 of their training programme.

Structured Clinical Training – General Aspects

Objectives: To provide the trainee with the skills and knowledge required to:

- assess and manage patients with congenital and acquired immunodeficiency - antibody and cell mediated defects, complement deficiency and neutrophil defects, at a consultant level
- investigate and manage patients with autoimmune/rheumatic diseases and systemic vasculitides
- investigate and manage allergy and allergic disease

KNOWLEDGE

- Understand the immunological basis for immunodeficiency states, allergic disease and autoimmune disease
- Knowledge of investigation and the evidence base for management of immunological disorders
- Knowledge of expected natural history of the disease, expected response to treatment, likely adverse effects and required monitoring for therapies instituted.

SKILLS

- History and physical examination
 - Taking an allergy focussed history
 - History & supporting information to assess drug allergy
 - Detailed recording of infection history
- Selection and interpretation of appropriate laboratory and ancillary investigations (e.g. Lung function tests, CT scans etc)
- Formulating differential diagnoses
- Prioritising therapeutic Interventions

ASSESSMENT & LEARNING METHODS

- Attendance at out-patients, day wards and consult rounds
- Directly observed procedures (DOPS) by trainer or other professionals and judged to be satisfactory against established criteria
- Portfolio indicating evidence of learning e.g. Literature reviews, case reports, publications, evidence-based protocols, patient information sheets and standard operating procedures authored by trainee
- Written case records and presentations
- Completed clinical and laboratory audits
- Attendance at 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 for Allergy & Immunology
- Testing knowledge during tutorials conducted by trainer
- Evidence of teaching others (including feedback from students)
- Case Based Discussion
- Mini-CEX
- FRCPATH Immunology Parts 1 and 2

Diagnosis and Management of Immunodeficiency Disorders in Adults and Children

KNOWLEDGE

- Understand the patho-physiology, including the molecular basis of immunodeficiency diseases
- Understand and be able to give advice on the appropriate use of laboratory tests for the diagnosis, treatment and prevention of primary or secondary immunodeficiency

Knowledge of -

- Clinical features of congenital and acquired immunodeficiency syndromes
- Antibody deficiency disorders
- T-Cell/Severe Combined Immunodeficiencies
- HIV disease
- Complement deficiencies
- Phagocyte deficiencies
- Asplenia
- Genetic studies of immunodeficiency syndromes
- Assessment of secondary antibody deficiency
- Knowledge of sensitivity, precision and specificity of relevant laboratory tests
- Knowledge of the relevant methods of quality control and quality assurance
- Aware of the clinical consequences of HIV infection, its epidemiology and prevention, current evidence for treatment and techniques required for monitoring HIV-induced disease

Therapy of Immunodeficiency Diseases

- Knowledge of the principles governing immune reconstitution of immunodeficiency diseases, including immunoglobulin replacement therapy, bone marrow transplantation and stem cell transplantation, gene therapy, cytokine therapy
- Knowledge of evidence-based indications for Immunoglobulin replacement therapy, the methods of delivery of replacement immunoglobulin (including intravenous and subcutaneous therapy), potential hazards of this therapy.

Immunoprophylaxis

- Knowledge of the principles of immunoprophylaxis, including potential advances in the field.

SKILLS

- History and clinical assessment of patients with suspected primary and secondary immunodeficiency
- Provide consultative advice on the diagnosis and management of secondary immunodeficiency
- Advise clinically appropriate and cost-effective selection of laboratory tests, and interpretation of these tests in context of clinical findings
- Request and interpret specific antibody titres and vaccination responses
- Analysis of complement functional defects, lymphocyte immunophenotyping & function testing & neutrophil function tests
- Management of immunoglobulin replacement therapy
- Explain indications, process and risk of immunoglobulin therapy to patients
- Management and prophylaxis of infections in the immunosuppressed patient
- Manage complications of immunoglobulin therapy
- Organise and deliver home-care therapy
- Anticipate, prevent, detect and manage infections in immuno-compromised patients in close co-operation with other clinical colleagues (e.g. specialists in Infectious Diseases, Microbiology and Virology)
- Management of C1 inhibitor deficiency
- Competent to provide consultative advice on immunisation to prevent communicable disease, including:
 - how to prevent and deal with adverse reactions
 - immunisation of patients with immunodeficiency
 - contraindications to immunisation
 - the use of test immunisation to assess immune competence
 - using information resources to keep up to date with this field
- In close collaboration with paediatric colleagues, able to 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 & LEARNING METHODS

- Personal study and self-directed learning
- Literature search & critical review
- Journal club presentations
- Reference to IUIS Scientific committee – update on primary immunodeficiency diseases
- Attendance at meetings and courses run by the Royal Colleges
- Attendance at meetings of learned societies:
 - European Society for Immunodeficiencies
 - UK Primary Immunodeficiency Network
- UK Primary Immunodeficiency Network resources
- Immunodeficiency clinics, including paediatric immunodeficiency clinics
- Infusion day ward/clinics
- Review of home therapy patients
- Observe home therapy training and assessment
- Case Based Discussion
- Mini-CEX
- FRCPATH Immunology Parts 1 and 2

Diagnosis and Management of Systemic Autoimmune Disorders

Objectives: To provide the trainee with the knowledge and skills to diagnose a range of autoimmune diseases; develop an understanding of the immunopathogenesis of these disorders; to advise and administer a range of immunosuppressive therapies.

KNOWLEDGE

Diagnosis and management of

- systemic lupus erythematosus
- rheumatoid arthritis and seronegative arthropathies
- other connective tissue disease
- autoinflammatory syndromes
- systemic vasculitic disorders

Diagnosis of autoimmune diseases

- Autoimmune skin diseases
- Autoimmune liver diseases
- Autoimmune endocrine diseases
- Autoimmune gastro-intestinal diseases
- Autoimmune neurological diseases
- Autoimmune kidney disease
- Other rare autoimmune diseases

Therapy of Autoimmune diseases

- Knowledge of the principles governing the use of immunosuppressive drugs (corticosteroids, azathioprine, mycophenylate, cyclophosphamide, cyclosporin, tacrolimus, sirolimus, methotrexate, dapsone)
- Knowledge of the principles governing the use of high dose IVIg,
- Knowledge of the principles governing the use of therapeutic monoclonal antibodies (including anti-CD20, anti-CD52, anti-TNF, anti-IL-6, anti-IL-1 receptor, ATG),
- Knowledge of the principles governing the use plasma exchange
- Knowledge of the principles governing the use interferon therapies
- Knowledge of the appropriate precautions applied during the use of such therapies including the use of immunisation, anti-TB prophylaxis, pneumocystis prophylaxis, bone protection

SKILLS

- Be able to 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
- Advise in the management of autoimmune skin diseases, autoimmune liver diseases, autoimmune endocrine diseases, autoimmune gastro-intestinal diseases, autoimmune neuromuscular diseases and other rare autoimmune diseases
- Competent to undertake immunosuppressive and immunomodulatory therapy including high-dose intravenous immunoglobulin therapy, plasma exchange, immunosuppressive drugs and biological agents
- Competence in monitoring patients with autoimmune disease to prevent/minimise adverse effects of therapy

ASSESSMENT & LEARNING METHODS

- Autoimmune disease and/or rheumatology clinics
- Ward consults and ward rounds
- Review of complex cases, including literature review
- Case Based Discussion
- Mini-CEX
- Personal study and self-directed learning
- Literature search & critical review
- Journal club presentations
- Study days and small group seminars
- Attendance at meetings and courses run by the Royal Colleges
- Attendance at meetings of learned societies
- FRCPath Immunology Parts 1 and 2

Diagnosis and Management of Allergic Diseases in Adults and Children

Objectives: To provide the trainee with the knowledge and skills to diagnose and treat allergic diseases as they present in childhood and adulthood.

KNOWLEDGE

Detailed knowledge of -

- Anaphylaxis
- Urticaria/ angioedema
- Chronic urticaria/angioedema
- Inducible urticaria/angioedema
- Asthma
- Rhinitis
- Drug & vaccine allergy
- Anaesthetic reactions
- Atopic dermatitis
- Latex allergy
- Venom hypersensitivity
- Paediatric immunotherapy
- Allergen immunotherapy

In particular, to develop –

- Knowledge of the mechanisms, common causes, clinical features and differential diagnosis of anaphylactic (immune-mediated and non-immune mediated) reactions
- Knowledge of the efficacy, limitations, indications and contraindications for allergen immunotherapy
- Knowledge of different desensitisation regimens, and the advantages and disadvantages of different allergen preparations for immunotherapy
- Knowledge of appropriate monitoring prior to, during and after desensitisation injections, including the management of trivial and severe reactions
- Knowledge of the definition, diagnosis, differential diagnosis and management of asthma, rhinitis, conjunctivitis and atopic dermatitis
- Knowledge of the differences in the natural history of allergic diseases and approaches to allergen avoidance and treatment in children
- Knowledge of how to diagnose and manage allergic diseases affecting the respiratory tract, skin and gut in children, usually in collaboration with paediatricians

SKILLS

- Diagnose, assemble a differential diagnosis and provide management of asthma, rhinitis, conjunctivitis and atopic dermatitis
- Assess and treat patients with allergic diseases (in children as well as adults), 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.
- 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, 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 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, paediatrician and school where appropriate

ASSESSMENT & LEARNING METHODS

- Allergy Clinics
- Drug allergy clinics
- Office based and day ward based challenges
- Case Based Discussion
- Mini-CEX
- Personal study and self-directed learning
- Literature search & critical review
- Journal club presentations
- Study days and small group seminars
- Attendance at meetings and courses run by the Royal Colleges
- Attendance at meetings of learned societies:
 - Irish Association for Allergy and Immunology
 - British Society for Allergy and Clinical Immunology
 - European Academy for Allergy & Immunology
- Evidence of teaching others (including feedback from students)
- FRCPATH Immunology Parts 1 and 2

Diagnosis of Lymphoproliferative Disease and Myelomatosis

Objectives: To provide the trainee with the knowledge and skills to diagnose lymphoproliferative and myelomatosis disorders.

KNOWLEDGE

- 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

SKILLS

- Diagnosis and management of lymphoproliferative disease and myelomatosis
- Investigation and management of possible secondary immunodeficiency
- Appropriate referral to haematologists

ASSESSMENT & LEARNING METHODS

- Laboratory exposure to immunophenotyping
- Laboratory experience in immunochemistry
- Attendance at bone marrow/lymphoma MDTs
- Optional attendance at appropriate haematology clinics
- Personal study and self-directed learning
- Literature search & critical review
- Journal club presentations
- Attendance at meetings and courses run by the Royal Colleges
- Attendance at meetings of learned societies:
- Evidence of teaching others (including feedback from students)
- FRCPATH Immunology Parts 1 and 2

Immunological Procedures

Objectives: To provide the trainee with the knowledge and skills: to prescribe and administer immunoglobulin replacement therapy; Educate patients on the treatment of anaphylaxis; to perform skin prick testing and interpret other related investigations

KNOWLEDGE

- 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

SKILLS

- Range of clinical skills as they apply to internal medicine but in particular in dealing with clinical immunological disorders
- Specific knowledge about the appropriate investigations and therapies applied to these patients

ASSESSMENT & LEARNING METHODS

- Attendance at immunodeficiency and allergy clinics and day wards
- Portfolio of cases assessed
- Attend pulmonary function department
- Optional attendance at appropriate respiratory clinics
- Attendance at home therapy training/assessment
- Involvement in preparation of policies and procedures
- Testing knowledge during tutorials conducted by trainer
- Evidence of teaching others (including feedback from students)
- DOPS
- FRCPATH Immunology Parts 1 and 2

Structured Laboratory Training

Objective: To provide trainees with the skills and knowledge to be able to direct a diagnostic immunology laboratory at Consultant level

KNOWLEDGE

Knowledge of key laboratory methodologies and procedures

Measurement and analysis of proteins

- Turbidometry & Nephelometry,
- Radial immunodiffusion
- Electrophoresis (agar, cellulose, capillary zone)
- Immunofixation (electrophoresis with immune precipitation)
- Polyacrilamide gel electrophoresis (PAGE) with isoelectric focusing

Detection of antibody:antigen reactions

- Enzyme-linked immunoassays (ELISA)
- Fluorochrome- linked assays
- Radio-immuno assays
- Chemiluminescence based assays
- Agglutination based assays (latex, red cell)

Fluorescence microscopy

- Indirect fluorescence microscopy
- Direct fluorescence microscopy on tissue biopsy samples
- Flow cytometry, Multiplex bead assays

Knowledge of key technologies used in molecular biology

- Theoretical knowledge of procedures used in gene cloning and the basic principles of gene cloning
- Preparation and storage of DNA from peripheral blood cells
- Knowledge of digestion of DNA by restriction enzymes
- Knowledge of the techniques of Southern, Western and Northern blotting
- Knowledge of the polymerase chain reaction (PCR)
- Knowledge of molecular methods for the detection of gene defects causing primary immunodeficiency

Ability to interpret a range of immunological assaysImmunoglobulins, other relevant circulating proteins

- Quantification of total immunoglobulins i.e. IgG, IgA, IgM, IgD and IgE
- Quantification of IgG subclasses
- Quantification of specific IgG responses to pneumococcal, tetanus, hemophilus antigens
- Quantification of immunoglobulin fractions (light and heavy chains) in serum and other body fluids e.g. urine
- Detection and quantification of:
 - Paraproteins (monoclonal immunoglobulins)
 - Cryoglobulins
 - Beta 2 microglobulin
- Quantification of specific IgE responses to allergens
- Quantification of precipitin antibodies e.g. to avian, aspergillus antigens
- Quantification of inflammatory proteins such as C-reactive protein, tryptase, other acute phase proteins

Complement components and activation pathways (classical and alternative)

- Measurement of key individual complement proteins e.g. C3, C4, mannose binding lectin
- Investigation of complement activation pathways (classical and alternative)

- Measurement of complement control proteins, particularly C1-esterase inhibitor
- Measurement of products resulting from complement activation
- Measurement of C3 nephritic factor and other complement autoantibodies
- Measurement of individual components when activation pathways are defective

Detection of auto-antibodies

- Methods used for auto-antibody detection
- Develop skill in detection and interpretation of autoantibodies to mitochondrial, gastric parietal cell, smooth muscle, liver/kidney/microsomal, nuclear (ANA), anti-dsDNA, neutrophil cytoplasmic (ANCA) antigens
- Interpretation of other auto-antibodies including rheumatoid factor; antiphospholipid antibodies, beta 2 glycoprotein 1 antibodies; antibodies to MPO, PR3 and GBM; extractable nuclear antigen (ENA) antibodies; acetylcholine receptor antibodies; intrinsic factor antibodies; diabetes associated antibodies; coeliac disease associated antibodies; thyroid peroxidase antibodies; paraneoplastic associated antibodies.

Direct immunofluorescence of biopsy tissue

- Principles involved in technique
- Familiarity with examination of skin and renal tissue
- Familiarity with staining patterns in a range of skin diseases including dermatitis herpetiformis, bullous skin disorders, vasculitis, SLE and related disorders
- Familiarity with staining patterns in a range of renal diseases including glomerular basement membrane disease, IgA nephropathy, immune complex disorders

Flow cytometry

- Familiarity with principles of flow cytometry
- Ability to interpret flow cytometry plots
- Familiarity with difficulties/pitfalls in interpretation
- Familiarity with commonly employed monoclonal antibodies
- Familiarity with testing for neutrophil oxidative burst activity
- Familiarity with use of cytometry for cytotoxicity assays
- Familiarity with use of cytometry for lymphocyte proliferation assays

Oligoclonal antibody detection in CSF

- Detection of oligoclonal IgG bands in CSF and in serum

Histocompatibility & Immunogenetics

- HLA typing by serological (lymphocytotoxicity) methods
- HLA typing by PCR – employing Sequence Specific Primer/Oligonucleotide (SSP/SSO) techniques
- Measurement of anti-HLA antibodies
- Cross-matching (CDC and flow cytometry based)

Laboratory Practice

- Preparation, maintenance and use of SOPs
- Assay validation
- Factors influencing choice of platform
- Quality control plan
- Recording and investigating non-conformances

SKILLS

- 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
- Write succinct, relevant and understandable reports in response to requests for investigation
- Perform procedures and investigations, which are in routine use in the immunology laboratory
- Assess quality control data and trouble shoot assays in routine use in the immunology laboratory
- Prepare and maintain SOPs
- Contribute to choice of assay & assay validation

ASSESSMENT & LEARNING METHODS

- Experience in Immunology laboratory
- Participation in laboratory meetings
- Involvement in sign-out or results & clinical liaison
- Personal study and self-directed learning
- Literature search & critical review
- Journal club presentations
- Study days and small group seminars
- Attendance at meetings and courses run by the Royal Colleges
- Attendance at 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 for Allergy & Immunology
- Testing knowledge during tutorials conducted by trainer
- Evidence of teaching others (including feedback from students)
- Annual training assessments
- Successful completion of relevant courses/degrees/diplomas (e.g. MSc in medical immunology)
- FRCPath Immunology Parts 1 and 2

Laboratory Management

Objectives: To provide the trainee with the knowledge and skills manage a diagnostic Immunology laboratory.

KNOWLEDGE

Process management

- Distinguish between demand and workload
- Knowledge of the staffing and non-staffing infrastructures required to meet demand and workload.

Human Resource management:

- Hospital policies and the role of the HR department in staff welfare and departmental - hospital interactions

Recruitment, training and retention methods and practice

- The roles, training and developmental needs of the differing professional groupings within the department
- Conflict resolution
- Disciplinary policies and procedures

Financial management

- Costing of assays and processes
- Writing business case
- Budget building, planning and management terminology and methods
- Resource procurement how to undertake equipment evaluation and direct to the procurement process

Business Management and organisational structure in the Health Service

- Health Service management structures; National, Regional, Hospital and Community
- Planning; Short, Medium and Long term
- Service Contract Negotiations

Quality Assurance and Quality Control

- Knowledge and understanding of pre-analytical variables
- Knowledge and understanding of analytical variables (including internal quality control, external quality assurance, standardisation, competency testing)
- Knowledge and understanding of post-analytical variables
- Sensitivity and specificity - analytic and clinical, accuracy and precision, false positivity and negativity, positive and negative predictive values
- ROC (Receiver Operator Characteristics) curve
- Knowledge of quality management systems
- The role of audit in ensuring quality
- Role of external evaluation (accreditation)
- Development of quality policy and holding of quality meetings

Demand Management

- Development of internal guidelines and testing algorithms
- Continual re-evaluation of utility of tests offered
- Communication of testing guidelines to users
- Development of IT infrastructure to facilitate demand management

Health and Safety

- Knowledge of the importance of Health and Safety in the workplace in general and the laboratory in particular ensure the roles of all parties involved in creating a safe environment from which to provide a laboratory Immunology service: The Hospital, The department, The health & safety officer, The health & safety committee, The individual member of staff, The Health and Safety Authority, The Advisory Committee on Dangerous Pathogens, The Radiation Protection officer & Control of Substances Hazardous to Health
- Knowledge of safety as it relates to chemicals, radiation, bio-hazards, the physical environment
- Role of external evaluation (accreditation)
- Role of risk assessment and safety audits

SKILLS

- Apply standardisation information to the routine operation of the laboratory
- Use of standardisation in assay trouble-shooting and the maintenance of quality, the role of external agencies (including NEQAS and INAB) involved/associated with quality assurance
- Undertake option appraisals and prepare a business case
- Contribute to all aspects of maintenance of laboratory accreditation
- Contribute positively to the laboratory's quality improvement programme
- Contribute to strategic planning in the laboratory
- Contribute to demand management

ASSESSMENT & LEARNING METHODS

- Laboratory experience
- Involvement in accreditation maintenance and inspections
- Laboratory quality improvement projects
- HST Leadership for Pathology
- Core pathology skills
- Personal study and self-directed learning
- Literature search & critical review
- Journal club presentations
- Study days and small group seminars
- Attendance at meetings and courses run by the Royal Colleges
- FRCPath Immunology Parts 1 and 2

Documentation of Minimum Requirements for Training

- These are the minimum number of cases you are asked to document as part of your training. It is recommended you seek opportunities to attain a higher level of exposure as part of your self-directed learning and development of expertise.
- You should expect the demands of your post to exceed the minimum required number of cases documented for training.
- If you are having difficulty meeting a particular requirement, please contact your specialty coordinator.

Curriculum Requirement	Required/ Desirable	Minimum Requirement	Reporting Period	Form Name
Section 1 - Training Plan				
Personal Goals Plan (Copy of agreed Training Plan for your current training year signed by both Trainee & Trainer)	Required	1	Training Post	Personal Goals Form
Section 2 - Training Activities				
Outpatient Clinics				Clinics
General Immunology (<i>attend minimum of one clinic per week</i>)	Required	40	Year of Training	
Day Care Clinics (<i>minimum of 1 per week</i>)	Required	40	Year of Training	
Ward Rounds/Consultations				Clinical Activities
New Consultations	Required	40	Year of Training	
Follow up consultations	Required	20	Year of Training	
Laboratory Consultations	Required	30	Year of Training	
Emergency Consultations	Desirable	10	Year of Training	
Chronic Disease Management				Cases
Management of patients on IVIg	Required	100 patient years	Training Programme	
Management of patients on subcut immunoglobulin	Required	60 patient years	Training Programme	
Management of immunosuppression	Required	50 patient years	Training Programme	
Management of allergic disease	Required	100 cases	Training Programme	
Emergencies/Complicated Cases (<i>Acute immunology problems</i>)				Cases
Recurrent/unusual infections in immunocompromised adults or children	Required	1	Training Programme	
Acute anaphylaxis – management, prevention	Required	1	Training Programme	
Infusion reactions	Required	1	Training Programme	
Acute Angioedema	Required	1	Training Programme	
Procedures/Practical Skills/Surgical Skills				Procedures, Skills, & DOPS

Curriculum Requirement	Required/ Desirable	Minimum Requirement	Reporting Period	Form Name
Administration of Immunoglobulin (IV)	Required	2	Training Programme	
Administration of Immunoglobulin (SC)	Required	2	Training Programme	
Lung function tests interpretation	Required	20	Training Programme	
Skin prick testing	Required	100	Training Programme	
Intradermal testing	Required	10	Year of Training	
Challenge studies (food or drug)	Required	10	Year of Training	
Relatively Unusual Cases	Required	10	Training Programme	Cases
Lab Experience				Laboratory Activities
1. General				
Laboratory Organisation	Required	1	Year of Training	
Clinical Liaison & Governance	Required	1	Year of Training	
Quality Systems	Required	1	Year of Training	
Quality Control & Quality Assurance	Required	1	Year of Training	
Accreditation	Required	1	Year of Training	
Specimen Reception	Required	1	Year of Training	
Management of Referral Tests	Required	1	Year of Training	
2. Assays: (Interpret and perform)				
Immunofluorescence assays	Required	10	Year of Training	
ELISA	Required	10	Year of Training	
Nephelometry/Turbidimetry	Required	10	Year of Training	
Immunochemistry	Required	50	Training Programme	
Electrophoresis	Required	50	Training Programme	
Paraprotein Characterisation	Required	50	Training Programme	
Isoelectric Focusing (Oligoclonal bands in CSF)	Required	5	Training Programme	
Cryoglobulin detection and characterisation	Required	10	Training Programme	

Curriculum Requirement	Required/ Desirable	Minimum Requirement	Reporting Period	Form Name
Autoantibody detection by Immunoblot	Required	10	Training Programme	
Lymphocyte Subsets	Required	10	Training Programme	
Lymphocyte Immunophenotyping	Required	10	Training Programme	
Neutrophil Function	Required	2	Training Programme	
Direct and indirect immunofluorescence e.g. <i>skin, renal</i>	Required	20	Training Programme	
3. Knowledge of Method, interpretation and clinical relevance of				Laboratory Activities
HLA Typing	Desirable	1	Training Programme	
Characterisation of HLA antibodies	Desirable	1	Training Programme	
Crossmatching – CDC, Flow, Virtual	Desirable	1	Training Programme	
4. Laboratory Practice				Laboratory Activities
SOP writing/updating	Required	1	Year of training	
EQA returns review	Required	1	Year of training	
EQA or IQC failure – investigation and follow-up	Required	1	Year of training	
Vertical audit with follow-up of at least one non-conformance	Required	1	Year of training	
Involvement in writing business case	Required	1	Training Programme	
Involvement in costing a new or existing assay	Required	1	Training Programme	
Validation of a new assay	Required	1	Training Programme	
Management experience	Required	1	Training Programme	Management Experience
Section 3 - Educational Activities				
Mandatory Courses				Teaching Attendance
Ethics Foundation	Required	1	Training Programme	
Ethics for General Medicine or Ethics for Pathology	Required	1	Training Programme	
HST Leadership for Pathology (Year 3 +)	Required	1	Training Programme	
An Introduction to Health Research Methods	Required	1	Training Programme	
Mastering Communication (Year 1)	Required	1	Training Programme	
Performing Audit (Year 1)	Required	1	Training Programme	

Curriculum Requirement	Required/ Desirable	Minimum Requirement	Reporting Period	Form Name
Core Pathology I Core Pathology II Core Pathology III	Required	1	Training Programme	
Transfusion online	Required	1	Training Programme	
Wellness Matters	Required	1	Training Programme	
Non – Mandatory Courses	Desirable	1	Training Programme	Teaching Attendance
Participation at In-house activities minimum of 1 per month from the categories below:				Attendance at Hospital Based Learning
Grand Rounds	Required	20	Year of Training	
Radiology Consultations/ case discussions	Required	10	Year of Training	
Journal Club	Required	10	Year of Training	
MDT Meetings	Required	20	Training Programme	
Immunology meeting	Required	40	Year of Training	
Examinations				Examinations
FRCPATH Part I examination	Required	1	Training Programme	
FRCPATH Part II examination	Required	1	Training Programme	
Delivery of Teaching	Desirable	1	Training Programme	Delivery of Teaching
Study Days/ Master Classes	Required	3	Year of Training	Study Day Attendance
Research	Desirable	1	Year of Training	Research Activities
Audit activities and Reporting (1 per year either to start or complete, Quality Improvement (QI) projects can be uploaded against audit)	Required	1	Year of Training	Audit & QI
Publications	Desirable	1	Year of Training	Additional Professional Experience
Presentations (<i>minimum 6 per year – local, national or international</i>)	Required	6	Year of Training	Additional Professional Experience

Curriculum Requirement	Required/ Desirable	Minimum Requirement	Reporting Period	Form Name
National/International meetings (<i>2 per year</i>)	Required	2	Year of Training	Additional Professional Experience
Additional Qualifications	Desirable	1	Year of Training	Additional Professional Experience
Committee Attendance	Desirable	1	Training Programme	Additional Professional Experience
Section 4 - Assessments				
DOPS				Procedures, Skills, & DOPS
Counseling pre- IVIG	Required	1	Training Programme	
Skin prick testing	Required	1	Training Programme	
Intradermal testing	Required	1	Training Programme	
Patient education on adrenaline autoinjector or similar	Required	1	Training Programme	
CBD (<i>at least 2 per year</i>)	Required	2	Year of Training	Case Based Discussion
Mini-CEX (<i>At least two Mini-CEx assessments should take place in each year of training</i>)	Required	2	Year of Training	Mini CEX
Quarterly Assessments/End-of-Post Assessments	Required	4	Year of Training	Quarterly Assessments/End-of-Post Assessments
End of Year Evaluation	Required	1	Year of Training	End of Year Evaluation