FACULTY OF PATHOLOGY

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

HIGHER SPECIALIST TRAINING IN

MICROBIOLOGY CLINICAL AND LABORATORY

OUTCOME-BASED EDUCATION – OBE CURRICULUM

This Curriculum of Higher Specialist Training in Microbiology Clinical and Laboratory was developed in 2023 by a working group led by Prof Karina O'Connell and Dr Anna-Rose Prior, National Specialty Directors and the RCPI Education Department. The Curriculum undergoes an annual review process by the National Specialty Director(s) and the RCPI Education Department. The Curriculum is approved by the Specialty Training Committee and the Faculty of Pathology.

Version	Date Published	Last Edited By	Version Comments
1.0	01 July 2024	Keith Farrington	New OBE Curriculum

National Specialty Directors' Foreword

This Curriculum defines the purpose, learning objectives, training process and programme of assessment for Microbiology Clinical and Laboratory training in Ireland leading to the award of Certificate of Satisfactory Completion of Specialist Training (CSCST).

The purpose of the Microbiology Curriculum is to set the standards for attainment of the award of CSCST and to produce doctors with the requisite skills to lead a full clinical and laboratory microbiology service at consultant level in Ireland.

The Microbiology Curriculum has been developed with the input of a working group comprising Microbiology consultants actively involved in delivering teaching and training, education specialists and a Trainee representative. The Curriculum has moved to an Outcome Based Education (OBE) approach in line with other countries in Europe and the US and is one of the key initiatives of the RCPI's Strategic Plan 2021-2024 which seeks to enhance the quality of Ireland's BST and HST training programmes to ensure that they are aligned with international best practices and standards. There are six broad training goals each aligned to key areas of practice. Within each goal are a series of training outcomes that reflect the totality of everyday practice in Microbiology. Trainees will demonstrate proficiencies in each outcome matched to the level of their training, progressing to independent competence in each. Trainers will link closely with their Trainees assisting them and evaluating their progress on a regular basis. In addition to clinical training, and reflecting the diversity of the specialty, the Curriculum includes management, education, quality improvement and research experience.

Achievement of FRCPath is a mandatory requirement for successful completion of Higher Specialist Training to achieve CSCST. It is advised that Trainees attempt the Part I of the FRCPath examination after a minimum of twelve months of specialty training in Microbiology. The Part II FRCPath examination is taken after a minimum of two and a half years of recognised training and when the candidate is considered by their educational supervisor to be sufficiently prepared for the examination.

Microbiology consultant posts comprise both general hospital and combined hospital/ community posts which cover all areas of Microbiology including laboratory, clinical, surveillance, infection control and antimicrobial stewardship. In larger centres, more specialist posts exist in Virology, Mycology, Maternity and Paediatric Microbiology. This Curriculum has been designed to provide Trainees with the full range of generic professional competencies, specialty-specific capabilities and underlying knowledge and skills essential to practice as a Consultant Microbiologist.

We would like to thank all the individuals involved in the workshop and discussion group which led to the compilation of this Curriculum. We are excited to be part of the ongoing development of the Microbiology HST programme in conjunction with the RCPI and Trainers around the country.

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1. INTRODUCTION

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

1.1. Purpose of Training

Microbiology - Clinical and Laboratory - is a clinical specialty that focuses on the study of human diseases caused by microorganisms including bacteria, viruses, fungi, and parasites. It encompasses the study of microbial pathogenesis, laboratory diagnostics, epidemiology, clinical management, and infection prevention and control principles.

This five-year programme is designed to provide Trainees with comprehensive training in microbiology, virology, mycology, parasitology and the principles of infection prevention and control. Trainees will receive training in the management of the clinical microbiology laboratory, antimicrobial stewardship and surveillance, and will collaborate with Public Health authorities and national surveillance organisations throughout their training.

Besides these specialty specific elements, Trainees in Microbiology Clinical and Laboratory must also acquire certain core competencies which are essential for good medical practice. These comprise the generic components of the Curriculum.

1.2. Purpose of the Curriculum

The purpose of the Curriculum is to guide the Trainee towards achieving the educational outcomes necessary to work in healthcare as an independent Consultant Clinical Microbiologist. The Curriculum defines the relevant processes, content, outcomes, and requirements to be achieved. It stipulates the overarching goals, outcomes, expected learning experiences, instructional resources and assessments that comprise the Higher Specialist Training (HST) programme. It provides a framework for certifying successful completion of HST programme.

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

1.3. How to use the Curriculum

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.

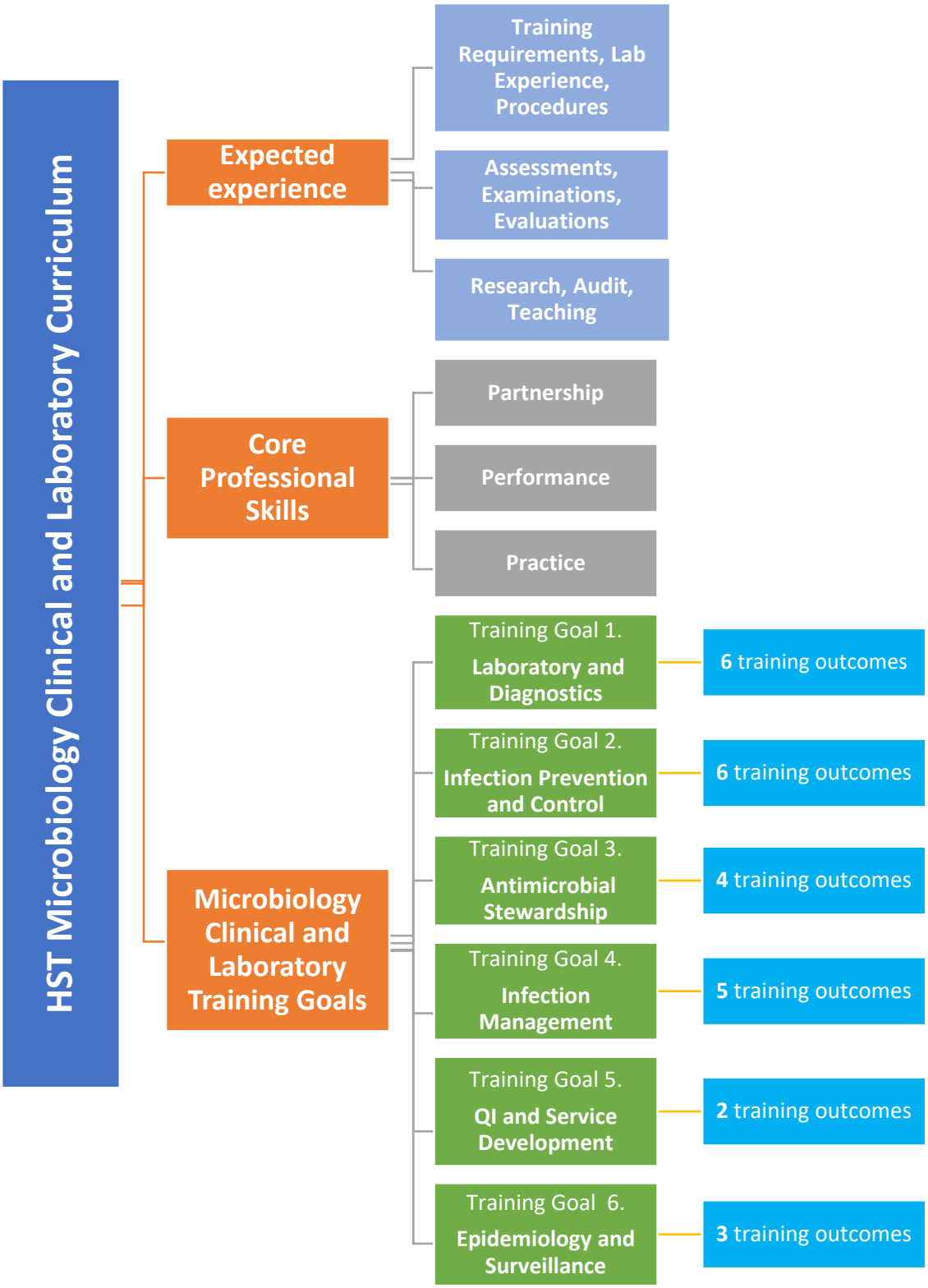
It is important to note that ePortfolio is a digital repository designed to reflect Curriculum requirements. It facilitates recording of progress through HST and evidence that training is valid and appropriate. While a complete ePortfolio is essential for HST certification, Trainees and Trainers should 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.

1.4. Reference to Rules and 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.

1.5. Overview of Curriculum Sections and Training Goals



2. EXPECTED EXPERIENCE

This section details the training experience and the service provision tasks that all Trainees are expected to complete throughout the Higher Specialist Training.

2.1. Duration and Organisation of Training

The duration of HST in Microbiology Clinical and Laboratory is five years, one year of which may be gained from a period of National Speciality Director (NSD)-approved full-time research or through the successful completion of a National Speciality Director (NSD)-approved Fellowship or out of clinical programme experience (OCPE).

In the normal course of events, the Part I FRCPath will be taken after a minimum of 12 months of specialty training in Microbiology. The Part II FRCPath is taken after a minimum of two and a half years of recognised training and when the candidate is considered by their Trainer to be sufficiently prepared for the examination. Trainees are advised to consult the Royal College of Pathologist Examination Regulations and Guidelines for the most up to date eligibility criteria. Trainees are expected to consult with their Trainer at the earliest opportunity if considering taking either examination to ensure that the Trainee has the requisite experience to undertake the examination.

Experience in virology is required as part of the HST programme in Microbiology. This will be facilitated via rotation to a specialist virology centre or as part of assignments to hospitals in which the General Clinical Microbiology service includes a substantial element of virology.

Trainees should note this is a national training scheme and it is not generally possible to consider personal circumstances in determining annual allocations of training.

Trainees must spend the first two years of training in clinical posts in Ireland before undertaking any period of research or any out of clinical programme experience (OCPE). The earlier years will usually be directed towards acquiring a broad general experience of Microbiology under appropriate supervision.

An increase in the content of hands-on experience follows naturally and as confidence is gained and abilities are acquired, the Trainee will be encouraged to assume a greater degree of responsibility and independence.

If an intended career path would require a Trainee to develop further an interest in a sub-specialty within Microbiology, for example paediatrics or obstetrics and gynaecology, this will be accommodated where possible within the training period. The training programme offered will provide opportunities to fulfil all the requirements of the Curriculum of training for Microbiology 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 NSDs. 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 two years of clinical training or with the same Trainer for more than one year unless there is no alternative Trainer available at that training site.

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. Trainees should identify these elements and discuss options for meeting these Curriculum requirements with their Trainer.

Generic knowledge, skills and attitudes support competencies which are common to good medical practice in the all the medical and related specialties. It is intended that all Specialist Registrars should re-affirm those competencies during HST. No timescale of acquisition is offered, but failure to make

progress towards meeting these important objectives at an early stage would cause concern about a Trainee's suitability and ability to become independently capable as a specialist.

2.2. Training Activities, Procedures, Laboratory Experience and Cases

Listed below are required elements of all posts throughout the programme. The specific 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 generic expected experience a Specialist Registrar in Microbiology - Clinical and Laboratory should complete. All these activities should be recorded on ePortfolio using the respective form.

The numbers specified in the table are provided as an indicative guide only and are provided to give the Trainee an indication of the minimum frequency expected for each training activity. The Trainee is strongly recommended to exceed these numbers and to seek advice from their Trainer to agree the appropriate frequency of their training requirements in the context of their year of HST and experience gained to date. Trainees are required to meet and agree expected experience numbers with their Trainer at the beginning of each new HST post. This will ensure that Trainees have a clear vision of their learning goals for the rotation and areas for development or improvement have been identified.

TRAINING ACTIVITIES		
TYPE	**Expected Experience**	**ePortfolio Form**
On-Call for Microbiology	Record work outside of normal working hours (Monday to Friday). Briefly document the nature of the commitment (on-site or off-site, immediate consultant support or telephone support) and the experience gained. Trainees are encouraged to complete as much on-call work as possible during HST under supervision from the on-call Consultant Microbiologist. In particular, Trainees are strongly encouraged to commence off-site (first on-call with consultant supervision) call as early in their training as they are deemed competent to do so by their Trainer. The quantity of such on-call should be determined by local factors such as the number of Trainees in a department.	Policies and Guidelines
Attendance at AMS Committee meetings	Record at least one per year	
Participation in AMS rounds, both ward/specialty focused and directed at patients on formulary non-compliant antimicrobials	Record at least one per each month of training	
Participation in audit of antimicrobial use	Record at least one per each year of training	
Participation in antimicrobial formulary review	Record at least one over the course of HST	
Guidelines/Policies	An SpR should be involved in a minimum of one policy or guideline per year (An SpR can explore an existing policy to fulfil this requirement). In later stages of training, Trainees are encouraged to lead	

	on document development with appropriate support. By the end of the HST, Trainees should have a record of contribution to the review or development of guideline or policy documents e.g., antimicrobial use, infection control	Policies and Guidelines
Infection Control	Record on average one entry per month, from the examples listed here: Outbreak meetings, Infection Control committee meetings, Hospital build, Disinfection and sterilisation, Environmental issues, Inoculation injury, surveillance activities, Other.	

2.3. Evaluations, Examinations and Assessments

It is crucial that Trainees engage regularly with their Trainer to ensure that Trainees can get the optimal learning experience at each HST training site they rotate through. This approach affords an opportunity for Trainers to identify areas where additional training or support is needed.

Trainees are expected to:

- Complete **four quarterly assessments per training year** (one assessment per quarter)
- Complete **one end of year evaluation at the end of each training year**
- Complete all **workplace-based assessments** as agreed with Trainer
- Complete **FRCPath (Medical Microbiology) Parts I & II** by the end of HST
- Complete **HIS/UKHSA Foundation Certificate in Infection Prevention and Control** by the end of HST

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

2.4. Research, Audit and Teaching Experiences

Trainees are expected to complete the following activities:

- Complete one **audit**, per each year of training
- Attend minimum one **national/international meeting per year**
- Deliver **two teaching events** per each year of training (for example, medical or surgical grand rounds, undergraduate or postgraduate teaching)
- Deliver one **oral presentation or poster** per each year of training
- Complete **one quality improvement (QI) project** over the course of HST
- Minimum of two **publications**, i.e., paper submitted for publication to a peer-reviewed journal over the course of HST
- Attend relevant **committee meetings (local, national, international)**

It is desirable, but not expected, to pursue additional qualification with a recognised higher-level institution (Fellowship, Diploma, Masters, Doctor of Medicine (MD), PhD). Trainees should seek advice from their Trainer if considering commencing a programme of work and/or study towards an additional qualification. If the Trainee intends to take a leave of absence from the HST programme or an out-of-programme year to gain this additional qualification, the NSDs must be informed with as much advance notice as possible**.**

2.5. Teaching Attendance

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

2.6. Summary of Expected Experience

Experience Type	Trainee is expected to	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 Trainer to be signed by both Trainee and Trainer	Personal Goals
On-Call for Pathology	Please refer to "Training activities"	
Liaisons	Please refer to training/ learning opportunities under the relevant training outcome	Clinical and Other Liaisons
Procedures, Practical/Laboratory Skills	Gain experience in procedural, practical, laboratory skills as indicated in Training Goal 1 – Laboratory and Diagnostics, Outcome 1- Laboratory Methodology	Procedures, Skills & DOPS
Cases	Gain experience in a variety of cases as indicated in training/learning opportunities under the relevant training outcome	Cases
Management Experience	Gain experience in clinical management and leadership indicated in training/learning opportunities under the relevant training outcome	Management Experience
Deliver Teaching	Record on ePortfolio episodes where you have delivered teaching as indicated above in section 2.4.	Delivery of Teaching
Publication	Complete two publications during the training programme as indicated in section 2.4.	Additional Professional Activities
Presentation	Deliver one oral presentation or poster per each year of training, as indicated in section 2.4.	Additional Professional Activities
Audit	Complete and report on one audit or Quality Improvement (QI) per each year of training, either to start, continue or complete	Audit and QI
Attendance at Hospital Based Learning	Attend different hospital-based activities (Journal Club, Grand Rounds etc.) Record attendance on ePortfolio	Attendance at Hospital Based Learning
National/International Meetings	Attend one per year of training. Record attendance on ePortfolio	Additional Professional Activities
Teaching Attendance	Attend courses and Study Days as detailed in the Teaching Appendix. Record attendance on ePortfolio	Teaching Attendance
Workplace-based Assessments	Complete all the workplace-based assessment as outlined in the outcomes	CBD/DOPS/Mini-CEX
Quarterly and/or End-of-Post Assessments	Complete a Quarterly Assessment/End of post assessment with Trainer four times in each year. Discuss progress and complete the ePortfolio form with your Trainer	Quarterly Assessments/End-of-Post Assessments
End of Year Evaluation	Prepare for the End of Year Evaluation by ensuring the portfolio is up to date and the End of Year Evaluation form is initiated with the assigned Trainer	End of Year Evaluation

3. CORE PROFESSIONAL SKILLS

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

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

Partnership

Communication and interpersonal skills

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

Collaboration

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

Health Promotion

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

Caring for patients

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

Performance

Patient safety and ethical practice

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

Organisational behaviour and leadership

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

Wellbeing

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

Practice

Continuing competence and lifelong learning

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

Reflective practice and self-awareness

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

Quality assurance and improvement

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

4. SPECIALTY SECTION – TRAINING GOALS

This section includes the Microbiology Clinical and Laboratory 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 – Laboratory and Diagnostics

By the end of HST, the Trainee is expected to be able to manage a diagnostic Microbiology laboratory. This will mean the assimilation of laboratory experience in the latter part of the programme (years 3-5) and necessitate significant Trainee involvement and engagement with laboratory accreditation, maintenance, and inspections.

Outcome 1 – Laboratory Methodology

For the Trainee to demonstrate knowledge of laboratory methodologies such as organism identification, culture technique, susceptibility testing, molecular diagnostic techniques and genomics.

Training/learning opportunities

- Laboratory rounds
- Laboratory practical experience
- DOPS on Gram stain interpretation
- Feedback opportunity
- FRCPath examinations

Outcome 2 – Advise on test selection

For the Trainee to be able to advise on the appropriate specimen and diagnostic test for various clinical scenarios.

Training/learning opportunities

- Feedback opportunity
- Case Based Discussion (CBD) or Mini-CEX, as appropriate and as agreed with Trainer
- Clinical handover
- ICU ward rounds
- Attendance at MDT Meetings
- FRCPath examinations

Outcome 3 – Understand diagnostic stewardship

For the Trainee to demonstrate an understanding of diagnostic stewardship and resource management.

Training/learning opportunities

- Feedback opportunity
- Case Based Discussion (CBD) or Mini-CEX, as appropriate and as agreed with Trainer
- Clinical handover
- Audit and/or QIP
- ICU ward rounds
- Attendance at MDT Meetings
- FRCPath examinations

Outcome 4 – Interpretation and reporting of lab results

For the Trainee to be proficient in the interpretation, reporting and communication of results.

Training/learning opportunities

- Feedback opportunity
- Clinical authorisation of laboratory results
- Case Based Discussion (CBD) and/or DOPS, as appropriate and as agreed with Trainer
- Attendance at MDT Meetings
- FRCPath examinations

Outcome 5 – Quality and Accreditation

For the Trainee to demonstrate an understanding of quality management systems including internal quality control, external quality control, ISO standards.

Training/learning opportunities

- Audit and/or QIP
- Laboratory management meetings
- External quality assurance schemes
- Accreditation preparation and inspections
- ISO 15189 document
- Involvement with laboratory non-conformances

Outcome 6 – Laboratory health and safety

For the Trainee to understand and practice statutory health and safety legislation in the laboratory.

Training/learning opportunities

- Feedback opportunity
- Case Based Discussion (CBD) and/or DOPS, as appropriate and as agreed with Trainer
- Mandatory Training
    - Fire safety
    - Chemical safety
    - Manual handling
- Biological agents' regulations - Laboratory health and safety manuals

Training Goal 2 – Infection Prevention and Control (IPC)

By the end of HST, the Trainee is expected to be proficient in the leadership and delivery of an IPC service, with consideration for hospital and community settings.

Outcome 1 – Leadership and implementation of IPC policies

For the Trainee to lead and advise as part of the IPC team on the prevention of cross-transmission of pathogens and the prevention of healthcare-associated infections.

Training/learning opportunities

- Feedback opportunity
- Case Based Discussion (CBD) or Mini-CEX, as appropriate and as agreed with Trainer
- Infection prevention and control (IPCT) meetings
- Audit and/or QIP
- Contributing to developing local hospital policies
- Course attendance e.g., such as those provided by Healthcare Infection Society (HIS)
- FRCPath examinations

Outcome 2 – Provision of IPC Education

For the Trainee to deliver education on IPC policies and procedures within community and healthcare settings.

Training/learning opportunities

- Local, national, international meetings
- Ward rounds
- Hand hygiene training
- Standard precautions training

Outcome 3 – Outbreak management

For the Trainee to demonstrate the ability to participate in managing outbreaks in the healthcare setting.

Training/learning opportunities

- Feedback opportunity
- Case Based Discussion (CBD) or Mini-CEX, as appropriate and as agreed with Trainer
- Outbreak control team (OCT) meetings
- Contributing to policy development
- Healthcare Infection Society (HIS) course attendance
- FRCPath examinations

Outcome 4 – Hospital design and environment

For the Trainee to be able to advise on the role of the hospital environment and infrastructure as potential reservoirs in the transmission of infections.

Training/learning opportunities

- Audit and/or QIP
- Water and Air safety meetings

- IPCT Committee
- Health technical memoranda (HTMs)
- Contributing to developing local policies
- HIS course attendance
- FRCPath examinations

OUTCOME 5 – STERILISATION AND DISINFECTION

For the Trainee to understand and advise on disinfection and sterilisation processes in the healthcare settings.

Training/learning opportunities

- Audit and/or QIP
- Attending relevant conferences
- Technical Services Department (TSD) visits
- Policy development
- HIS course attendance
- FRCPath examinations

OUTCOME 6 – RISK AND PATIENT SAFETY

For the Trainee to be able to identify, investigate, manage and report patient safety issues, including, but not limited to, non-compliance with policies, healthcare-associated infection acquisition, and serious incident management.

Training/learning opportunities

- Case Based Discussion (CBD)
- Feedback opportunity
- Open disclosure training
- Root-cause analysis
- Relevant Patient Safety Committees
- Study day attendance
- FRCPath examinations

Training Goal 3 – Antimicrobial Stewardship (AMS)

By the end of HST, the Trainee is expected to be capable of developing and delivering an AMS programme.

OUTCOME 1 – LEADERSHIP AND GOVERNANCE OF AN AMS PROGRAMME

For the Trainee to develop the skills required to lead and govern an AMS programme including awareness of national standards and KPIs.

Training/learning opportunities

- Feedback opportunity
- Case Based Discussion (CBD)
- Local AMS Committee membership
- National meeting attendance
- Study day attendance
- AMS ward rounds
- FRCPath examinations

OUTCOME 2 – IMPLEMENTATION OF AN AMS PROGRAMME

For the Trainee to demonstrate the ability to provide leadership on the appropriate use of antimicrobials.

Training/learning opportunities

- Feedback opportunity
- Case Based Discussion (CBD)
- Audit and/or QIP
- Committee membership
- Local and national meetings
- Study day attendance
- AMS ward rounds
- FRCPath
- Outpatient antimicrobial therapy (OPAT) patient reviews

OUTCOME 3 – PROVISION OF AMS EDUCATION

For the Trainee to deliver education on antimicrobials and the increasing global problem of antimicrobial resistance**.**

Training/learning opportunities

- Local and National meetings
- National Policies including iNAP
- Study day attendance
- Attendance at MDT Meetings
- AMS ward rounds
- FRCPath
- Antimicrobial Awareness Week

OUTCOME 4 – GUIDELINES AND FORMULARY MANAGEMENT

For the Trainee to use local and national data to develop antimicrobial guidelines and to evaluate newer agents for addition to the hospital formulary.

Training/learning opportunities

- Attendance at drugs and therapeutics (D&T) meetings
- Involvement in antimicrobial guidelines development and updates

Training Goal 4 – Infection Management

By the end of HST, the Trainee is expected to be competent in advising on the diagnosis, management and prevention of bacterial, viral, fungal and parasitic infections.

OUTCOME 1 – ASSESS PATIENT AND GENERATE A DIFFERENTIAL DIAGNOSIS

For the Trainee to be able to collate clinical, epidemiologic and diagnostic information to generate a differential diagnosis for the patient with a suspected infection, including, but not limited to, neonates, paediatric, maternity, immunocompromised and non-immunocompromised patients in both the community and in-patient healthcare settings.

Training/learning opportunities

- Feedback opportunity
- Case Based Discussion and/or Mini-CEX as appropriate and as agreed with Trainer
- Clinical consultations
- Clinical handover
- Attendance at MDT meetings
- Presentation(s) at national and/or international meetings
- Study day attendance
- FRCPath examinations

OUTCOME 2 – SELECT AND INTERPRET APPROPRIATE TESTS

For the Trainee to be able to advise on and interpret diagnostic tests appropriate for the clinical scenario.

Training/learning opportunities

- Feedback opportunity
- Case Based Discussion and/or Mini-CEX as appropriate and as agreed with Trainer
- Clinical Consultations
- Clinical handover
- Attendance at MDT meetings
- ICU ward rounds
- FRCPath examination

OUTCOME 3 – DEVISING MANAGEMENT PLAN

For the Trainee to formulate and institute a management plan.

Training/learning opportunities

- Feedback opportunity
- Case Based Discussion and/or Mini-CEX as appropriate and as agreed with Trainer
- Clinical consultations
- Clinical handover
- Attendance at MDT meetings
- ICU ward rounds
- FRCPath examination

OUTCOME 4 – LIAISING AND COMMUNICATING WITH RELEVANT STAKEHOLDERS

For the Trainee to communicate with other healthcare providers including GPs, Public Health and other clinicians as appropriate.

Training/learning opportunities

- Feedback opportunity
- Case Based Discussion and/or Mini-CEX as appropriate and as agreed with Trainer
- Clinical Consultations
- Clinical handover
- Attendance at MDT meetings
- Presentation(s) at national and/or international meetings

OUTCOME 5 – IMMUNISATION AND POST-EXPOSURE MANAGEMENT

For the Trainee to advise on pharmacological strategies to prevent infection including antimicrobial prophylaxis, and active and passive immunisation.

Training/learning opportunities

- Feedback opportunity
- Case Based Discussion and/or Mini-CEX as appropriate and as agreed with Trainer
- Clinical Consultations
- National Immunisation Guidelines
- Attendance at MDT meetings, including Occupational Health
- FRCPath examination

Training Goal 5 – Quality Improvement and Service Development

By the end of HST, the Trainee is expected to be capable of identifying service needs and using available data to develop and improve service provision.

The Trainee is expected to gain an understanding of the management structures within the Health Service (HSE) in addition to local clinical governance structures.

The Trainee must perform an audit annually and a formal QIP during the course of HST.

Outcome 1 – Identify service needs

For the Trainee to identify service needs and use available data to develop and improve service provision.

Training/learning opportunities

- QIP
- Audit
- Case Based Discussion (CBD)
- Presentations at local, national, or international meetings
- Attendance at management meetings
- Collaboration in the development of a business case
- Study days
- Committee membership

Outcome 2 – Quality Improvement for Microbiology

For the Trainee to demonstrate an understanding of the importance of quality improvement in Microbiology by completing a QIP.

Training/learning opportunities

- Complete a QIP

Training Goal 6 – Epidemiology and Surveillance

By the end of HST, the Trainee is expected to be competent in the interpretation and application of surveillance data in relation to IPC and AMS programmes, including responding to emerging trends.

Outcome 1 – AMR Surveillance

For the Trainee to understand the principles of data handling and interpretation in informing IPC practices.

Training/learning opportunities

- Feedback Opportunity
- Case Based Discussion (CBD)
- Audit and/or QIP
- IPC meetings
- Attendance at national and/or international meetings
- Study day attendance
- Healthcare infection society (HIS) courses

Outcome 2 – Utilisation of surveillance systems

For the Trainee to apply surveillance data for infection prevention and management in order to provide safe and effective patient care and to identify emerging trends and pathogens.

Training/learning opportunities

- Feedback opportunity
- DOPS
- Case Based Discussion (CBD)
- Audit and/or QIP
- IPC meetings
- Attendance at national and/or international meetings
- Study day attendance
- HIS courses
- Health Information and Quality Authority (HIQA) standards
- Health Protection Surveillance Centre (HPSC) reports and alerts

Outcome 3 – Reference laboratory

For the Trainee to have awareness of the role and function of reference laboratories.

Training/learning opportunities

- Feedback opportunity
- Case Based Discussion (CBD)
- Reference laboratory visits
- Study days

5. APPENDICES

This section includes two appendices to the Curriculum.

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

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

ASSESSMENT APPENDIX

Workplace-Based Assessment and Evaluations

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

Relevance of Feedback for WBA

Although "assessment" is the keyword in WBA, it is necessary to acknowledge that feedback is an integral part and complementary component of WBA. 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 four 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 and 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.

Examinations

In the normal course of events, the Part I FRCPath will be taken after a minimum of 12 months of specialty training in Microbiology. The Part II FRCPath is taken after a minimum of two and a half years of recognised training and when the candidate is considered by their Trainer to be sufficiently prepared for the examination. Trainees are advised to consult the Royal College of Pathologist Examination Regulations and Guidelines for the most up to date eligibility criteria. Trainees are expected to consult with their Trainer at the earliest opportunity if considering taking either examination to ensure that the Trainee has the requisite experience to undertake the examination.

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 new 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.

HIS/UKHSA Foundation Certificate in Infection Prevention and Control which comprises attendance at seven of nine Training Education days in the rolling programme and completion of the Foundation Course in Infection Prevention and Control.

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 5 per training year**.

Microbiology – Clinical and Laboratory and Teaching Attendance Requirements