FACULTY OF PATHOLOGY

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

HIGHER SPECIALIST TRAINING IN

CHEMICAL PATHOLOGY

OUTCOME BASED EDUCATION CURRICULUM

This curriculum of Higher Specialist Training in Chemical Pathology was developed in 2024 and undergoes an annual review process by the National Specialty Director(s) and the RCPI Workplace Education Team. The Curriculum is approved by the Specialty Training Committee and the Faculty of Pathology.

Version	Date Published	Last Edited By	Version Comments
3.0	July 2026	Keith Farrington	Updates to the Core Professional Skills section to explicitly align with the *Eight Domains of Good Professional Practice*.

National Specialty Director's Foreword

Dear prospective and current Trainees, Dear Trainers,

It is always a good idea to check if one is on the right path. RCPI's move to outcome-based education Curriculum gave us a challenge and the opportunity to do just that. The first edition of the OBE Curriculum is in front of you. It was created with input from current Trainees and consultants in chemical pathology as well as RCPI educational specialists.

Chemical pathology is the branch of pathology which deals with the diagnosis and management of disease by measurement of chemicals present in body fluids and tissues. Chemical pathology laboratories are run by chemical pathologists, consultants ensuring the quality of the results, appropriateness of diagnostic service and usefulness of advice to clinicians. To do this well, a consultant chemical pathologist needs to marry the knowledge of medicine and science, thoroughly understanding the pathophysiology of multiple diseases, the science behind the testing methods, the mathematics and statistics behind the testing evaluation and comparisons, the guidelines leading the treatment and the impact testing has on clinical management, having patient outcomes and safety as the first and foremost goal. To lead the laboratory and communicate well with clinician colleagues, the Trainee also needs to acquire insight into one's leadership and clear communication techniques.

So, if you are interested in the why and the how of diagnostics and the management of complex systems, if you can think thoroughly, if you can combine clinical insights with laboratory data, make sound judgments and express your thoughts clearly, this is the specialty for you. If you feel lacking in any of those areas—well, practice makes perfect, and we hope this Curriculum provides a clear guide on how to learn all the skills needed.

If the guide is not clear, please let us know—we aim to review it yearly and improve it as we go along.

Happy learning!

Dr Ana Rakovac

Table of Contents

INTRODUCTION

This section includes an overview of the Higher Specialist Training programme and of this Curriculum document.

Purpose of Training

This programme is designed to provide training in Chemical Pathology 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 Chemical Pathology.

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 practices and standards, the Royal College of Physicians (RCPI) have implemented an Outcome Based Education (OBE) approach. This Curriculum design differs from traditional "minimum 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.

How to Use the Curriculum

Trainees and Trainers should use the Curriculum as a basis for goal-setting meetings, delivering feedback, and completing assessments, including appraisal processes (Quarterly Assessments/End of Post Assessment, End of Year Evaluation). Therefore, it is expected that both Trainees and Trainers familiarise themselves with the Curriculum and have a good working knowledge of it.

Trainees are expected to use the Curriculum as a blueprint for their training and record specific feedback, assessments and training events on ePortfolio. The ePortfolio should be updated frequently during each training placement.

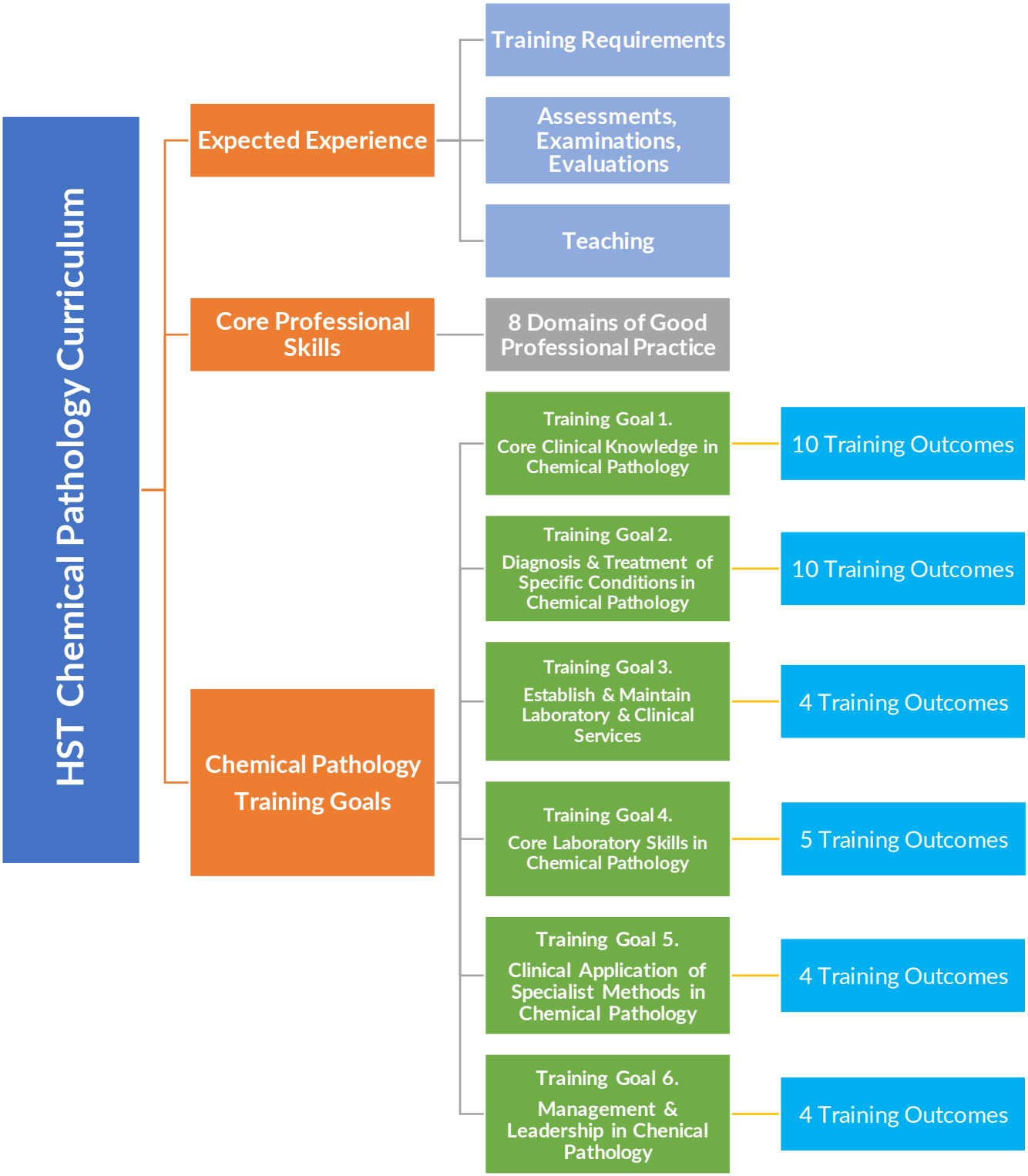
It is important to note that ePortfolio is a digital repository designed to reflect Curriculum requirements. It facilitates recording of progress through HST and evidence that training is valid and appropriate. While a complete ePortfolio is essential for HST certification, Trainees and Trainers should always refer to the Curriculum in the first instance for information on the requirements of the training programme.

Please note: It is the responsibility of the Trainee to keep an up-to-date ePortfolio throughout the programme as it reflects their individual training experience and it documents that they have successfully met training standards as expected by the Medical Council.

Reference to Rules & Regulations

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

Overview of Curriculum Sections & Training Goals



EXPECTED EXPERIENCE

This section details the training experience that all Trainees are expected to complete over the course of Higher Specialist Training.

Duration & Organisation of Training

To complete the HST Training Programme in Chemical Pathology, 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 Chemical Pathology Posts
- 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
- Specified Laboratory Experience

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

Clinics List, Ward Rounds & 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 ACTIVITIES			
Clinic	**Timeline**	**Expected Experience**	**ePortfolio Form**
Diabetes	Years 1-5	Attend at least 2 per month in appropriate posts (to include 5 type 1* clinics per programme)	Clinics
Lipid/CVD Risk Factors	Years 1-5	Attend at least 2 per month in appropriate posts	Clinics
Metabolic Bone	Years 1-5	Attend at least 2 per month in appropriate posts	Clinics
*Endocrine (Pituitary, Adrenal, Thyroid, Fertility, Paediatric)	Years 1-5	Attend as appropriate (As agreed with Trainer)	Clinics
*Haematology/Oncology	Years 1-5	Attend as appropriate (As agreed with Trainer)	Clinics
*Metabolic (including Paediatrics)	Years 1-5	Attend as appropriate (As agreed with Trainer)	Clinics
*Nephrology (including Transplant & Dialysis)	Years 1-5	Attend as appropriate (As agreed with Trainer)	Clinics
CONSULTATIONS, MDT, PROCEDURES, LABORATORY			
Type	**Timeline**	**Expected Experience**	**ePortfolio Form**
Consultations	Years 1-5	At least 2 per month	Clinical Activities
Appropriate specialist rounds (*e.g.*, ICU, Nutrition)	Years 1-5	At least 6 pr year in appropriate posts	Clinical Activities
MDT/ Meetings	Years 1-5	At least 2 per month	Clinical Activities
Laboratory Liaisons	Years 1-5	As appropriate	Clinical Activities

Examinations			
FRCPath Part I		1	Examinations
FRCPath Part II		1	Examinations
Audit			
Preparation of QC material (Observe)	Programme	1	Audit/QA
Discussion of EQA report	Programme	At least 2 per month	Audit/QA
Discussion of IQC failure	Programme	At least 1 per month	Audit/QA
Audit of QMA	Programme	At least 1 per month	Audit/QA
Procedures			
Basic Laboratory Techniques[1]	Programme	Free Count	Procedures, Skills, & DOPS
POCT/NPT[2]	Programme	Free Count	Procedures, Skills, & DOPS
Molecular Diagnostics[3]	Programme	Free Count	Procedures, Skills, & DOPS
Clinical Diagnostic procedures[4]	Programme	Free Count	Procedures, Skills, & DOPS
Validation of methods	Programme	Free Count	Procedures, Skills, & DOPS
Reporting of results	Programme	Free Count	Procedures, Skills, & DOPS

*Not Chemical Pathology run clinics
[1]For example, use of pipette, use of balance, pH meter, preparation of buffer, use of spectrophotometer, assay calibration, basic calculations (e.g., molarity, dilutions, basic calculations on laboratory middleware) PEG precipitation, use of centrifuge, experience with specimen reception and operation of automated analysers
[2]For example, measurement of glucose using meter, urinalysis, urine pregnancy test, use of blood gas machine, use of bilirubinometer, HbA1c measurement, ketone measurement, urine toxicology testing
[3]For example, DNA, extraction, PCR, Agarose gel electrophoresis
[4]For example, performance of sweat test, dynamic function tests

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

Evaluations, Assessments & Examinations

Specialist Registrars are expected to:

- **Complete 4 quarterly evaluation per training year** (1 evaluation per quarter)
- **Complete 1 end of year evaluation at the end of each training year**
- **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**

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

Research, Audit & Teaching Experiences

Specialist Registrars are expected to complete the following activities:

- Deliver a minimum of **12 teaching sessions** (to include tutorials, lectures, bedside teaching, etc.) over the course of 5 years of HST
- Deliver **1 oral or poster presentation**, per each year of HST
- Complete **1 Audit or Quality Improvement Project**, per year of HST
- Attend a minimum of **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

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.

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 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), a	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 or poster 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

CORE PROFESSIONAL SKILLS

This section includes the Irish Medical Council guidelines for medical professional conduct.

*The Medical Council has defined **eight domains of good professional practice**.*

These domains describe a framework of competencies applicable to all doctors across the continuum of professional development from formal medical education and training through to maintenance of professional competence. They describe the outcomes which doctors should strive to achieve and doctors should refer to these domains throughout the process of maintaining competence.

These principles are woven into training practice and feedback is formally provided in the Quarterly Assessments, End of Post, and End of Year Evaluation.

Core Professional Skills

Introduction to Core Professional Skills

Core Professional Skills refer to the foundational capabilities expected of all doctors in postgraduate training in Ireland. These skills underpin safe, ethical, and effective clinical practice across all specialties and settings.

They are aligned with *the Eight Domains of Good Professional Practice*, as defined by the Medical Council. These domains provide a national framework of professional competencies that apply across the continuum of a doctor's career – from formal medical education and postgraduate training to lifelong professional development and the maintenance of competence.

Trainees and Trainers should use these Domains to guide reflection, supervision, developmental goal-setting, and assessment throughout training. The standards described under each Domain define what all doctors are expected to demonstrate and continually develop in their professional practice.

For doctors whose practice also involves indirect patient care, the Core Professional Skills remain fully applicable. In such contexts, some professional competencies may be demonstrated through the support, guidance, and expertise provided to patient-facing colleagues, or through leadership and decision-making that influences patient care at a systems level.

1 Patient Safety and Quality of Patient Care

Doctors must place patient safety and quality of care at the centre of practice, ensuring accountability to patients, their profession, and their organisation. This requires addressing risks, managing incidents, preventing infection, and driving continuous improvement within governance and ethical standards. By embedding safety and accountability into practice, doctors protect patients from preventable harm, strengthen trust, and uphold professional integrity.

Quality Improvement

- Apply quality improvement methods (e.g., audit, evaluation) to monitor and enhance care.
- Analyse and interpret patient, staff, and system data to inform service improvements.

Patient Safety and Incident Management

- Apply safe practices in prescribing, procedures, referrals, infection prevention and control, care transitions, and near-patient diagnostics.
- Identify, escalate, and report risks, incidents, near-misses, and notifiable events in line with statutory and professional duties.
- Participate in open disclosure after adverse events, in line with statutory duty.

Infection Prevention and Control

- Implement evidence-based infection prevention and control, including hand hygiene, aseptic technique, safe PPE use, and safe management of medical devices and clinical environments.

System Safety and Governance

- Demonstrate understanding of local governance structures, reporting systems, and escalation pathways.
- Recognise and escalate organisational or service barriers (e.g., unsafe premises, processes, or systems) that compromise patient safety or timely access to care.

Antimicrobial Resistance

- Understand behavioural, social, environmental, and geographic drivers of antimicrobial resistance in clinical decision-making.

2 Relating to Patients

Doctors must foster respectful, person-centred clinical relationships that uphold patient autonomy, dignity, and trust. This requires clear communication, protection of confidentiality, and supporting informed consent, while recognising individual needs and potential barriers to care. By practising with fairness and shared responsibility, doctors enable patients to participate meaningfully in decisions about their care and contribute to safer, more equitable outcomes.

Person-Centred Care

- Deliver care that upholds dignity, autonomy, and individual preferences, considering cultural context and social determinants of health.
- Communicate clearly and accessibly, adapting to patients' language, literacy, cognitive ability, and circumstances.

Confidentiality

- Protect confidentiality across all communications, applying data-protection legislation and managing required disclosures appropriately.
- Explain limits to confidentiality where required (e.g. safeguarding, public health, or legal duties).

Informed Consent and Shared Decision-Making

- Contribute to, or directly undertake where appropriate, the assessment of capacity, ensuring discussions allow sufficient time to explain risks, benefits, and alternatives, and, where relevant, the purpose and implications of complex or sensitive procedures (e.g., genetic testing).
- Support patient autonomy through informed consent and shared decision-making, providing specialist input to colleagues or seeking consent directly where this forms part of clinical duties, respecting valid Advance Healthcare Directives when capacity is lacking.
- Be aware of the need to identify, address or escalate cultural and social barriers to participation in healthcare decisions.

Information and Care Navigation

- Provide clear, balanced, and evidence-based information to help patients understand their care options, make informed decisions, and access appropriate services or supports.
- Coordinate referrals and share relevant information to support continuity and navigation of care pathways.

Relationships and Boundaries

- Build respectful relationships with patients while maintaining professional boundaries.
- Be clear about the limits of competence and refer patients when required.

Health Promotion and Preventive Care

- Provide evidence-based health promotion and preventive care advice, tailored to individual risk factors.

3 Communication and Interpersonal Skills

Doctors must communicate clearly, compassionately, and safely with patients, families, and colleagues to support trust, understanding, and shared decision-making. This requires adapting communication to meet individual needs, handling challenging conversations with sensitivity, upholding professional boundaries, and ensuring accuracy in records, correspondence, and handovers. By communicating effectively across all settings, doctors reduce risk, ensure patient understanding, and promote safe, coordinated care.

Clinical Communication and Documentation

- Take accurate, structured histories and explain diagnoses, care plans, and clinical decisions with clarity and empathy.
- Apply handover protocols to ensure safe care transitions.
- Maintain complete, timely, and legible documentation to support continuity, safety, and compliance.

Patient Communication and Comprehension

- Collaborate with colleagues to confirm and document patient understanding of information shared, including risks, benefits, alternatives, and limitations.
- Apply health literacy principles across verbal, written, digital, and visual formats.
- Deliver difficult news clearly and with empathy.
- Adapt communication to patient capacity, language, literacy, cognitive ability, or culture, involving interpreters, advocates, or supports (e.g., written materials) as required.

Safeguarding

- Conduct safeguarding discussions respectfully, protecting dignity, confidentiality, and legal compliance.
- Escalate safeguarding concerns through appropriate channels.

Complaints and Regulatory Communication

- Respond promptly and professionally to patient complaints and enquiries.
- Reduce complaint risk through clear communication, accurate records, and timely follow-up.
- Engage constructively with organisational and regulatory complaint processes and contribute to service learning.

Open Disclosure

- Participate in supervised open disclosure discussions after adverse events using honest, transparent, and compassionate communication, in line with statutory and professional standards.

Team Dialogue

- Engage in respectful and constructive dialogue with colleagues to support shared understanding and safe decisions.
- Identify and escalate communication breakdowns that may compromise patient safety.

4 Collaboration and Teamwork

Doctors must work collaboratively with colleagues across disciplines and services to deliver safe, coordinated, and high-quality care. This requires contributing to shared decisions, respecting team roles, and maintaining open and constructive communication. By promoting collaboration and teamwork, doctors strengthen service delivery, promote shared accountability, and foster continuous improvement in team-based care.

Governance and Organisational Awareness

- Understand local governance and leadership structures relevant to your role, including responsibilities and lines of accountability.
- Raise clinical, safety, resource, or organisational concerns through appropriate channels in line with governance and escalation policies

Team Coordination and Integrated Care

- Build effective working relationships with interprofessional teams, recognising the roles of all members.
- Share accountability for decision-making and care coordination, recognising the risks of fragmentation.
- Ensure continuity of care by providing timely, accurate discharge summaries.

Organisational Leadership and Team Culture

- Contribute to leadership by facilitating shared decision-making, coordinating care, and supporting junior colleagues.
- Foster psychological safety by promoting respectful communication, shared learning, and open dialogue.
- Manage conflict to support respectful, functional, and safe team environments.

Team Learning and Development

- Engage in structured team-based learning (e.g., case reviews, safety forums), to inform service improvement and professional development.
- Provide and receive feedback constructively to support team development and patient care quality.

5 Management (Including Self-Management)

Doctors must manage workload, time, and personal wellbeing to ensure safe and effective clinical practice. This requires prioritising tasks, recognising limits, escalating concerns appropriately, and engaging constructively with organisational systems and processes. By balancing personal capacity with service demands, doctors protect patients from harm, prevent burnout, and support the safe and sustainable delivery of healthcare.

Health, Wellbeing, and Development

- Monitor personal health and performance, recognising fatigue or burnout, and seek support when needed.
- Set and review professional development goals informed by reflection, supervision, and feedback.

Workload and Task Management

- Prioritise tasks to deliver timely, safe, and effective care.
- Coordinate rotas, leave, handovers, and cover to maintain service continuity.
- Communicate availability and scheduling clearly to colleagues.

Administrative Competence

- Complete documentation and administrative tasks accurately and on time.
- Engage with training and professional development, including preparation, participation, and submission of required materials.
- Fulfil supervisory and/or line-management responsibilities where appropriate (e.g., supporting colleagues, approving leave, and contributing to performance assessments).
- Use operational tools (e.g., rotas, workflows, IT systems) effectively to support safe and coordinated care.

Sustainability and Environmental Stewardship

- Order, prescribe, investigate, and deliver care responsibly, ensuring clinical necessity while adopting resource-conscious and sustainable approaches.
- Be aware of organisational sustainability initiatives (e.g., green prescribing, waste reduction).

Systems and Safety Engagement

- Recognise how system pressures (e.g. staffing levels) affect patient safety.
- Contribute to local safety monitoring, governance, and service improvement activities within role and training scope.

6 Scholarship

Doctors should maintain and advance their professional competence through lifelong learning, supervision, reflection, teaching, and research. This requires engaging critically with evidence, translating learning into practice improvement, and contributing to the education and development of colleagues. By integrating inquiry, reflection, and shared learning into their work, doctors strengthen decision-making, enhance patient safety, and uphold professional standards.

Evidence-Based Practice

- Apply research evidence, guidelines, and clinical data appropriately to inform patient care.
- Use audit, service evaluation, and quality improvement data to evaluate and improve practice.

Lifelong Learning and Scope of Practice

- Comply with training and development requirements within your training programme (e.g., maintaining your ePortfolio).
- Set and evaluate learning goals informed by reflection, feedback, and supervision.
- Use insights from audits, reviews, and adverse events to improve practice.
- Recognise limits in knowledge or skill and seek supervision or escalate when required.

Teaching and Role Modelling

- Teach, supervise, and support colleagues and teams using effective communication and evidence-based practice.
- Share clinical knowledge to strengthen team learning and service improvement.
- Model professionalism, clinical integrity, critical thinking and reflective practice in everyday work.

Research and Dissemination

- Undertake audit, research, or service evaluation, disseminating and communicating findings through professional or academic channels.
- Comply with legal, institutional, and ethical standards in research activities.

Innovation and Digital Literacy

- Apply health informatics, telehealth, and emerging technologies with attention to safety, evidence base, and ethical considerations.
- Evaluate risks, benefits, and limitations of digital innovations, including AI, to ensure safe and effective patient care.

7 Professionalism

Doctors must uphold integrity, accountability, and respect in all aspects of clinical care, leadership, and professional practice. This requires complying with legal and regulatory duties, maintaining confidentiality and professional boundaries, and acting with fairness in healthcare delivery. By modelling professionalism, doctors build trust, protect patients, and promote safe, inclusive healthcare systems.

Statutory and Ethical Duties

- Comply with legal and regulatory requirements, reporting unsafe or unprofessional behaviours, and engaging with investigations and complaints.
- Fulfil safeguarding duties, including mandatory reporting of child protection and vulnerable adult concerns.
- Uphold professional boundaries across all settings to protect patient dignity, autonomy, and trust.
- Protect patient data in line with GDPR and professional standards.
- Declare and transparently manage conflicts of interest in clinical, research, and public activities.

Resource Use and Stewardship

- Use diagnostic, prescribing, and other clinical resources responsibly and fairly, ensuring clinical justification.
- Integrate sustainability principles into practice, balancing immediate patient needs with long-term system and environmental responsibility.

Advocacy, Equity and Fair Practice

- Treat patients and colleagues with dignity and respect, ensuring care is free from discrimination.
- Advocate for fair access to, and equitable experience within, healthcare by recognising and addressing diverse needs and social or structural barriers, inclusive of disability and socioeconomic disadvantage.

Antimicrobial Stewardship

- Use antimicrobials responsibly, selecting agents, dosing, and duration appropriately.
- Participate in stewardship initiatives, such as audits, surveillance, and outbreak management.

Professional Leadership and Accountability

- Represent the profession with integrity, modelling leadership that promotes a culture of safety, openness, and professional accountability.
- Take responsibility for patient safety by identifying and escalating risks, and contributing to learning (e.g., AAR, NIMS).
- Manage personal or team workload pressures, escalating where necessary to maintain safe practice.
- Recognise and respond to signs of stress or impaired performance in self and colleagues, addressing appropriately to safeguard wellbeing and team function.

Public and Online Professional Conduct

- Uphold professional standards in all online and social media activity, recognising that the same expectations apply as in face-to-face communication.
- Maintain patient confidentiality and clear boundaries, separating personal and professional use, and directing patient contact through formal channels.
- Ensure that public communications are accurate, evidence-based, and compliant with regulatory standards.

8 Clinical Skills

Doctors must maintain and apply clinical skills that enable safe, accurate, and effective assessment, diagnosis, and treatment across all stages of patient care. This requires integrating patient history, examination findings, investigations, and patient context to inform clinical reasoning, safe prescribing, and appropriate escalation or referral. By applying these skills responsibly, doctors support patient safety, ensure continuity of care, and deliver high-quality outcomes across healthcare settings. This Domain addresses the professional and ethical responsibilities that underpin the safe application of practice, complementing specialty-specific technical competencies.

Assessment and Reasoning

- Conduct comprehensive assessments, with consent, integrating history, examination, investigations, and patient context.
- Apply structured reasoning to generate differential diagnoses and safe management plans, using evidence and guidelines.
- Recognise uncertainty, limits of competence, or impaired performance, and escalate or seek supervision when required.
- Take account of the patient's psychological, social, and contextual factors where clinically relevant to safe decision-making.
- Use digital tools responsibly to support assessment, decision-making, and care delivery.

Transfer of Care

- Consider the need for referral or transfer of patients as required, contributing to collaboration, coordination, and continuity across services.

Records and Communication

- Maintain accurate and timely records and correspondence to support safe handover, discharge, and care transitions, complying with legal and data protection standards.

Complex Care Planning

- Participate in discussions regarding high-risk or complex care, including end-of-life care and advanced planning, ensuring shared decision-making.

Safe Prescribing

- Understand the principles of prescribing safely and appropriately, including selecting the correct drug, dose, route, and duration, and ensure monitoring or handover where required.

SPECIALTY SECTION – CHEMICAL PATHOLOGY TRAINING GOALS

This section includes the Chemical Pathology Training Goals that the Trainee should achieve by the end of the Higher Specialist Training.

Each Training Goal is broken down into specific and measurable Training Outcomes.

Under each Outcome there is an indication of the suitable and recommended training/learning opportunities and assessment methods.

In order to achieve the Outcomes it is recommended to agree on the most appropriate type of training and assessment methods with the assigned Trainer.

Training Goal 1 – Core Clinical Knowledge in Chemical Pathology/Chemical Pathology of Disease

By the end of HST Trainees should have a comprehensive knowledge of topics underpinning the chemical pathology of disease including ability to advise on appropriate diagnostic pathways and initial clinical management.

Outcome 1 – Demonstrate appropriate knowledge of water and electrolyte disorders (sodium, potassium, chloride, calcium, phosphate, magnesium) and acid base disorders

The Trainee will be expected to demonstrate knowledge on causes and diagnosis of fluid balance and electrolyte disturbances and provide appropriate advice for their investigations and management. Trainees need to be proficient in investigations as well as acute and chronic management of water depletion and excess, hypo/hypernatraemia, hypo/hyperkalaemia, hypo/hypercalcaemia, hypo/hyperphosphataemia and hypo/hypermagnasaemia. Trainee needs to be highly skilled in using the knowledge of physiology of acid-base status as well as pathophysiology of acid-base disturbances in interpreting results (including near-patient testing results) and advising on management.

Training/Learning Opportunities

Clinic Attendance
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

Outcome 2 – demonstrate appropriate knowledge of renal, glomerular, and tubular disorders

The Trainee will be expected to describe the structure, function and disorders of the kidneys and urogenital tract, understand the endocrine functions of the kidney, including the renin-aldosterone system, vitamin D and erythropoietin, diseases of the renal tract, including intrinsic and extrinsic disorders, and the effects of drugs and toxins, acute kidney injury and chronic kidney disease, consequences of renal disease and the biochemical tests for assessing renal function. Consequently, the Trainee will be expected to provide appropriate advice for investigation and management of the above.

Training/Learning Opportunities

Clinic Attendance
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

OUTCOME 3 – DEMONSTRATE APPROPRIATE KNOWLEDGE OF DIABETES MELLITUS AND ABILITY TO MANAGE TYPE 2 DIABETES INDEPENDENTLY

The Trainee should be able to describe different types of diabetes mellitus, their pathogenesis and presentations, criteria for diagnosis (including in pregnancy) and available therapies. The Trainee should also be able to describe analytical issues in diabetes diagnosis, including the process of haemoglobin non-enzymatic glycation and influence of Hb variants on analysis as well as alternative diagnostic methods available (fructosamine, OGTT…). The Trainee should be able to independently care clinically for patients with type 2 diabetes, managing to achieve appropriate level of glycaemic control by adjusting treatment, screen for long-term complications and identify and manage co-morbidities. The Trainee should be able to diagnose, including near-patient testing methods, and advise on initial management of diabetes-related emergencies: diabetic ketoacidosis acidosis and hyperosmolar hyperglycaemic state. The Trainee should be able to work as part of multidisciplinary team for the acute and long-term care of patients with diabetes.

Training/Learning Opportunities

Clinic Attendance
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

OUTCOME 4 – DEMONSTRATE APPROPRIATE KNOWLEDGE OF ENDOCRINOLOGY DISORDERS (INCLUDING PITUITARY, THYROID, REPRODUCTIVE, DYNAMIC FUNCTION TESTING)

The Trainee should have thorough knowledge of endocrine physiology, including feedback loops and the production, control and effects of hormones in hypothalamus-pituitary-end gland axis (thyroid, adrenal, gonads) as well as renin-angiotensin-aldosterone system. The Trainee should be able to create investigation plans and interpret results of investigations in endocrinology, including dynamic function tests and imaging. The Trainee should be able to investigate and manage common thyroid disorders, including subclinical presentations and advise on investigation and management of discordant thyroid test results. The Trainee should be proficient in diagnosis of secondary hypertension, as well advise on testing and treatment. The Trainee should be able to identify biochemical patterns of endocrine emergencies and advise on initiation of treatment.

Training/Learning Opportunities

Clinic Attendance
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

OUTCOME 5 – DEMONSTRATE APPROPRIATE KNOWLEDGE OF GASTROENTEROLOGY AND HEPATOBILIARY DISORDERS

The Trainee should understand the physiology of digestion and absorption as well as the role of the gut as an endocrine organ and advise on appropriate investigations, including the biochemical investigations in screening for gut neoplasms and inflammatory bowel disease. The Trainee should understand the physiology of the hepatobiliary system and pancreas, its diseases (MASLD, hepatitis, cirrhosis, cholestasis, gallstones, neoplasia, acute and chronic pancreatitis…) and be able to explain causes and create investigation plans as well as interpret results, particularly of investigation of pathological fluids (ascites).

Training/Learning Opportunities

Clinic Attendance
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

OUTCOME 6 – DEMONSTRATE APPROPRIATE KNOWLEDGE OF CARDIOVASCULAR DISEASE AND ITS INVESTIGATION

The Trainee is expected to understand and direct appropriate testing in the diagnosis of acute coronary syndromes and heart failure, including the biomarkers used for diagnostic purposes (troponins, natriuretic peptides). The Trainee should also understand the major risk factors for atherosclerotic cardiovascular disease (ASCVD), in particular the role of dyslipidaemias and the aetiopathogenesis of hypertension.

Training/Learning Opportunities

Clinic Attendance
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

OUTCOME 7 – DEMONSTRATE APPROPRIATE KNOWLEDGE OF INVESTIGATIONS IN RESPIRATORY DISEASE

The Trainee is expected to understand respiratory disease biochemical markers and genetic testing involved in their diagnosis, including alpha1 antitrypsin and cystic fibrosis as well as biochemical investigation of pleural fluid and its interpretation. In addition, the Trainee should understand the application of blood gas analysis in the stratification of respiratory failure.

Training/Learning Opportunities

Clinic Attendance
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

OUTCOME 8 – DEMONSTRATE APPROPRIATE KNOWLEDGE OF INVESTIGATIONS IN NEUROLOGICAL AND NEUROMUSCULAR DISEASE

The Trainee should understand the physiology of formation and composition of cerebrospinal fluid (CSF), the use of nasal fluid to determine existence of CSF leak and interpret CSF findings in common conditions (subarachnoid haemorrhage, infections, tumours) as well as CSF tumour markers and dementia screens. The Trainee should demonstrate knowledge of pathophysiology, investigation and management of rhabdomyolysis and myopathies.

Training/Learning Opportunities

Clinic Attendance
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

OUTCOME 9 – DEMONSTRATE APPROPRIATE KNOWLEDGE OF INVESTIGATIONS IN MONITORING CANCER TREATMENT

The Trainee should be able to advise on appropriate use of biochemical biomarkers in diagnosis and monitoring of malignancies.

Training/Learning Opportunities

Clinic Attendance
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

Training Goal 2 – Diagnosis & Treatment of Specific Conditions in Chemical Pathology

By the end of HST Trainees are expected to be proficient in diagnosing and managing common disorders diagnosed and managed (where appropriate) by chemical pathologists. Trainees are expected to attain sufficient capability to provide direct clinical care to patients in the following areas: type 2 diabetes mellitus, cardiovascular risk management and disorders of lipid metabolism, disorders of calcium and bone metabolism, including osteoporosis, and porphyrias. In all other areas, Trainees are expected to gain experience in direct patient care either by attending clinics managed by other specialties or by the way of clinical liaison or multidisciplinary meetings but are not expected to be delivering direct clinical care.

Outcome 1 – to be able diagnose and manage disorders of lipid metabolism and assess cardiovascular risk

The Trainee should understand the physiology of lipid metabolism, the genetic and non-genetic causes of lipid disorders, form appropriate investigation pathways for inherited and acquired lipid disorders, and manage lipid disorders independently according to recommended guidelines. The Trainee needs to be up to date with pharmacology of lipid-lowering agents and ways to assess cardiovascular risk as well as assess patients directly. The Trainee needs to understand the genetic basis of inherited lipid disorders, in particular familial hypercholesterolaemia, and be able to advise on cascade screening of affected family members, where appropriate.

Training/Learning Opportunities

Clinic attendance/ appropriate ward rounds
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

Outcome 2 – To be able to diagnose, manage and consult on the management of porphyrias

Trainee needs to be proficient in diagnosis of acute and cutaneous porphyrias, using both biochemical and genetic diagnostic methods and assessing patients. Trainee needs to be skilled in providing advice on the most appropriate treatment as well as advise on the cascade genetic screening of family members.

Training/Learning Opportunities

Clinic attendance/ appropriate ward rounds
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

Outcome 3 – To be able to diagnose and manage metabolic bone disorders including osteoporosis

In addition to understanding calcium, phosphate and magnesium disorders (Training Goal 1, Outcome 1) and possessing a detailed practical knowledge of the relevant laboratory investigations, the Trainee will need to understand the pathophysiology, causes, investigation pathways (including imaging) and therapeutic options in metabolic bone disorders (including osteoporosis, hypoparathyroidism and hyperparathyroidism—primary, secondary and tertiary, Paget's disease of bone, abnormal alkaline phosphatase, calcium and bone mineral disorders, and vitamin D deficiency) and manage them independently.

Training/Learning Opportunities

Clinic attendance/ appropriate ward rounds
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

Outcome 4 – To be able to consult in diagnosis and management of nutritional disorders

The Trainee needs to be able to direct investigations and management in vitamin and calorie-deficient states, particularly in refeeding syndrome. Where possible, it is desirable that Trainee gains experience in obesity management—however, there is a present a paucity of dedicated obesity clinics in available training sites and experience will need to be obtained in type 2 diabetes and lipid clinics.

Training/Learning Opportunities

Clinic attendance/ appropriate ward rounds
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

Outcome 5 – To demonstrate adequate knowledge of paediatric chemical pathology and be able to diagnose inborn errors and metabolism disorders (IEM)

The Trainee should understand the biochemical basis of inborn errors of metabolism and demonstrate knowledge on presentation and diagnosis of common IEMs (phenylketonuria, galactosaemia, homocystinuria, branch-chain amino acid disorders, fatty acid oxidation disorders, lysosomal, metals, mitochondrial, glycogen storage disorders, mucopolysaccharide, organic acid, peroxisomal, purine disorders…). The Trainee should be proficient in analysis and interpretation of amino acids, organic acids, carnitines and acylcarnitines, enzyme activity, mucopolysaccharides, tissue culture and DNA investigations. The Trainee should be able to advise on emergency management of common and important metabolic presentations, including metabolic acidosis, hypoglycaemia, hyperammonaemia.
The Trainee should understand the differences in metabolism and reference ranges in childhood vs adulthood and should be able to advise on general paediatric chemical pathology cases, including in primary care.

The Trainee should be proficient in diagnosis of cystic fibrosis using biochemical and genetic methods.
The Trainee should understand the methodology of newborn screening programme.
The Trainee should aim to attend both paediatric and adult metabolic clinics.

Training/Learning Opportunities

Clinic attendance/ appropriate ward rounds
Laboratory clinical liaison (review queue, clinical enquiry review)
Laboratory benchwork
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

OUTCOME 6 – TO BE ABLE TO DIAGNOSE AND CONSULT ON MANAGEMENT OF TRACE ELEMENT DISORDERS

The Trainee should be proficient in diagnostic techniques for assessment of trace element deficiency/excess or toxicology syndromes (zinc, copper, aluminium) and provide advice on diagnostic pathways.

Training/Learning Opportunities

Clinic attendance/ appropriate ward rounds
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

OUTCOME 7 – TO BE ABLE TO ADVISE ON APPROPRIATE INVESTIGATIONS IN TOXICOLOGY

In the absence of a dedicated clinical toxicology laboratory in Ireland, the Trainee is expected to gain knowledge on currently available laboratory methods (ethanol, salicylates, paracetamol) as well as the near-patient testing methods for illicit substances and their method limitations. It is desirable for the Trainee to gain knowledge on the state-of-the-art methods in toxicology (HPLC-MS/MS) by visiting one of the non-clinical toxicology laboratories in Ireland for additional insight (State Laboratory or HSE National Drug Treatment Centre in Pearse St.)

Training/Learning Opportunities

Clinic attendance/ appropriate ward rounds
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

OUTCOME 8 – TO BE ABLE TO ADVISE ON THERAPEUTIC DRUG MONITORING

The Trainee should be familiar with the principles of pharmacokinetics and its effects on half-life, dosage prediction of the commonly monitored medications (digoxin, lithium, antiepileptics, methotrexate, immunosuppressants, and antibiotics) as well as with metabolic effects/side-effects of drugs; *e.g.*, thyroid dysfunction with lithium or amiodarone.

Training/Learning Opportunities

Clinic attendance/ appropriate ward rounds
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

OUTCOME 9 – TO BE ABLE TO DIAGNOSE AND CONSULT ON ABNORMALITIES IN SERUM, URINE AND CSF PROTEINS

The Trainee should be able to understand the principles of measurement of serum proteins, their functions and properties (albumin, immunoglobulins, protease inhibitors, transport proteins, caeruloplasmin, clotting factors, complement, and hormone binding proteins) and be competent in diagnosis of hypoalbuminaemia, paraproteinaemias, cryoglobulinaemia as well as the acute phase response, immunoglobulin deficiencies, alpha-1-antitrypsin deficiency, cytokines . The Trainee should prove the ability to assess and appropriately interpret both gel and capillary serum protein electrophoresis, immunofixation and immunosubtraction as well as serum light chain analysis and demonstrate the ability to distinguish acute-phase changes from abnormalities due to underlying disease

The Trainee should be able to assess urine proteins in health and disease and interpret common laboratory tests for proteinuria. The Trainee should be able to interpret CSF protein analysis, for example in dementia screening.

Training/Learning Opportunities

Clinic attendance/ appropriate ward rounds
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

OUTCOME 10 – TO BE ABLE TO DIAGNOSE AND CONSULT ON DETECTION OF PREGNANCY, BIOCHEMICAL CHANGES IN HEALTHY PREGNANCY AS WELL AS BIOMARKERS OF DISEASE IN PREGNANCY

The Trainee should be able to understand maternal and foetal physiology, detection of pregnancy as well as detection of pregnancy complications, including pre-eclampsia. The Trainee should be familiar with the physiological changes in reference ranges of common analytes in pregnancy as well as with the effects of pregnancy on existing disease. The Trainee should be well versed in assessment and management of hyperglycaemia in pregnancy and options for prenatal screening. The Trainee should understand the role of biochemistry testing in the assessment of fertility and assisted reproduction.

Training/Learning Opportunities

Clinic attendance/ appropriate ward rounds
Laboratory clinical liaison (review queue, clinical enquiry review)
Self-directed learning (Relevant text, guidance)
Study Days

Recommended Assessment Methods

Feedback opportunities (to include record of self-directed learning, where appropriate)
WBA
FRCPath Examination

Training Goal 3 – Establish & Maintain Laboratory & Clinical Services

By the end of HST Trainees will be able to contribute setting up new laboratory and clinical services and maintaining/managing such services.

Outcome 1 – To be proficient in the commissioning of chemical pathology services

The Trainee should understand the governance, resourcing and financing of laboratory services and demonstrate the ability to identify a service need and construct an appropriate business plan, while using resources effectively.

Training/Learning Opportunities

Contribution to service development (Case studies)
Audits (clinical & laboratory)
Business case writing and tender preparation and evaluation

Recommended Assessment Methods

Feedback opportunities
WBA

Outcome 2 – To participate actively in Multidisciplinary Team Meetings (MDT)

The Trainee should be able to actively convey clinical and laboratory knowledge in aid of patient management by serving as a bridge between the laboratory and the clinician colleagues, effectively interacting and contributing to improved patient outcomes.

Training/Learning Opportunities

Attending Multidisciplinary Team Meetings

Recommended Assessment Methods

Feedback opportunities
WBA

Outcome 3 – to be proficient in clinical liaison and in responding to laboratory-related queries

The Trainee should learn to communicate effectively in liaison encounters, by learning to identify the caller and their relationship to the patient accurately, sharing patient information only when satisfied of appropriateness of the interaction and conveying appropriate clinical advice, possibly after a departmental discussion. Same scrutiny should be applied to laboratory-related queries with the focus always primarily on patient safety.

Training/Learning Opportunities

Case Recording

Recommended Assessment Methods

Feedback opportunities
WBA

OUTCOME 4 – TO BE PROFICIENT IN THE EVALUATION AND DEVELOPMENT OF LABORATORY AND CLINICAL SERVICES

The Trainee should demonstrate ability in performing an assessment of need, assessment of risk as well as root cause analysis. The Trainee should understand hospital and departmental governance, develop adequate people management skills, learn the principles of laboratory accreditation, and demonstrate efficiency in continuous improvement of laboratory and clinical services, by focusing first and foremost on improved patient outcomes and patient safety.

Training/Learning Opportunities

Case Recording
Attendance at quality and management meetings
Audits (clinical & laboratory)
QI Activities

Recommended Assessment Methods

Feedback opportunities
WBA

Training Goal 4 – Core Laboratory Skills in Chemical Pathology

By the end of HST Trainees are expected to demonstrate an understanding of factors affecting the operation and management of a clinical laboratory

OUTCOME 1 – DEMONSTRATE AN UNDERSTANDING OF TOTAL QUALITY MANAGEMENT IN A CHEMICAL PATHOLOGY LABORATORY, INCLUDING PROFICIENCY IN THE UNDERSTANDING AND PROVISION OF QUALITY ASSURANCE (INTERNAL QUALITY CONTROL, IQC, AND EXTERNAL QUALITY ASSESSMENT, EQA)

The Trainee should understand the laboratory quality management system, the roles of various personnel members, principles of assessment and management of risk. The Trainee demonstrate aptitude in interpreting internal quality control and external quality assurance reports, assessing non-conformances and their clinical risk, root cause analysis and remedial action.

Training/Learning Opportunities

Laboratory Activities

Recommended Assessment Methods

Feedback opportunities
WBA

OUTCOME 2 – DEMONSTRATE AN UNDERSTANDING OF BASIC AUTOMATED AND SPECIALIST TECHNIQUES, METHODS, AND PROCESSES RELEVANT TO CHEMICAL PATHOLOGY

The Trainee should be able to describe the whole pre-analytical, analytical, and post-analytical process from sample requirement and collection, including order of draw, transport and arrival to the lab, automated laboratory processes, laboratory information technology. The Trainee should understand the sources of common laboratory errors and interferences.

Training/Learning Opportunities

Laboratory Activities

Recommended Assessment Methods

Feedback opportunities
WBA including DOPS

OUTCOME 3 – TO BE PROFICIENT IN CALCULATIONS AND STATISTICAL METHODS USED IN A CHEMICAL PATHOLOGY LABORATORY

The Trainee should be proficient in statistics to understand methods for collecting, analysing, interpreting, and presenting empirical data underpinning method validation and verification as well as quality assessment.

Training/Learning Opportunities

Laboratory Activities
Statistics course

Recommended Assessment Methods

Feedback opportunities
WBA

OUTCOME 4 – TO BE PROFICIENT IN THE VALIDATION AND VERIFICATION OF AUTOMATED AND SPECIALIST METHODS IN GENERAL CHEMICAL PATHOLOGY INCLUDING NEAR-PATIENT TESTING

The Trainee needs to be able to oversee planning and performance of validation/verification experiments, including precision and accuracy assessment, limits of detection and quantitation, recovery and interference assessments, application of appropriate reference intervals, implementation of metrological traceability, use of international reference preparations, calibrants, controls with assigned values, and external quality assurance specimens with unknown values.

Training/Learning Opportunities

Laboratory Activities
Yearly accreditation process

Recommended Assessment Methods

Feedback opportunities
WBA

OUTCOME 5 – TO BE FAMILIAR WITH DISCIPLINE SPECIFIC MEDICO-LEGAL AND ETHICAL MATTERS E.G. CHAIN OF CUSTODY

The Trainee needs to be familiar with the legal framework required for processing of forensic samples (chain of custody.)

Training/Learning Opportunities

Laboratory Activities
Visit to State Laboratory or HSE National Drug Treatment Centre in Pearse St

Recommended Assessment Methods

Feedback opportunities
WBA

Training Goal 5 – Clinical Application of Specialist Methods & Services in Chemical Pathology

By the end of HST Trainees will be able to interpret and evaluate data produced in the laboratory by specialist methods, and apply this to patient care appropriately.

Outcome 1 – To be proficient in the clinical application of mass spectrometry

The Trainee should be able to understand the theory behind the analytical method of mass spectrometry and various separation techniques used with it (high performance liquid chromatography, gas chromatography, inductively coupled plasma MS…) as well as ways to identify interferences and resolve reporting issues.

Training/Learning Opportunities

Laboratory Activities/Result interpretation related to mass spectrometry
Self-directed learning
Clinic attendance
Attendance at appropriate courses

Recommended Assessment Methods

Feedback opportunities
WBA

Outcome 2 – To be proficient in the clinical application of chromatography

The Trainee should be able to understand the theory behind the analytical method of chromatography (thin-layer, gas, ion exchange, HPLC *etc.*,) and its application in clinical use.

Training/Learning Opportunities

Laboratory Activities/Result interpretation related to chromatography
Self-directed learning
Clinic attendance
Attendance at appropriate courses

Recommended Assessment Methods

Feedback opportunities
WBA

Outcome 3 – To be proficient in the clinical application of screening tests in Chemical Pathology including newborn screening

The Trainee should be proficient in understanding the principles behind screening programmes, principles of primary and secondary prevention, regulation of screening programmes in Ireland, including newborn screening and national bowel screening. The Trainee should be able to advise on investigation and management of hyperlipidaemia, including cascade screening in case of familial hypercholesterolaemia. The Trainee should understand the technology behind newborn screening and the public health repercussions of it. The Trainee should be familiar with clinical and biochemical investigations in screening for diabetes complications.

Training/Learning Opportunities

Laboratory Activities/Result interpretation related to screening tests
Clinic attendance
Self-directed learning
Attendance at appropriate courses

Recommended Assessment Methods

Feedback opportunities
WBA

OUTCOME 4 – TO BE PROFICIENT IN THE CLINICAL APPLICATION OF MOLECULAR DIAGNOSTIC TESTING

The Trainee should understand the basic principles of genetics and molecular diagnostic testing, including inheritance and penetrance models, and be familiar with methods for targeted and whole-genome sequencing, e.g., PCR, Sanger, DNA arrays whole-genome and whole-exome sequencing. The Trainee should understand the process of genetic variant classification and the methods available to test variant pathogenicity. The Trainee should be familiar with the application of bioinformatics, in particular, creating and clinically interpreting genome sequencing data.

Training/Learning Opportunities

Laboratory Activities/Result interpretation related to molecular diagnostic
Clinic attendance
Self-directed learning
Attendance at appropriate courses

Recommended Assessment Methods

Feedback opportunities
WBA

Training Goal 6 – Management & Leadership in Chemical Pathology including Clinical Risk Management

By the end of HST Trainees are expected to demonstrate ability to lead a high quality chemical pathology laboratory, focused on provision of patient care, with a strong emphasis on research and development.

OUTCOME 1 – TO BE ABLE TO PROVIDE CLINICAL LEADERSHIP FOR CHEMICAL PATHOLOGY LABORATORY SERVICES

The Trainee should aim to identify their own leadership style and develop it through application of academic rigour, practical experience and in-depth self-analysis by getting involved in leading projects in the laboratory appropriate to the stage of training.

Training/Learning Opportunities

Preparing and chairing meetings (depending on the stage of training)
Presentations
Teaching
Audit
RCPI Mandatory Teaching

Recommended Assessment Methods

Feedback opportunities
WBA

OUTCOME 2 – TO BE PROFICIENT IN CHEMICAL PATHOLOGY LABORATORY ACCREDITATION

The Trainee should demonstrate understanding of the role of accreditation in ensuring quality of laboratory service and results and be familiar with current Irish National Accreditation Board standards (ISO 15189:2022).

Training/Learning Opportunities

Participation in laboratory accreditation
Regular attendance at quality meetings in chemical pathology laboratory and near-patient testing department
RCPI Mandatory Teaching

Recommended Assessment Methods

Regular Informal feedback
WBA

OUTCOME 3 – TO BE ABLE TO MAINTAIN AND SAFELY MANAGE A CHEMICAL PATHOLOGY LABORATORY

The Trainee should be familiar with health and safety legislation in Ireland and its application in the chemical pathology laboratory.

Training/Learning Opportunities

Laboratory Activities (laboratory management meetings and whole-department management meetings)
RCPI Mandatory Teaching
Mandatory HSE courses in chemical handling
Recommended Assessment Methods
Feedback opportunities
WBA

OUTCOME 4 – TO BE ABLE TO CRITICALLY APPRAISE RELEVANT PEER-REVIEWED LITERATURE AND WRITE CONCISE CASE REPORTS AND RESEARCH ARTICLES.

The Trainee should become skilled in critical appraisal and scientific writing, focusing on publishing in peer-reviewed journals.

Training/Learning Opportunities

Research activities
Journal clubs
Study days
Grand rounds

Recommended Assessment Methods

Feedback opportunities
WBA
FRCPath Part 2 Module 2

APPENDICES

This section includes two appendices to the Curriculum.

The first one is about Assessment (i.e. Workplace Based Assessments, Evaluations etc).

The second one is about Teaching Attendance (i.e. Taught Programme, Specialty-Specific Learning Activities and Study Days)

ASSESSMENT APPENDIX

Workplace-Based Assessment & 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. 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.
- **Actionable**: to improve performance and foster behavioural change, feedback should include practical and contextualised examples of both Trainee's strengths and areas for improvement. Based on these examples, it is necessary to outline a realistic action plan to direct the Trainee towards remediation/improvement.

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 Assessment/End of Post Assessment; 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 & Summative Assessment

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.
MiniCEX **|** *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	
QA **|***Quarterly Assessment***	As the name suggests, the Quarterly Assessment recurs four times in the academic year, once every academic quarter (every three months). It frequently happens that a Quarterly Assessment coincides with the end of a post, in which case the Quarterly Assessment will be substituted by completing an End of Post Assessment. In this sense the two Assessments 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 Assessment. 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 Assessment to assess the end of a post. This means that for every specialty and level of training, a minimum of four Quarterly Assessment and/or End of Post Assessment will be completed in an academic year as a mandatory requirement.
EOPA **|** *End of Post Assessment*	
EOYE **|** *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

RCPI Taught Programme

The RCPI Taught Programme consists of a series of modular elements spread across the years of training.

Delivery will be a combination of self-paced online material, live virtual tutorials, and in-person workshops, all accessible in one area on the RCPI's virtual learning environment (VLE), RCPI Brightspace.

The live virtual tutorials will be delivered by Tutors related to this specialty and they will use specialty-specific examples throughout each tutorial. Trainees will be assigned to a tutorial group and will remain with their tutorial group for the duration of HST.

Trainees will receive their induction content and timetable ahead of their start date on HST. Trainees must plan the time to complete their requirements and must be supported with the allocation of study leave or appropriate rostering.

As the HST Taught Programme is a mandatory component of HST, it is important that Trainees are released from service to attend the Virtual Tutorials and, where possible facilitated with the use of teaching space in the hospital.

Specialty-Specific Learning Activities (Courses & Workshops)

Trainees will also complete specialty-specific courses and/or workshops as part of the programme.

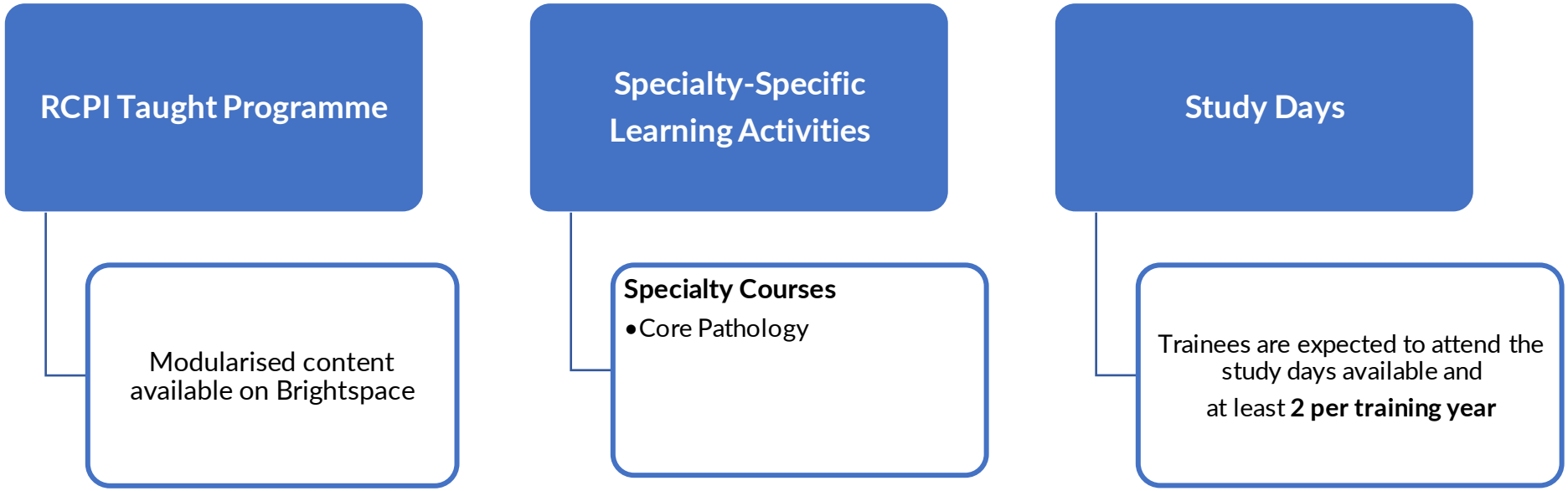
Trainees should always refer to their training Curriculum for a full list of requirements for their HST programme. When not sure, Trainees should contact their Programme Coordinator.

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 HST Curriculum.

Trainees are expected to attend the majority of the study days available and **at least 2 per training year**.

Chemical Pathology Teaching Attendance Requirements



Recommended Reading

- Tietz Textbook of Clinical Chemistry and Molecular Diagnostics
- Crook, MA. Clinical Biochemistry and Metabolic Medicine, 2012
- Deacon's Calculations in Laboratory Science
- Clinical Biochemistry: Metabolic and Clinical Aspects 3rd Ed. WJ Marshall, M Lapsley, AP Day, RM Ayling